

**FACULTY OF ELECTRICAL** **department**  
**ENGINEERING** **of foreign languages**  
**AND COMMUNICATION**



# **English for Information Technology**

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**Brno 2018**

## PREFACE

This coursebook is aimed at the intermediate level learners who study information and communication technology at universities and wish to pursue their careers in this field. Its aim is to equip the university students with both receptive and productive skills in professional English language at the level B2 of the Common European Framework for Languages (CEFR) focused on information and communication technology. The coursebook enables students to acquire professional vocabulary, linguistic means for expressing different language functions and to develop language skills necessary for both active participation in the seminars, lectures, conferences, and effective communication with colleagues, business partners and institutions in the competitive international environment of the information and communication technology sector.

*English for Information Technology* consists of twelve main units covering a wide range of topics dealing with information and communication technology, four review units, extra reading and speaking activities, answer key, and video and audio transcript with highlighted answers to all tasks. The units focus on the current development and careers in information technology, hardware, software, networks, the Internet safety, computer and the Internet history.

Each unit consists of a lead-in activity, main topic text, vocabulary practice, reading, listening, speaking tasks and language functions, such as predicting, classifying, qualifying, comparing, giving advice and instructions, persuading, and describing features, functions, processes, tables and charts. All tasks correspond to the Cambridge English exams format. They include multiple matching, gap filling, multiple-choice cloze, multiple choice, sentence completion and true/false tasks. The English-Czech wordlist with phonetic transcription of the specialized terminology accompanies each unit. Most tasks are based on the communicative approach in language learning, but the elements of the Presentation-Practice-Production method and task-based approach are implemented in the coursebook as well.

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# MAP OF THE COURSEBOOK

	Vocabulary Practice	Listening and Video Watching	Reading	Speaking	Language Functions
<b>Unit 1</b> Introduction to Information Technology	IT industries and branches, developments in the IT sector	Development of IT technologies, predictions: - listening for gist - listening for specific information	Concept of IT, trends and predictions in IT: - skimming the text for the main ideas - scanning the text for specific details	Giving opinions, asking for opinions, providing explanations, making predictions, confirming and contradicting predictions	Predicting
<b>Unit 2</b> A Career in Information Technology	Different IT professions, verbs associated with different roles and tasks in the IT sector	IT jobs description and specification: - predicting what information is needed - listening for specific information - noting specific information	Job advertisement: - scanning the text for specific details	Giving opinions, providing explanations, asking questions, describing, introducing yourself, referring to previous communication, stating purpose of an application, exchanging information, making enquiries, giving reasons, stating intentions and preferences	A job interview
<b>Unit 3</b> Personal Computer and Types of Computers	Computer system, basic hardware and software components, types of computers, verbs associated with data processing, qualifying adjectives	Computer specifications: - listening for specific information	Types of computers from a historical point of view: - scanning the text for specific details	Classifying from general to specific, classifying from specific to general, giving opinions, reasoning	Classifying, qualifying and comparing
<b>Unit 4</b> Motherboard	Motherboard components, verbs associated with functions of individual components	CPU and its components: - listening for specific information - noting specific information iMac and MacBook: - noting specific information	Motherboard, its components and their functions: - recognising links - scanning the text for specific details Troubleshooting guide: - identifying the main message - scanning the text for specific details Units of memory and binary system: - recognising links - scanning the text for specific details	Describing functions, giving specifications, providing detailed information, making enquiries, making comparisons, providing explanations	Describing functions
<b>Review 1 Units 1 – 4</b>					
<b>Unit 5</b> Input Devices	Keys of the keyboard and verbs associated with their functions; pointing devices based on motion of an object, pointing devices based on touching a surface; imaging, video and audio input devices; verbs associated with functions of different input devices	Touchscreens: - listening for specific information - noting specific information 3D scanning: - listening for specific information - noting specific information	Keyboard, pointing devices, imaging, video and audio input devices: - scanning the text for specific details - guessing meaning of words from the context - recognising links	Describing features and functions, giving opinions, providing explanations, predicting, reasoning, developing arguments	Describing features
<b>Unit 6</b> Output Devices	Components and specifications of a monitor; types and features of printers; features of speakers and headphones; verbs associated with functions of different input devices	Display devices specifications: - listening for specific information 4D printing: - listening for specific information - inferring meaning	Monitor, printer, speakers and headphones: - recognising links - scanning the text for specific details - guessing meaning from the context	Describing features and functions, giving opinions, providing explanations, reasoning, developing arguments, giving advice and instructions, making decisions	Giving advice and instructions
<b>Unit 7</b> Storage Devices	Components and specifications of magnetic, optical and solid-state storage devices; verbs associated with functions of different storage devices	Hard drives: - listening for specific information Blue-ray discs: - listening for specific information - noting specific information	Storage devices, optical storage: - recognising links - scanning the text for specific details - guessing meaning from the context	Describing features and functions, providing explanations, reasoning, stating objectives of a meeting, giving opinions, interrupting, ending a meeting, confirming decisions and actions	Meetings in IT companies
<b>Unit 8</b> Software	Features and classification of system software (operating system, utility software, security software, computer programming tools and programming languages) and application software; verbs associated with functions of system and application software	Talking software: - listening for specific information - noting specific information LipMouse algorithm: - listening for gist - inferring meaning - listening for specific information	Outlining problems with software: - recognising links E-mail providing solution to the problem with the OS: - skimming the text for the main ideas - scanning the text for specific details - recognising links - guessing meaning of words from the context	describing processes, describing problems, making enquiries, providing explanations, proposing solutions	Describing processes
<b>Review 2 Units 5 – 8</b>					

