

2. Практический раздел электронно-методического комплекса

2.1 Материалы для практических занятий по дисциплине

UNIT 1

Graphical user interface (part one)

Vocabulary

augment (v) расширять
bitmapped растровый
title bar строка заголовка
overlap (v) перекрывать
pop up (v) выскакивать на экране
scroll bar полоса прокрутки
pop up menu всплывающее меню
envision (v) предвидеть, рисовать в своем воображении
comprehension понимание
derive (v) извлекать
enhance (v) усиливать, улучшать
overwhelm (v) ошеломить
inevitable неизбежный
demise прекращение деятельности
conceive (v) понимать, постигать
implementation осуществление, реализация

Exercise 1. Read the text and say which of the following statements expresses its main idea.

1. The invention of the first GUI comes back to the 30-th of the twentieth century.
2. It took a long time to develop GUI.
3. Douglas Engelbart made a major contribution to the development of GUI.

(1) Like many developments in the history of computing, some of the ideas for a GUI computer were thought of long before the technology was even available to build such a machine. One of the first people to express these ideas was Vannevar Buch. In the early 1930s he first wrote of a device he called the “Memex”, which he envisioned as looking like a desk with two touch screen graphical displays, a keyboard, and a scanner attached to it. However, starting it about 1937 several groups around the world started constructing digital computers. The perfection and commercial production of vacuum tubes provided the fast switching mechanisms these computers needed.

(2) In 1962, Douglas Engelbart published his ideas in an essay “Augmenting Human Intellect”. In this paper for human intellect, Douglas argued that digital computers could provide the quickest method to “increase the capability of a man to approach a complex problem situation, to gain comprehension to suit his particular needs, and to derive solutions to problems.” He envisioned the computer not as a replacement, but a tool for enhancing it. Douglas and his staff worked for years to develop the ideas and technology that finally culminated in a public demonstration in front of over a thousand computer professionals in 1968.

(3) The display was based on vector graphics technology and could display both text and solid lines on the same screen. Douglas’ hands operated three input devices: a standard typewriter-style keyboard and a small rectangular box with three buttons near the top, connected to the computer with a long wire. This was the mouse invented by Douglas himself and built by one of his engineers. Other input devices had been tried (such as touch screens and light pens), but user testing found the mouse to be the most natural way to manipulate an on-screen cursor. With the invention of the mouse came the invention of the mouse pointer, which in this system was a stick arrow, about the height of a single character, pointing straight up. This was called “a bug” by Douglas team, but this term did not survive into modern use.

(4) Douglas Engelbart’s demonstration in 1968 overwhelmed many people. Xerox upper management, fearing the inevitable demise of their paper-based company in the ‘paperless’ future, decided that they had better make sure they controlled this new technology. They formed the Palo Alto Research Center, or PARC, in 1970. PARC invented its own computer in 1973. The Alto was not a microcomputer as such, although its working components did fit under the desk. Its most striking feature was its display, which was the same size and orientation as a printed page, and featured full raster-based, bitmapped graphics at a resolution of 606 by 808. Each pixel could be turned on and off independently, unlike the vector-based terminals which could only display text and straight lines. It also had a keyboard and a modernized version of Engelbart’s mouse, again with three buttons. The mouse cursor itself became a bitmapped image, and for the first time took the familiar diagonal-pointing arrow shape we know today.

(5) At this point the PARC researchers realized that a new visual code development environment had to be invented. This was Smalltalk, the first modern GUI. Smalltalk was conceived as a programming language and development environment so easy to use that a child could understand it, and in many respects was successful in this goal. Smalltalk was the world’s first object-oriented programming language, where program code and data could be encapsulated into single units called objects that could then be reused by

other programs without having to know the details of the object's implementation. It first began to take shape around 1974, and was continuously updated and enhanced.

(6) Individual windows in Smalltalk were contained by a graphical border, and stood out against the grey pattern of the background below them. They each had a title bar on the top line of each window which could be used to identify the window and move it around the screen. The title bar did not stretch the full length of the window, but started at the top left and only extended as far as the title itself. Windows could overlap other windows on the screen. The concept of "icons" was also invented at this time – small representations of programs or documents that could be clicked on to run them or manipulate them. Pop-up menus were also invented at the same time – the user would click one of the mouse buttons and hierarchical menu would appear at the last position of the mouse cursor. Also appearing for the first time were scroll bars, radio buttons and dialog boxes. The combination of Smalltalk and the Alto was essentially a modern personal computer with a very similar graphical user interface to the ones we use today. Many of the PARC team wanted Xerox to market the new, cost-reduced Alto III as a commercial product but Xerox management declined.

Exercise 2. Give the number of the paragraph which says about:

- a) the invention of a mouse;
- b) the idea of building a GUI computer;
- c) the origin of the first GUI;
- d) the construction of the first digital computer;
- e) Engelbart's contribution to the development of input devices;
- f) the first computer display;
- g) the origin of a modern computer;
- h) the advantages provided by a digital computer;
- i) the invention of the concept of icons;
- j) the devices which provided a computer with fast switching mechanisms;
- k) the world's first object-oriented programming language.

Exercise 3. Define whether the following statements correspond to the content of the text (yes, no).

1. A computer has been designed to improve the intellectual abilities of a human being.
2. The first GUI was composed of two touch screen graphical displays and a keyboard.

3. A title bar was invented by Douglas Engelbart.
4. PARC invented their own computer in order to control the technology being the latest one in 1968.
5. Pop-up menus were being invented along with a title bar and the concept of “icons”. Windows on the computer screen cannot overlap each other.
6. The first object-oriented programming language was invented at the very end of the 20th century.
7. Fast switching mechanisms of a computer were provided by improving vacuum tubes.
8. It was Douglas Engelbart who designed the device called mouse.
9. Originally, the mouse cursor did not have a diagonal-pointing arrow.
10. Douglas Engelbart’s inventions did not impress the world of business.
11. It took D. Engelbart and his team quite a short time to make all their inventions.

Exercise 4. Match the terms with their definitions.

- | | |
|-----------------------|--|
| 1. augment | a. to lie over and partly cover something. |
| 2. title bar | b. a horizontal or vertical bar that contains a box that is clicked and dragged up, down, left, or right in order to scroll the screen. |
| 3. pop-up menu | c. cessation of existence or activity. |
| 4. derive | d. to think of or create (something) in the mind. |
| 5. bitmapped graphics | e. the section at the top of a window that contains the name or description of the window. |
| 6. demise | f. a rectangular pattern of parallel scanning lines followed by the electron beam on a television screen or computer. |
| 7. overlap | g. obtain something from (a specified source). |
| 8. implement | h. to enlarge in size, number, strength, or extent. |
| 9. overwhelm | i. to appear very quickly or suddenly. |
| 10. inevitable | j. incapable of being avoided or prevented. |
| 11. enhance | k. to picture in the mind; imagine. |
| 12. conceive | l. to put into practical effect; carry out |
| 13. raster | m. a menu that appears on the display when the user changes the state of a button or makes a selection from a menu bar. |
| 14. scroll bar | n. it differs from vector graphics which usually cannot be enlarged or reduced without producing jagged lines or distorted images. |

15. pop up **o.** to affect deeply in mind or emotion, to affect (someone) very strongly.
16. envision **p.** to make greater, as in value, beauty, effectiveness to picture in the mind.

Exercise 5. Give your own interpretation of the following words and word combinations used in the text.

independently, replacement, rectangular box, encapsulate, enhance, identify, cost-reduced product, commercial product.

Exercise 6. Answer the following questions.

1. When did the first ideas for GUI computers originate?
2. What was the main purpose of inventing a digital computer in Douglas Engelbart's opinion?
3. What is the difference between bitmapped and vector graphics?
4. What devices were invented by Engelbart's team?
5. What were the advantages of the computer invented by PARC?
6. What developments led to the development of a modern personal computer?

Exercise 7. Make up the plan of the text and render its content.

UNIT 2

Graphical user interface (part two)

Vocabulary

pull down menu разворачивающееся меню
checkmark галочка
keyboard shortcut клавишная комбинация быстрого вызова
widget элемент интерфейса
tiled windows «мозаичные» окна
shortcut ярлык
squeeze (v) сжимать
zoom (v) увеличивать масштаб
trash ненужная информация
abandon (v) отменить

bevel скошенный, косой
mimic (v) имитировать
consistent единообразные по стилю, по управлению
vendor поставщик, производитель
survivor сохранившийся, продолжающий существовать
lack (v) испытывать недостаток
debut (v) дебютировать
swipe (v) скользить
font шрифт

Exercise 1. Read the text and say which of the following statements expresses its main idea.

1. The most important changes in GUI began in 1976.
2. The GUI advance was the result of efforts of some people.
3. It was Bill Gates who made the greatest contribution to the development of GUI.

(1) The most important of GUI pioneers was a small startup founded in garage in 1976 by Steve Jobs and Steve Wozniak, called Apple Computer. Apple had built it on the wildly popular Apple computer, which displayed both text and graphics but had a traditional command line interface. Apple was a young company that found itself flush with money, and was more willing to take risks. Many former Xerox PARC engineers found new jobs with Apple to recreate their work on the Alto and Smalltalk but on a product that would actually see commercial release and potentially become very popular. Work on Apple's next-generation Lisa computer, which had started life as a traditional text-based command line computer for business use, was transformed by the influx of PARC people. The Lisa team eventually settled on an icon-based interface where each icon indicated a document or an application, and developed the first pull-down menu bar, where all menus appeared at the very top line of the screen. Other innovations from the Lisa team included the idea of checkmarks appearing next to selected menu items, and the concept keyboard shortcuts for the most frequently used menu commands. The Lisa also changed some PARC conventions, such as using proportionally-sized scroll bars instead of fixed-height ones, and added new conventions, such as a trash can for dragging documents scheduled for deletion, and the idea of "greying out" menu options if they were not currently available. The three-button mouse was simplified to have only one button for the Lisa. As the interface required at

least two actions for each icon (selecting and running), the concept of double-clicking was invented to provide this functionality.

(2) In 1985 Bill Gates released a new competing product. In Windows each application had its own menu bar attached to it, just below the title bar. Another departure was the use of tiled, rather than overlapping windows. In 1987 Windows was updated to version 2.0, abandoning the tiled window approach in favour of the overlapping method and having maximizing widgets.

(3) Also in 1987, the UK-based company Acorn Computers introduced their first GUI called “Arthur” along with what was the world’s first 32-bit microcomputer, the Acorn A305/A310. This GUI used proportionally sized scroll bars and introduced a new concept: a “Dock” or shelf at the bottom of the screen where shortcuts to launch common programs and tools could be kept. It is important to note that many of the GUIs released in the mid-80s supported proportionally-spaced fonts in applications, but they used a fixed-width font for the system (menus and icon labels) for the sake of clarity.

(4) 1988 saw the release of NeXTSTEP, the new GUI and opening system for Steve Jobs’ NeXT computer, his first major project after leaving Apple in 1985. NeXTSTEP which introduced a sharp, 3D beveled look to all of its GUI components, was the first to use the “X” symbol to indicate a close window widget, and introduced the idea of vertical menu strip in the upper left-hand corner, which could also be “torn off” at any point so that the user could leave specific menus at any point on the screen. NeXTSTEP also had a Dock that lived on any side of the screen.

(5) Just before the end of the 1980s, new GUIs started appearing on Unix workstations. These ran on top of a networked windowing architecture known as X, which would later be the foundation for GUIs on Linux. These were simple GUIs that attempted to mimic the appearance of Microsoft Windows but still allow access to the power of the Unix shell underneath. X also introduced a new GUI idea where merely moving the mouse cursor over a window would automatically activate it and allow the user to start typing in it.

(6) The initial design goal of the X Window System was merely to provide the framework for displaying multiple command shells and a clock on a single large workstation monitor. The philosophy of X was to “separate policy and mechanism” which meant that it would handle basic graphical and windowing requests, but left the overall look of the interface up to the individual program. To provide a consistent interface, a second layer of code, called a “window manager” was required on top of the X Window server. The window manager handled the creation and manipulation of windows and window widgets, but was not a complete graphical user interface. Another

layer was created on top of that, called a “desktop environment” or DE, and varied depending on the Unix vendor. As the 90s began, other personal computing platforms fell off sharply in popularity, leaving only Windows and the Macintosh as the survivors of the GUI wars.

(7) Windows reached an unprecedented level of popularity with the release of version 3.0 in 1990 and 3.1 in 1992. While still lacking many of the features of the Macintosh (such as an icon-based file manager) it was sharp and had good-looking icons, and sold millions of copies. The release of Windows 95 cemented Microsoft’s lead in GUI sales, and became one of the most popular programs of all time. Windows 95 introduced the concept of the Start Menu, from which all programs could be launched, and the Task Bar where all running programs could be switched between. The next major release of Microsoft is operating system Windows 8 which officially debuted on October 26th, 2012. Windows 8 is a completely redesigned operating system developed with touchscreen use in mind as well as near-instant- on capabilities that enable a Windows 8 PC to load and start up in a matter of seconds rather than in minutes. Windows 8 replaces the more traditional Microsoft Windows OS look and feel with a new design system interface codenamed “Metro” that first debuted in the Windows Phone 7 mobile operating system. The Metro user interface primarily consists of a “Start screen” made up of “Live Tiles”, which are links to applications and features that are dynamic and update in real time. Users can switch between apps in Metro by simply swiping across the screen.

Exercise 2. Give the number of the paragraph which expresses the following ideas.

1. Since then computer users have been able to leave specific menus somewhere on the screen.
2. Microsoft took a leading position on the market of GUI.
3. The first icon-based interface made its appearance in the late 1980s.
4. The preference was given to the tiled windows.
5. A complete graphical interface was not created at that time.
6. Some special button combinations were invented for the most frequently used menu commands.
7. The company took a risk due to the available finance.
8. The company with the head office in Great Britain developed its own microcomputer.
9. Computer users got the possibility to write in the windows.
10. This GUI gave the possibility to load and start up within seconds.

Exercise 3. Define whether the following statements correspond to the content of the text (yes; no; not stated).

1. The first significant GUI computer was designed in Xerox PARC.
2. In its early days Apple Company had a lot of sponsors.
3. Lisa computer was designed as an ordinary computer for that period of time.
4. Lisa computer was aimed at doing a scientific research.
5. While working with Lisa computer the Apple employees used PARC conventions.
6. A one-button mouse provided two functions: selecting and running.
7. The so-called “dock” was designed to keep shortcuts of common programs and tools.
8. NeXTSTEP GUI gave a user the opportunity to leave specific menus at any point on the screen.
9. GUI used in the UK-based company Acorn Computers made it possible to type in a window.
10. The window manager handled the creation and manipulation of a complete graphical user interface.
11. Before the end of the 1980s, new GUIs were installed on different types of workstations.
12. Windows became very popular when version 2.0 appeared.
13. Windows 3.1 did not have many features of the Macintosh.
14. Microsoft took the leading position in GUI sales after the appearance of Windows 95.
15. A new design system interface “Metro” was originally used in a mobile phone.

Exercise 4. Match the terms with their definitions.

- | | |
|--------------|---|
| 1. Smalltalk | a. a menu that appears when an item in a GUI is selected, usually below the item (it is also called drop-down menu). |
| 2. Alto | b. a powerful multi-tasking, multiuser computer operating system. |
| 3. widget | c. a style of type. |
| 4. checkmark | d. a general term for a small gadget or device . |
| 5. trash | e. something that is reliable or in agreement. |
| 6. abandon | f. to imitate or copy in action, speech, etc. |

- | | |
|--------------------|--|
| 7. Unix | g. a programming language that was designed expressly to support the concepts of object-oriented programming. |
| 8. consistent | h. being at the disposal. |
| 9. vendor | i. litter bin. |
| 10. survivor | j. a person who sells something. |
| 11. squeeze | k. to pass a hand over the screen. |
| 12. swipe | l. the desktop computer from Xerox that pioneered the use/icon//desktop environment. |
| 13. conventions | m. ideas or actions intended to deal with a problem or situation. |
| 14. approach | n. a person or a thing who outlives the other or others. |
| 15. font | o. absence of something that should be there. |
| 16. pull-down menu | p. reference designations. |
| 17. available | q. worthless or discarded material or objects; refuse or rubbish. |
| 18. mimic | r. to press forcibly together; compress. |
| 19. lack | s. to give up by leaving or ceasing to operate with e.g. the electronic work sheet. |
| 20. trash can | t. a mark indicating that something has been noted or completed etc. |

Exercise 5. Give your own interpretation of the following words and word combinations used in the text.

flush with money, to take risks, set about, commercial release, influx, eventually, competing product, activate, unprecedented, initial, debut, near-instant-on capabilities, for the sake of clarity.

Exercise 6. Answer the following questions.

1. What kind of interface was developed by the Apple for its Lisa computer?
2. What innovations did PARC people introduce?
3. What was Bill Gates' contribution to the further development of modern GUIs?
4. Who introduced the term "Dock"?
5. What is the objective of the "X" symbol?
6. What was done by the GUI developers for providing a consistent interface?
7. What were the reasons for the popularity of Windows 95?

8. What are the main features of Windows 8?

Exercise 8. Make up the summary of the text.

UNIT 3

Smartphones and mobile operating systems

Vocabulary

track pad сенсорная панель

stylus перо

Wireless Application Protocol (WAP) протокол мобильной интерактивной связи с Интернетом

QUERTY keyboard стандартная клавиатура компьютера

keypad клавишное поле

single-minded имеющий узкое назначение

digital voice service цифровая передача речевых сигналов

swipe прокрутка; скольжение

tapping касание

pinch щипок

runtime performance настройки быстродействия

Notification area центр уведомлений

thumbnail «миниатюра», контрольное изображение

parallax видимое угловое смещение объекта

sluggish зависающий

force quit (v) принудительно завершить работу

source code исходный код

reverse pinch растягивание

haptic осязаемый

boot загрузка

toolkit набор инструментальных средств

capacitive емкостный

Exercise 1. Read the text and say which of the following statements expresses its main idea.

1. IOS 7 is the latest state-of-the-art gadget.
2. Touchscreen phones are dominating on the mobile device market.
3. Modern smartphones are based on the advanced mobile operating systems.

- (1) Like a computer operating system, a mobile operating system is the software platform on top of which other programs run. When a user purchases a mobile device, the manufacturer will have chosen the operating system for that specific device. The operating system is responsible for determining the functions and features available on the device, such as keyboards, Wireless Application Protocol (WAP), synchronization with applications, e-mail, text messaging and more. The mobile operating system will also determine which third-party applications can be used on the device.
- (2) The commercial success of smartphones and tablets has opened up a new and untapped market in mobile communications. Smartphone is a cellular telephone with built-in applications and Internet access. In addition to digital voice service, modern smartphones provide text messaging, e-mail, Web browsing, still and video cameras, MP3 player and video playback. In addition to their built-in functions, smartphones run myriad free and paid applications, turning the once single-minded cellphone into a mobile personal computer.
- (3) Since 2007, touchscreen phones have come to dominate the mobile device market. Touchscreen display is a type of electronic display that senses physical touch by a person's hands or fingers, or by a device such as a stylus, and then performs actions based on the location of the touch as well as the number of touches. It is useful for interacting directly with a computer or electronic device, partially or even completely eliminating the need for intermediate input devices such as computer mice, track pads or keyboards.
- (4) Smartphones, tablets, laptops and similar electronic devices can be based on one of the two primary types of touchscreen displays. Resistive touch displays distinguish and sense specific touch location when the two electrically charged layers of the touchscreen are pressed together with the physical force at a specific point. Capacitive touch screens distinguish and sense specific touch location based on the electrical impulses in a human body, typically the fingertip. This enables capacitive touchscreens to not require any actual force to be applied to the screen's surface; at the same time, capacitive screens typically don't respond to styluses or gloved hands due to the lack of electrical impulses generated.
- (5) The presence of touch functionality in smartphones and tablets clearly underlines the popularity of this interface. Touchscreen devices have also changed the whole way we look at mobile OS. Better technology, lower costs and heightened competition have increased the range of features and functionalities found on phones and tablets. The four major smartphone operating systems are iPhone (iOS), Android, BlackBerry and Windows Phone.

(6) Symbian mobile OS was used by many major mobile phone brands, like Samsung, Motorola, Sony Ericsson, and above all by Nokia. Symbian had a native graphics toolkit. It was designed to be manipulated by a keyboard-like interface metaphor, such as the ~15-key augmented telephone keypad, or the mini-QWERTY keyboards. It was the most popular smartphone OS on a worldwide average until the end of 2010, when it was overtaken by Android. Although more Symbian smartphones have been sold worldwide than any other, in 2011, Nokia switched from its native Symbian to the Microsoft phone platform.

(7) Android is a Linux-based operating system designed primarily for touchscreen mobile devices such as smartphones and tablet computers. Initially developed by Android, Inc., it was financially backed by Google which later bought it in 2005. Android is an open-source code and its licensing allows the software to be freely modified and distributed by device manufacturers and enthusiast developers. Additionally, Android has a large community of developers writing applications that augment the functionality of devices, written primarily in a customized version of the Java programming language. In October 2012, there were approximately 700,000 apps available for Android, and the estimated number of applications downloaded from Google Play was 25 billion.

(8) Android's user interface is based on direct manipulation, using touch inputs that correspond to real-world actions, like swiping, tapping, pinching and reverse pinching to manipulate on-screen objects. The response to user input is designed to be immediate, often using the vibration capabilities of the device to provide haptic feedback to the user. Android devices boot to the home screen which is similar to the desktop found on PCs. Android home screens are typically made up of app icons and widgets; app icons launch the associated app, whereas widgets display live, auto-updating content such as the weather forecast and the user's email inbox.

(9) IOS is a mobile operating system for Apple-manufactured devices. IOS runs on the iPhone, iPad, iPod Touch and Apple TV. IOS is best known for serving as the underlying software that allows iPhone users to interact with their phones using gestures such as swiping, tapping and pinching. These finger actions are typically performed on multi-touch capacitive touch screen displays, which provide fast response and accept inputs from multiple fingers.

(10) IOS comes with a lot of default apps, including an email client, a Safari Web browser, a portable media player (iPod) and the phone app. Developers can use the iOS software development kit (SDK) to create applications for Apple mobile devices. The SDK includes tools and interfaces for developing, installing, running and testing apps. Native apps can be written using the iOS

system frameworks and the Objective-C programming language. Included in the iOS SDK are Xcode Tools, which include an integrated development environment (IDE) for managing application projects, a graphical tool for creating the user interface and a debugging tool for analyzing runtime performance. iOS 7 for iPhone 5 has recently appeared on the smartphone market. Its GUI has undergone some noticeable changes. First of all, iOS 7 gets rid of the black bars at top and bottom of the screen; you have the “slide to unlock” words highlighted by a helpful animated glow.

(11) A file sharing feature AirDrop is also available on mobile devices running the iOS 7. It’s very simple: a “sharing” icon in an app lets you send a file, link or other piece of data to those willing to receive it. You choose AirDrop and you get a list of people in the vicinity. Press their icon and it’s done. The receiver gets a message popping up on their screen where they can accept or reject the data – photo, file, link. Double-tapping the Home button brings up the list of apps used before. In iOS 6 and earlier, it was a row on the bottom of the screen; now it’s a flat carousel in the screen centre. It has the style of thumbnails. If an app is sluggish, force quit the application by double tapping the Home button and flicking the app’s window up. The home screen gets some goodies too. It and the lock screen can use dynamic or static wallpapers, and they can use panoramas too. Wallpapers also benefit from a subtle parallax effect, so if you move the phone the wallpapers appear to move. The rest of iOS 7 emphasizes simplicity, so for example, the stitched leather is gone from Calendar and Notes don’t pretend that they’ve been written on yellow legal pads. Simplifying iOS makes it feel much more modern and efficient.