	Vocabulary Practice	Listening and Video Watching	Reading	Speaking	Language Functions
<b>Unit 9</b> Windows basics	GUI structural and interaction elements; Word processing; verbs associated with GUI functions, working with windows and formatting	Word processing: - listening for specific information - noting specific information	Graphical control elements, working with windows, files, folders and shortcuts, word processing: - scanning the text for specific details	Making comparisons, describing features, reasoning, giving and following instructions	Giving and following instructions
<b>Unit 10</b> Computer Networks and Internet Access	Types and features of computer networks, networking topologies and Internet access; features of networking hardware components; verbs associated with functions of networking hardware	How a web of networks work: - listening for gist - listening for specific information Locating a network fault: - listening for specific information	Computer networks, Internet access, networking hardware: - scanning the text for specific details - recognising links	Identifying the source of a problem, making enquiries, providing explanations, keeping track, proposing a solution	Troubleshooting
<b>Unit 11</b> World Wide Web	Features of World Wide Web, software system for searching information online, different browsers; features of email; verbs associated with web browsing, finding information online and sending an email		Email: - scanning the text for specific details Sending an attachment: - recognising links	Comparing and contrasting, giving opinions, asking questions, making suggestions, providing explanations, reasoning, making general statement about a graph or chart, providing detailed description of the trends	Describing charts and graphs
<b>Unit 12</b> Internet Safety	Types and features of Internet crimes; features of different types of malware; verbs associated with malware behaviour and preventing computer infection	Interview with a white-hat hacker: - listening for gist - listening for specific information - noting specific information Interview with a member of the Internet Safety Foundation: - listening for specific information - noting specific information Global cyberware: - listening for specific information - guessing meaning of words from the context	Malware: - scanning the text for specific details	Making enquiries, asking for and providing information, giving opinions, giving opinions, providing explanations, predicting, reasoning, developing arguments, persuading, using emotive language and flattery, asking rhetorical questions	Persuasive techniques
<b>Review 3</b> <b>Units 9 – 12</b>					
<b>Extra Activities</b> History of a Computer History of the Internet	Different inventions and discoveries associated with historical development of hardware, software and the Internet		History of a computer: - scanning the text for specific details - recognising links The first computer programmer: - scanning the text for specific details History of the Internet: - recognising links - scanning the text for specific details	Case studies: - Start-up Fever - Women Managers in the IT Sector  Use of linguistic means for expressing different language functions mentioned above.	
<b>Review 4</b> <b>Mock Credit Test</b>					

## Unit 1

### INTRODUCTION TO INFORMATION TECHNOLOGY

“The digital revolution is far more significant than the invention of writing or even of printing.”

Douglas Carl Engelbart



#### Activity

- 1 Discuss the quote.
- 2 What does ICT deal with?
- 3 Which industries are associated with ICT?
- 4 How has ICT influenced the different areas of life?
- 5 How do you think developments in ICT will affect work, commerce, the relationship between humans and computers and the other areas of life in the next few years?

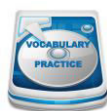


#### Text

**Information technology** or **Information and Communication Technology** (hereinafter referred to as **ICT** or just **IT**) is a broad subject concerned with technology and other aspects of managing and processing information, especially in large organizations. In particular, ICT deals with the use of computers and telecommunications equipment to **convert, store, protect, process, transmit** and **retrieve** information. The term ICT is commonly used as a synonym for computers and computer networks, but it also **encompasses** other information distribution technologies such as television and telephones. Several industries are associated with information technology, including computer **hardware, software, electronics, semiconductors, Internet, telecom equipment, e-commerce** and **computer services**. For that reason, computer professionals are often called **ICT specialists** and the division of a company or university that deals with software technology is often called the **ICT department**.

In the Czech Republic education system, information technology was formally integrated into the school curriculum in the 1980s. With the arrival of the Internet and the broadband connections to all schools, the application of ICT knowledge, skills and understanding in all subjects became a reality.

The potential and capabilities of modern ICT systems are still growing exponentially fuelled by the progress in **electronics, microsystems, networking**, the ability to master increasingly complex **cyber-physical systems** and **robots**, and progress in **data processing** and **human-machine interfaces**. These developments provide major opportunities to develop the next generation of open platforms on top of which a multiplicity of innovative **devices**, systems and applications can be implemented.



#### Vocabulary Practice

**Task 1: Match the definitions 1 – 6 to the verbs A – F.**

- |   |   |                   |
|---|---|-------------------|
| 1 | ..... organize and manipulate data, usually large amounts of numeric data     | <b>A</b> convert  |
| 2 | ..... find and bring back information   | <b>B</b> store    |
| 3 | ..... keep information safe from loss   | <b>C</b> protect  |
| 4 | ..... change data from one format to another                                  | <b>D</b> process  |
| 5 | ..... copy data from a CPU to memory, or from memory to a mass storage device | <b>E</b> transmit |
| 6 | ..... pass information from one place to another                              | <b>F</b> retrieve |

**Task 2: Find the words in the text according to these definitions.**

- 1 ..... any of various solid crystalline substances used especially as a base material for computer chips and other electronic devices
- 2 ..... technology of very small devices made of silicon or polymer which perform non-electronic functions such as typically sensing and actuation
- 3 ..... a specialized functional area within an organization where experts in electronic communications of all kinds work
- 4 ..... business transactions conducted on the Internet
- 5 ..... grouping of two or more computer systems linked together
- 6 ..... the science dealing with the development and application of devices involving flow of electrons in a vacuum, gaseous media and semiconductors
- 7 ..... boundaries across which two independent systems meet and act on or communicate with each other

**Listening**

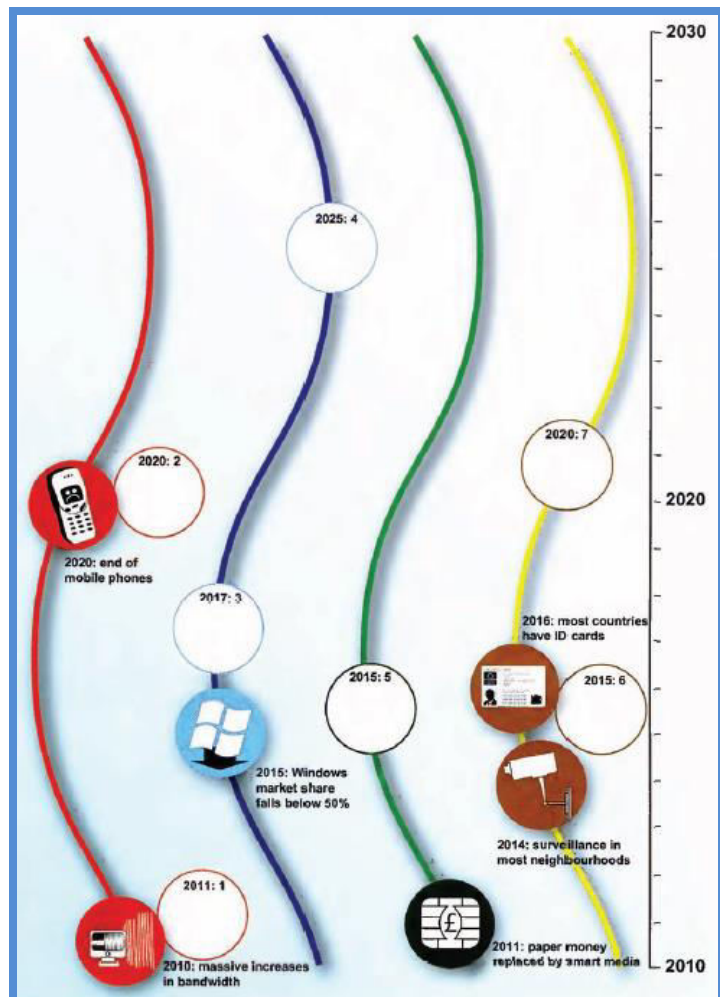
Listen to Ian Pearson, a futurologist, talking about the development of technologies and the impact these could have on business and society.

**Task 1: Which coloured line on the diagram below represents the different areas of technology?**

- 1 ..... Telecoms
- 2 ..... Society
- 3 ..... Business
- 4 ..... Software/Hardware

**Task 2: Match the numbered boxes 1 – 7 on the diagram with the innovations.**

- A ..... contact lens display screens
- B ..... RFID replaces barcodes
- C ..... biometric scanners replace ID cards
- D ..... free voice calls
- E ..... VR escapism a growing social problem
- F ..... thought recognition
- G ..... desktop computers that can compute as fast as the human brain





### Speaking 1

- 1 Have any of the predictions of Ian Pearson already come true?
- 2 Are there any predictions that will come true sooner than the listening extract suggests?
- 3 Are there any of these predictions that you think will not come true?
- 4 What other predictions would you make about the future of hardware, software, telecoms, or IT?



### Reading

#### **Peter Wilson** .....

The world is now plugged in, and countries are connected up using a mixture of terrestrial networks, undersea cables, satellite and microwave communications, Wi-Max and Wi-Fi, GSM and 3G. The move from packet-based services to the Internet protocol means everyone expects to communicate voice, data and video from anywhere to anywhere, globally. The availability of wide area data services such as MPLS and Ethernet have spread all over the world, allowing companies to manage and communicate with their operations wherever they may be. A reason for this has been the fall in bandwidth costs, and broadband is getting cheaper and cheaper. Services can now deliver tens or even hundreds of megabits of bandwidth into individual homes for much less money than a 84Kb line that a whole factory might have used to run its operation only a few years ago.

#### **Jenny Lane** .....

In 1965 Gordon Moore stated that the number of transistors on a chip would double about every two years. And that has more or less remained true since then. As we write, a single chip can hold about 1 billion transistors each making 3 billion binary calculations per second. There has been a huge increase in the volume of data and data storage capacity required for this; secondly, there has been a significant decrease in the size and power consumption of hardware and finally manufacturing costs are falling significantly. The result is that there are more and more powerful computers in our lives, and even handheld devices can store gigabytes of data holding thousands of MP3 music files or hundreds of films.

#### **Sanjay Ravi** .....

The internet is changing the way we access, buy and use applications. We go online and download the software we want onto our computer, like any other digital product. Increasingly we don't even have the software on our hardware, but visit an internet site and use that application as a service. The use of this Software as a Service (SaaS) model means that we may not need such powerful computers in the future. We have seen the impact of off-shoring and the rise of India as the world centre of software development and application management. We are also seeing some of the smartest applications and services coming out of people's bedrooms; more and more experts are producing Open source software, which is becoming more and more popular, creating a real threat to the big corporations.

**Task 1: Read the magazine article about trends in IT. Match the industry leader to their area of expertise.**

- A software
- B telecoms
- C hardware



**Task 2: Say if the following statements are true (T) or false (F) according to the text.**

According to Peter Wilson:

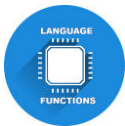
- 1 ..... most countries are connected up with undersea cables.
- 2 ..... many countries have unreliable mobile phone networks.
- 3 ..... recently bandwidth costs have risen dramatically.

According to Jenny Lane:

- 4 ..... Moore's predictions have been fairly accurate.
- 5 ..... a typical chip can now hold 3 billion transistors.
- 6 ..... both data storage capacity and power consumption have gone up.

According to Sanjay Ravi:

- 7 ..... fewer people are going to computer stores to buy software.
- 8 ..... SaaS will require ordinary users to have more powerful computers.
- 9 ..... software development needs the support of a big corporation to succeed.

**Language Functions: Predicting**

We can use different expressions to talk about how sure we are that something will happen in the future.

100%	will definitely	<i>be sure to, be bound to, be certain to</i>
75%	will probably	<i>be likely to, there's a good chance that</i>
50%	will possibly	<i>may, might, could</i>
25%	probably won't	<i>be unlikely to</i>
0%	definitely won't	<i>there's no chance that</i>

Example: *The mouse is bound to disappear in the next few years.*

**Speaking 2**

**Work with a partner. You each have some predictions about two more areas of technology. Make predictions and show how sure you are about them.**

**Student A:** You are an expert in the field of Artificial Intelligence and Artificial Life. Tell your partner about your predictions in your field. You are very certain about your predictions in the near future but less certain about predictions in the more distant future.

- AL entity gains entry to University – 2017
- AL entitles given basic 'human' rights – 2018
- Computers more intelligent than humans – 2020
- Living genetically engineered teddy bear – 2040
- Robot team beats England football team – 2050

**Student B:** You are an expert in the field of Biotechnology. Tell your partner about your predictions in your field. You are very certain about your predictions in the near future but less certain about predictions in the more distant future.