Exercise 2. Change the order of the following items according to the content of the text.

1. Two primary types of touchscreen displays.
2. A Linux-based operating system designed primarily for touchscreen mobile devices.
3. The responsibility of operating systems for the functions and features of a mobile phone.
4. The most popular smartphone OS until the end of 2010.
5. The abilities provided by AirDrop.
6. Touchscreen displays and their functions.
7. The principle of Android’s user interface operation.
8. Internetworking Operating System.
9. Smartphone as a mobile personal computer.
10. The iOS software development kit.

Exercise 3. Define whether the following statements correspond to the content of the text (true – T; false – F; not stated – NS).

1. It makes no difference what operating system is used in some particular device.
2. Smartphones became popular due to the application of new technologies.
3. Touchscreen displays provide the direct interaction with a computer.
4. The number of services provided by a smartphone is unlimited.
5. Resistive touch displays do not require any actual force to be applied to the screen's surface.
6. A capacitive touch screen is activated by the electrical impulses in a human body.
7. The change from one phone platform to another happened in 2011.
8. Android licensing meant that it was impossible to modify the software.
9. Home screens of Android devices and PC desktops are the same.
10. There are black bars at top and bottom of the screen with iOS 7 for iPhone5.
11. In iOS 7 the list of apps used before is a flat carousel in the screen centre.
12. Actually, iOS is used in all modern gadgets.

Exercise 4. Match the terms in the left column with their definitions.

- | | |
|----------------|---|
| 1. thumbnail | a. a pointing and drawing device that is shaped just like a pen. It is used when operating digital tablets and touch screens devices such as smart phones and iPads. |
| 2. keypad | b. a multi-touch touchpad from Apple that debuted on Mac laptops in 2009 and became a stand-alone pointing device for desktop computers in 2010. |
| 3. home button | c. sliding a finger or stylus across a touch screen to scroll or move items around. |
| 4. stylus | d. a miniature representation of a page or image that is used to identify a file by its contents; may be used to rearrange the page order by dragging and dropping them into a different sequence. |
| 5. trackpad | e. written by a programmer, but not directly executable by the computer. It must be |

converted into machine language by compilers, assemblers or interpreters.

6. swipe

f. a small keyboard, for example on a telephone, computer, or calculator.

7. source code

g. a reference to the main page of a site.

Exercise 5. Say what terms are meant by the following descriptions.

a) Wireless Application Protocol; b) IDE; c) runtime; d) SDK; e) QUERTY keyboard.

1. It is a collection of software used for developing applications for a specific device or operating systems. It typically includes an integrated development environment. Most of them contain a sample code, which provides developers with example programs and libraries. They also offer technical documentation, which may include tutorials and FAQs. Some of them may also include sample graphics, such as buttons and icons, which can be incorporated into applications.

2. The name comes from the first six letters (keys) appearing in the top left letter row of the keyboard, read from left to right. Its design is based on a layout created for the Sholes and Glidden typewriter and sold to Remington in the same year, when it first appeared in typewriters. It became popular with the success of the Remington No. 2 of 1878, and remains in use on electronic keyboards due to the network effect of a standard layout and a belief that alternatives fail to provide very significant advantages. Its use and adoption is often viewed as one of the most important case studies in open standards because of the widespread, collective adoption and use of the product, particularly in the United States.

3. It is an application that facilitates application development. In general, it is a graphical user interface GUI-based workbench designed to aid a developer in building software applications with an integrated environment combined with all the required tools at hand. Most common features, such as debugging, version control and data structure browsing, help a developer quickly execute actions without switching to other applications. Thus, it helps maximize productivity by providing similar user interfaces (UI) for related components and reduces the time taken to learn the language. It supports single or multiple languages.

4. It defines a mechanism for accessing and delivering content over wireless networks. It is based on the layered OSI model, uses new networking protocols having functions similar to the Web protocols HTTP, SSL, and TCP. A nice feature of its browsers is that they can be implemented on small

mobile devices such as cell phones, pagers, and PDAs. So, instead of coding content using HTML and JavaScript, programmers can use WML and WML Script. WML and its companion scripting language WML Script are tag-based markup languages designed after the HTML model. The advantages are that WML demands less memory and processing power from browsers, as compared to HTML and JavaScript. Another asset to WML is that it was designed to be used in relatively small display sizes so common in wireless devices such as PDAs.

5. It is the environment and data structures that keep track of everything that's going along as your program runs. In C, it is the environment variables and operating-system provided services that let the program interact with the rest of the system. In an object-oriented language, it's also all the tables of objects and classes and methods that get built to allow message passing to take place. In an interpreted language, it's the state of the interpreter, plus all of those other things. In general, it can be described as "everything that happens that you didn't explicitly write yourself".

Exercise 6. Find the following words and word combinations in the appropriate paragraphs of the text and explain what they mean in the given context.

third-party applications (1), untapped market (2), myriad (2), intermediate (3), underline (5), on a worldwide average (6), customized version (7), estimated number (7), haptic feedback (8), auto-updating content (8), "slide to unlock" words (10), gets rid of (10), a file sharing feature AirDrop (11), goodies (11), link (11).

Exercise 7. Answer the following questions.

1. What makes iOS modern and efficient?
2. Who is responsible for the functions and features of a mobile phone?
3. What is a smartphone?
4. What is a touchscreen display?
5. What types of touchscreen displays are available nowadays?
6. Since when have touchscreen phones dominated the mobile device market?
7. What was the most popular smartphone OS in 2010?
8. What is meant by Android?
9. What operating system was primarily designed for touchscreen mobile devices?
10. What is Android's user interface based on?

11. What is iOS?
12. What can be used for creating applications for Apple mobile devices?
13. What abilities does a file sharing feature AirDrop provide?

Exercise 8. Make up the summary and the abstract of the text.

UNIT 4

Cloud computing

Vocabulary

heterogeneous неоднородный
middleware связующее программное обеспечение
sophisticate (v) усложнять
scalable наращиваемый
appropriate подходящий, соответствующий
proprietary патентованный
tenancy владение
constituent group клиентская группа
affordable возможный, допустимый
customize (v) переделывать, подгонять
pool (v) объединять

Exercise 1. Read the text and say which of the following statements expresses its main idea.

1. Cloud Computing is a computer technology which uses the Internet for storing data and applications.
2. Cloud Computing provides its users with a number of very important benefits.
3. Cloud Computing provides its users with the services which are free of charge.

(1) Technological developments are increasingly changing and getting sophisticated. Cloud computing is the latest development of client server applications and files are stored in the “cloud”. Cloud computing is a term that applies to applications and data storage that are delivered over the Internet or via wireless technology. The individual user's device (i.e. computer, cell phone, etc.) only provides an interface to interact with the computer programs and data. In brief, cloud computing is the product of

Virtualization technology which offers to use the hardware or infrastructure or software applications either separately or combined without really having your own hardware. Cloud Computing refers to the delivery of computing and storage capacity as a service to a heterogeneous community of end-recipients. Cloud is a computing model providing web-based software, middleware and computing resources on demand. By deploying technology as a service, you give users access only to the resources they need for a particular task. You pay for what you use! It prevents you from paying for idle computing resources. Cloud computing can also go beyond cost savings by allowing the users to access the latest software and infrastructure offerings to foster business innovation. The users are actually using the cloud computing without realizing it. When you are using the Sky Drive, Hotmail, Gmail, you are in the cloud. Cloud computing is to access resources that are somewhere over the Internet. It can be accessed for free, as is the case of emails or by premium subscription with a guaranteed service level. Virtually the power is infinite. Businesses use cloud computing with Rackspace. com to combine all their processes on one server.

(2) Cloud computing is mostly economic. If you are a very small company, it will launch a service without any capital investment in hardware. Thus, with cloud computing, virtually with no start-up software and hardware investment you are getting heavy equipment today. The second advantage is being able to benefit from economies of scale that have an economic impact. Resources that are not used by the Indian companies at night can be used by the companies being on the other side of the planet, such as U.S., as an example. Cloud computing is like a machine with unlimited resource that runs 24 hours and 7 days a week and all those resources are shared.

(3) Cloud computing is self-healing. In case of failure, the last backup of the application automatically becomes the primary copy. Cloud computing offers a high scalability. The whole architecture is predictable and efficient. It is not one computer or server; it is thousands of computers that can handle the situation. Cloud Computing is a Multipurpose Virtualization system. In Cloud Computing, it is not possible to know where your data is physically present. Among the characteristics of cloud computing is the availability of on-demand services. Due to this feature cloud services can be used automatically as needed and without human interaction from service provider. Cloud computing provides broad network access, i.e. the access to the remote systems via a network such as the Internet or intranet. Cloud computing assumes that all Network resources should be pooled. The resource of the cloud provider is designed to meet the need of Cloud users and is provided dynamically. The cloud provider is independent of location. The user does not have any control nor the knowledge where from the

services are offered (geographically). The cloud systems have built-in control and measurement of resource consumption function depending on the type of cloud service. Thus, both parties, the cloud provider and the cloud user, ensure appropriate transparency in relation to the services utilized. It is API based and manipulation is not possible.

(4) So, Cloud Computing provides its users with a number of very important benefits. At the same time there are some reasons for criticizing Cloud Computing. One of the drawbacks is that Cloud Computing increases the dependency of Internet usage. As appropriately said by Richard Stallman “One reason you should not use web applications to do your computing is that you lose control ... It’s just as bad as using a proprietary program.” (Reference of the quotation: The Gaurdian).

(5) Cloud computing can be divided into three groups: a public cloud, a private cloud and a hybrid cloud. Public clouds are owned and operated by companies that use them to offer rapid access to affordable computing resources to other organizations or individuals. With public cloud services, users don’t have to purchase hardware, software or supporting infrastructure, which is owned and managed by a provider. A private cloud is owned and operated by a single company that controls the way virtualized resources and automated services are customized and used by various lines of business and constituent groups. Private clouds exist to take advantage of many of cloud’s efficiencies, while providing more control of resources and steering clear of multi-tenancy. A hybrid cloud uses a private cloud foundation combined with the strategic use of public cloud services. The reality is that a private cloud can’t exist in isolation from the rest of a company’s IT resources and the public cloud. Most companies with private clouds will evolve to manage workloads across data centers, private clouds and public clouds – thereby creating hybrid clouds.

(6) Services which are offered by cloud computing are numerous and various. Cloud-based applications – or software as a service (SaaS) – run on distant computers “in the cloud” that are owned and operated by others and that connect to users’ computers via the Internet and, usually, a web browser. Platform as a service provides a cloud-based environment with everything required to support the complete lifecycle of building and delivering web-based (cloud) applications – without the cost and complexity of buying and managing the underlying hardware, software, provisioning and hosting. Infrastructure as a service provides companies with computing resources including servers, networking, storage, and data center space on a pay-per-use basis.

Exercise 2. Change the order of the following items according to the content of the text.

1. Characteristics of cloud computing.
2. Types of Cloud Computing.
3. Benefits of cloud computing.
4. Main objective of a cloud computing.
5. Drawbacks of Cloud Computing.
6. Definition of a Cloud.
7. Definition of Cloud Computing.

Exercise 3. Define whether the following statements correspond to the content of the text (true – T; false – F; not stated – NS).

1. State-of-the-art technologies are becoming less sophisticated.
2. Cloud Computing provides hardware or infrastructure or software applications.
3. The term “cloud” comes from the direct meaning of the word.
4. The users do not realize the essence of Cloud Computing.
5. The resources of Cloud Computing are unlimited.
6. In case when Cloud computing fails, an expert makes the necessary debugging.
7. A user always knows who offers him cloud computing services.
8. Public clouds are accessible to every company.
9. A hybrid cloud was created by one of the private companies.
10. It is necessary to have a cloud-based environment in order to support the process of construction and delivery of cloud applications.

Exercise 4. Match the terms in the left column with their definitions.

- | | |
|---------------------------|--|
| 1. API | a. use of a browser (thin client) to access a software application over the Internet to perform work. |
| 2. Cloud Computing | b. computing software that occupies a position in a hierarchy between the operating system and the applications. |
| 3. Hybrid cloud computing | c. allows you to download images, vectors, and video clips in the highest definition available. |
| 4. Web-based software | d. it is an abbreviation for Application Program Interface. |

- | | |
|-------------------------|---|
| 5. middleware | e. computer technology which uses the Internet for storing data and applications. |
| 6. premium subscription | f. a combination of public cloud storage and private cloud storage where some critical data reside in the enterprise's private cloud while other data are stored and accessible from a public cloud storage provider. |

Exercise 5. Find the following words and word combinations in the appropriate paragraphs of the text and explain what they mean in the given context.

to deploy a technology (1), cost savings (1), to foster business innovation (1), somewhere over the Internet (1), premium subscription (1), infinite (1), self-healing (3), scalability (3), handle the situation (3), remote systems (3), resource consumption (3), appropriate transparency (3), to take advantage (5), a pay-per-use basis (6).

Exercise 6. Answer the following questions.

1. What is cloud computing?
2. What does the term “cloud” mean in the field of computer science?
3. What does it mean “to access resources by premium subscription”?
4. What are the benefits of cloud computing?
5. What is Cloud Computing criticized for?
6. What does Cloud Computing offer its users as services?

Exercise 7. Make up the summary and the abstract of the text.

UNIT 5

What is “hybrid” cloud computing?

Vocabulary

lock down (v) ограничить возможности
 multi-tenant многопользовательский
 nascent появляющийся, рождающийся
 rage сильное стремление, рвение
 concern озабоченность
 test bed испытательный стенд

business setup предприятие
sales metrics количественные показатели продаж
dummy макет
vet проверять
go live (v) начать функционировать
craft (v) изготавливать
hurdle препятствие, помеха
up-front cost полная стоимость
downtime время бездействия (из-за неисправности)
outage перерыв в работе
cross-contamination взаимное ухудшение
mitigate (v) смягчать
API программный интерфейс приложения
SOP (Standard operating procedure) стандартный порядок действий

Exercise 1. Read the text and say which of the following statements expresses its main idea text.

1. Hybrid Cloud Computing has more advantages than drawbacks.
2. The hybrid cloud allows IT to take advantage of the benefits of the private and public cloud.
3. The hybrid cloud is characterized by a great complexity.

(1) Hybrid cloud computing combines the benefits of so-called ‘public’ cloud resources where some IT functions are managed externally, while a defined percentage of a company’s IT stays on-premise in a ‘private’ cloud. The business benefits from the cost and flexibility advantages offered by public cloud computing and can apply that model to the data that it feels happy to manage externally. At the same time, the business is able to retain customer data (and other Intellectual Property) inside its own data centre.

(2) The ‘hybrid cloud’ has been described as the best of both worlds; it has certainly brought many new organisations to the cloud that had previously voiced fears relating to the data security of external public clouds. While a business might use the Rackspace cloud or Amazon Elastic Computer Cloud (EC2) for its general computing requirements, the private cloud remains in place for mission-critical sensitive data that needs to be locked down. This is not to say that public cloud computing resources are insecure, but some companies are wary of housing their data alongside that of their competitors in what is known as a multi-tenant cloud, i.e. one with several customers’ data stored inside.

(3) If you think about it, many (if not all) companies have made pretty significant investments in their own IT infrastructure already. The option to still use the company network is generally viewed as a more practicable step than a complete jump to the cloud all at once. As for the hybrid model it maximizes flexibility in the company's IT mix, as it can be a composition and combination of at least one private cloud and at least one public cloud.

(4) There are still problems lying ahead. The matter is that the hybrid cloud offers operational flexibility; it also offers scalability of peaks in data traffic; and yet it is a nascent technology and so is still being developed. There may be interconnectivity challenges on the road ahead as this new IT service delivery model is brought online, but the general feeling is that it's all very positive.

(5) Cloud computing has been the latest rage for several years, becoming more and more popular as distributed systems and easier access to services becomes the norm. Demand for cloud services has grown quickly, but many IT directors have expressed concerns over public cloud security issues and have instead moved towards private clouds, which are generally far more restricted and less distributed than are public systems. This means losing many of the advantages of the public cloud in the switch. A solution that has emerged is the hybrid clouds, which are often now the focus of IT management as they work to balance user needs, data access requirements, and security. In 2011 the survey by Unisys showed that 21 percent of IT organizations are focusing on hybrid clouds and a Sand Hill Group survey just before that showed that IT managers believed hybrid cloud use will continue a fast growth. The 2010 SHG survey predicted growth would triple, which happened by 2014.

(6) So what is the hybrid cloud, how does hybrid cloud computing work, and will it work for your organization? The hybrid cloud is a mixture of private and public cloud systems; hence its name. The private cloud can be self-hosted by the company (common in enterprise) or hosted by a paid third-party virtually, but kept private for the company's own use (common in smaller systems). The public cloud, of course, is public and off-premise. Users connect to the private cloud separately from the public one. Often, the setup has the public cloud hosting software, data and services that are non-critical with the rest on the private cloud. Many firms use the public cloud as a development test bed as well. In a small business setup, for example, the private cloud may hold valuable customer data and sales metrics while the public cloud hosts the company's virtual phone network and communications system. In an enterprise, as another example, the public cloud may host the beta version of the company's proprietary in-house software for tracking and analysis with key test data (all dummies created for the testing) included. The

private cloud hosts the actual software and data and will be upgraded once testing in the public cloud is complete. This saves valuable network and hardware resources for continued enterprise use while allowing the IT department to fully vet software-in-progress before going live and without fear of harming the current network. Some large networks have multiple private-public cloud mixtures, though this is generally only common in large enterprises with geographically global data centers and offices. Many financial institutions, for example, use multiple private-public cloud mixes. It is more common for enterprise to have a single private cloud and multiple public clouds for various services.

(7) The hybrid cloud allows IT to take advantage of the benefits of the private and public cloud. Some of the risks associated with these systems are also included, however, so the mixture is not always just positives. The challenge for the IT manager is to find the proper balance between the risks and rewards to craft a hybrid cloud that works well for the corporation's needs. There are Pros and Cons of Hybrid Cloud Computing. Among the former are the following benefits. First: Public clouds allow for a low investment hurdle to activate and can be cheaply scaled to more or less servers and network connections as needed. In a hybrid cloud, this flexibility is retained for all services put onto the public cloud, giving a lot of operational flexibility. Second: Private clouds have fewer security concerns and the enterprise retains control over the data center and its contents. In the hybrid cloud this remains so. Among the latter are the following downsides of the hybrid cloud. First: The flexibility of the private cloud is very limited and the up-front costs and continued maintenance requirements can be expensive. Management will have to budget for needs as well as the occasional unforeseen downtime or outage. Second: Mismanagement of the two systems can lead to cross-contamination, with data from the private (secure) cloud being ported to the public cloud. This is mitigated with intelligent SOPs.

(8) The goal of a hybrid cloud system is to provide as many benefits of the public and private cloud as possible while not incurring the risks associated with them. Most of this will be done in the design and implementation stages, of course, and proper API between the two (if any connections are to be had at all) will be critical in that process. Since the primary concern in a hybrid cloud is the accidental crossing of critical data from private to the public, having no or very few and tightly controlled connections is important. Generally speaking, the hybrid cloud will increase the complexity of a network environment. The benefits, however, often outweigh this issue of complexity and are enough to override the initial planning costs.

Exercise 2. Match the following titles to the appropriate paragraph.

1. The challenge that lies ahead.
2. The objective of a hybrid cloud system.
3. The Pros and Cons of Hybrid Cloud Computing.
4. Two types of cloud used by companies.
5. The main idea of 'hybrid' cloud computing.
6. Best of both worlds.
7. Hybrid cloud makes business sense.
8. Hybrid Cloud Architecture.

Exercise 3. Define whether the following statements correspond to the content of the text (true – T; false – F; not stated – NS).

1. Hybrid cloud computing takes the advantages of “public” cloud resources only.
2. The emergence of the ‘hybrid cloud’ made many companies join the cloud.
3. The leading international companies use Amazon Elastic Computer Cloud.
4. Some companies are afraid of using a public cloud for storing their data.
5. All the problems relating to the Hybrid model have been solved.
6. The first ideas of cloud computing emerged in 70s-80s of the XX century.
7. Hybrid cloud is the most popular technology with business management.
8. Public clouds usually contain critical sensitive data.
9. Many financial institutions use a single private cloud and multiple public clouds for various services.
10. Every IT manager has to make a sensible use of the mixture of the private and public clouds.
11. Hybrid Cloud Computing is lack of operational flexibility inherent in the Public cloud.
12. It is very important to manage cloud computing systems in a proper way.

Exercise 4. Match the terms in the left column with their definitions.

- | | |
|----------------|--|
| 1. up-front | a. a platform for experimentation of large development projects. |
| 2. outage | b. an imitation of a real or original object, intended to be used as a practical substitute. |
| 3. test bed | c. money given immediately upon the completion of a financial agreement. |
| 4. flexibility | d. obstacle; a difficult problem to be overcome. |
| 5. matrices | e. something that interests you because it is important or affects you. |

- | | |
|------------|---|
| 6. dummy | f. an interruption or failure in the performance of some operation (supply of power, as an example). |
| 7. hurdle | g. the ability to change or be changed easily to suit a different situation. |
| 8. concern | h. a set of figures or statistics that measure results. |

Exercise 5. Say what terms are meant by the following descriptions.

1) API; 2) contamination; 3) interconnectivity; 4) On-Premise Software.

1. It can occur in an information system when classified information is found on a computer system which is not supposed to be there. This can happen by accident, by transmission of insecure data, because the information was changed to a different classification rating, because users did not follow protocol and transferred information through insecure methods such as floppy disks or thumb drives. It can also occur through a computer virus or other form of malware.

2. It is a type of software delivery model that is installed and operated from a customer's in-house server and computing infrastructure. It utilizes an organization's native computing resources and requires only a licensed or purchased copy of software from an independent software vendor. It is known as shrink wrap.

3. It is a set of commands, functions, and protocols which programmers can use when building software for a specific operating system. It allows programmers to use predefined functions to interact with the operating system, instead of writing them from scratch.

4. This concept is used in numerous fields such as cybernetics, biology, ecology, network theory, and non-linear dynamics. The concept can be summarized as all parts of a system interact with and rely on one another simply by the fact that they occupy the same system, and that a system is difficult or sometimes impossible to analyze through its individual parts considered alone.

Exercise 6. Find the following words and word combinations in the appropriate paragraphs of the text and explain what they mean in the given context.

to stay on-premise (1); to voice fears (2); mission-critical sensitive data (2); to be wary of (2); alongside (2); a multi-tenant cloud (2); to be self-hosted by

the company (6); to be off-premise (6); investment hurdle (7); continued maintenance requirements (7); to budget for needs (7); to override the initial planning costs (8).

Exercise 7. Answer the following questions.