- Plastic bones – 2017
- Nano devices implanted in blood – 2019
- Electronic memory enhancement – 2020
- Virus crosses from machines to humans – 2025
- Artificial brain – 2045

## Unit 1 WORDLIST

**3G** [θri:dʒi:]**bandwidth** ['bændwɪðθ]**barcode** [bɑ:'kəʊd]**biometric scanner** [baɪə(ʊ)'metrɪk 'skænə]**broadband** ['brɔ:dbænd]**compute** [kəm'pjʊ:t]**contact lens** ['kɒntækt lenz]**convert** [kən'vɜ:t]**cyber-physical system** ['saɪbə 'fɪzɪk(ə)l 'sɪstəm]**data processing** ['deɪtə 'prəʊsesɪŋ]**device** [dɪ'vaɪs]**distribution technology**

[dɪstrɪ'bju:ʃ(ə)n tek'nɒlədʒɪ]

**e-commerce** [i: 'kɒmɜ:s]**electronics** [ɪlek'trɒnɪks]**encompass** [ɪn'kʌmpəs]**entity** ['entɪti]**hardware** ['hɑ:dweə]**human-machine interface**

[ 'hju:mən mə'ʃi:n 'ɪntəfeɪs]

**implement** ['ɪmplɪment]**implementation** [ɪmplɪmen'teɪʃ(ə)n]**information and communication technology**

[ɪnfə'meɪʃ(ə)n ənd kəmju:nɪ'keɪʃ(ə)n tek'nɒlədʒɪ]

**ICT specialist** [aɪsi:'ti: 'speʃəlɪst]**ICT department** [aɪsi:'ti: dɪ'pɑ:tm(ə)nt]**manipulate** [mə'nɪpjuleɪt]**market share** [mɑ:kɪt 'ʃeə]**microsystems** ['maɪkrəʊ'sɪstəmz]**multiplicity** [mʌltɪ'plɪsɪti]**networking** ['netwɜ:kɪŋ]**off-shoring** [ɒf'ʃɔ:ɪŋ]**platform** ['plætfɔ:m]**process** [prə'ses]**protect** [prə'tekt]**radio-frequency identification (RFID)**

['reɪdɪəʊ 'fri:kw(ə)nsɪ aɪdentɪfɪ'keɪʃ(ə)n; ɑ:ɪfər'di:]

**retrieve** [rɪ'tri:v]**semiconductor** [semɪkən'dʌktə]**software** ['sɒf(t)weə]**Software as a Service (SaaS)**

['sɒf(t)weə əz ə 'sɜ:vɪs; sas]

**store** [stɔ:]**surveillance** [sə'veɪl(ə)ns]**telecom equipment** ['telɪkɒm i'kwɪpm(ə)nt]**terrestrial network** [tə'restriəl 'netwɜ:k]**transmit** [trænz'mɪt]

třetí generace mobilních telekomunikačních technologií (nabízí možnost bezdrátového přenosu s rychlostí alespoň 200 kbit/s)

šířka pásma (rozsah frekvencí elektromagnetického signálu nebo rozdíl nejvyšší a nejnižší frekvence, jednotkou je Hertz [Hz])

čárový kód

biometrický skener

širokopásmové připojení

(vy)počítat, spočítat

kontaktní čočky

konvertovat, převádět

kyberneticko-fyzikální systém

zpracování dat

přístroj, součástka, zařízení

distribuční technologie

obchodování po internetu

elektronika

zahrnovat, pokrývat

entita, subjekt

hardware (technické vybavení počítače)

rozhraní člověk-stroj

implementovat, uskutečnit, zavést

implementace, zavedení, realizace

informační a komunikační technologie

odborník na výpočetní techniku/IKT

oddělení výpočetní techniky/IKT

zpracovávat; zacházet, manipulovat

tržní podíl

mikrosystémy

rozmanitost, velký počet

síťové sdílení, propojování (počítačů)

přemístění činností organizace do jiné organizace

v zahraničí, kde jsou nižší náklady

platforma (pracovní prostředí, jak po stránce

hardware, tak i software)

zpracovat

chránit

radiofrekvenční identifikace

získat

polovodič

software (programové vybavení počítače)

pronájem software (způsob poskytování licencí

software, při kterém zákazník nekupuje licenci

software, ale používá jej formou služby, př.

cloudové aplikace)

uchovávat, uložit

sledování, dohled, dozor

telekomunikační vybavení

pozemní síť

přenášet

## Unit 2

### A CAREER IN INFORMATION TECHNOLOGY

“Why join the navy if you can be a pirate?”

Steve Jobs



#### Activity

- 1 Discuss the quote.
- 2 Why are careers in the ICT field in high demand?
- 3 What do ICT professionals do?
- 4 What skills must an ICT professional have?
- 5 What field(s) of ICT are you interested in and why?



#### Text

The ICT industry is one of the fastest growing and changing fields. Technology is developing rapidly and new devices and systems are constantly being created to provide faster and more efficient methods for information and communication technology. Careers in the ICT field are in high demand and the industry is expected to grow. Professionals in ICT careers may work in commercial service sectors and ICT companies.

Careers in information and communication technology fields include a variety of roles and tasks associated with **planning**, **research**, **installing**, **maintenance** and **monitoring** the performance of ICT systems and transmissions. Specialists typically focus on a specific computer network, database, or systems administration function.

There are the following careers in ICT:

- 1 .....  
**Manages** projects, technology and people. **Takes responsibility** for the maintenance of servers and installation of new software, and for **staffing** a **helpdesk** and a support group. Is responsible for developing and implementing computer software that supports the operations of the business. Is responsible for multiple development projects and **oversees** the implementation and support of the system. Has to take responsibility for budgets and for staff.
- 2 .....  
**Studies** methods of working within an organization to decide how tasks can be done efficiently by computers. **Makes** a detailed **analysis** of the employer's requirements and work patterns to prepare a report on different options for using information technology. This may involve consideration of hardware as well as software. Either uses standard computer **packages** or writes a **specification** for programmers to **adapt** existing software or to **prepare** new software. May **oversee** the implementation and testing of a system and acts as a link between the user and the programmer.
- 3 .....  
**Maintains** the link between PCs and workstations connected in a network. Uses telecommunications, software and electronic skills, and knowledge of the networking software to **locate** and **connect** faults. This may involve work with the **controlling** software, on the wiring, printed circuit boards, software or microchips on a file server, or on cables either within or outside the building.
- 4 .....  
**Researches**, **designs**, and **develops** computers, or parts of computers and the computerized element of appliances, machines, and vehicles. Also involved in their **manufacture**, **installation**, and **testing**. May specialize in different areas: research and development, design, manufacturing. Has to be aware of cost, efficiency, safety, environmental factors, as well as engineering aspects.
- 5 .....  
**Produces** the programs which control the internal operations of computers. **Converts** the system analyst's specification to a logical series of steps. **Translates** these into the appropriate computer language. Often **compiles** programs from libraries or subprograms, combining these to make up a complete system program. **Designs**, **tests** and **improves** programs for computer-aided design and manufacture, business applications, computer networks and games.

6 .....