1. What are two types of cloud used by companies?
2. How do public and private clouds differ by their functions?
3. Why does hybrid cloud make business sense?
4. What challenge does the hybrid cloud offer?
5. What is 'hybrid' cloud computing?
6. What is the "hybrid cloud"?
7. What do companies use public and private clouds for?
8. When is the public cloud used as a test bed?
9. Why should IT managers be careful with the mixture of public and private clouds?
10. What are the benefits of the hybrid system?
11. What are the downsides of the hybrid system?
12. What is the goal of a hybrid cloud system?

Exercise 8. Make up the summary and the abstract of the text in writing.

UNIT 6

Search engine

Vocabulary

crawl (v) медленно двигаться, ползти

reciprocal links взаимные ссылки (связи)

search engine поисковая система

spider поисковый агент

URL унифицированный указатель информационного ресурса

supplement (v) дополнять

rank (v) ранжировать, располагать (в определенном порядке)

bid on/for (v) делать заявку на что-то, предлагать

verbiage фразеология; словесное выражение

meet criteria отвечать критериям

to refine (v) уточнять, детализировать

"Brick-and-Mortar" традиционная торговля через обычные магазины

Exercise 1. Read the text and say which of the following statements expresses its main idea.

1. A Search Engine is the system which is made up of the hardware and software components of a computer.
2. Search Engines are very complex.
3. Search Engines have become a very important aspect of commerce online.

(1) A Search Engine is not an engine in the normal sense, but it is actually a software program that searches websites, documents, images, and even videos for specific keywords. It returns a list of results where the keyword or search term you typed was found. A Search Engine is actually a system, the system which is made up of the hardware and software components of a computer. Google and Yahoo are considered systems because they are computers with software running on them. Search Engines are very complex and the search algorithms are updated continuously.

(2) Search Engines use computer robot programs called spiders to gather and store the information you're searching. Spiders find the pages and then pass the information on to another program for indexing. The spider identifies the data and then stores it in the search engines database. The spiders crawl along the web and find information about content by following other links that have previously been crawled. This is why it's important to have links to useful content on your website, and also have other website link back to you. If you launch a website, but never link to other pages, your site will more than likely not be found by the spiders. If your page has fresh content on it, then the spiders will find you eventually, although it takes more work and you have to manually submit the new Uniform Resource Locator to the search engines indexing program.

(3) URL is the Uniform Resource Locator for a website. It can also be referred to as a domain name. Domains with rich keywords that get searched a lot have a better chance at success in the search engines. The URL for Google is google.com, and Microsoft has live.com. One popular search engine, Ask Jeeves, has recently changed its name to Ask.com. Shorter domains have more brand power and have sold for millions of dollars on the open domain market. Short, three or four letter domains are very rare and are owned by major players in the online world.

(4) Search Engines have become a very important aspect of commerce online. Companies use Commerce or online commerce to support and supplement their traditional "Brick and Mortar" locations. Search Engines are used to find specific products that consumers are looking for to buy online. Having your website come up in the search listings and providing the

customers with the product or information they are searching for is a key. People are paying top dollar to be ranked at the top of the search engines.

(5) Keywords are the terms that you type in the search engine. If it matches the content that the search engine has stored in the database, the results are returned. Short keywords like “Car” will return millions of results. To find more specific, targeted results you can use long tail keywords which are also used when the website wants to refine search terms. If you were searching cars, for instance, you might want to include the brand name or city you want to buy it from. This will return more specific search results for your specific need. Working with long tail keywords successfully means that a publisher needs to know which long tail keywords actually get hits or are searched for on the major search engines. Research is the only way to know if long tail keywords will work or not. Google offers advertising where you can bid on specific keywords. This type of advertising is called Pay-Per-Click Advertising. When the terms are searched, your ad shows up and you pay every time someone clicks your ad. PPC is a very popular form of advertising in Search Engines. Keyword research tools help with finding the specific terms that people are searching. They also tell you the average monthly volume for a specific keyword, and the amount of competition there is for that word as well. Click Through Rate is the average percentage of clicks vs the average times your ad was actually viewed. Ad copy and verbiage play a very important role as to how effective your Search Engine advertisements are.

(6) Ranking in a search engine is also very important. This is referred to as the rank or position of the results returned by the Search Engine. When you enter a term or keyword in Google for instance, the most relevant results appear first. Ranking high in the search engines is a science in itself and high ranks mean big money for businesses. If you can rank constantly on the first page of the results, your success is almost guaranteed. The Search Engines use a variety of criteria that the websites and other data types must meet in order to rank high in the given Search Engine for a given term. Social marketing is also another way to get ranked. Search Engines love websites like MySpace.com, YouTube.com, and Digg.com because they always have fresh content to be indexed and have a multitude of links to follow. Every time someone submits a new article or blog posting, the spiders are there to index it. This is why social profiles are generally indexed in the Search Engines even before a site that just launched. Search Engines play a vital role in everyday life. People use them to study, work and play. Specialists in computers have made studying and mastering Search Engines a daily journey, constantly learning new things about how they function and how to get top rankings.

Exercise 2. Give the number of the paragraph which says about:

- a) the functions of computer robot programs;
- b) the special tools designed to find the specific terms that people are searching;
- c) the definition of a search engine;
- d) the role of search engines in everyday life;
- e) the complexity of search engines;
- f) the role of search engines in developing trade;
- g) major players in the online world;
- h) the aspects influencing ads efficiency;
- i) the environment providing profit in business.

Exercise 3. Define whether the following statements correspond to the content of the text (true – T; false – F; not stated – NS).

1. A Search Engine is a system, the system which is made up of the hardware components of a computer.
2. The search algorithms are updated once a day.
3. The only function of spiders is to find the necessary information.
4. Uniform Resource Locator is the same as a domain name.
5. Search engines are actively used in online commerce.
6. Research is one of the ways to know if long tail keywords will work or not.
7. The term "social marketing" was coined in 1971 by Kotler and Zaltman.
8. When someone submits a new blog posting, they are indexed by spiders.

Exercise 4. Match the terms in the left column with their definitions.

- | | |
|----------------|---|
| 1. CTR | a. the software that gathers specific information in an automated and orderly way from the Internet. |
| 2. advertising | b. contains a group of computers that can be accessed and administered with a common set of rules. |
| 3. verbiage | c. is the highest amount being paid for a commodity or service. |
| 4. a domain | d. selling goods, services or an idea that promotes the overall welfare of a community. |
| 5. blog | e. a way of measuring the success of an online advertising campaign. |

- | | |
|---------------------|--|
| 6. web spider | f. When the context involves a software or hardware system, this refers to documentation. |
| 7. social marketing | g. the promotion of goods or services for sale through impersonal media (radio, TV, Internet). |
| 8. top dollar | h. a website containing short articles called posts that are changed regularly. |

Exercise 5. Find the following words and word combinations in the appropriate paragraphs of the text and explain what they mean in the given context.

to update continuously (1), to identify the data (2), to crawl along the web (2), to manually submit (2), a domain (3), to match the content (5), targeted results (5), get hits (5), show up (5), constantly (6), blog posting (6), to master Search Engines.

Exercise 6. Say what terms are meant by the following descriptions.

1) URL; 2) search engine; 3) link; 4) Pay-Per-Click Advertising.

1. A conceptual two-point segment of an end-to-end circuit that connects two end users and enables them to communicate, even when two separate physical paths are used. In a satellite radio link, for example, there is an uplink from the Earth station (i.e., antenna) to the satellite and a downlink from the satellite to the Earth station.

2. Hyperlinks placed between two web pages in exchange for the other page linking back. They are an important part of search engine optimization as engines like Google rank the web pages in their results by the number of different pages link to yours. By participating in link exchanges, a site can increase its rank within the search engine's results.

3. A computer program that searches documents, especially on the World Wide Web, for a specified word or words and provides a list of documents in which they are found.

4. A formatted text string used by Web browsers, email clients and other software to identify a network resource on the Internet. Network resources are files that can be plain Web pages, other text documents, graphics, or programs.

5. A great way to quickly start generating traffic and solid sales to your website. When a user searches in "Google", "Yahoo", "Bing", Social Media network or their affiliate websites, you can bid for a search term and have an

ad displayed in the results. These ads are displayed on the top side of search results.

Exercise 6. Answer the following questions.

1. What is meant by the computer term “Search Engine”?
2. What are the functions of computer spiders?
3. What is the principle of a computer spider operation?
4. Who usually possesses shorter domains in online world?
5. What is the difference between online and “Brick and Mortar” commerce?
6. What is the role of keywords?
7. When is it necessary to work with long tail keywords?
8. What does the efficiency of your Search Engine advertisements depend on?
9. What is ranking and what does high ranking mean for business?
10. Why are specialists in computers continuously working at learning Search Engines?

Exercise 7. Make up the summary and the abstract of the text.

UNIT 7

What is information technology security?

Vocabulary

sensitive information секретная информация
decipher (v) шифровать
encryption кодирование, шифрование
unauthorized access несанкционированный доступ
legitimate законный
confidentiality конфиденциальность
integrity целостность
vulnerability уязвимость
robustness устойчивость
compromise (v) подвергать риску
remote access удаленный доступ
availability доступность
tradeoff компромисс
usability практичность

Exercise 1. Read the text and say which of the following statements expresses its main idea.

1. Information technology security is simply the process of keeping information secure.
2. Protecting sensitive information and the security of computer networks is the main concern of ITS.
3. ITS provides appropriate level of security.

(1) Security is a basic human concept that has become more difficult to define and enforce in the Information Age. In primitive societies, security was limited to ensuring the safety of the group's members and protecting physical resources, like food and water. As society has grown more complex, the significance of sharing and securing the important resource of information has increased. Before the proliferation of modern communications, information security was limited to controlling physical access to oral or written communications. The importance of information security led societies to develop innovative ways of protecting their information. For example, the Roman Empire's military wrote sensitive messages on parchments that could be dissolved in water after they had been read. Military history provides another more recent example of the importance of information security. Decades after World War II ended, it was revealed that the Allies had gained an enormous advantage by deciphering both the German and Japanese encryption codes early in the conflict. Recent innovations in information technology, like the Internet, have made it possible to send vast quantities of data across the globe with ease. However, the challenge of controlling and protecting that information has grown exponentially now that data can be easily transmitted, stored, copied, manipulated, and destroyed.

(2) Within a large organization information technology generally refers to laptop and desktop computers, servers, routers, and switches that form a computer network, although information technology also includes fax machines, phone and voice mail systems, cellular phones, and other electronic systems. A growing reliance on computers to work and communicate has made the control of computer networks an important part of information security. Unauthorized access to paper documents or phone conversations is still an information security concern, but the real challenge has become protecting the security of computer networks, especially when they are connected to the Internet. Most large organizations have their own local computer network, or intranet, that links their computers together to share resources and support the communications of employees and others

with a legitimate need for access. Almost all of these networks are connected to the Internet and allow employees to go "online."

(3) Information technology security is controlling access to sensitive electronic information so only those with a legitimate need to access it are allowed to do so. This seemingly simple task has become a very complex process with systems that need to be continually updated and processes that need to constantly be reviewed. There are three main objectives for information technology security: confidentiality, integrity, and availability of data. Confidentiality is protecting access to sensitive data from those who don't have a legitimate need to use it. Integrity is ensuring that information is accurate and reliable and cannot be modified in unexpected ways. The availability of data ensures that is readily available to those who need to use it.

(4) Information technology security is often the challenge of balancing the demands of users versus the need for data confidentiality and integrity. For example, allowing employees to access a network from a remote location, like their home or a project site, can increase the value of the network and efficiency of the employee. Unfortunately, remote access to a network also opens a number of vulnerabilities and creates difficult security challenges for a network administrator.

(5) Information Security involves a Tradeoff between Security and Usability: There is no such thing as a totally secure system – except perhaps one that is entirely unusable by anyone! Corporate Information Security's goal is to provide an appropriate level of security, based on the value of an organization's information and its business needs. The more secure a system is, the more inconvenience legitimate users experience in accessing it.

Exercise 2. Give the number of the paragraph which says about:

Organization of information technology security within large companies; main objectives of information technology security; basic concept of security; totally secure computer systems; legitimate need for access; balancing the demands of users versus the need for data confidentiality; availability of data; protecting the security of computer systems; origins of information technology security; local computer networks.

Exercise 3. Match the terms with their definitions:

1. Integrity

a. Application of cryptography to make information unintelligible, i. e. translating

- plaintext into ciphertext using a prescribed algorithm and a key.
2. Vulnerability **b.** Not permitted, accepted or agreed by management.
 3. Information security **c.** One of the three core elements of information security, along with availability and integrity. It essentially concerns secrecy or privacy.
 4. Encryption **d.** The preservation of confidentiality, integrity and availability of information. In addition, other properties, such as authenticity, accountability, non-repudiation, and reliability can also be involved.
 5. Confidentiality **e.** Weakness in an information system, or cryptographic system, or components (e.g., system security procedures, hardware design, internal controls) that could be exploited to violate system security policy and result in a security breach.
 6. Availability **f.** Property of completeness and accuracy of information. Protected through controls such as referential integrity, data entry validation, digital signatures, honesty, ethics and trust. One of the three core elements of information security, along with confidentiality and availability.
 7. Unauthorized **g.** One of the three core elements of information security, along with confidentiality and integrity. It concerns the requirement for information, IT systems, people and processes to be operational and accessible when needed.

Exercise 4. Define whether the following statements correspond to the content of the text (yes, no).

1. Security is a basic human concept that is easy to define.
2. Information security is limited to controlling physical access to oral or written information.

3. The requirements for controlling and protecting information have grown exponentially.
4. Control of computer networks is an important part of ITS.
5. Protecting the security of computer networks, especially when they are connected to the Internet, has become the real challenge.
6. Information technology security is controlling access to all electronic information.
7. There are three main objectives for ITS: confidentiality, integrity and availability of data.
8. Allowing employees to access a network from a remote location can decrease the number of vulnerability.
9. Information technology security is a responsibility only of those who are directly concerned with it.

Exercise 5. Answer the following questions.

1. Did the problem of security exist in primitive societies?
2. Why has the significance of sharing and securing the important resources of information increased in a modern society?
3. What examples of the importance of IS are given in the text?
4. What has made the control of computer networks an important part of ITS?
5. What is the most important task of ITS?
6. Who is allowed to get access to sensitive electronic information?
7. What are the 3 main objectives of ITS?
8. What are the advantages and disadvantages of an access from a remote location?
9. Are there any totally secure systems?

Exercise 6. Arrange the following headings in the logical order. Match them with the paragraphs of the text.

1. The demands of users versus the need of data confidentiality and integrity;
2. Responsibility for ITS;
3. History of information security;
4. Main objectives of ITS;
5. ITS in the digital era.

Exercise 7. Make up the summary of the text.

UNIT 8

Data classification

Vocabulary

sensitivity степень конфиденциальности
top secret совершенно секретный
confidential данные ограниченного пользования
security clearance проверка на отсутствие нарушений секретности
public information информация, доступная неограниченному кругу лиц
level of protection уровень защиты
backup резервное копирование
adequate security control соответствующий контроль безопасности
fraudulently obtained полученный обманным путем

Exercise 1. Read the text and say which of the following statements expresses its main idea.

1. Data classification is one of the foundational elements of information security.
2. Each piece of information created should be assigned its classification level.
3. Without a data classification scheme an organization might suffer from constant security breaches.

(1) One of the foundational elements of an information security program is the existence of and adherence to a formal data classification scheme. Yet, many organizations—even those that profess a commitment to protecting company and customer information—fail to implement data classification. We will look at the reasons that data classification can be difficult and offers several practical guidelines to overcome these obstacles.

What is data classification?

(2) Data classification is a simple concept. It is a scheme by which the organization assigns a level of sensitivity and an owner to each piece of information that it owns and maintains. In a hospital, for example, a data classification scheme would identify the sensitivity of every piece of data in the hospital, from the cafeteria menu to patient medical records. The most widely recognized data classification scheme is the one used by governments, such as the U.S., which assigns classifications such as:

- Top secret
- Secret
- Confidential

(3) When a document, letter, memo, or other piece of information is created, the owner assigns to it a classification level, which among other things, defines the security clearance of individuals that can access that information.

(4) Similarly, in business, organizations adopt data classification schemes to define the levels of confidentiality that are required for each piece of information created or maintained by the organization. A corporate data classification scheme might comprise information classifications such as:

- Company confidential
- Private
- Sensitive
- Public

(5) Such a scheme greatly facilitates data security, because it instantly identifies and communicates the level of protection required for any piece of data as well as the audience that may view it. For example, a document that is tagged as "company confidential" is easily recognized as not to be released outside of the company. Further, it limits those who may access the information to a defined group.

(6) A good data classification scheme also includes a time-element, to allow a piece of information to change its status on a certain date. An example would be a public company's earnings announcement, which might be company confidential until the date of the earnings announcement, at which time it becomes "public."

(7) There are many other attributes to data classification schemes, but these few points are sufficient to establish why data classification is fundamental to information security. Without a data classification scheme, an organization treats all information the same. This increases the probability that sensitive data will not have adequate security controls, increasing the risk of sensitive data being compromised. It also means that less sensitive data will have more security controls than necessary, leading to unnecessary restrictions and loss of efficiency for operational personnel.

Consequence of failure in data classification

(8) Two high profile cases in 2005 show the severe losses that can arise when data is not properly classified, the scheme is not adhered to in practice, or the scheme is not used to drive security controls appropriate for each class of data.

(9) In early 2005, ChoicePoint, a U.S. firm that provides information on consumers to insurance companies and other types of businesses and government agencies, revealed that criminals had fraudulently obtained valid customer accounts that enabled access to approximately 150,000 consumer names, addresses, Social Security numbers, and credit reports. Clearly, the security controls that ChoicePoint had in place for its new customer account

setup process were not adequate for the class of data that it allowed such customers to access.

(10) Around the same time, Bank of America disclosed that it lost several backup tapes in transit to a backup center. The tapes contained financial information on 1.2 million government employees that were members of the U.S. government's SmartPay credit card program. Although the Bank's data classification scheme may have recognized the confidential nature of such information when residing on the Bank's primary systems, it did not, in this case, appear to extend to the same information when it was contained on backup media.

(11) Although ChoicePoint and Bank of America can be faulted for not adequately protecting confidential information, it is likely that both organizations had a data classification scheme in place. The problem was that they did not have adequate security controls based on the classification, at least in these instances.

(12) Many organizations have an even more fundamental problem: they do not have any data classification scheme at all. If data classification is a foundational requirement for information security, what explains this failure?

(13) First, data classification is one place where the old maxim is true: perfection is the enemy of the good. Some security professionals insist upon a scheme that is perfect in theory, but difficult to implement. For example, if most users are ignorant of basic security practices, successfully implementing a robust data classification scheme will be extremely challenging. A data classification program will only be effective if employees are willing to properly classify each piece of information and maintain the classification. An organization will be better served by a simple data classification scheme that is put into practice – even one that is theoretically imperfect – than the perfect scheme that exists in name only.

(14) Second, the development and implementation of data classification can be downright expensive. The costs are two-fold: the cost of developing the data classification scheme with appropriate controls based on each class of data and then training all employees to recognize and classify data accordingly. The development and training effort can be significant, but there is even more effort required to classify existing data and to continue to classify new data on an on-going basis. For healthcare organizations, financial services firms, and others that are required by law to classify data, the cost of these efforts may be rationalized in terms of regulatory compliance. But for non-regulated organizations, it is often difficult for management to justify such efforts as a necessary part of doing business. Finally, the leaders of the security program – the chief information security officer, and others – often lack the authority to drive a data classification

program through to full implementation. In many companies, the security program does not have the political clout required to gain acceptance for such an ambitious initiative.

Exercise 2. Give the number of the paragraph which says about:

not adequate security control based on the classification of data; time – element; cost of development and implementation of data classification; definition of data classification; classification of data that might be compromised; most widely recognized data classification scheme; security clearance; data classification as fundamental to information security; data classification as a foundational requirement for information security.

Exercise 3. Define whether the following statements correspond to the content of the text (yes, no).

1. Data classification is of the least concern for many organizations.
2. Data classification is a scheme by which an organization defines an owner to each piece of information.
3. According to the classification used by the US government all information can be assigned as top secret, secret and public.
4. After creating any piece of information the owner should assign to it a classification level.
5. Most corporate data classification scheme might comprise the following levels of confidentiality – company confidential, private, sensitive, public.
6. Data classification scheme limits access to the information.

Exercise 4. Match the terms with their definitions.

- | | |
|---------------|---|
| 1. Sensitive | a. Highly sensitive internal documents that could seriously damage the organization if such information were lost or made public. It has very restricted distribution and must be protected at all times. Security at this level is the highest possible. |
| 2. Public | b. The prevention of unauthorized use of a resource, including the prevention of use of a resource in an unauthorized manner. |
| 3. Top secret | c. Information in the public domain; annual reports, press statements etc.; which has been |

approved for public use. Security at this level is minimal.

4. Confidential

d. Privileged or proprietary information which if compromised by corruption, alteration, loss or misuse, could cause serious harm to the organization owing it.

5. Access control

e. It is not available or disclosed to unauthorized individuals.

Exercise 6. Give your own interpretation of the following words and word combinations used in the text.

a) Data classification; b) a classification level; c) a corporate data classification scheme; d) a time-element; e) adequate security control.

Exercise 7. Answer the following questions.

1. What is one of the foundational elements of an information security program?
2. What is data classification?
3. What is the most widely recognized data classification scheme?
4. When should a document be given its classification level?
5. What classification levels does a corporate data classification scheme comprise?
6. How can you explain the term “a time-element”?
7. Why is data classification fundamental to information security?
8. How did the criminal obtain the access to valid customers’ accounts of ChoicePoint insurance company?
9. Was the Bank of America data classification scheme properly organized?
10. What were the consequences of failure in data classification in Choice-Point and Bank of America?
11. Why is implementing of data classification difficult?
12. What does the cost of implementation of data classification include?

Exercise 8. Divide the text into logical abstracts and give each of them its logical name. Write at least 4 sentences to each item of your plan. Make up the summary of the text.

UNIT 9

How does a computer virus work?

Vocabulary

Intricate запутанный, замысловатый

Cell клетка

Loophole лазейка

Bragging right повод для гордости

Rely on (v) надеяться, полагаться

Shut off (v) отключать

Crack down on (v) расправиться

Exercise 1. Read the text and say which of the following statements expresses its main idea.

1. Most viruses have two phases of work – an attack and infection phase.
2. Viruses are created by people for different reasons.
3. Programs found on the Internet are much more vulnerable to viruses than programs that are purchased on CD.

(1) You might be surprised to find out that computer viruses are in reality marvels of the Information Age! So let us have a look at how computer viruses work... Although computer viruses are very simple computer programs, a properly engineered virus can have a devastating effect, causing information loss and damages of billions of dollars. For example, the Melissa virus (March 1999) forced Microsoft and other corporations to completely shut off their email system. That was a wonder of modern programming and nothing could stop it at that time.

(2) Computer viruses work much the same way that biological viruses work. This is actually why they are called viruses. However, instead of a computer virus being passed from one person to another, they are passed from one computer to another. A biological virus requires a virus to attach itself to another cell in the body and pass the virus into the cell. The virus will then use the components of the healthy cell to reproduce itself. In this case, the cell will either become so full of the replicated virus cells that it eventually bursts, releasing the virus on to other cells, or the cells of the virus will simply use the healthy cell to launch the virus cells to other healthy cells one at a time. A computer virus works much the same way.