**Advises** potential customers about available hardware and **sells** equipment to suit individual requirements. **Discusses** computing needs with client to ensure that a suitable system can be supplied. **Organizes** the sale and delivery and, if necessary, installation and testing. May **arrange** support or training, maintenance and consultation. Must have sufficient technical knowledge.

7 .....

Is an analyst programmer who is responsible for maintaining updating and modifying the software used by a company. Some specialize in software which handles the basic operation of the computers. This involves the use of machine codes and specialized low-level computer languages. Most **handle** applications software. May **sort out** problems encountered by users. Solving problems may involve **amending** an area of code in the software, **retrieving** files and data lost when a system crashes, and a basic knowledge of hardware.

8 .....

Can be responsible for installation, maintenance or repair of computers and associated equipment. **Installs** hardware, ranging from personal computers to mainframe machines, and tests by running special software. Some technicians **carry out** routine servicing of large mainframe systems, aiming to avoid breakdowns. Others are called to **identify** and **repair** faults as quickly as possible usually by replacing faulty parts. Work can also involve upgrading machines usually on customers' premises.

9 .....

**Writes** the programs which enable computer to carry out particular tasks. May write new programs or **adapt** existing programs, perhaps altering computer packages to meet the needs of an individual company. When writing a new program, follows a specification provided by a system analyst. **Devises** a series of logical steps and converts these to the appropriate computer language. **Checks** programs for faults and does extensive testing.

10 .....

**Tests** the security of networks systems and **advises** customers how to introduce and maintain security policies including setting up secure password systems, installing firewalls, keeping out hackers and dealing with viruses.

**Match these different types of IT jobs A – J with the descriptions 1 – 10 in the text.**

- A Applications Programmer
- B Software Engineer/Software Designer
- C Computer Salesperson
- D System Analyst
- E IT Manager
- F Security Specialist
- G Hardware Engineer/Hardware Architect
- H System Support Person/System Administrator
- I Network Support Person/Network Engineer
- J Computer Services Engineering Technician



### Vocabulary Practice

**Complete the definitions with the verbs used in the text.**

- 1 ..... – do and complete a task
- 2 ..... – invent something new or a new way of doing something
- 3 ..... – find or discover something
- 4 ..... – to change something slightly in order to correct a mistake or to improve it
- 5 ..... – find the exact position of something
- 6 ..... – put a new program onto a computer
- 7 ..... – change something in order to make it suitable for a new use or situation
- 8 ..... – translate instructions from one computer language into another so that a particular computer can understand them
- 9 ..... – deal with and control
- 10 ..... – change something from one system to another



### Listening 1

Listen to four people on a training course introducing themselves and talking about their jobs. Choose each speaker's occupation from the list of jobs A – H below.

Speaker 1: .....

Speaker 2: .....

Speaker 3: .....

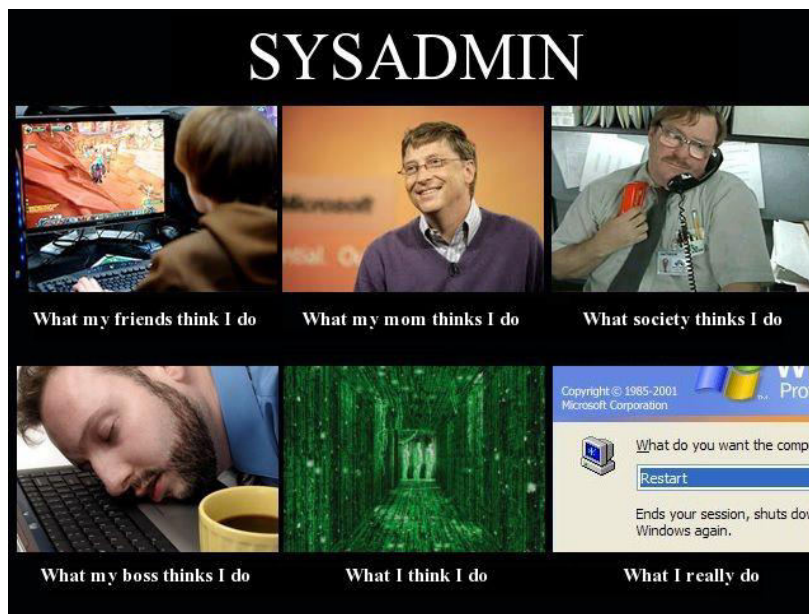
Speaker 4: .....

- A software engineer
- B computer security specialist
- C blog administrator
- D helpdesk technician
- E DTP operator
- F hardware engineer
- G network administrator
- H webmaster



### Speaking 1

Look at the picture and discuss what the picture shows. What do the individual parts of the picture represent and why?



### Listening 2

Listen to the interview between Chris Scott, the Personnel Manager at Digitum-UK, and the candidate, Sarah Brown. Complete the following notes.

**Name:** Sarah Brown

**Qualifications:**

Degree in ..... (1) (Aston University)

Languages: Basic Spanish and Italian

**Work experience:**

NCR\*: ..... (2) (one year)

Software for: ..... (3)

Programs for: ..... (4)

Database knowledge: ..... (5)

Present job: Works for Intelligent Software writing programs in COBOL and C.

**Reasons for applying:**

..... (6)

\*NCR – abbrev. National Cash Register



### Speaking 2

Work in pairs, A and B. Choose one of the computing careers from the list provided. Your partner must find out what your job is by asking only Yes/No questions. He/She should ask at least five questions.

#### Student A:

IT Manager  
System Analysts  
Network Engineer  
Hardware Engineer

#### Student B:

Software Engineer  
Computer Salesperson  
System Support Person  
Applications Programmer



### Reading

Read the advertisement for a position at Golden Prairie Publishing and choose the correct answers.

**TOP-QUALITY RECRUITS**

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**Golden Prairie Publishing**  
***Now hiring: Desktop Publishing Specialist***

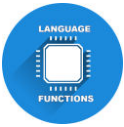
---

Golden Prairie Publishing is hiring a Desktop Publishing Specialist. Qualifications/Skills must include:

2+ years work in the field. Position requires college degree.  
Experience with **desktop publishing software**.  
A background in **graphic communications** and **design**.  
Skills to create **electronic pages** for print.  
Using text and **clip art** to make expert **page layouts**.  
Planning skills. Ability to turn a first sketch into a **comprehensive layout**.  
Familiarity with **offset lithography** or **electrostatic printing** methods, but not essential as full training will be given.