(3) Viruses are small pieces of software that attach themselves to real software (or even media, like photos, mp3s, or movies). Whenever a user runs the infected file(s), the virus comes to life and can either replicate and

infect other programs and files, or explode with its full power. That in general is how a computer virus works. Nowadays viruses are mainly focused on replication. Otherwise, they would be useless. Of course, they can erase the entire hard disk of your computer, but that is all.

(4) Once the healthy program starts running, the computer virus will then be able to run, attach itself to other programs, and cause major destruction. Computer viruses, unlike biological viruses, are created by people. People write code that contains a computer virus, then test it to make sure that it works, and attach some form of action to the virus. That action is whatever the virus will do once it lands on a computer. Attaching this action is when the virus creator either makes the virus come up with a happy face on someone's computer or erase their entire hard drive. There are a few reasons why people write such destructive viral codes. One is simply because they know how. And when they find a security loophole in a computer, they want to take advantage of it before someone else does. Others do it just for the thrill, just like others draw graffiti or break into cars simply for a thrill. And of course, there's always bragging rights that go along with creating a particularly intricate and complicated virus that's hard to crack. However, because government officials are starting to crack down on these virus creators that cause so much damage, those bragging rights might become a thing of the past!

(5) There are two phases in how a computer virus works. The first phase is the infection phase. Once the user runs the infected entity, the virus will load into memory. It then scans for other programs and attempt to spread and infect them as well. It does this by modifying the program to add its code. Depending on its complexity, the computer virus might also attempt to search for, and infect, PCs linked to the infected computer, throughout the network. After the replication, the virus launches the real program, so the user has no knowledge of the infection. If this were the only thing a computer virus can do, nobody would hate them so much. However, now comes the dangerous phase.

(6) Most viruses have an attack phase, which causes the damage. This attack phase is triggered by a random event. For example, one might open Windows Media Player and trigger the virus. Other triggers, such as a specific date, or a specific number of replications are also used. Some viruses also react to antivirus software or to different files on the hard drive. There are viruses know to disable antivirus tools to make sure they are free to do whatever they were programmed to do. In the attack phase, the virus can do virtually anything from printing a message on the screen to a total erase of the user's hard disk.

(7) This gives you a basic idea of how a computer virus works and the results can be catastrophic to the user. In a matter of seconds, you can lose months of work or, worse, lose your entire computer. There are viruses that are so aggressive that they render computers unusable. Well, at least until some parts of them are replaced. One might be lucky and end up with a silly message on the screen or a few mp3s deleted, but these are very friendly viruses. But all hope is not lost and people don't simply have to rely on the hope that a virus doesn't land on their computer. There are many security measures that any computer user can take to protect themselves against computer viruses. Traditional viruses, although less common now, can be protected against by running a more secure operating system such as Unix on a computer. Viruses on these types of operating systems are virtually unheard of because no one except the authorized user ever has access to the hard drive. For operating systems such as MAC or Windows, it's extremely important to place some virus protection such as Norton or McAfee on the computer to keep it safe and protected against viruses. It's also important to never open any executable attachments that come with email messages. Files that have EXE, COM, or VBS are executable programs. Once you open them, you give them free access to your computer, allowing them to do whatever they wish. Programs found on the Internet are much more vulnerable to viruses than programs that are purchased on CD. Because of this, buying software from manufacturers that comes on its own CD is sure to be a better safeguard against viruses than downloading programs online. Lastly, it's also very important to stay informed on what new security patches can be downloaded to protect PCs. By taking these few simple steps, you can be sure that you are doing what you can to save yourself major headaches down the road.

Exercise 2. Give the number of the paragraph which says about:

2 phases of a computer virus work; the reasons why people write destructive viral codes; an attack phase of a virus; resemblance of a computer virus to a biological virus; general ways of a computer virus work.

Exercise 3. Define whether the following statements correspond to the content of the text (yes, no).

1. Computer viruses are rather complicated computer programs.
2. Whenever a user runs the infected file(s), the virus comes to life and can either replicate and infect other programs and files, or explode with its full power.

3. All viruses have two phases – an attack phase and an infection phase.
4. In the attack phase, the virus can do virtually anything from printing a message on the screen to a total erase of the user's hard disk.
5. There are viruses known to disable antivirus tools to make sure they are free to do whatever they were programmed to do.
6. Traditional viruses, although less common now, can be protected against by running a more secure operating system such as Unix on a computer.
7. Once you open executable programs, you give them free access to your computer, allowing them to do whatever they wish.
8. Downloading programs from the Internet is safe.

Exercise 4. Match the terms with their definitions.

- | | |
|-----------------------|---|
| 1. to replicate | a. A process of loading a virus into computer memory |
| 2. viral code | b. A mechanism that starts a series of events |
| 3. an infection phase | c. To create a copy of something |
| 4. an attack phase | d. A code that contains a virus |
| 5. trigger | e. A piece of software designed to update a computer program, or its supporting data |
| 6. executable program | f. A process of causing damage to software/hardware |
| 7. security loophole | g. a file containing a program that will run as soon as it is opened |
| 8. patch | h. A vulnerability in software, typically in the operating system, that enables an attacker to compromise the system. |

Exercise 5. Give your own interpretation of the following words and word combinations used in the text.

A computer virus; a devastating effect; a healthy program; replication; a security loophole; an intricate virus; a friendly virus.

Exercise 6. Answer the following questions.

1. What problems can a computer virus cause?
2. Why are computer viruses called so?
3. What is a virus?
4. How do computer viruses spread?

5. What is the difference between a biological virus and a computer virus?
6. What are the reasons for creating viruses?
7. What are the two phases of a computer virus work?
8. What is done during the attack phase?
9. What is done during the infection phase?
10. What measures should be take for protecting your computer from virus attacks?

Exercise 7. Make up the plan of the text and render its content.

UNIT 10

How does antivirus software work?

Vocabulary

With a clean sweep с полной заменой
Registry folder папка реестров
Common sense здравый смысл
Keylogger логгер клавиатуры
Odd странный
Questionable сомнительный
Alert (v) предупреждать об опасности

Exercise 1. Read the text and say which of the following statements expresses its main idea.

1. If you run your antivirus software regularly your computer will be save from malicious programs.
2. Antivirus software is practically a requirement for anyone using the Windows operating system.
3. You should follow a certain set of rules to keep your computer virus free.

(1) Antivirus software is practically a requirement for anyone using the Windows operating system. While it's true you can avoid computer viruses if you practice safe habits, the truth is that the people who write computer viruses are always looking for new ways to infect machines. There are several different antivirus programs on the market – some are free and some you have to purchase. Keep in mind that free versions often lack some of the nicer features you'll find in commercial products.

(2) Let's start with the assumption that you're able to run antivirus software. Assuming your antivirus software is up to date, it should detect malware on your machine. Most antivirus programs have an alert page that will list each and every virus or other piece of malware it finds. You should write down the names of each malware application your software discovers.

(3) Many antivirus programs will attempt to remove or isolate malware for you. You may have to select an option and confirm that you want the antivirus software to tackle the malware. For most users, this is the best option – it can be tricky removing malware on your own. If the antivirus software says it has removed the malware successfully, you should shut down your computer, reboot and run the antivirus software again. This time, if the software comes back with a clean sweep, you're good to go. If the antivirus software finds different malware, you may need to repeat the previous steps. If it finds the same malware as before, you might have to try something else.

(4) If you can't access your antivirus software or you keep seeing the same malware pop up scan after scan, you may need to try and start your computer in Safe Mode. Many computer viruses will store files in your Windows registry folder. This folder acts like a database of instructions and tells your operating system important information about the programs you have on your computer. It can also tell viruses to activate as soon as the operating system loads. Starting your computer in Safe mode allows you to work with your machine using only the core elements of the Windows OS.

(5) Try running your antivirus software in this mode. If you see new malware pop up, you may have hit upon your solution. Some malware exists only to download other kinds of malware and install them on your machine. If you can remove all of these applications, you'll be in good shape. If for some reason your antivirus software can't remove the virus on its own, it's time to do a little more research. Remember when we said you should write down the names of all the malware applications that your software discovered? Here's where that comes into play. You'll need to research each of those files online using the appropriate Internet security firm. Make sure to use the same firm that produces the antivirus software you're using. That's because different firms sometimes give the same virus different names. Not all firms will refer to the same virus the same way.

(6) Most Internet security firms will list all the files associated with a particular virus and tell you where you can expect to find those files. You may have to do some digging to find each file. Before you delete any files, you should save a backup copy of your Registry folder. If you accidentally delete the wrong file, you may make it difficult or impossible to run your computer properly. Delete all the files associated with the malware on your list. Once that's done, you'll need to reboot your computer and run your

antivirus software again. Hopefully nothing else will pop up. You may want to update your login information for your various accounts online. Some malware has key logging software that can send your passwords and information to a remote user. It's better to be safe than sorry.

(7) There are some simple rules you can follow that will help you avoid computer viruses. Most of these fall under the category of common sense.

- Don't open strange e-mail attachments or click on hyperlinks in email. Virus programmers love to trick people into clicking on links that will lead them to malicious software. Let people know that you don't click on hyperlinks in e-mail unless the sender includes a description of the link and what it leads to. If your e-mail client supports autolaunch, turn it off. Otherwise, you might automatically activate a computer virus just by opening the e-mail.

- The same applies to other messages you might encounter. Hyperlinks in message boards, Facebook messages or instant messages can sometimes lead to malware. Pay attention to the source of the message. Look for any unusual signs like misspellings or odd sentence structure, particularly if the person who sent you the message normally avoids errors. If you do see an odd link, you may want to let the sender know – he or she might be the victim of a hacked account.

- Don't visit questionable Web sites. This includes everything from software and music to video piracy sites. Many current Web browsers will alert you if you try to go to a site that is known for hosting malware. Pay attention to these warnings and stay away from those sites.

- Pay close attention to any windows that pop up while you surf the Web. If you see a notification claiming that you need to download the latest video driver to watch something, use caution. This is a common tactic used to distribute malware.

- Run your antivirus software at least once a week. You should also make sure your antivirus software and OS remain current by downloading updates and patches on a regular basis. Most antivirus software updates at least once a week as security firms add more virus information to their databases.

- Avoiding viruses might sound like a lot of work but keep in mind it's easier than fixing a computer that's been hit with a virus.

Exercise 2. Give the number of the paragraph which says about:

Safe mode; Windows registry folder; information on an alert page; different kinds of antivirus software; hyperlinks that might lead to malware; rebooting and running antivirus software after removing malware; different names for the same viruses.

Exercise 3. Define whether the following statements correspond to the content of the text (yes, no).

1. If you practice safe habits, you can avoid computer viruses.
2. You have to purchase all antivirus software programs.
3. All antivirus software programs have an alert page that will list each and every virus or other piece of malware it finds.
4. Many antivirus programs will attempt to remove or isolate a virus without your assistance.
5. You should always reboot your computer after the malware has been deleted successfully.
6. Many computer viruses will store files in your Windows Registry folder.
7. All malware exists only to download other kinds of malware and install them on your computer.
8. Before deleting any files you should save a backup copy of your Registry folder.
9. You may automatically activate a computer virus just by clicking on unknown links.
10. All current Web browsers will alert you if you try to go to a site hosting malware.
11. You should always make sure your antivirus software and operating system remain current by downloading updates and patches.

Exercise 4. Match the terms with their definitions.

- | | |
|------------------------------|--|
| 1. malware | a. to remove power from a computer's main components in a controlled way. |
| 2. to shut down the computer | b. a running computer system is restarted, either intentionally or unintentionally. |
| 3. rebooting | c. any type of software used to disrupt computer operation, or gain access to private computer. |
| 4. registry folder | d. a file sent with an e-mail message |
| 5. keylogging | e. a way for the Windows operating system to run with the minimum system files necessary. |
| 6. attachment monitoring | f. to start a computer automatically. |
| | g. the practice of covertly recording and keystrokes on a remote computer, typically using a dedicated software applications or piece of implanted hardware. |

- | | |
|---------------|--|
| 7. autolaunch | h. database used by Microsoft Operating system to store configuration information installed on a computer |
| 8. safe mode | i. and extra part or extension that is or can be sent along with an e-mail |

Exercise 5. Give your own interpretation of the following words and word combinations used in the text.

Antivirus software; an alert page; reboot a computer; safe mode; clean sweep; login information; message board; questionable site; to remain current.

Exercise 6. Answer the following questions.

1. Is antivirus software a compulsory requirement for anyone using the Windows Operating System?
2. What information is listed on an alert page?
3. What is the best option for most users after a virus has been spotted on your computer?
4. What should be done if you keep seeing the same malware pop up scan after scan?
5. Where do many computer viruses store their files within an operating system?
6. Why is it important to write down the names of all the malware applications that your software discovered?
7. Do all firms use the same names for all the viruses?
8. Why should a backup copy of your Registry folder be saved?
9. How does key logging software act?
10. How often should you run antivirus software?

Exercise 7. Make up the plan of the text and render its content.

UNIT 11

Types of computer crimes and their impact

Vocabulary

bundled software стандартное ПО (поставляемое в комплекте с ПК)
 original equipment изготовитель комплексного оборудования

unbundling разукomплектование
softlifting рассеивание ПО, незаконное размножение ПО
to counterfeit (v) фальсифицировать, подделывать
peer-to-peer пиринговый, децентрализованный
shareware условно-бесплатное ПО
executable file файл, содержащий исполнимый код
replicate (v) копировать, тиражировать
backdoor (trapdoor) «лазейка» (доступ в обход системы безопасности)
to disrupt (v) подрывать, нарушать
retaliation расплата, возмездие
ring of death преднамеренное переполнение входных буферов
компьютера с целью вывести его из строя
to round down (v) округлять в меньшую сторону
cumulative совокупный
bogus фиктивный

Exercise 1. Read the text and say which of the following statements expresses its main idea.

1. Cyber crimes are faster growing crimes in the world which cause enormous financial losses.
2. All types of cyber crimes are united by their goals.
3. Viruses, Trojan Horses and worms are the main types of malicious software.

(1) Cyber crime is faster growing crime in the world with millions of people affected every day. The effects of one successful attack on a corporation can have far-reaching implications, including financial losses at the corporate level, to stock losses and money lost for consumer or stockholders. According to the Congressional Research Service, several computer security consulting firms estimate global financial losses from viruses, worm attacks and other hostile computer-based attacks to be between \$13 and \$226 billion. Laws have been swiftly put into place to halt these types of attacks, but criminals find haven in countries with lax cyber crime law. According to crime-research.org, as early as 2003 the United States was already leading the world in percentage of cyber attacks at 35,4 percent, followed by South Korea at 12,8 percent. Countries with high rates of computer piracy, such as Russia, have reacted slowly to cyber crime. Cyber attacks come in several forms, with the hacker varying his methods depending on the target, the situation and what he is seeking.

Software piracy

(2) Most retail programs are licensed for use at just one computer site or for use by only one user at any time. By buying the software, you become a licensed user rather than an owner. You are allowed to make copies of the program for backup purposes, but it is against the law to give copies to friends and colleagues.

(3) Some common types of software piracy include counterfeit software, OEM unbundling, softlifting, hard disk loading, corporate software piracy, and Internet software piracy. OEM (original equipment manufacturer) unbundling involves disassembling the bundled software that is sold in conjunction with OEM hardware and installing it on other machines. Softlifting occurs when users share their software with other users who are not authorized to have access by the End-user License Agreement. Hard disk loading takes place when an unauthorized copy of commercial software is installed onto a computer system. The end user, or purchaser in this case, will then use the computer system with pirated software, often not realizing that the software that was pre-installed on the computer system is not legitimate. This type of piracy is most common with operating systems, especially older Microsoft branded operating system such as Windows 95 and Windows 98.

(4) Counterfeit software occurs when fake copies of software are produced in such a way that they appear to be authentic. Counterfeit software would include CD or DVD along with any accompanying manuals that the original legitimate software was sold with, but sold at a price well below that of the legitimate software. Internet software piracy involves illegally obtained software, through Internet channels, usually through peer-to-peer file sharing systems or downloaded from pirate Web sites. Corporate software piracy occurs when corporations underreport the number of software installations acquired through volume purchase agreement.

(5) Originally, software companies tried to stop software piracy by copy-protecting software. This strategy failed, however. An entirely different approach to software piracy, called shareware, acknowledges the futility of trying to stop people from copying software and instead relies on people's honesty. Shareware publishers encourage users to give copies of programs to friends and colleagues but ask everyone who uses a program regularly to pay a registration fee to the program's author directly.

Viruses, Worms and Trojan Horses

(6) Viruses, worms and Trojan horses are all malicious programs that can cause damage to the computer, but there are differences among them. A computer virus attaches itself to a program or file enabling it to spread from one computer to another, leaving infections as it travels. Some viruses may only cause annoying effects while others can damage your hardware, software or files. Almost all viruses are attached to an executable files, which

means the virus may exist on your computer but it actually cannot infect your computer unless you run or open the malicious program. It is important to note that a virus cannot be spread without a human action, such as running an infected program, to keep it going.

(7) A worm is similar to a virus and is considered to be a sub-class of a virus. Worms spread from computer to computer, but unlike a virus, it has capability to travel without any human actions. The biggest danger with a worm is its capability to replicate itself on your system. Your computer could send out hundreds or thousands of copies of the worm to everyone listed in your email address book, creating a huge devastating effect. In most cases the worm consumes too much system memory (or network bandwidth), causing Web servers, network servers and individual computers to stop responding. In recent years, worm attacks are designed to allow malicious users to control the computer remotely.

(8) A Trojan Horse, at first glance, will appear to be useful software but actually do damage once installed or run on your computer. Though some Trojans are designed to be more annoying than malicious (like changing your desktop, adding silly active desktop icons), others can cause serious damage by deleting files and destroying information on your system. Trojans are also known to create a backdoor on your computer that gives malicious users access to your system, possibly allowing confidential or personal information to be compromised. Unlike viruses and worms, Trojans do not reproduce by infecting other files nor do they self-replicate.

Denial of service attacks

(9) The Denial of Service attack is primarily designed to disrupt the availability of the target server or network. Many times hackers launch DoS attacks in retaliation for a company's policies, or against a government for its actions. The main goal in a DoS attack is to make the target's resources unavailable to users. The "Ping of Death" is a common DoS attack method which the attacker sends a flood of "ping" commands to the target, eventually overwhelming it with requests.

Salami slicing

(10) Salami slicing was employed successfully by criminally inclined IT staff to acquire large sums of money, by means of very small amounts. In a small example, a bank employee could always round down on transactions and pocket the difference. A few pennies here and there in small transactions is hard to spot, but the cumulative effect across numerous transactions could be significant. Salami slicing usually comes to light when the individuals involved are observed to be living well beyond their salary levels with no visible other means of support.

Spoofing

(11) The word “spoof” means to hoax, trick or deceive. Therefore, in the IT world, spoofing refers to tricking or deceiving computer systems or other computer users. This is typically done by hiding one’s identity or faking the identity of another user on the Internet. Spoofing can be done on the Internet in several different ways. One common method involves sending messages from a bogus e-mail address or faking the e-mail address of another user. IP spoofing involves masking the IP address of a certain computer system. Because IP spoofing makes it difficult to track the sources of a transaction, it is often used in denial-of-service attacks that overload a server. This may cause the server to either crash or become unresponsive to legitimate requests. Finally, spoofing can be done by simply faking an identity, such as an online username. For example, when posting on a Web discussion board, a user may pretend he is the representative for a certain company when he actually has no association with the organization. In online chat rooms, users may fake their age and location.

Hijacking

(12) Hijacking is a type of network security attack in which the attacker takes control of a communication between two entities and masquerades as one of them. In one type of hijacking, the attacker takes control of an established connection while it is in progress. The attacker intercepts messages in a public key exchange and then transmits them, substituting their own public key for the requested one, so that the two original parties still appear to be communicating with each other directly. The attacker uses a program that appears to be the server to the client and appears to be the client to the server. This attack may be used simply to gain access to the message, or to enable the attacker to modify them before retransmitting them.

(13) Another form of hijacking is browser hijacking, in which a user is taken to a different site than the one the user requested. The attacker gains access to DNS (Domain name system) records on a server and modifies them so that requests for the genuine Web page will be redirected elsewhere – usually to a fake page that the attacker has created. This gives the impression to the viewer that the Web site has been compromised, when in fact, only a server has been hijacked.

Exercise 2. Give the number of the paragraph which says about:

Trojan Horses; shareware; IT spoofing; impact of cyber attacks; counterfeit software; malware designed to disrupt the availability of the target server or a network; common types of software piracy; a worm; corporate software piracy.

Exercise 3. Define whether the following statements correspond to the content of the text (yes, no).

1. Cyber crimes can be rather annoying, but hardly ever result in financial losses.
2. Computer criminals are hiding from law and justice by migrating into foreign countries.
3. Rates of cyber crimes in the USA are particularly low.
4. Viruses cannot damage computer hardware.
5. A virus cannot infect a computer unless a user runs or opens the malicious program.
6. Trojan horses are notorious for their ability to replicate themselves and send multiple copies to other computers.
7. A criminal involved into salami slicing can be easily spotted by the police.
8. Denial of the service attack is frequently preceded by IP spoofing.
9. Browsers hijacking results in redirecting users to a bogus site on the Internet.

Exercise 4. Match the terms with their definitions.

- | | |
|--------------------|---|
| 1. Virus | a. A concealed instruction to a computer that appears to be a useful application but actually does something destructive in the background. |
| 2. Phishing | b. An illicit program that allows unauthorized entry. |
| 3. DoS attack | c. Gaining an unauthorized access by using IP address of a trusted host. |
| 4. Trojan horse | d. A person who enjoys learning programming languages and computer systems and can often be considered an expert on the subject |
| 5. Salami slicing | e. A process of attempting to acquire confidential information such as username, passwords, and credit card details, by masquerading in an electronic communication. |
| 6. Trapdoor | f. Programs sold with a computer or other hardware as a part of a package. |
| 7. Software piracy | g. A malicious program that can reproduce itself and cause damage to the computer software. |
| 8. Spoofing | h. Violating a license agreement by installing a legally purchased software on multiple unauthorized computers. |

- | | |
|----------------------|--|
| 9. Hacker | i. A file in a format that the computer can directly execute. |
| 10. Cyber crime | j. An act of illegally using, copying or distributing software without purchasing. |
| 11. Bundled software | k. Making an imitation of something valuable with intention to deceive. |
| 12. Softlifting | l. Paralyzing a computer network by flooding it with large number of requests or data sent simultaneously from many individual computers. |
| 13. Counterfeit | m. A criminal dealing with computers and networks. |
| 14. Executable file | n. A number of small illegal activities that creates a serious crime. |

Exercise 5. Give your own interpretation of the following words and word combinations used in the text.

Cyber crime; counterfeit software; bundled software; shareware; softlifting; to fake user's age and location; to spread a virus without a human action; to compromise information.

Exercise 6. Answer the following questions.

1. What is the rate of growth of cyber crimes in the world?
2. What are the main types of cyber crimes?
3. What are the common types of software crimes?
4. What types of malware can you name?
5. What is the difference between a virus and a worm?
6. Trojan Horses are designed to be more annoying than malicious, aren't they?
7. What is the main goal of Denial of Service Attack?
8. What was Salami Slicing designed for?
9. What methods does spoofing involve?
10. What are the two main forms of hijacking?

Exercise 7. Make up the summary of the text.

2.2 Дополнительные тексты для перевода

TEXT 1 OPERATING SYSTEM

Functions of an Operating System

The operating System's (OS) function is to manage the main components of a computer and act as a user interface for the computer's hardware. The OS plays an important role for the entire computer system. The operating system is responsible for performing the following activities, provides a user interface, performs common hardware functions, manages system memory, manages processing tasks, provides network capability, controls access to system resources and manages files.

Types of system interfaces

Providing a system interface, which allows users the ability to access the computer system, is a principle function of any operating system. There exist many different types of system interfaces, which include command based user interfaces and graphical user interfaces.

Command-based user interface

The first computer system interfaces were command based. A command-based user interface requires users to memorize commands and type them in order to run programs and accomplish tasks. Such user interfaces were predominately in personal computers used until Windows 3.1 became standard issue in 1992.

Graphical user interface

The main difference between the graphical user interface and the command-based user interface is that the prior uses icons, menus and button-bars, which are activated by mouse to operate software. In his writings, Cardinali (1994) explains that graphical user interfaces are linked to an increase in productivity amongst users. Studies showed that the graphical user interface significantly reduces the learning curve opposed to its command driven counterpart. Cardinali (1994) attributes the graphical interface's preference among users to the elimination of having to memorize commands. The most commonly used graphical user interface today is Windows by Microsoft.

Common hardware functions

The performance of a computer depends on the Operating system's management of hardware, which includes extrapolating data from input devices or retrieving data from disks, storing the data and displaying the information via output devices such as a monitor. The OS converts simple instructions for the tasks above into detailed instructions that the computer is able to interpret. In addition, the OS communicates errors and attention needs required by input/output devices.

Memory Management and processing tasks

Sobh and Tibrewal (2006) state, «Memory is an important resource that must be carefully managed». The memory management feature is responsible

for directing user requests for data to the data's physical storage location. Other functions of the memory management feature include space multiplexing and multitasking. Space multiplexing means that more than one user can be operating the OS at the same time, under this assumption, the OS schedules every process in such a way that users get the impression that their processes reside directly on the RAM. Multitasking allows users to run more than one application simultaneously. In short, the job of the memory manager is to keep track of which parts of memory are in use and which parts are not in use, to allocate memory to processes when they need it and de-allocate it when they are done, and to manage swapping between main memory and disc when main memory is not big enough to hold all the processes.

Networking capability, system resources, and file management

Some operating systems provide features that allow users to connect to computer networks and the capability to link users to the Internet (Stair and Reynolds, 2006). The networking capability of the OS makes a user more vulnerable to security issues. Therefore, the OS is equipped with protection features such as password protected log-on features, the recording of user information pertaining to the log-on, and the reporting of security breaches. Furthermore, users may require that more than one person have access to the same computer. The OS protects multiple users on the same computer by keeping track of where each file is stored and who is authorized to access it.

Market share and trends

- The major operating systems are Windows, Mac OS, UNIX and Linux.
- Windows decisively dominates the workstation market, with almost 90% of market share. Mac OS has recently increased its share to about 10%.
- Windows XP is still the major workstation operating system, with 65% to Vista's 24%.
- Windows and UNIX each command about a third of the server market.

Pros, Cons and Costs

- The major advantages of Windows are availability of business applications software, support and resources, and very high mainstream comfort levels.
- The high cost of matching Windows applications on other systems and the high cost of migration are the greatest barriers to change.
- Despite somewhat higher hardware costs, Mac TCO is lower than that of Windows.
- Mac OS offers the advantages of less «user friction interface», higher productivity, lower maintenance and support costs, and better security.

- Windows licensing costs are far higher than the other operating systems. Mac servers include unlimited licences, and UNIX and Linux are free.
- Estimates were that there would be 500,000 new pieces of malware (viruses, Trojans, etc.) for Windows by the end of 2008. Threats to Mac OS, UNIX and Linux are negligible.
- TCO findings for servers are mixed with some studies finding higher TCO for UNIX and Linux, others for Windows – depending on who commissioned the study.
- Linux and UNIX offer low maintenance requirements, exceptional stability and very good security.
- Mixed networks often make tremendous business sense, as they allow businesses to match systems to their needs instead of vice versa.

Conclusion

The Operating system is responsible for providing users with an interface that allow them to communicate directions in order to perform specified tasks on a computer. The OS facilitates the above process by managing common hardware functions, where it converts simple directions into detailed instructions the computer can interpret. Furthermore, the OS manages memory and processing tasks, which allow users to store and request data, to run more than one application at a time and even allow multiple users access to the same system. Finally, the OS secures the users files by managing its resource allocation and files, which allow users to comfortably share their computer and networking capabilities with others.

(5,242 symbols)

<http://www.nashnetworks.ca/pros-cons-and-costs-of-operating-systems.htm>
<https://jennadoucet.wordpress.com/2010/03/14/functions-of-an-operating-system/>

TEXT 2 29 YEARS OF WINDOWS EVOLUTION

Microsoft's Windows operating system was first introduced in 1985. Over 29 years later a lot has changed, but what things have stayed the same? Microsoft Windows has seen nine major versions since its first release in 1985. Over 29 years later, Windows looks very different but somehow familiar with elements that have survived the test of time, increases in computing power and – most recently – a shift from the keyboard and mouse to the touchscreen.

Here's a brief look at the history of Windows, from its birth at the hands of Bill Gates with Windows 1 to the latest arrival under new Microsoft chief executive Satya Nadella.

Windows 1

This is where it all started for Windows. The original Windows 1 was released in November 1985 and was Microsoft's first true attempt at a graphical user interface in 16-bit.

Development was spearheaded by Microsoft founder Bill Gates and ran on top of MS-DOS, which relied on command-line input.

It was notable because it relied heavily on use of a mouse. To help users become familiar with this odd input system, Microsoft included a game, Reversi that relied on mouse control, not the keyboard, to get people used to moving the mouse around and clicking onscreen elements.

Windows 2

Two years after the release of Windows 1, Microsoft's Windows 2 replaced it in December 1987. The big innovation for Windows 2 was that windows could overlap each other, and it also introduced the ability to minimise or maximise windows instead of «iconising» or «zooming».

The control panel, where various system settings and configuration options were collected together in one place, was introduced in Windows 2 and survives to this day.

Microsoft Word and Excel also made their first appearances running on Windows 2.

Windows 3

The first Windows that required a hard drive launched in 1990. Windows 3 was the first version to see more widespread success and be considered a challenger to Apple's Macintosh and the Commodore Amiga graphical user interfaces.

Windows 3 introduced the ability to run MS-DOS programmes in windows, which brought multitasking to legacy programmes. Windows 3 supported 256 colours bringing a more modern, colourful look to the interface.

Windows 3.1

Windows 3.1 released in 1992 is notable because it introduced TrueType fonts making Windows a viable publishing platform for the first time.

Minesweeper also made its first appearance. Windows 3.1 required 1MB of RAM to run and allowed supported MS-DOS programs to be controlled with a mouse for the first time. Windows 3.1 was also the first Windows to be distributed on a CD-ROM.

Windows 95

As the name implies, Windows 95 arrived in August 1995 and with it brought the first ever Start button and Start menu. New windows launched with a gigantic advertising campaign.

It also introduced the concept of “plug and play” – connect a peripheral and the operating system finds the appropriate drivers for it and makes it work. That was the idea; it didn’t always work in practice.

Windows 95 also introduced a 32-bit environment, the task bar and focused on multitasking. MS-DOS still played an important role for Windows 95, which required it to run some programmes and elements. Internet Explorer also made its debut on Windows 95, but was not installed by default.

Windows 98

Released in June 1998, Windows 98 built on Windows 95 and brought with it IE 4, Outlook Express, Windows Address Book, Microsoft Chat and NetShow Player, which was replaced by Windows Media Player 6.2 in Windows 98 Second Edition in 1999.

Windows 98 introduced the back and forward navigation buttons and the address bar in Windows Explorer, among other things. One of the biggest changes was the introduction of the Windows Driver Model for computer components and accessories – one driver to support all future versions of Windows.

USB support was much improved in Windows 98 and led to its widespread adoption, including USB hubs and USB mice.

Windows ME

Windows ME was the successor to Windows 98 SE and was targeted specifically at home PC users. It included Internet Explorer 5.5, Windows Media Player 7, and the new Windows Movie Maker software, which provided basic video editing and was designed to be easy to use for users. Microsoft also updated the graphical user interface.

Windows 2000

Windows 2000 was released in February 2000 and was based on Microsoft’s business-orientated system Windows NT and later became the basis for Windows XP.

Microsoft’s automatic updating played an important role in Windows 2000 and became the first Windows to support hibernation.

Windows XP

Arguably one of the best Windows versions, Windows XP was released in October 2001.

It was based on Windows NT like Windows 2000, but brought the consumer-friendly elements from Windows ME. The Start menu and task bar

got a visual overhaul, bringing the familiar green Start button, blue task bar and vista wallpaper and other visual effects.

ClearType, which was designed to make text easier to read on LCD screens, was introduced, as were built-in CD burning, autoplay from CDs and other media, plus various automated update, that unlike Windows ME actually worked.

Windows XP was the longest running Microsoft operating system, seeing three major updates and support up until April 2014 – 13 years from its original release date. Windows XP was still used on an estimated 430m PCs when it was discontinued.

Its biggest problem was security: though it had a firewall built in, it was turned off by default. Windows XP's huge popularity turned out to be a boon for hackers and criminals, who exploited its flaws.

Windows Vista

Windows XP to remain competitive for six years before being replaced by Windows Vista in January 2007. Vista updated the look and feel of Windows with more focus on security.

It also ran slowly on older computers. PC gamers saw a boost from Vista's inclusion of Microsoft's DirectX 10 technology.

Windows Media Player 11 and IE 7 debuted, along with Windows Defender an anti-spyware programme. Vista also included speech recognition, Windows DVD Maker and Photo Gallery. Later a version of Windows Vista without Windows Media Player was created in response to anti-trust investigations.

Windows 7

Considered by many as what Windows Vista should have been, Windows 7 was first released in October 2009. It was intended to fix all the problems and criticism faced by Vista, with slight tweaks to its appearance and a concentration on user-friendly features.

It was faster, more stable and easier to use. For this reason, users and would upgrade to from Windows XP, forgoing Vista entirely.

Windows 7 continued improvements on Windows Aero (the user interface introduced in Windows Vista) with the addition of a redesigned taskbar that allows applications to be "pinned" to it, and new window management features. Other new features were added to the operating system, including libraries, the new file sharing system HomeGroup, and support for multitouch input.

In contrast to Windows Vista, Windows 7 was generally praised by critics, who considered the operating system to be a major improvement over its predecessor due to its increased performance, its more intuitive interface.

Windows 8

Released in October 2012, Windows 8 was Microsoft's most radical overhaul of the Windows interface, ditching the Start button and Start menu in favour of a more touch-friendly Start screen.

The new tiled interface replaces the lists of programmes and icons. A desktop was still included, which resembled Windows 7.

Windows 8 was faster than previous versions of Windows and included support for the new, much faster USB 3.0 devices. The Windows Store, which offers universal Windows apps that run in a full-screen mode only, was introduced. Programs could still be installed from third-parties like other iterations of Windows.

The radical overhaul was not welcomed by many. Microsoft attempted to tread a fine line between touchscreen support and desktop users, but ultimately desktop users wanting to control Windows with a traditional mouse and keyboard and not a touchscreen felt Windows 8 was a step back. Even despite the parallel rise of tablets such as the iPad, and smartphones, which had begun outselling PCs by the end of 2010.

A free point release to Windows 8 introduced in October 2013, Windows 8.1 marked a shift towards yearly software updates from Microsoft.

Windows 10

Announced on 30 September 2014, Windows 10 has only been released as a test version for keen users to try. The “technical preview” is very much still a work in progress.

Some interesting features include the ability to switch between a keyboard and mouse mode and a tablet mode, for those computers like the Surface Pro 3 with a detachable keyboard.

Windows 10 – despite being the ninth version of Windows – is designed to unify all Windows platforms across multiple devices, including Windows Phone and tablets, with universal apps that can be downloaded from the Windows Store and run on all Windows devices. Windows 10 was also criticized for limiting how users can't control its operation; in particular, Windows Update installs all updates automatically, no longer allows users to selectively install updates, and only the Pro edition of Windows 10 can delay the automatic installation of new builds of the platform.

(7,401 symbols)

<https://www.theguardian.com/technology/2014/oct/02/from-windows-1-to-windows-10-29-years-of-windows-evolution>

TEXT 3 UNIX

The uniqueness of UNIX

The features that made UNIX a hit from the start are: multitasking capability, multi-user capability, portability, UNIX programs, library of application software, security.

1. Multitasking Capability

Many computers do just one thing at a time, as anyone who uses a PC or laptop can attest. Try logging onto your company's network while opening your browser while opening a word processing program. Chances are the processor will freeze for a few seconds while it sorts out the multiple instructions. UNIX, on the other hand, lets a computer do several things at once, such as printing out one file while the user edits another file. This is a major feature for users, since users don't have to wait for one application to end before starting another one.

2. Multi-user

The same design that permits multitasking permits multiple users to use the computer. The computer can take the commands of a number of users – determined by the design of the computer – to run programs, access files, and print documents at the same time.

The computer can't tell the printer to print all the requests at once, but it does prioritize the requests to keep everything orderly. It also lets several users access the same document by compartmentalizing the document so that the changes of one user don't override the changes of another user.

3. System portability

A major contribution of the UNIX system was its portability, permitting it to move from one brand of computer to another with a minimum of code changes. At a time when different computer lines of the same vendor didn't talk to each other – yet alone machines of multiple vendors – that meant a great savings in both hardware and software upgrades. It also meant that the operating system could be upgraded without having all the customer's data inputted again. And new versions of UNIX were backward compatible with older versions, making it easier for companies to upgrade in an orderly manner.

4. UNIX Programs

UNIX comes with hundreds of programs that can divide into two classes; Integral utilities These are absolutely necessary for the operation of the computer, such as the command interpreter, and Tools that aren't necessary for the operation of UNIX but provide the user with additional capabilities, such as typesetting capabilities and e-mail.

UNIX Communications

E-mail is commonplace today, but it has only come into its own in the business community within the last 10 years. Not so with UNIX users, who have been enjoying e-mail for several decades. UNIX e-mail at first

permitted users on the same computer to communicate with each other via their terminals. Then users on different machines, even made by different vendors, were connected to support e-mail. And finally, UNIX systems around the world were linked into a world wide web decades before the development of today's World Wide Web.

5. Applications libraries

UNIX as it is known today didn't just develop overnight. Nor were just a few people responsible for its growth. As soon as it moved from Bell Labs into the universities, every computer programmer worth his or her own salt started developing programs for UNIX. Today there are hundreds of UNIX applications that can be purchased from third-party vendors, in addition to the applications that come with UNIX.

6. Security.

It is safe, preventing one program from accessing memory or storage space allocated to another, and enables protection, requiring users to have permission to perform certain functions, i.e. accessing a directory, file, or disk drive.

UNIX at HOME

A few of the many advantages of using Unix at home are: Unix runs on older, less powerful machines. If your machine does not have enough CPU speed and memory for Windows, it can still run Unix.

Several Unix flavors such as FreeBSD are free. Additionally high quality, free applications like the eMacs text editor, Apache web server and GIMP image editor are available for Unix platforms. Equivalent Windows software costs hundreds of dollars Unix provides a flexible multi-user environment. Each member of the family can have their own account with personal settings and secure files. You can keep the kids from reading your work, financial or personal files, while allowing your spouse to access financial files but not work or personal files.

Unix provides the ultimate in computer programming environments. Powerful C, C++, Fortran and Java compilers along with development tools are available for free. Furthermore, the Internet is littered with libraries of free code for these compilers. It would cost over \$1,000 to create a comparable programming environment for a machine running Windows.

On the downside

You should only consider Unix if you are willing to spend a lot of time working on your operating system. Unix is harder to install, maintain and upgrade than Windows or the MacOS. More home oriented applications run under Windows than Unix. If you need educational software for the kids or love computer games, Windows is a better choice than Unix. Dual booting

(running Windows and Unix on the same machine) overcomes this disadvantage.

UNIX Evaluation

In making a decision on which OS is better, we must finally evaluate the abundant advantages of UNIX over the disadvantages. As programs continue to become larger and more complex, and as computers become faster and increase in complexity, operating systems must become more and more stable. In comparison with Windows NT, UNIX maintains this stability very well.

NASA, who relies very heavily on their equipment, prefers UNIX because of its stability in complex, mission-critical tasks as UNIX very rarely crashes (see graph below). When UNIX does actually crash, only parts of it crash so the system is often easily recoverable without rebooting (UNIX-Based 37). In addition, UNIX tends to beat Windows NT in performance tests. Companies and organizations often create performance tests where an operating system is put under an intense load to see how it performs against other operating systems under the same work load. A newly released study shows that Windows NT finished last in comparison with five UNIX versions (See Outside Source: UNIX Trounces Windows NT in Tests). The tests measured reliability, ease of management, stability, and performance among other things (UNIX Trounces).

Finally, but still very important, although UNIX can be more expensive than Windows NT initially, it can actually cost less in the long run. The «base» software in UNIX generally costs more than Windows NT, but client-access licenses and add-on packages often do not. What is a client-access license? Like most published information, programs are restricted by copyright laws. One cannot just legally copy a program from one computer to another without paying for another copy of that software. In the networked environment, servers are licensed in a different way. They are licensed according to how many other computers are trying to use its data at the same time. For example, in a network of seven computers connected together, one being the server, if all six computers were logged in (using the server's data) at the same time, then the server would need six of what are called client-access licenses. Windows NT continually charges more and more for each client-access license added, while you can usually get an unlimited client-access license for UNIX for about \$1200. One could spend thousands more in Windows NT client-access licenses. As well, add-on software packages (such as those that manage e-mail for many users) for UNIX often cost less (and are often already included with UNIX) than those for Windows NT.

Disadvantages of UNIX

In continuing the evaluation of Windows NT and UNIX, I will show you the disadvantages and advantages of UNIX. UNIX generally holds its disadvantages in its interaction with users. As hinted to before, UNIX is not very user-friendly to beginners. Many people, including UNIX gurus (people who know about and often like UNIX), agree that UNIX is not as user-friendly. Using UNIX can often require the knowledge of basic commands as opposed to just using the mouse. X Windows, a system similar to Microsoft Windows that runs on UNIX, is also not as easy and attractive to use as Windows (Showdown). However, this is changing rapidly. An organization that produces free software, known as the KDE Free Qt Foundation, has, in fact, developed a windowing system called the K Desktop Environment that many people consider to be far superior to the Windows NT interface in usability, customizability, and stability (Systems 34).

Finally, users do not have as large of a choice for programs under UNIX as they do under Windows. A program developed for the Microsoft Windows environment cannot automatically be run on UNIX. Some modifications need to be made to a program before it can be run on a different operating system other than for which it was intended to. Companies that develop software have been reluctant to develop programs for UNIX because not as many people use the operating system. However, as Linux, a free operating system that greatly resembles and is almost comparable to UNIX (Reborn), is increasing in popularity, companies are continually providing more and more programs for UNIX (Showdown).

Different Unix systems

They are many different versions of Unix, as well as some Unix 'lookalikes'. The most widely used are: • System V (distributed by the original developers, AT&T) • AIX (IBM) • Berkeley BSD (from the University of California, Berkeley) • SunOS, now known as Solaris (from the makers of Sun workstations) • Xenix (a PC version of Unix).

(7,802 symbols)

<http://www.123helpme.com/unix-operating-system-view.asp?id=159727>

TEXT 4 LINUX

The term “Linux” is used to describe Open Source software, consisting of an operating system kernel, a graphical user environment, software configuration, utilities and applications that make a computer usable. There are many different versions of Linux available. These versions are referred to as “distributions”.

What Linux distributions, desktop environments and most Linux applications all have in common is: They are Open Source. The Linux

community is a type of Open Source community focused on the Linux operating system and its applications, and using, improving and supporting them.

Open Source Community

Using open source software like Linux, and Linux applications provides you with the freedom to run a complete, full-featured operating system, pre-configured with most, if not all, of the applications you will need for your daily computing – or to change anything about the way it looks, the way it works, or the applications it runs to suit your taste. Although you will find some distributions of Linux for purchase, the vast majority are provided free of charge. Open Source software is licensed in a way that allows anyone to give it away for free, no strings attached.

For example, the licence gives any member of the user community the freedom to use Linux for any purpose, to distribute, modify, redistribute, or even sell the operating system. If you do modify and then redistribute Linux with your modifications, you are required by the licence to submit your modifications for possible inclusion into future versions. There is no guarantee that this will ever happen, but if you have made it better, then your changes just might be included in the next release of your distribution of Linux.

Developer Community

Many users of Linux are corporations that use the operating system to run their businesses, or include it within their products. Google's Chrome OS and Android have roots in Linux. Many of the corporations that make use of Linux provide fixes and new features for Linux as they use the software for their businesses. These improvements are given back to the Linux community and Linux improves as a result. These efforts on the part of the developer community is how we can continually improve and grow without having to charge our users money.

Linux Advantage: Community

Whether you are a home user of Linux, a Linux software or application developer, or an employee of an organization that uses the operating system, you are a member of the Linux and Open Source communities and you benefit from the efforts of the developers who contribute to Linux. Members of the Linux community can – and do – run Linux on almost any hardware, from the prettiest Macbook to the cheapest netbook, from the newest Chromebook to some very old machines designed for Windows, and from the most powerful Internet servers to the smallest smart thermostat.

Having “an inspiring, engaging, and enjoyable community” (Preface: The Art of Community, 2nd Edition) is the lifeblood of any open source software project. The community provides product and feature ideas, user

support, developer talent, documentation, financial support, visionary direction, and cultural norms – for the benefit of anyone who uses, contributes to, or otherwise supports the project. Although many projects, applications and even companies have their own communities, the inspirational engagement of the Linux community is one of the key things that makes Linux one of the top 3 operating systems in the world.

Linux Security

The Linux operating system is more secure, and better supported than the operating systems preinstalled on most home computer hardware today. Linux is backed by many large corporations, as well as independent developers and users, many of whom are focused on ensuring and improving the security that is built into the operating system. The built-in updater provided with your Linux distribution provides security updates for both its software applications and the operating system. Vulnerabilities are patched more quickly, and are delivered automatically and more frequently than the two most popular operating systems.

Combination lock

Four Reasons Why Linux Is More Secure When you use a distribution of Linux, security updates, driver updates, application updates, software upgrades and operating system upgrades are all provided, all free of charge. And they are all available from trusted sources. So you have no more need to search the Internet for software. No more risking malware or junkware infections as a result from downloading from the wrong site. There are thousands of software titles in hundreds of categories available in your Linux distribution's repositories – the ultimate in a trusted source!

Linux is designed with security in mind. Unlike operating systems that update only once a month, Linux distributions receive updates continuously. The updates include security patches for the operating system and all of its components. Security updates for all of its installed applications are also provided on the same schedule. This ensures that you have the latest protection for all of your computer's software – as soon as it's available!