- 1 The purpose of this advertisement is
  - A to post a job opening
  - B to describe a company
  - C to start a publishing company
  - D to sell a desktop publishing program
- 2 A job qualification is NOT
  - A the ability to make clip art
  - B project planning skills
  - C a college education
  - D the ability to make layouts
- 3 What can you infer from this advertisement?
  - A The job pays well.
  - B This is a managerial position.
  - C The company is hiring from within.
  - D Students do not meet the requirements.





### Language functions: A Job Interview

**Possible questions a candidate for a job can expect in a job interview:**

#### **Small talk to begin**

*Did you have any trouble finding us?*

*Did you find a parking space around here?*

*How are you enjoying this hot weather/snow/etc.?*

#### **Standard interview questions**

*Tell us something about yourself.*

*What university do/did you attend and why did you choose it?*

*Why did you choose to study information technology?*

*What do you know about our company?*

*Why would you like to work here?*

*Who would you consider to be our main competitors?*

*What attracted you to this particular position?*

*What do you see as your strengths?*

*How do your skills and experience match the job requirements?*

*What skills have you developed at university/in your current job?*

*What languages can you speak?*

*What do you like doing in your spare time?*

#### **More difficult questions**

*What do/did you dislike about university/your current job?*

*How would you describe the way you work?*

*Would you describe yourself as an ambitious person?*

*What are your weaknesses?*

*What skills do you think you need to improve?*

*Where do you see yourself in five years' time?*

*Tell me about a time when you experienced pressure, at university or at work.*

*Tell me about a time you had to make a difficult decision.*

*Tell me about a time when you played an important role in a team.*

**Possible questions a candidate for a job can ask in a job interview:**

#### **Questions about the job**

*Can you tell me exactly what I would be expected to do if I were hired for this position?*

*What's the most important thing I can accomplish in the first three months?*

*Is there an employee performance review process? How often does that occur and can you walk me through a typical one?*

*Is there anything else I can provide you with that would be helpful or questions I can answer?*

#### **Questions about the company**

*What exactly does this company value the most, and how do you think my work for you will further these values?*

*Can you tell me what the career paths are for this department and what sort of advancements I could work towards?*

*Can you tell me about the team I'll be working with?*

*Do you offer continuing education and professional training?*

*What can you tell me about your new products or plans for growth?*

**Task: Problem-solving**

**Work in pairs. Study these job requirements 1 – 6 and try to match them to the list of jobs A – F which follows.**

<p style="text-align: center;"><b>1</b></p> <ul style="list-style-type: none"> <li>• at least 5 years (2 at senior level) in: Unix, Sybase or Oracle, NT or Windows 2000, Terminal Server, TCP/IP, Internet.</li> <li>• strong project management (2 years)</li> <li>• willingness to travel abroad</li> </ul>	<p style="text-align: center;"><b>2</b></p> <ul style="list-style-type: none"> <li>• able to manage, lead and develop a team</li> <li>• knowledge of C, C++, Delphi</li> <li>• experience of object-oriented design within a commercial environment</li> <li>• ability to deliver software projects against agreed schedules and within agreed estimates</li> </ul>	<p style="text-align: center;"><b>3</b></p> <ul style="list-style-type: none"> <li>• proven track record in the delivery of e-solutions in banking environment</li> <li>• knowledge of Unix, NT and Oracle</li> <li>• willingness to travel internationally</li> </ul>
<p style="text-align: center;"><b>4</b></p> <ul style="list-style-type: none"> <li>• minimum 4 years lifecycle development experience</li> <li>• demonstrable skills using VB, SQL, RDBMS</li> <li>• able to develop core s/w</li> <li>• excellent communication skills</li> </ul>	<p style="text-align: center;"><b>5</b></p> <ul style="list-style-type: none"> <li>• minimum of 18 months commercial experience of Web development</li> <li>• knowledge of HTML, Java, ASP</li> <li>• full portfolio of URLs as examples</li> </ul>	<p style="text-align: center;"><b>6</b></p> <ul style="list-style-type: none"> <li>• experience of NT, Exchange, SQL Server, Monitoring Software, Verta, TCP/IP</li> <li>• solid grasp of networking</li> <li>• 2 to 5 years' experience in a network environment</li> </ul>

- A** ..... Visual Basic Developer  
**B** ..... IT Engineer (Network & Database)  
**C** ..... Web Developer  
**D** ..... Network Support  
**E** ..... E-commerce Consultant  
**F** ..... Team Leader

**Speaking 3**

**Role-play a job interview between an interviewer and a candidate for one of the jobs from the previous exercise.**

**Ask some questions from the section Language Functions: A Job Interview.**

**Student A:** You are an interviewer. Ask at least ten questions.

**Student B:** Choose one of the jobs and answer the interviewer's questions.



## Unit 2 WORDLIST

<b>adapt</b> [ə'dæpt]	přepřacovat, přizpůsobit
<b>amend</b> [ə'mend]	pozměnit, opravit, doplnit
<b>applications programmer</b> [æplɪ'keɪʃ(ə)nɪz 'prəʊgræmə]	programátor aplikačního softwaru
<b>Application Service Provider (ASP)</b> [æplɪ'keɪʃ(ə)n 'sɜ:vɪs prə'vaɪdɜ; ɛɪ es'pi:]	služba zákazníkům prostřednictvím sítě
<b>arrange</b> [ə'reɪn(d)ʒ]	zařít; uspořádat
<b>blog administrator</b> [blɒg əd'mɪnɪstreɪtə]	správce blogu
<b>carry out</b> ['kæɪɔʊt]	provést, uskutečnit
<b>clip art</b> [klɪp ɑ:t]	klipart
<b>compile</b> [kəm'paɪl]	sestavit
<b>computer salesperson</b> [kəm'pjʊ:tə 'seɪlspɜ:s(ə)n]	prodávč výpočetní techniky
<b>computer security specialist</b> [kəm'pjʊ:tə sɪ'kjʊərtɪ 'speʃ(ə)lɪst]	odborník na počítačovou bezpečnost
<b>computer services engineering technician</b> [kəm'pjʊ:tə 'sɜ:vɪsɪz endʒɪ'nɪərɪŋ tek'nɪʃ(ə)n]	opravář počítačů a serverů
<b>Delphi</b> ['delfɪ], ['delfaɪ]	integrované grafické vývojové prostředí firmy Borland určené pro tvorbu aplikací na platformě MS Windows v jazyce Object Pascal
<b>design</b> [dɪ'zaɪn]	navrhnout
<b>develop</b> [dɪ'veləp]	vyvinout
<b>devise</b> [dɪ'vaɪz]	navrhnout, vynalézt
<b>desktop publishing (DTP)</b> ['deskɒp 'pʌblɪʃɪŋ]	tvorba tištěného dokumentu
<b>DTP operator</b> [dɪ'tɪ:'pi: 'ɒpəreɪtə]	DTP operátor/grafik
<b>e-commerce developer</b> [i:'kɒmɜ:s dɪ'veləpə]	vývojář elektronické komerce
<b>estimates</b> ['estɪməts]	kalkulace, předběžné odhady
<b>Exchange/Microsoft Exchange Server</b> [ˈmæɪkroʊsɒft ɪks'tʃeɪndʒ 'sɜ:və]	softwarový produkt, který slouží k výměně emailových zpráv a sdílení zdrojů
<b>handle</b> ['hænd(ə)l]	řít, ovládat, manipulovat
<b>hardware engineer/architect</b> [ˈhɑ:dwɛə endʒɪ'nɪə/'ɑ:kɪtekt]	vývojový inženýr hardware
<b>help desk/helpdesk technician</b> [ˈhelpdesk tek'nɪʃ(ə)n]	technik helpdesku (technické podpory v oblasti IT)
<b>identify</b> [aɪ'dentɪfaɪ]	(roz)poznat, identifikovat
<b>install</b> [ɪn'stɔ:l]	(na)instalovat
<b>IT manager</b> [aɪ'tɪ: 'mænɪdʒə]	IT manažer/ředitel
<b>locate</b> [lə(ʊ)'keɪt]	najít, lokalizovat, vypátrat
<b>maintenance</b> ['meɪnt(ə)nəns]	údržba
<b>monitoring</b> ['mɒnɪtərɪŋ]	monitoring, monitorování, sledování
<b>network administrator/engineer/support person</b> [ˈnetwɜ:k əd'mɪnɪstreɪtə/endʒɪ'nɪə/sə'pɔ:t 'pɜ:s(ə)n]	správce sítě
<b>NT/Windows NT (New Technology)</b> [en'tɪ: 'wɪndəʊz; nju: tek'nɒlədʒɪ]	víceuživatelský a víceprocesorový operační systém firmy Microsoft
<b>offset lithography</b> ['ɒfset lɪ'θɒgrəfi]	ofsetový tisk
<b>Oracle</b> ['bræk(ə)l]	databázový software (Oracle Corporation – společnost vyvíjející nástroje pro vývoj a správu databází)
<b>oversee</b> [əʊvə'si:]	dohlížet, kontrolovat
<b>package</b> ['pækɪdʒ]	balíček
<b>page layout</b> [peɪdʒ 'leɪaʊt]	grafické rozvržení tiskové nebo elektronické stránky
<b>project management</b> ['prɒdʒekt 'mænɪdʒm(ə)nt]	projektový management, řízení projektů
<b>relational database management system (RDBMS)</b> [rɪ'leɪʃ(ə)nəl 'deɪtəbeɪs mænɪdʒm(ə)nt 'sɪstəm]	systém správy databáze založený na relačním modelu

**research** ['ri:sɜ:tʃ]

**software engineer/designer**

[ˈsɒf(t)weə ɛndʒɪˈniə/ diˈzainə]

**solid grasp** ['sɒlɪd grɑ:sp]

**track record** [træk ˈrekɔ:d]

**specification** [spesɪfɪˈkeɪʃ(ə)n]

**Structured Query Language (SQL)**

[ˈstrʌktʃəd ˈkwɪəri ˈlæŋɡwɪdʒ; eskju:əl]

**Sybase** ['saɪbeɪs]

**system analyst** [ˈsɪstəm ˈæn(ə)lɪst]

**system administrator/sysadmin/**

**system support person**

[ˈsɪstəm ədˈmɪnɪstreɪtə/ sɪsˈædmin/

səˈpɔ:t ˈpɜ:s(ə)n]

**test** [test]

**VB (Visual Basic)** [viːˈbiː; ˈvɪʒ(j)uəl ˈbeɪsɪk]

**web developer/webmaster**

[web diˈveləpə/ ˈwebmɑ:stə]

výzkum, zkoumání; (pro)zkoumat

softwarový inženýr

spolehlivé porozumění

přehled dosažených pracovních výsledků

specifikace, upřesnění

standardizovaný strukturovaný dotazovací

jazyk používaný pro práci s daty v relačních

databázích

podnikový aplikační software

systémový analytik

systémový administrátor, správce systému

(o)testovat, (pře)zkoušet

programovací jazyk umožňující rychlý vývoj

aplikací s grafickým uživatelským rozhraním,

přístup k databázím a práci se vzdálenými

objekty

vývojář/správce webových stránek

## Unit 3

### PERSONAL COMPUTER AND TYPES OF COMPUTERS

“Never trust a computer you can’t throw out a window.”

Steve Wozniak

A small blue square icon with the text 'LEAD-IN' in white, set against a background of binary code (0s and 1s).

#### LEAD-IN

#### Activity

- 1 Discuss the quote.
- 2 What kinds of computers are typical for personal use? Why?
- 3 What kinds of computers are typical for business use? Why?
- 4 What kind of computer(s) do you have?
- 5 What are the main components and technical specifications of your computer system?

A small blue square icon with the text 'TOPIC 1' in white, set against a background of binary code (0s and 1s).

#### TOPIC 1

#### Text

#### *Personal Computer*

The machine you think of as a ‘computer’ is more precisely called a ‘**general-purpose** digital electronic computer’. It is ..... (1) because it can be programmed to perform a wide variety of applications (making it different from a **special-purpose** computer designed to perform only one function). ..... (2) means that computer handles all data internally in the form of numbers (all of the numeric data, all of the text data, and even sounds and pictures are stored as numbers). The word digit originally meant ‘finger’ or ‘toe’ and since people started counting on their fingers, the word digit also came to be applied to numbers.

A computer is an electronic machine that performs four functions: it ..... (3) (getting information into the machine); it ..... (4) (holding the information before and after processing); it ..... (5) (performing prescribed mathematical and logical operations on the information at high speed); and it ..... (6) (sending the results out to the user via some display method).