Linux can get viruses and other infections... but, as a rule, it doesn't. Rapid and timely updates ensure that there are very few, if any threats to Linux systems that persist in the wild. In reality, there have been very few «public» infections in the last 10 years that can affect even Linux. And because of security updates to Linux, those few old attacks are no longer a threat to anyone installing or using a modern Linux distribution today. Linux is designed to make it difficult for viruses, rootkits and other malware to be installed and run without conscious intervention by you, the user. Even if you do accidentally invite in an infection, chances are it's designed to attack Windows and can do no damage to your Linux system.

Another significant security feature of Linux is that its users are not administrators by default. Administrators («root» users) on any computer system have permission to do anything they want, including do damage to the system. For example, other operating systems look at the name of a file to determine which program should open it, then immediately attempt to open it. That design makes it easy for an intruder to attack a computer. Linux opens a file based on what the file is, not based on its name. So even if a malicious program disguises its identity by using a name like «Business Proposal.docx» Linux will recognize the file as a program. The system provides a warning that the file is not a text document, but that it is really a program that will be run if you give it permission to continue. To be extra secure, Linux requires you to provide your administrator password to grant that permission. Every single time.

Conclusion

Unlike Windows, and OSX, Linux is not created and supported by just one company. Over 4,000 individual developers contributed to Linux over the last 15 years. Linux is supported by individuals, the Linux and Open Source communities, as well as many organizations. These organizations include Intel, Redhat, Linaro, Samsung, IBM, SUSE, Texas Instruments, Google, Canonical, Oracle, AMD, and Microsoft. These corporations, and others, use the Linux operating system to run their businesses, or include it within their products. (Google Android phones and Chromebooks, Samsung televisions, etc.) They want to ensure that Linux is provided with the best protection from security vulnerabilities. Many of these corporations provide security fixes and new security measures for Linux as they use it in their businesses. These improvements are given back to the Linux distribution and the software improves. Whether you are a home user of Linux, a Linux software or application developer, or an employee of a company that uses Linux, the scrutiny and ongoing security improvements provided for Linux are benefiting you.

(6,483 symbols)

http://goinglinux.com/articles/CommunityTheLinuxAdvantage_en.htm

http://goinglinux.com/articles/Security-TheLinuxAdvantage_en.htm

TEXT 5 COMPUTERS: HISTORY AND DEVELOPMENT

Nothing epitomizes modern life better than the computer. For better or worse, computers have infiltrated every aspect of our society. Today computers do much more than simply compute: supermarket scanners calculate our grocery bill while keeping store inventory; computerized telephone switching centers play traffic cop to millions of calls and keep lines

of communication untangled; and automatic teller machines let us conduct banking transactions from virtually anywhere in the world. But where did all this technology come from and where is it heading? To fully understand and appreciate the impact computers have on our lives and promises they hold for the future, it is important to understand their evolution.

Early Computing Machines and Inventors

The abacus, which emerged about 5,000 years ago in Asia Minor and is still in use today, may be considered the first computer. This device allows users to make computations using a system of sliding beads arranged on a rack. Early merchants used the abacus to keep trading transactions. But as the use of paper and pencil spread, particularly in Europe, the abacus lost its importance. It took nearly 12 centuries, however, for the next significant advance in computing devices to emerge. In 1642, Blaise Pascal (1623–1662), the 18-year-old son of a French tax collector, invented what he called a numerical wheel calculator to help his father with his duties. This brass rectangular box, also called a Pascaline, used eight movable dials to add sums up to eight figures long. Pascal's device used a base of ten to accomplish this. For example, as one dial moved ten notches, or one complete revolution, it moved the next dial – which represented the ten's column – one place. When the ten's dial moved one revolution, the dial representing the hundred's place moved one notch and so on. The drawback to the Pascaline, of course, was its limitation to addition.

In 1694, a German mathematician and philosopher, Gottfried Wilhem von Leibniz (1646–1716), improved the Pascaline by creating a machine that could also multiply. Like its predecessor, Leibniz's mechanical multiplier worked by a system of gears and dials. Partly by studying Pascal's original notes and drawings, Leibniz was able to refine his machine. The centerpiece of the machine was its stepped-drum gear design, which offered an elongated version of the simple flat gear. It wasn't until 1820, however, that mechanical calculators gained widespread use. Charles Xavier Thomas de Colmar, a Frenchman, invented a machine that could perform the four basic arithmetic functions. Colmar's mechanical calculator, the arithometer, presented a more practical approach to computing because it could add, subtract, multiply and divide. With its enhanced versatility, the arithometer was widely used up until the First World War. Although later inventors refined Colmar's calculator, together with fellow inventors Pascal and Leibniz, he helped define the age of mechanical computation.

The real beginnings of computers as we know them today, however, lay with an English mathematics professor, Charles Babbage (1791–1871). Frustrated at the many errors he found while examining calculations for the

Royal Astronomical Society, Babbage declared, "I wish to God these calculations had been performed by steam!" With those words, the automation of computers had begun. By 1812, Babbage noticed a natural harmony between machines and mathematics: machines were best at performing tasks repeatedly without mistake; while mathematics, particularly the production of mathematic tables, often required the simple repetition of steps. The problem centered on applying the ability of machines to the needs of mathematics. Babbage's first attempt at solving this problem was in 1822 when he proposed a machine to perform differential equations, called a Difference Engine. Powered by steam and large as a locomotive, the machine would have a stored program and could

perform calculations and print the results automatically. After working on the Difference Engine for 10 years, Babbage was suddenly inspired to begin work on the first general-purpose computer, which he called the Analytical Engine. Babbage's assistant, Augusta Ada King, Countess of Lovelace (1815–1842) and daughter of English poet Lord Byron, was instrumental in the machine's design. One of the few people who understood the Engine's design as well as Babbage, she helped revise plans, secure funding from the British government, and communicate the specifics of the Analytical Engine to the public. Also, Lady Lovelace's fine understanding of the machine allowed her to create the instruction routines to be fed into the computer, making her the first female computer programmer. In the 1980's, the U.S. Defense Department named a programming language ADA in her honor.

Babbage's steam-powered Engine, although ultimately never constructed, may seem primitive by today's standards. However, it outlined the basic elements of a modern general purpose computer and was a breakthrough concept. Consisting of over 50,000 components, the basic design of the Analytical Engine included input devices in the form of perforated cards containing operating instructions and a "store" for memory of 1,000 numbers of up to 50 decimal digits long. It also contained a "mill" with a control unit that allowed processing instructions in any sequence, and output devices to produce printed results. Babbage borrowed the idea of punch cards to encode the machine's instructions from the Jacquard loom. The loom, produced in 1820 and named after its inventor, Joseph-Marie Jacquard, used punched boards that controlled the patterns to be woven.

In 1889, an American inventor, Herman Hollerith (1860–1929), also applied the Jacquard loom concept to computing. His first task was to find a faster way to compute the U.S. census. The previous census in 1880 had taken nearly seven years to count and with an expanding population, the bureau feared it would take 10 years to count the latest census. Unlike Babbage's idea of using perforated cards to instruct the machine, Hollerith's

method used cards to store data information which he fed into a machine that compiled the results mechanically. Each punch on a card represented one number, and combinations of two punches represented one letter. As many as 80 variables could be stored on a single card. Instead of ten years, census takers compiled their results in just six weeks with Hollerith's machine. In addition to their speed, the punch cards served as a storage method for data and they helped reduce computational errors. Hollerith brought his punch card reader into the business world, founding Tabulating Machine Company in 1896, later to become International Business Machines (IBM) in 1924 after a series of mergers. Other companies such as Remington Rand and Burroughs also manufactured punch readers for business use. Both business and government used punch cards for data processing until the 1960's.

In the ensuing years, several engineers made other significant advances. Vannevar Bush (1890–1974) developed a calculator for solving differential equations in 1931. The machine could solve complex differential equations that had long left scientists and mathematicians baffled. The machine was cumbersome because hundreds of gears and shafts were required to represent numbers and their various relationships to each other. To eliminate this bulkiness, John V. Atanasoff (1903-1995), a professor at Iowa State College (now called Iowa State University) and his graduate student, Clifford Berry, envisioned an all-electronic computer that applied Boolean algebra to computer circuitry. This approach was based on the mid-19th century work of George Boole (1815–1864) who clarified the binary system of algebra, which stated that any mathematical equations could be stated simply as either true or false. By extending this concept to electronic circuits in the form of on or off, Atanasoff and Berry had developed the first all-electronic computer by 1940. Their project, however, lost its funding and their work was overshadowed by similar developments by other scientists.

(6,591 symbols)

http://www.dia.eui.upm.es/asignatu/sis_op1/comp_hd/comp_hd.htm

TEXT 6 HOW COMPUTER MOUSE WAS INVENTED

The trackball, a related pointing device, was invented in 1941 by Ralph Benjamin as part of a World War II-era fire-control radar plotting system called Comprehensive Display System (CDS). Benjamin was then working for the British Royal Navy Scientific Service. Benjamin's project used analog computers to calculate the future position of target aircraft based on several initial input points provided by a user with a joystick. Benjamin felt that a

more elegant input device was needed and invented what they called a “roller ball” for this purpose.

The device was patented in 1947, but only a prototype using a metal ball rolling on two rubber-coated wheels was ever built, and the device was kept as a military secret.

Another early trackball was built by British electrical engineer Kenyon Taylor in collaboration with Tom Cranston and Fred Longstaff. Taylor was part of the original Ferranti Canada, working on the Royal Canadian Navy's DATAR (Digital Automated Tracking and Resolving) system in 1952.

DATAR was similar in concept to Benjamin's display. The trackball used four disks to pick up motion, two each for the X and Y directions. Several rollers provided mechanical support. When the ball was rolled, the pickup discs spun and contacts on their outer rim made periodic contact with wires, producing pulses of output with each movement of the ball. By counting the pulses, the physical movement of the ball could be determined. A digital computer calculated the tracks, and sent the resulting data to other ships in a task force using pulse-code modulation radio signals. This trackball used a standard Canadian five-pin bowling ball. It was not patented, as it was a secret military project as well.

On 2 October 1968, a mouse device named *Rollkugel* (German for “rolling ball”) was released that had been developed and published by the German company Telefunken. As the name suggests and unlike Engelbart's mouse, the Telefunken model already had a ball. It was based on an earlier trackball-like device (also named *Rollkugel*) that was embedded into radar flight control desks. This had been developed around 1965 by a team led by Rainer Mallebrein at Telefunken Konstanz for the German *Bundesanstalt für Flugsicherung* as part of their TR 86 process computer system with its SIG 100-86 vector graphics terminal.

When the development for the Telefunken main frame TR 440 (de) began in 1965, Mallebrein and his team came up with the idea of «reversing» the existing *Rollkugel* into a moveable mouse-like device, so that customers did not have to be bothered with mounting holes for the earlier trackball device. Together with light pens and trackballs, it was offered as optional input device for their system since 1968. Some samples, installed at the Leibniz-Rechenzentrum in Munich in 1972, are still well preserved. Telefunken considered the invention too small to apply for a patent on their device.

A few months after Telefunken started to sell the *Rollkugel*, Engelbart released his demo on 9 December 1968. Independently, Douglas Engelbart at the Stanford Research Institute (now SRI International) invented his first mouse prototype in the 1960s with the assistance of his lead engineer Bill

English. They christened the device the *mouse* as early models had a cord attached to the rear part of the device looking like a tail and generally resembling the common mouse. Engelbart never received any royalties for it, as his employer SRI held the patent, which ran out before it became widely used in personal computers. The invention of the mouse was just a small part of Engelbart's much larger project, aimed at augmenting human intellect via the Augmentation Research Center.

Several other experimental pointing-devices developed for Engelbart's oN-Line System (NLS) exploited different body movements – for example, head-mounted devices attached to the chin or nose – but ultimately the mouse won out because of its speed and convenience. The first mouse, a bulky device used two potentiometers perpendicular to each other and connected to wheels: the rotation of each wheel translated into motion along one axis. At the time of the «Mother of All Demos», Englebart's group had been using their second generation, 3-button mouse for about a year.

The Xerox Alto was one of the first computers designed for individual use in 1973, and is regarded as the grandfather of computers that utilize the mouse. Inspired by PARC's Alto, the Lilith, a computer which had been developed by a team around Niklaus Wirth at ETH Zürich between 1978 and 1980, provided a mouse as well. The third marketed version of an integrated mouse shipped as a part of a computer and intended for personal computer navigation came with the Xerox 8010 Star Information System in 1981.

By 1982 the Xerox 8010 was probably the best-known computer with a mouse, and the forthcoming Apple Lisa was rumored to use one, but the peripheral remained obscure; Jack Hawley of The Mouse House reported that one buyer for a large organization believed at first that his company sold lab mice. Hawley, who manufactured mice for Xerox, stated that “Practically, I have the market all to myself right now”; a Hawley mouse cost \$415.

That year Microsoft made the decision to make the MSDOS program Microsoft Word mouse-compatible, and developed the first PC-compatible mouse. Microsoft's mouse shipped in 1983, thus beginning Microsoft hardware. However, the mouse remained relatively obscure until the 1984 appearance of the Macintosh 128K, which included an updated version of the Lisa Mouse and the Atari ST in 1985.

(4,454 symbols)

<https://www.quora.com/How-was-computer-mouse-invented>

TEXT 7 WEB BROWSERS

A web browser is a special software program (application) used to retrieve files from remote web servers. A web browser can open Web-based

HTML files, FTP connections, graphic images and other files. The browser application is smart enough to be able to tell the difference between these files and display them properly. Browsers are also created to be “intelligent” enough to be able to “learn” to handle even more types of files using “plug-ins”.

Web browsers are software. They run on your computer and do not connect you to the Internet. You use a web browser after you connect to your Internet Provider. A browser is not an online service like America Online, MSN or CompuServe. The online service provider provides telephone numbers and dial up connections. A web browser uses that connection to reach across the Internet and download files and information.

Now, you should know that America Online purchased the organization that produced the Netscape browser. Because there was great confusion about what the Internet and Internet Service Providers are, the online service «Netscape» was created to take advantage of the confusion between web browsers and the Internet.

Netscape and Microsoft Internet Explorer are applications, not Internet Service Providers. There now exists a «Netscape» Internet Service Provider.

Browser Applications

The most well known browsers are listed below. The order of the listing of the browsers is in relation to the number of copies of the software installed on computers. Microsoft Internet Explorer tops the list only because it is automatically installed with the operating system and there are no options to remove MSIE from the installation in versions of Windows prior to Windows XP. By U.S. Government court order Microsoft has added a feature to Windows that will allow you to uninstall most of MSIE's functionality; however, Microsoft completely integrated the browser into the operating system and completely removing all functions of the browser would actually damage the operating system, or so was their argument to the court.

Microsoft Internet Explorer

This browser is automatically installed with Windows. No, you don't have a choice about it. You CAN set another browser as your default however.

Netscape Navigator / Communicator

A free download. AOL/Time-Warner owns Netscape now and appears actively engaged in driving this browser into the ground.

Mozilla

A (better) freeware variation of Netscape. Uses the Gecko engine originally developed for Mosaic and the later Netscape spin-off. Mozilla itself is an open source spin-off of the original code that was used to create

Netscape. Mozilla's biggest feature is that it uses tabs for various web pages, saving desktop space. Developed using open source.

Opera (not free) – Originally a stripped-down browser offering less functionality but greater page rendering speed.

NCSA Mosaic – The FIRST web browser. No longer under active development. Last version 3.0 supports WinNT and 2.1.1 for Macintosh.

Hot Java – From Sun Microsystems. No longer under development since Solaris 8 and later are shipped with Netscape.

Lynx – Text Only – No graphics, tables or frames, but runs from DOS.

Browser Functions and Components

Every web browser has an HTML rendering engine designed to read the embedded HTML tags and use those tags to arrange content and format the text on the web page. The rendering engine is the guts of the web browser and no two browsers will render a web page the same way. This is why any good web developer will test the web page in several web browsers (Internet Explorer, Netscape, Mozilla) that run on several different platforms (Windows, Linux, Unix and Mac).

Cache

When a web browser downloads a web page, it stores that web page in a special location on the computer called the cache. Storing web pages and the content inside them allows the browser to skip re-downloading that content if the web page have not been changed on the web server. This speeds up the web browsing experience, particularly when hitting the back button to return to the previous web page. The cache contains all the files you have pulled and viewed in your web browser. In most cases, web pages and files are left on your computer until a certain size limit is reached. At that point, the browser will delete older files from previous web sessions and replace them with newer files from whatever web server you are browsing.

If your caching functions are set to the defaults, you will have difficulty with dynamically generated pages. Sites such as CNN and CNBC change the content of their web pages several times a day. The default settings in the web browser will result in your seeing the first web page you browse to for as long as the browser is open. You can change these settings so that in just a minute past when the content changed at the site, your web browser will pull the new web page.

Bookmarks and Shortcuts

To help you find things again later, most browsers offer a bookmark function to allow you to store the address of the page in a list of favorite sites. This list of favorites can be browsed later and when the listed site is clicked on, the site's web page is retrieved from the server. Netscape calls these

'bookmarks' and stores them in a bookmarks folder. Internet Explorer calls them 'shortcuts' and stores them in a Favorites list.

Plug-Ins

Plug-ins are software you can download and install on your computer that extends the functionality of your web browser. Web browsers were designed to support this functionality to allow web browsers to become smarter over time. This plug-in functionality was used to provide additional capabilities.

Plugins run 'applets' or handle different kinds of media files, such as audio (files with names ending in .ogg, .wav, .mp3, .rm, .ram and more) and video (files ending in .avi, .mpeg, .mov and .qt). The Macromedia Flash plugin runs Flash applets (.swf). Sun's Java plugin runs Java 'applets'.

(4,838 symbols)

http://www.inetdaemon.com/tutorials/www/web_browser/

TEXT 8 WHAT IS A NETWORK?

A network is set of computers linked together for the purpose of communicating and sharing information. The Internet is a global supernetwork, so is the local area network (a LAN) at your workplace or your school, as is the wireless hotspot at your local coffee shop, hotel or library, the telephone and cellular systems, and the satellite communications in space.

What defines a network is often defined by who owns and operates the equipment and the computers that are part of the network. Thus, your school's network is separate from the Internet.

You know you have a network when you have two or more computers connected together and they are able to communicate. Plugged into the back of each computer is some sort of communications port. Nearly all computers today have one or more serial ports, parallel ports, Ethernet ports, modem ports, fire wire ports, USB ports and more. All of these ports can be used in one way or another to connect computers to a network. The most common type of network port is an Ethernet port (the square port with the row of connectors on the bottom). The next most common is a wireless network connection, but that has no physical connector port.

Xerox was the first company to research and develop a network. Once upon a time, Xerox printers were extremely expensive, so companies wanted to share them. Xerox knew their printers were expensive and users were only able to print from one big computer (a mainframe) attached to the printer directly. You would print your document, and then walk down to the building next door where the mainframe was housed, with the printer, and pick up your printout. Xerox decided that they could sell more printers if they could

make it possible for anyone to use the printer from any computer. To allow multiple computers to communicate with the printer, some means of sharing a connection to the printer was needed. Xerox put Bob Metcalf and others to work on researching and designing what eventually came to be called Ethernet. Ethernet is now the most common networking protocol on the planet.

Hosts, End Stations and Workstations

When people talk about networks, they often refer to computers that are at the edge of the network as hosts, end stations, workstations, or servers. It's all just the same thing, a computer attached to the network; though the word HOST has the most general meaning and can include anything attached to the network including hubs, bridges, switches, routers, access points, firewalls, workstations, servers, mainframes, printers, scanners, copiers, fax machines and more!

Just about everything electronic that has a processor and which you would use in an office is 'network capable' today and lots of things that aren't currently networked probably will be networked in the future. In many offices the phone system already IS the network (Voice over IP).

Hosts, End Stations and Workstations

When people talk about networks, they often refer to computers that are at the edge of the network as hosts, end stations, workstations, or servers. It's all just the same thing, a computer attached to the network; though the word HOST has the most general meaning and can include anything attached to the network including hubs, bridges, switches, routers, access points, firewalls, workstations, servers, mainframes, printers, scanners, copiers, fax machines and more!

Just about everything electronic that has a processor and which you would use in an office is 'network capable' today and lots of things that aren't currently networked probably will be networked in the future. In many offices the phone system already IS the network (Voice over IP).

LAN, MAN, WAN and er.. IPAN??

There are some terms, acronyms actually, that are used to describe the size and scope of a network: LAN, WAN, MAN. We've added our own term 'IPAN'.

LAN

A Local Area Network (LAN) is usually a single set of connected computers that are in a single small location such as a room, a floor of a building, or the whole building.

MAN

A Metropolitan Area Network (MAN) is a network that encompasses a city or town. It is usually multiple point-to-point fiber-optic connections put

together by a communications company and leased to their customers, but a small number of big corporations have built a few of these of their own and opened them to the local companies with which they do business. The automotive, travel and insurance industries are just a few examples of who has built a WAN.

WAN

A Wide Area Network (WAN) is usually composed of all the links that connect the buildings of a campus together, such as at a University or at a corporate headquarters. WAN connections can often span miles, so you frequently hear people referring to the 'WAN' connection to an office half way around the world. Usually, what distinguishes a WAN from a LAN is that there is one or more links that span a large distance over serial, T-carrier or ISDN, Frame Relay or ATM links.

IPAN

So what the heck is an IPAN? An IPAN is an Inter-Planetary Area Network. NASA has built a Deep Space Internet that uses a store-and-forward

communications protocol called Disruption Tolerant Networking (DTN). The mechanical rovers Spirit and Opportunity on the planet Mars, were given addresses on a NASA network and NASA uses Internet and IPAN protocols to communicate with the Mars rovers. While the communication with the rovers never crosses over the Internet, the NASA network does have hosts spanning space between the planets Earth and Mars. They also have probes they have sent into the outer solar system with which they use IPAN to communicate.

This networking tutorial section will teach you about running an Internet Protocol (IP)-based network on top of Ethernet. A typical physically wired network is built with several layers of technologies layered one top of one another. The TCP-Model and the OSI Model tutorials will help you understand the layering concepts and you should probably start there first and come back to this page.

This list starts with the lower layer functions or protocols and works its way up.

All networks have several layers of functions stacked on top of each other. Ethernet is used to provide the means to transmit information encoded in electrical signals across copper wiring between two computers. Internet Protocol networking software running on the computers use the Ethernet network to send data back and forth inside IP packets. The Internet Protocol layer provides the means for the computer to connect to the network, obtain a logical address, to learn the logical addresses of other computers and to

communicate with the other computers on the network. Internet Protocol provides the basic network functions.

(5,437 symbols)

<http://www.inetdaemon.com/tutorials/networking/>

TEXT 10 WHAT IS WI-FI?

First, let's get a couple of points out of the way: Wi-Fi, which rhymes with the outdated term "hi-fi," has nothing in common with its soundalike. Hi-fi stood for "high-fidelity" and was used to describe a phonograph/radio system with excellent sound.

Wi-Fi, by comparison, does not stand for "wireless fidelity" and has nothing to do with sound. In fact, it really doesn't stand for anything! It simply represents wireless networking technology that allows you to go on the Internet without having to plug in any cables.

There's an organization called the Wi-Fi Alliance that actually owns the Wi-Fi trademark and controls or dictates the technology behind it.

Wi-Fi is everywhere these days, from people's homes to airports, hotels, libraries and just about every other place where people use their computers or wireless devices (laptops, smartphones and iPads/tablets).

Here are the main advantages of setting up a wireless network in your home:

- You can "connect" any and every computer in your home to your network without having to string cables/wires throughout the house.
- That means you can go on the Internet in any room from a laptop, desktop or smartphone.
- You can set up an access password that allows a visitor to log in to your network and will keep others from logging in without your permission...or knowledge.
- All it takes is a small, affordable piece of hardware called a "router" and some time to get things working.

Some well-known brands of routers are Belkin, Linksys and Netgear. You'll find plenty of information on routers online.

The good news is, you can set up a wireless network in your home pretty easily and quickly these days. It starts with your computer and grows from there. Here are some of the things you should know as you start your own network:

Start with your main computer: A wireless network needs to be set up. That's right: Even though your network will eventually be "wireless," to set it up you'll need to use your existing physical connection to the Internet.

A router comes with special software that has to be loaded on your computer. The software sets up the connection needed between your computer, modem and Internet Service Provider; and once everything is ready to go, you'll be able to invite and allow others devices to join your wireless network.

Safety and security. The wireless network broadcasts over a small area, but it has no boundaries. A next-door neighbor could easily be aware of your wireless network. That is, anyone close by with a wireless-enabled device might be able to see that a wireless network is nearby. However, without the password you create, they will not be able to access it or use it.

There are also security settings (which come with the router software) that will prevent hackers from intercepting your signal.

Wireless with wires. One more thing: Your "wireless" router has couple of wires, at least two. One is the electrical cord for power; the other is a cable (typically an Ethernet cable) with a connector that looks like a large telephone jack and that plugs into your modem. (If your router is a modem too, it will connect to your computer.)

That may sound funny, but the "wireless" feature has to do with the devices that will be able to connect wirelessly with the router.

Modem: You probably have a modem now – it's an important part of a wireless network. You need your modem to connect your computer to the Internet, and you'll still need it because your router works with your modem (or, you'll be replacing your modem with a device that is both a modem AND router).

A "wireless" router. Just as a mailman delivers mail to different addresses on your street, the router, once it's set up, will deliver an Internet connection (back and forth) for any computer or device with "wireless" capability.

Generation gap. Most electronic/computer stores carry a selection of routers. As with other technologies (cell phones, computers), routers have gone through several "generations" of development. As of 2013, most stores advertised "wireless-N" routers as the most common generation, with "wireless-ac" advertised as the "next" generation. (Before "N" came Wireless-G and Wireless-B.) As you might guess, the new generation tends to be better and, in this case, faster.

You'll also see routers that come with the designation "2.4 GHz" and/or "5 GHz" (gigahertz), which are the radio wave signals a router emits. What? Radio waves? Yes! That's how the signal is sent throughout your house and received by compatible wireless devices. If a router is both 2.4 and 5 GHz, it will be called a "dual band" router.

As with anything else related to technology, it helps to do some research and ask plenty of questions of salespeople and people you know. With the wireless network fundamentals you just read about, you should be able find the wireless system that will work best for you.

(3,876 symbols)

<http://whatismyipaddress.com/wi-fi>

2.3 Дополнительные тексты для реферирования

TEXT 1 WHAT IS A HIGH LEVEL LANGUAGE?

A high level language is a **problem-oriented** programming language, whereas a low level language is **machine-oriented**. In other words, a high level language is a convenient and simple means of describing the information

structures and sequences of actions required to perform a particular task.

A high level language is independent of the architecture of the computer which supports it. This has two major advantages. Firstly, the person writing the programs does not have to know anything about the computer on which the program will be run. Secondly, programs are **portable**, that is, the same program can be run on different types of computer. However, this feature of **machine independence** is not always achieved in practice.

In most cases, programs in high level languages are shorter than equivalent programs in low level languages. However, conciseness can be carried too far, to the point where programs become impossible to understand. More important features of a high level language are its ability to reflect clearly the structure of programs written in it, and its readability.

High level languages may be broadly classified as **general-purpose** or **special-purpose**. General-purpose languages are intended to be equally well suited to business, scientific, engineering or systems software tasks. The commonest general-purpose languages are Algol 68 and PL/1. The language Ada also falls into this category. Because of their broad capabilities, these languages are large and relatively difficult to use.

The commonest categories of special purpose languages are commercial, scientific and educational. In the commercial field, Cobol still reigns supreme, while Fortran is still the most widely used scientific language. In the computer education field, Basic is widely used in schools, with Logo and Prolog gaining popularity. Pascal is the most popular language at universities. Pascal is a powerful general-purpose language in its own right

Another way of classifying high level languages is as **procedural** and **declarative** languages. Procedural languages state how a task is to be performed, often breaking programs into **procedures**, each of which specifies

how a particular operation is to be performed. All the early high level languages are procedural, with Algol, Pascal and Ada as typical examples.

Declarative programming languages describe the data structures and relationships between data relevant to a particular task, and specify what the objective of the task is. The process by which the task is to be carried out is not stated explicitly in the program. This process is determined by the language

translation system. Prolog is an example of a declarative programming language.

TEXT 2 COMPUTER STRUCTURE

A computer is a collection of resources, including digital electronic processing devices, stored programs and sets of data, which, under the control of the stored programs automatically inputs, outputs, stores, retrieves and processes the data, and may also transmit data to and receive it from other computers. A computer is capable of drawing reasoned conclusions from the processing it carries out.

From the hardware point of view the essential features of this definition are 'a collection of digital electronic processing devices'.

Computers vary enormously in size, processing power and cost. Nevertheless, all computers consist of one or more functional devices, each carrying out one or more of the tasks described above. Each device performs a precisely specified task connecting to other modules via defined interfaces. Modules of the same type of computer may be exchanged and new modules are added without modification to their internal workings. The phrase 'plug-compatible' describes units which may be connected in this manner.

Mainframes, Minis and Micros

Very broadly speaking, there are three classes of computers according to their size and complexity. These classes are known as mainframes, minicomputers (or minis) and microcomputers (or micros).

Mainframes are large computers comprising a number of free-standing units. Mainframes are generally housed in specially designed, air-conditioned rooms. Connections between the units are made by wires running beneath the floor of the room. Mainframes are very powerful, and support a number of applications running concurrently. Examples of mainframes are the ICL 2900

series, the IBM 3000 series and the Burroughs B6700 series. Very large mainframes are known as supercomputers. These include the Cyber 205 and the Cray 2.

Minicomputers are smaller than mainframes, with several functional devices mounted on a rack in a single unit. Minicomputers do not generally require an air-conditioned environment. They are often found in laboratories, factories and offices. Minicomputers can support more than one application running concurrently, though not as many as mainframes. The Digital Equipment Vax series is the most popular minicomputer. Others are made by Prime, Data General and Hewlett Packard.

Microcomputers are the newest addition to the computer family. They are small and cheap, and are (generally) contained in a few small units. Their distinguishing feature is that processing is carried out on a single microprocessor chip. Although they are very versatile microcomputers can only support one application at any one time. Examples of microcomputers are the IBM PC, the Apple Macintosh and the Research Machines Nimbus.

The classification of computers into mainframes, minis and micros is only very approximate. Computers are getting smaller and more powerful all the time. Micros are being introduced with the capability of minis only a few years ago. Minicomputers are incorporating microprocessors to assume the capability of mainframes.

TEXT 3 PERIPHERALS

The terms that are often used when people talk about computers are hardware, software and peripherals.

The computer hardware can best be described as the actual parts that go together to make up the computer such as wires, switches, electronic circuits, microprocessors and anything else that is involved in the working parts.

Software refers to the programs that are input into the computer. Disks and cassettes are often referred to as software once they have computer programs on them but they are really peripherals.

The peripherals of the computer are the devices for input, output or storage of data and include the keyboard, visual display unit, cassettes, disk drivers and printers. The VDU is also known as the monitor and the program and the results of the processing can be seen on this as well as the data entered.

The printer will produce the print-out of the results of the processing. This is often referred to as hard copy.

The highest quality of printer available is the daisy wheel. This consists of a wheel with flexible stems radiating from the center. The letters are well-

defined and can be read clearly. The printer moves bi-directionally printing both ways from left to right and then right to left. Remember that what is to be exists in the memory of the computer and the daisy wheel does not have to type in sequence as it would be expected from a human brain. The carriage, therefore, need not waste time returning at the end of each line.

The dot matrix is usually faster than the daisy wheel. This printer has a print head consisting of a row of needles. It moves speedily over the place where a letter has to be printed using dots to make up the letter. The needles print on to a special typewriter ribbon. The quality of print-out is not of a very

high standard and would not generally be used at high business levels. However, it is often used for the production of rough drafts. Characters of different sizes can be built up with dot-matrix printers and some may have two-colour ribbons.

An ink-jet printer forms dot matrix characters by applying ejected droplets of ink, vibrated at an appropriate frequency towards special absorbent

paper. A charged electrode is placed electrostatic technique the ink drops can be directed to particular parts of the paper. The printers use information that is stored digitally.

Thermal printers require heat sensitive paper which is marked by a heated needle-like writing implement known as a stylus.

Laser printers are very fast and can use different sizes of paper. Since they are non-impact printers they are very quiet and can produce good graphics. The laser printer works by beaming a laser on to an electrically charged drum which substance, called toner, is poured over it. When the paper is brought into contact with the drum the image melts on to the paper as it headed.

The keyboard is where the data or information is input into the computer.

It is usually arranged like an ordinary typewriter keyboard with a number of other keys added which carry out special functions.

Some computer programs display what are called icons on the computer

screen. The icons may represent items of furniture in an office, for instance. The user is able to instruct the computer by the use of a tiny moveable device known as a mouse which is connected to the computer by a cable and can be moved about the top of a desk. The desk represents the VDU screen and as the mouse moves about it moves with the short bright line known as the cursor, on the screen.

TEXT 4 PERMANENT PATCH MANAGEMENT

To patch a program is to make corrective alterations to the binary program modules (the executable files). This can be done to effect a change in

the machine language instruction code contained within the file or to change the initial value of memory data that is contained within file. Patches are typically applied through the use of the DEBUG.COM software debugger with a script file, or through a dedicated patching utility.

Patches are the simplest to design for programs written in the assembly language. For programs written in a high-level language, a good understanding of how the compiler ultimately produces assembler code is required.

The primary advantages of patches are that they are small enough to be downloaded by the end users of your product using a modem and that they can be placed on public access bulletin board systems without compromising security. Placing a corrected copy of an entire binary module on a public BBS

can be too great a temptation to would-be pirates, whereas placing patches on a BBS benefits only those who already possess your product.

Patches are not only a useful way to distribute bug fixes, you can also use them to make custom modifications to your product to satisfy clients with particular needs. Another reason to develop a patch is to modify a program for which you do not have source code. This might be done to solve a compatibility

problem with other programs you need to use or with certain hardware within your computer.

The advantage of developing a patch based on the use of DEBUG.COM and a script file is that it's reasonably simple to create an adequate script. But being simple and just adequate can also be a disadvantage. This method is far from bulletproof, and since the application of patches is done chiefly by end users, the more user-proof, the better.

Through the use of a custom patching utility, it is possible for the tool to verify that the correct version of the correct module is being patched, that enough memory is available, and so forth. The patching of binary modules with multiple segments can also be dealt with much more easily when a utility is used that is designed to apply patches.

An additional function that can be performed by such a tool is to report which patches have already been applied to a binary module. This information

will be valuable to technical support technicians when a customer calls with a problem. This capability can be achieved by including an array of flags within the binary code module, with one flag existing for each patch number anticipated. When each patch is applied, one change made to the file will be that corresponding flag within the array is set. All that is then necessary to produce a report of which patches have been applied is for the tool to locate and read this array.

To accommodate patching, you must, of course, allocate a patch space within each segment of each binary module from the very beginning. In addition, to accommodate the patch-reporting feature, an array of flags must be allocated within the binary module.

TEXT 5 VIDEO OUTPUT TESTING

When the computer is operating o.k. and you'd like to check out your video output circuits and chips, you can do it with a diagnostic program. In order to write such a program yourself you must know all about the registers in the output circuit and/or chip. A video output chip operates in a number of modes. You must program each mode and then get the chip to perform the graphics of that mode on the screen.

If all the modes display properly then the chip is considered o.k. Should one or more of the modes not perform then there is some sort of defect in the circuits in the chip that operate that particular mode.

Typically, a video chip will be able to display modes in alphanumeric, semi-graphics, and graphics. For example, a chip can have two alphanumeric modes, five semigraphic modes, and eight graphics. Each mode has a particular set of bits, that when input to the chip will turn on one of the modes.

When you write a video diagnostic program, and choose a mode to test, you must get those bits into the correct inputs to set up the mode to be tested. Once you produce the mode you then have the program display a pattern on the screen. For instance, in one alphanumeric mode you might want to see a complete set of upper – and lowercase characters. The program you write would print these characters for you on the screen. The second alphanumeric mode is the inverted image of the first, that is the background color of a character switches places with the character colour. To test that mode, you'd again print the set of numbers and characters on the screen. This time though they would appear inverted.

The other modes also are called by input bits to the chip registers and then the mode is proved by causing a graphic to be displayed. For example, you could input bits to put the chip into a mode that produces 256x192

graphic picture elements. Then a little graphic program could display a funny face. With the 256×192 graphic, 24 funny faces would be produced. This is in contrast to 2 funny faces that would be drawn if the graphic was only a 64x64 array.

To detect trouble the funny faces are examined for colour and size. As long as they are identical the chip mode is working o.k. If the funny faces are not uniform in colour, size, or if they are missing, then that mode could be defective.

There are many different types of video output chips. To run off a test on one, the important thing to know is how they work and then write a program to exercise it. According to the result of the exercise you find out which modes are working and which ones are not. The program can be in any languages the computer can use for graphics.

2.4 Глоссарий

А

Accomplish – выполнять

Agent-based – агентное моделирование.

Airspeed indicator – индикатор скорости воздушного потока

Altimeter – альтиметр/высотометр

Analyst – аналитик

Api (application program interface) – интерфейс прикладной программы

Applicable – применимый

Application silos – сервер приложения

Application – приложение

Asp (active server pages) – активные серверные страницы (технология для создания web-приложений)

Attitude indicator – авиагоризонт

Automation – автоматизация

Abort – 1) (преждевременное) прекращение выполнения программы; 2) выбрасывание задачи (снятие с решения)

Access – выборка (из памяти); доступ, обращение (к бд)

Account – расчет, счет

Accuracy – точность; безошибочность; правильность; четкость

Action – действие, воздействие; операция; линия поведения

Add – 1) складывать, суммировать, 2) false ~ частичное сложение без переносов

Address bus – адресная шина

Adsl – (asymmetrical digital subscriber line) асимметричная цифровая абонентская линия

Algorithm – алгоритм; алгоритм ветвления
Align – выравнивать; налаживать
Alignment – выравнивание; ориентация; настройка
Allocation – размещение; распределение назначения
Allocator – распределитель; генератор (в языке ада)
Alphanumeric – буквенно-цифровой
Ambiguity – многозначность
Amplifier – усилитель
Angle – угол (~ of lag – ~отставания; deviation ~ – угол отклонения)
Applet – вспомогательная программа; приложение
Application – использование; применение; приложение; прикладная задача (программа)
Approach – 1) приближение; подход, 2) принцип, 3) метод
Architecture – 1) архитектура, 2) структура, 3) конфигурация
Area – 1) область, 2) участок; 3) площадь, поверхность, 4) контактная площадка
Argument – 1) аргумент, доказательство, суждение; 2) независимая переменная
Artificial intelligence – искусственный интеллект
Assembler – ассемблер, компоновочная программа, программа сборки
Assembling – 1) сборка, монтаж; компоновка, ассемблирование, 2) трансляция программы с помощью ассемблера
Assign – назначать, присваивать
Assignment – назначение, присвоение
Automation – автоматизация
Availability – 1) работоспособность; 2) готовность; доступность; наличие
Avoidance – 1) избегание, уклонение, 2) предотвращение, 3) отмена

В

Back up – резервное копирование.
Back-end development – разработка веб-приложений на стороне сервера
Background – 1) фон, фоновая работа; 2) теоретические основы
Band – полоса; диапазон; зона
Bandwidth – ширина полосы; полоса частот
Bank – группа, ряд устройств; банк данных, хранилище данных
Base – 1) база; основание, 2) основание логарифма
Baseline – базовая строка

Basic – базовый; основной; элементарный; стандартный
Batch mode – пакетный режим
Behaviour – режим; поведение; характер изменения
Binary – двоичный, двудольный
Bit – бит, разряд; двоичная цифра
Black-box testing – тестирование по стратегии черного ящика
Block – 1) блок, узел; группа, модуль, 2) блокировать, прекращать
Bound – граница, предел
Box – стойка, рамка; блок
Branch – 1) ветвление; ветвь, 2) переход, 3) отрасль
Broadcast – 1) транслирование, передача, 2) вещательный
Browse – просматривать, пролистывать
Buffer – буфер, буферная схема, буферное устройство
Bug – ошибка, дефект; помеха
Burst – 1) пакет (ошибок); разбивка, 2) отделять, взрываться
Byte – байт, слог (маш. слова)

С

Cache – 1) кэш, сверхоперативная память; 2) кэшировать
Calculation – вычисление; расчет;
Call – вызов, обращение; вызывать
Cancel – отмена, отменять; стирание, стирать, сбрасывать
Capability – возможность, способность; характеристика
Capacitance – емкость; емкостное сопротивление
Capacity – емкость; разрядность; мощность; пропускная способность
Capacitor – конденсатор
Cast (shed, throw) light on (upon) – проливать свет
Cell – ячейка, элемент; секция
Central processing unit (CPU) – центральный процессор
Chain – цепь, цепочка; последовательность
Channel – канал (связи), дорожка, информационный канал
Character – знак, символ, цифра; буква; признак; литера
Chart – диаграмма; график, таблица, схема, чертеж
Chat room – интерактивное общение по сети в реальном времени
Check – проверка, контроль; проверять, контролировать
Clarity – четкость
Client-server database architecture – база данных архитектуры клиент / сервер
Cloud – «облако»
Cluster – кластер, группа, блок

Code – код, кодировать; система кодирования; программировать; (машинное) слово
Code refactoring – улучшение кода
Coding standard – стандарт кодирования
Coefficient – коэффициент, индекс
Column – колонка, столбец
Communication – коммуникация, связь; сообщение, передача
Compass system – курсовая система
Compatibility – совместимость, соответствие
Compilation – компилирование, составление, трансляция
Compiler – компилятор, транслятор
Complement – дополнение, дополнять; дополнительный код, обратный код
Complementation – операция образования дополнения;
component – деталь, радиодеталь; компонент, составная часть
Compress – сжимать
Compression – сжатие, компрессия
Computation – вычисление, расчет
Compute – вычислять, рассчитывать
Computer-aided design – автоматизированное проектирование
Concept – концепция; понятие; принцип
Concurrently – одновременно
Condition – условие; состояние; ситуация; режим
Configuration – конфигурация
Connect – соединять, присоединять, включать, подключать
Connection – соединение, связь;
Connectivity – возможности сетевого взаимодействия, сопряженность
Console – пульт управления, терминал
Constant – постоянная величина, коэффициент; постоянный, фиксированный
Constraint – ограничение; сдерживающий фактор
Construction – конструкция; структура; построение
Consumer – потребитель (информации); абонент
Contents – содержание, суть; объем, вместимость
Control – управление; регулирование; датчик; управлять, настраивать
Controller – устройство управления (контроллер); датчик
Consistent – последовательный
Constructive cost model – моделирование стоимости разработки
Contribute – вносить вклад
Core – ядро, сердечник
Correct – 1) исправлять; устранять ошибки; 2) правильный

Count – счет, подсчет; считать
Coupler – соединитель
CPU (Central Processing Unit) – центральный процессор, ЦПУ
Crack – шум, треск; взламывать
Crowd – уплотнение, объединение
CSS (Cascading Style Sheets) – каскадные таблицы стилей
Current – текущий; ток; ход
Curve – кривая; характеристика
Customer – заказчик
Customization – настройка
Cybernetics – кибернетика

D

Data – данные
Data store – хранение информации
Database – база данных
Database model – модель БД
DBMS (Database Management System) – система управления базой данных
Deadlock – тупик, тупиковая ситуация, взаимоблокировка, зависание (программы); блокировка; блокировать
Debug – налаживать (машину), отлаживать (программу), устранять неисправности
Decipher – дешифровать, декодировать; расшифровывать, дешифровать;
Decision – 1) решение; выбор;
Decompose – разлагать (разбивать) на составные части, подвергать декомпозиции
Decrement – 1) декремент, отрицательное приращение;
Dedicated hardware resources – выделенные аппаратные ресурсы
Deduce – выводить, проследивать (логическую цепь)
Define – определять
Delay – 1) задержка, запаздывание; время задержки; 2) задерживать; выдержка времени
Deliver – доставлять
Density – плотность, концентрация; интенсивность
Deploy – применять; использовать
Derivation – дифференцирование, операция взятия производной; вывод; словообразование; отклонение; извлечение
Design flaws – ошибка проектирования
Design verification – верификация проекта
Developer – разработчик.

Development- разработка
Deviation – девиация, отклонение
Digit – цифра; однозначное число; одноразрядное число, разряд
Dimension – размер, величина, измерение
Disadvantage – недостаток, невыгодное положение; вред
Discontinuous – прерывистый, скачкообразный
Discrepancy – расхождение, несоответствие
Discrete – отдельный, дискретный
Discretion – свобода действий, разделение; прерывистость
Dismiss – отпускать, распускать; увольнять; отклонять
Dispatching – диспетчеризация, координация, управление
Dispense – распределять, обходиться без чего-либо (with);
освободиться от чего-либо (from)
Display – устройство воспроизведения, воспроизведение на экране
Disposal – расположение,; избавление, устранение; передача
Dispose – располагать, распределять, избавиться от чего-либо (of)
Disposition – ликвидация
Disprove – опровергать
Disrupt – разрывать, разрушать
Dissect – рассекать; анализировать
Dissolve – растворять(ся), испарять(ся); аннулировать, расторгать
Distinct – отличный; различный; разный; отчетливый, ясный
Distinguish – различать, отличать; выделять
Distortion – искажение
Distribution – распределение, распространение
Disturbance – нарушение, возмущение; помеха, разрушение (магнитного
состояния), повреждение
Division – деление, раздел
Divisor – делитель
Domain – область, домен; интервал (времени)
Dot – точка; точка растра; точечный
Dot-and-dash line – штрихпунктирная линия
Dot-matrix image – растровое изображение; точечно-матричное
изображение
Dotted line – пунктирная линия
Draft – проект, эскиз, набросок
Drain – утечка, сток, непроизводительный расход
Drift – дрейф, уход, снос, смещение, сдвиг; медленное перемещение
Driver – драйвер, задающее устройство; возбудитель; двигатель
Dummy – макет; ложный, фиктивный; холостой
Dump – разгрузка, выход на печать; снятие, выключение

Dynamic Host Configuration Protocol (DHCP) – протокол динамической конфигурации узла

Dynamic IP addresses – динамический IP-адрес

Е

Edge – край (перфокарты), ребро, граф

Editing tools – инструменты редактирования

Efficiency – эффективность, производительность

Element – элемент, компонент, деталь, звено, схема

Eliminate – элиминировать, устранять; исключать

Elongate – удлинять(ся); продлевать(ся)

Eloquent – красноречивый

Elucidate – освещать, проливать свет, объяснять

Elude – избегать, уклоняться

Elusive – неуловимый; уклончивый

Embash – длинное тире

Embed – вставлять, врезать, вделывать; внедрять

Embody – воплощать, изображать; олицетворять; включать, заключать (в себе)

Embrace – охватывать, включать

Emerge – появляться, всплывать, выходить; возникать

Emergency – крайняя необходимость; экстренный случай; авария

Emitter – эмиттер, источник; генератор

Emphasis – ударение, упор, акцент to lay (place) emphasis on smth – подчеркивать, выделять, придавать значение чему-либо

Emulation – эмуляция

Encipher – кодировать, шифровать

Encourage attention – привлекать внимание

Encryption – шифрование

Ensure – обеспечивать, убедиться

Enterprise – предприятие

Entity – объект; сущность; категория

Entry – ввод, вход, запись; подача; введенные данные; содержимое

Environment – окрестность; оборудование; контекст; режим

Equal – равняться; уравнивать;

Equation – уравнение, равенство

Equilibrium – равновесие

Equipment – оборудование, приборы

Erase – стирать (запись), разрушать

Error – ошибка

Error-free – безошибочный; свободный от ошибок
Escape – потеря (связи); переход (с одного кода на другой); отменять, переходить
Estimate – 1) оценка 2) оценивать; приблизительно подсчитывать
Etching – травление
Evaluation – оценка, вычисление, формула оценки, оценочная функция
Even – чётный, равномерный, ровный, точный
Event – событие; исход; результат
Ever-increasing ~ строго возрастающая ошибка
Exchange – 1) обмен; замена;
Execute – выполнять, исполнять
Exercise a control – оказывать влияние
Exercise caution – соблюдать осторожность
Exert (every) effort (make efforts) – прилагать усилия
Expand – расширять, увеличивать, наращивать, разворачивать
Expectation – ожидание.
Exponent – показатель степени; порядок
Exponential – показательная функция; показательный, экспоненциальный
Expression – выражение
Extension – расширение, продолжение, протяженность, добавление
Extreme – предельный, критический
Extreme Programming – экстремальное программирование
Excess – избыток, излишек, остаток, эксцесс

F

Feasibility – возможность технической реализации
Feature – функция
Feedback – обратная связь
File-processing systems – системы обработки файлов
Flexibility – гибкость
Flight Director Systems – система командных пилотажных приборов, командно-пилотажная система
Flight instruments – пилотажно-навигационный прибор
Front-end development – разработка веб-приложений на стороне клиента
Functionality – функциональность

G

Gadget – устройство, приспособление, техническая новинка
Gain – усиление, увеличение; усиливать
Gain acceptance – получить признание

Gain an (the) advantage of (over) somebody – иметь преимущество перед кем-либо
Gain an insight into – проникнуть в сущность чего-либо, понять
Gain experience – приобретать опыт
Gain recognition – получить признание
Gain time – экономить время
Gap – интервал, промежуток, зазор
Garble – искажение; искажать
Gas-plasma display – плазменный дисплей; газоразрядный дисплей
Gate – 1) затвор, вентиль;
Gateway – шлюз; межсетевой шлюз
Gathering – сбор
GB – гигабайт
GEM(graphical environment manager) – диспетчер графической среды; графический интерфейс пользователя
Gender bender – адаптер с однотипными контакт-детальями на обоих концах
Gender changer – адаптер с однотипными контакт-детальями на обоих концах
General chart – общая схема
General options – общие параметры; системные параметры
General troubleshooting – устранение неисправностей общего характера или типичных неисправностей
Generate – генерировать, создавать, производить, формировать
GIF (graphics interchange format) – формат обмена графикой (графическими данными)
Glare filter – антибликовый фильтр
Glide – скольжение; плавный переход
Global backup – полное резервное копирование
Global channel – основной канал; общий канал
Global settings – общие настройки
Go out of commission – выходить из строя, отказать (о машине)
Grab – захват; оцифровка; семплирование
Grabber – средство захвата; плата захвата; экранный указатель координатного манипулятора в виде кисти руки
Gradient – градиент; плавно изменяющийся
Grandfather file – предпоследняя версия файла
Grandfather version – предпоследняя версия объекта
Grant – предоставить
Grayed – серый; неактивный
Grayed option – неактивный пункт меню; невыделенный параметр

Grid computing – система распределения мощностей и систем хранения
Gyroscopic Systems – гироскопическая система

Н

Nack – взламывать (систему), незаконно проникать
Half-duplex – способный передавать данные только в одном направлении
Halt – остановка, сбой; останавливаться
Handheld (computer) – небольшой портативный компьютер, помещающийся в одной руке
Handle – оперировать, манипулировать; обрабатывать
Handler – устройство управления; программа обработки
Handling – обработка; оперирование
Hang – внезапно прервать работу, остановиться (о программе)
Hard (hardware) failure – устойчивый отказ; аппаратный сбой
Hard copy – твердая копия, документальная копия, распечатка; печатный
Hard disk drive – жесткий диск, винчестер
Hard error – аппаратная ошибка, аппаратный сбой; постоянная ошибка; неисправимая ошибка
Hardware – аппаратура, аппаратное оборудование (обеспечение); технические средства
Hardware dependent – аппаратно-зависимый
Nash – ненужные данные; ненужная информация
Head – головка, заголовок, дескриптор
Heading indicator – индикатор курсовых углов, указатель курса
Headphone – наушник
Heap – неупорядоченный массив
Help-desk/helpline – телефонная служба помощи пользователям
Hertz – герц, единица частоты, равная одному циклу в секунду
Hexadecimal – шестнадцатеричный
Hierarchy – иерархия
High density disk – дискета высокой плотности, может хранить один и более мегабайт данных
High-end package – комплексная компьютерная программа
High-level language – язык высокого уровня, язык программирования близкий к языку человека (Basic, Pascal, C etc.)
High-level program – компьютерная программа, написанная на языке высокого уровня
Hold – фиксация; хранить; держать; удовлетворять
Holistic – целостный

Hook – ловушка; добавочный
Horizontal scrolling – горизонтальная прокрутка
Host – главная вычислительная машина
Host name – имя хоста (имя хост-компьютера)
HTML (hypertext Markup Language) – язык гипертекстовой разметки
HTML (Hypertext Markup Language) – язык разметки гипертекста
Hub – гнездо, разъем в сети
Hyperlink – гиперссылка
Hypertext – гипертекст

I

I/O (input/output) – ввод/вывод
IBM (International Business Machines) – крупнейшая компьютерная компания в мире
IC (integrated circuit) – встроенная цепь, схема
Icon – иконка, значок, графический символ
ID (identification) – идентификация, проверка, сличение; отождествление; определение, распознавание; обозначение
Identifier – идентификатор; имя
Idle time – ожидание; простой
Illegal – запрещенный, несанкционированный
Image – образ, изображение; изображать, отображать
Imaging – отображение
Implement – выполнять, осуществлять
Implementation – внедрение; ввод в работу; реализация
Improve – улучшать, усовершенствовать
Improvement – улучшение, усовершенствование
Inch – дюйм
Increment – приращение, прирост; матем. Инкремент приращение
Independent – независимый
Infinite – бесконечный; бесчисленный
Inheritance – наследование, ключевая характеристика объектно-ориентированного программирования, когда дочерние классы наследуют все свойства родительских классов
Inhibit – запрещать, подавлять
Initialization – установление в начальное состояние;
Initialize – устанавливать в начальное состояние; задавать начальные условия
Input – 1) вход, ввод; входное устройство; входной сигнал; 2) входные данные; 3) вводить, входить
Input device – устройство ввода

Install – устанавливать, вводить
Integer – целое число; единица измерения
Integration – объединение
Integrity – целостность; сохранность
Interaction – взаимодействие; взаимосвязь
Interface – интерфейс; сопряжение; граница между двумя системами
Intermediate – промежуточный
Interpret – интерпретировать, расшифровывать, дешифровать;
печатать на перфокартах содержащиеся на них
Interrupt – прерывание, прерываться; сигнал прерывания
Intranet – Интранет
Intruder – нарушитель, злоумышленник
Involve – вовлекать
IP (Internet protocol) address – адрес сетевого протокола IP
ISP (Internet service provider) – Интернет провайдер
IT (information technology) – информационные технологии
Item – отдельный предмет, элемент, единица, элементарная группа,
статья, позиция
Iteration – итерация, повторение; шаг; цикл
Iterative model – итеративная модель

Ж

Java [ˈdʒa:və] – Джава, язык программирования
Job – задание; работа
JPEG (Joint Photographic Expert Group) – комитет по стандартизации
формата файлов с изображениями и сжатием
Jump – переход, операция перехода; команда перехода; скачок
Junk mail – спам
Junkware-спам
Justification – выравнивание

К

KB (kilobyte) – килобайт, Кбайт
Kb (kilobit) – килобит, Кбит
Kernel – Ядро Программы; Ядро Системы Программирования
Key – 1) ключ, кнопка, клавиша, переключатель; 2) ключ, шифр, код,
указание к решению; 3) переключать, работать ключом, коммутировать
Keyboard – Клавиатура; Коммутационная Панель; Клавишный Пульт;
Keyword – Ключевое Слово, Дескриптор; Резервированное Слово
Khz (Kilohertz) – килогерц

L

LAMP (Linux/Apache/MySQL/PHP) software stack – программный стек

Linux/Apache/MySQL/PHP

Laptop – ноутбук

Layout – макет

Life-cycle – жизненный цикл (программного продукта)

Linear – линейный

Local area networks – локальные сети

Long-term – долгосрочный

M

Magnetic compass – магнитный компас

Magnitude – величина; значение; модуль

Mainframe – мейнфрейм

Maintain – поддерживать, обслуживать

Maintenance – сопровождение, поддержка, эксплуатация, техническое обслуживание

Make a reference to – ссылаться, упоминать

Malfunction – сбой, неисправность

Malicious (program) – вредоносная (программа)

Malware – вредоносные программы

Manage – управлять; вести; организовывать

Management – управление; организация; руководство; управленческий персонал; владение (инструментом, оружием); умение справляться (с делами, ситуацией)

Manipulation – манипулирование, работа; манипуляция, обработка; управление (механизмом)

Map – карта, таблица; отображать, устанавливать соответствие; преобразовывать

Mark up language – язык разметки

Matrix – матрица; дешифратор; сетка (из) резисторов; матрица; таблица

Means – средство; способ, метод; возможность; ~ of access – средства доступа; controlling~ средства управления; средства регулирования

Meet the case (demands, requirements) – соответствовать требованиям, подходить

Metaphor – метафора (программа)

Microcomputer – микрокомпьютер

Modem – модем (модулятор-демодулятор)

Modification – изменение

Modularization – деление на модули

Monitoring – контроль
Multitasking – многозадачность
Multi-tier – многоуровневый
Multi-user – многопользовательский

N

Narrowband – узкополосный
Navigational systems – навигационные системы
Network – 1) сеть, цепь, схема, контур; 2) сетевой
Network – сеть
No strings attached – без обязательств
Nodal – 1) узловая точка; 2) узловой
Noise cancellation – 1) подавление шумов; 2) устранение помех
Noise induction – 1) наведение помех (шумов); 2) наводка
Nondirectional radio beacon (ndb) – ненаправленный радиомаяк;
приводная радиостанция
Normalization – нормализация
Notation – 1) запись; 2) обозначение 3) система счисления; 4)
примечание
Numerical key – цифровая клавиша

O

Object – объект; объектный
Object-oriented database systems – объектно-ориентированные СУБД
Object-oriented design – объектно-ориентированное проектирование
Object-oriented programming – объектно-ориентированное
программирование.
Occur – случаться, происходить
OCR – (Optical Character Recognition) оптическое распознавание
символов
Octet – октет (упорядоченный набор из 8 бит)
Odd number – нечётное число
Odd parity – проверка на нечётность, контроль по нечётности
Offline – автономный, независимый, (работающий) независимо от
основного оборудования; автономно, независимо
Ongoing – постоянный
On-line – постоянно включенное [устройство], неавтономный режим
работы; экранный, электронный, оперативный, диалоговый,
интерактивный
Open source software = free software – открытые программные средства
Operand – операнд объект

Operate – работать, действовать, функционировать (о приборах, механизмах)

Operating characteristics – рабочие характеристики

Operating environment – операционная среда

Operating mode – рабочий режим, режим работы

Operating rate – быстродействие, производительность, рабочая частота, рабочая скорость

Operation – деятельность, работа; действие, операция; управление, приведение в

Operator – оператор, символ

Option – опция, вариант, элемент выбора

Order – команда (command, instruction); порядок, упорядоченность, последовательность, очерёдность

Original – оригинал, подлинник, исходный, начальный, первоначальный

Outline – контур, очертание; эскиз; схема; план; (общая) структура; элемент блок-схемы

Output – выход; вывод; выходное устройство; устройство вывода; выходной сигнал; выходные данные; результат; выходная мощность

Outside device – внешнее устройство

Outside margin – внешнее поле; наружное поле

Outsource – привлекать (внешние ресурсы, специалистов, услуги) для выполнения собственных, внутренних задач компании

Outsourcing – привлечение внешних ресурсов для решения собственных проблем

Overdub – перезаписывать без стирания (с наложением)

Overflow – переполнение; признак переполнения; избыток

Overlap – перекрытие, совмещение

Overload(ing) – перегрузка

Oversampling – дискретизация с запасом по частоте; семплирование с запасом по частоте

Overshoot – 1) переход за пределы, выброс за шкалу; 2) превышать, перегружать

Overstrike – наложение (знаков)

Р

Pair programming – парное программирование

Patch – патч

Patch a program – исправить программу

Persist – сохраняться

Phase – фаза

PHP (Personal Home Page) tools – Инструменты для создания персональных веб-страниц
Pipelining – конвейерный режим; конвейерная обработка
Pool – общий фонд
Preinstalled – предустановленный
Private network – частная (внутренняя) сеть
Procedure – процедура
Processing – обработка
Programmer – программист
Programming language – язык программирования
Prototype – прототип
Prototyping – прототипирование
Pseudo code – псевдокод; символический код

R

Ransomware – вредоносная хакерская программа (с требованием выкупа)
Recognize – распознать
Recover – восстанавливать
Redistribute – перераспределять
Redundant – излишний
Refer – относиться
Relate – иметь отношение
Relational algebra – реляционная алгебра
Relational database – реляционная бд
Relational model – реляционная модель данных
Relationship – отношение
Release – выпуск
Relevant – соответствующий
Repeat rate (repetition rate) – частота повторений; частота автоповтора символа
Repetitive error – систематическая ошибка, повторяющаяся ошибка
Replace mode – режим замены; режим перезаписи с перемещением
Replicate – копировать, дублировать, размножить, тиражировать
Repository – хранилище, архив
Reproduction fidelity – верность воспроизведения звука
Request – запрос, требование; запрашивать, требовать
Requirement – требование
Requirement gathering – сбор требований
Rescue – спасение, восстановление, спасти, восстанавливать

Reset all controllers – сброс значений всех контролеров; инициализация всех контролеров;
Resist – сопротивляться, препятствовать; защитное покрытие
Resilient – упругий
Resistance – сопротивление, электрическое сопротивление; сопротивляемость, устойчивость
Resizable – масштабируемый, с изменяемыми размерами
Resize – изменять размер, масштабировать
Response – чувствительность, ответ, зависимость, реакция, срабатывание, выходной сигнал
Responsive web design – адаптивный веб-дизайн
Restart key – клавиша перезапуска (рестарта)
Resting position – исходная позиция, первоначальная позиция
Restore – 1) восстановление, возвращение, 2) возвращать,
Restrict – ограничивать, лимитировать
Restricted access – ограниченный (лимитированы) доступ
Resultant – результирующий, итоговый
Roadmap – схема, план действий
Robust – крепкий
Romware – программное обеспечение в постоянной памяти
Root – корень, основание; корневой каталог; ~ node – самый верхний узел иерархической системы
Root user – привилегированный пользователь
Rootkit – руткит (набор программных средств для маскировки)
Route – 1) маршрут, направление, разводка, соединение, межсоединение; 2) направлять
Router – маршрутизатор
Run – работать
Runaway – 1) выход из-под контроля; 2) отклонение, уход

S

Scope – объем
Scrutiny – внимательное изучение
Search engine optimization – оптимизация сайта в поисковых системах
Sequential – поэтапный, последовательный
Serviceable – обслуживаемый, полезный, пригодный
Sign – знак, символ; обозначение
Simulation – имитация, моделирование
Single-user – однопользовательский.
Skip – пропуск; обход
Slimware – программное обеспечение небольшого объема

Slope – наклон (кривой), угол наклона; наклоняться
Smart card – интеллектуальная плата (карта)
Sntp (simple mail transfer protocol) – простой протокол передачи электронной почты
Software – программное обеспечение.
Software design – проектирование программного обеспечения
Spiral model – спиральная модель
Splitter – разделитель, разветвитель
Spread – распространение, разворот, расхождение
Spreadsheet – электронная таблица
Stand-alone – автономный
Standard generalized – стандартный обобщенный (язык разметки)
Start-stop transmission – старт-стопная передача; асинхронная передача данных
Statement – оператор, выражение
State-of-the-art – современный уровень (состояние); современный
Static allocation – статическое распределение
Stealth virus – вирус-невидимка
Storage medium – носитель, запоминающая среда
Streaming – поток, течение; бегущий
String – цепь, цепочка; последовательность
Structured design – структурное проектирование
Structured programming – структурированное (структурное) программирование
Sub-domains – субдомен (поддомен)
Submit – отправить
Subnet – подсеть
Subsequent – последующий
Subset – подгруппа, разновидность
Subsystem – подсистема, совокупность модулей
Supervisor (program) – управляющая программа; операционная система
Svga (super video graphics array) – усовершенствованный видеографический стандарт vga
Sync – синхронизация; синхронизировать
System bus – системная шина
System call – обращение к операционной системе
System compatibility – системная совместимость
System failure – сбой системы
System font – системный шрифт
Systems development life cycle (sdlc) – жизненный цикл разработки систем

T

T arrangement – расположение в форме буквы T

Tag – тег, признак (хранящийся вместе со словом), дескриптор; таг (неотображаемый текст разметки документа в HTML-формате); ярлык, этикетка, бирка; (кабельный) наконечник

Take a resolution – принять решение

Take the form of something – принимать форму чего-либо

Take the opportunity – воспользоваться случаем

Target computer – целевая вычислительная машина (для которой предназначается оттранслированная программа)

Task allocation – распределение задач в ОС – резервирование ресурсов, необходимых для выполнения задачи

Task manager – диспетчер задач

Task scheduler – планировщик задач в многозадачных ОС

Task-oriented – проблемно-ориентированный, целенаправленный

TCP/IP protocol – протокол TCP/IP

Team operation – групповая разработка (напр., программного обеспечения)

Template – шаблон; трафарет; лекало; маска; эталон (в системе распознавания); спецификатор шаблона

Temporary – временный; промежуточный (о данных)

Test case – тестовый пример

Threat – угроза

Top-level domain – домен высшего уровня

Trace – 1) след; 2) следить; проследживать; отслеживать

Traffic – трафик; поток (информации) обмена, рабочая нагрузка

Transaction processing systems – системы обработки транзакций

Transfer – передача; пересылка; перенос || передавать; пересылать; переносить

Treat – рассматривать

Turn Indicator – курсоуказатель, гиropолукомпас

U

Unauthorized – несанкционированный

Unwieldy – громоздкий

Updater – программа обновления

Updating – корректировка; обновление, изменение в соответствии с новыми данными

Upgrade – модернизировать

Upgrading – модернизация, совершенствование

Uploading – загрузка
Upstream – в направлении, противоположном основному трафику
User – пользователь
User account – учётная запись пользователя
User authentication – аутентификация пользователя
User command – директива пользователя
User documentation – документация пользователя
User environment – среда пользователя
User interface – пользовательский интерфейс
User Interfaces (UI) – пользовательский интерфейс
User-defined – определяемый пользователем
User-friendly – удобный, понятный
Utility routine – сервисная программа, служебная (обслуживающая) программа
Utility – утилита
Utilized – использовать

V

Validation – подтверждение соответствия
Validity – действительность, законность, вескость, обоснованность
Value – ценность, стоимость, цена, значение, величина, оценивать, ценить, of value – ценный
Vanish – исчезать, стремиться к нулю
Variable – переменный, непостоянный; переменная величина
Variety – разнообразие, ряд, множество, разновидность
Vector graphic – векторная графика
Vehicle – любое средство передвижения; средство распространения; среда, проводник
Velocity – быстродействие
Vendor – поставщик
Verbose – подробный
Verge – край, предел, on the verge of на грани
Verification – проверка полномочий, подтверждение
Verify – подтверждать, удостоверить, проверять
Veritable – настоящий, истинный
Versatile – многосторонний, гибкий
Version control – управление
Versus – против, в сравнении с, в зависимости от
Vertical speed indicator – указатель скорости набора высоты

Very-High Frequency Omnidirectional Range (VOR) – всенаправленный азимутальный радиомаяк УКВ диапазона VOR
Virtual memory – виртуальная память
Visible – видимый, заметный, явный
Vision – зрение, проникновение, проницательность, предвидение, вид
Visual – зрительный, видимый, наглядный
V-model – V-модель (разработка через тестирование)
Vocational – профессиональный
Voice actuation (activation) – включение голосом
Void – пустой, незанятый, лишенный, пустота
Volatile – летучий, быстро испаряющийся, непостоянный, изменчивый
Volume – объем, масса, пространство; том, книга
Voluntary – добровольный, сознательный, умышленный, произвольный
Vulnerability – уязвимость

W

Want – недостаток, отсутствие, необходимость; желать, хотеть, недоставать, нуждаться (for)
Warrant – 1) гарантировать, подтверждать, оправдывать; 2) гарантия, основание, оправдание
Waterfall model – каскадная модель (водопад)
Web development – веб разработка
Web publishing – онлайн публикации
WEB-project – интернет-проекты
Weight – 1) вес, груз, значение, влияние; 2) нагружать, придавать вес силу
White-box testing – тестирование на основе стратегии белого ящика
Wideband – широкополосный
Wi-Fi (Wireless Fidelity) – формат передачи цифровых данных по радиоканалам
Wire splicing – соединение проводов, сращивание проводов
Wired network – проводная сеть
Work piece – деталь
Work station – рабочая станция
Workgroup – рабочая группа
Workshop – мастерская; цех; секция, семинар
Worthy – достойный, заслуживающий (внимания и т.п.)

Y

yardstick – мера, мерка; критерий

yield – давать, производить, уступать, поддаваться; продукт, выход, мощность

yoke – отклоняющаяся катушка; отклоняющаяся система, ОС

Y modem – протокол асинхронной связи

Y scrolling – вертикальный скроллинг, вертикальное перемещение

Z

zap – стирание, затирание, уничтожение; стирать, затирать, уничтожать

zapping – выгорание контактов

zip – резкий звук; мгновенное перемещение; перебрасывать

zoom button – кнопка трансфокации, кнопка масштабирования

zoom-in – увеличение размеров изображения; zoom in –увеличивать, раскрывать

zoom-out – уменьшение размеров изображения

zoom out – уменьшать, закрывать

zoom setting – установка масштаба