A computer consists of **hardware** and **software**. The **CPU (central processing unit)**, **main memory** and **peripherals** constitute what is known as hardware – the physical parts. The **Control Unit (CU)**, the **Arithmetic Logic Unit (ALU)** and the **registers** are the basic parts of the CPU. The **RAM** and the **ROM** make up the main memory. **Peripherals** are classified into three types: storage, input and output devices.

**Storage devices** are made up of **hard disk drives**, **optical disc drives** and **flash drives**. They provide a permanent storage of both data and programs. **Input devices** are peripherals used to provide data and control signals to an information processing system such as a computer. Examples of input devices include **keyboards**, **pointing devices** (e.g. **mouse**, **touchpad** etc.), **scanners**, **digital cameras** and **webcams**. **Output devices** are peripherals used to communicate the results of data processing carried out by a computer which converts the electronically generated information into **human-readable format**. Examples of output devices are the **monitor** and the **printer**.

Software can be divided into two categories: (i) **system software**, which includes **operating systems**, **programming tools**, **utility and security software**, and (ii) **application software**, which comprises programs that let you do specific tasks (e.g. graphics, email).

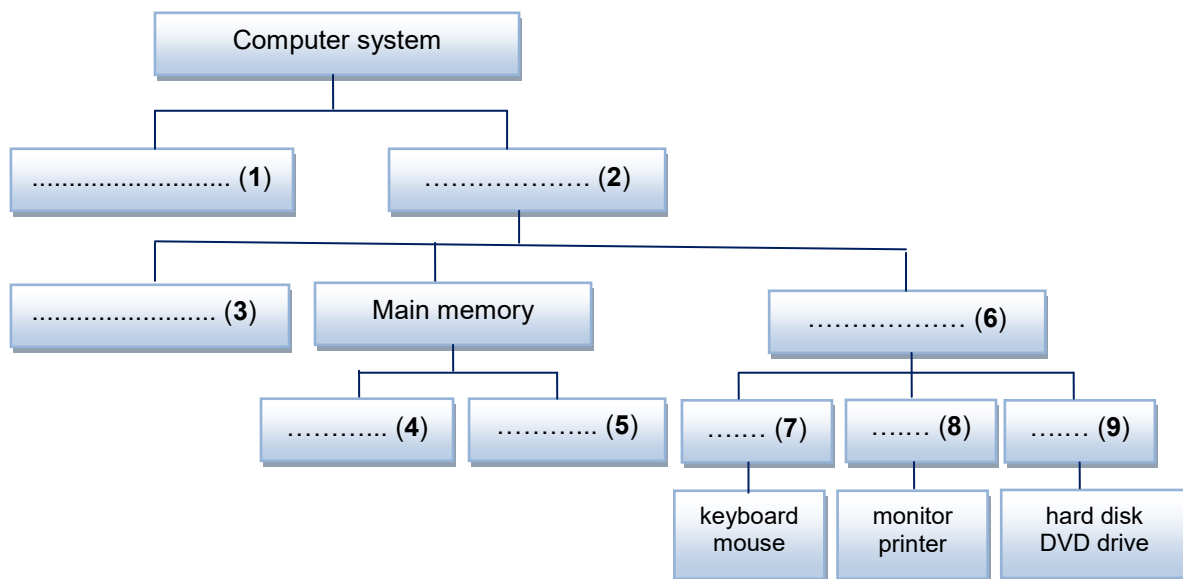


### Vocabulary Practice 1

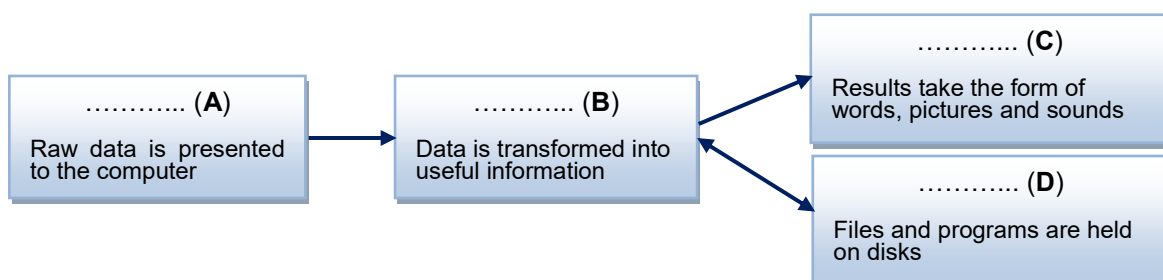
**Task 1: Fill in the following expressions into the gaps 1 – 6.**

- A stores data
- B inputs data
- C digital
- D outputs data
- E processes data
- F general-purpose

**Task 2: Label the diagram with the correct terms.**



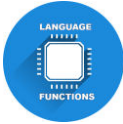
**Task 3: Complete the diagram and the sentences.**



- 1 Computer ..... is the visible or audible result of data processing – information that can be read, printed or heard by the user.
- 2 The CPU will process data as instructed by the programs you're running. .... includes functions like calculating, sorting, editing, drawing and searching.
- 3 DVDs are expected to replace CDs as ..... devices.
- 4 As a scanner, the Sigma-100 can be used to ..... photographs as well as documents into the computer.

**Task 4: Read these quotations and say which computer essential they refer to.**

- 1 ..... Accelerate your digital lifestyle by choosing a Pentium at 4.3 GHz.
- 2 ..... Right-click to display a context-sensitive menu.
- 3 ..... You will see vivid, detailed images on a 17" display.
- 4 ..... This will produce high-quality output, with sharp text and impressive graphics.
- 5 ..... Use it when you want to let the grandparents watch the new baby sleeping.
- 6 ..... Press any key to continue.



### Language Functions: Classifying

'Classifying' means putting things into groups or classes. We can classify types of computers, functions and parts of a computer, classes of software, etc.

#### Classifying from general to specific:

... are classified into X categories  
 ... can be divided into X types/classes  
 There are X categories/types/classes of ...  
 ... include  
 ... consists of  
 ... is made up of  
 ... is composed of  
 ... comprise

e.g. *Storage media are classified into three categories: magnetic, optical and flash memory.*

#### Classifying from specific to general:

... is a type of  
 ... are parts/components of  
 ... constitute  
 ... make up

e.g. *OCR is a type of software which recognizes characters.*

**Read the text *The Personal Computer* again.**

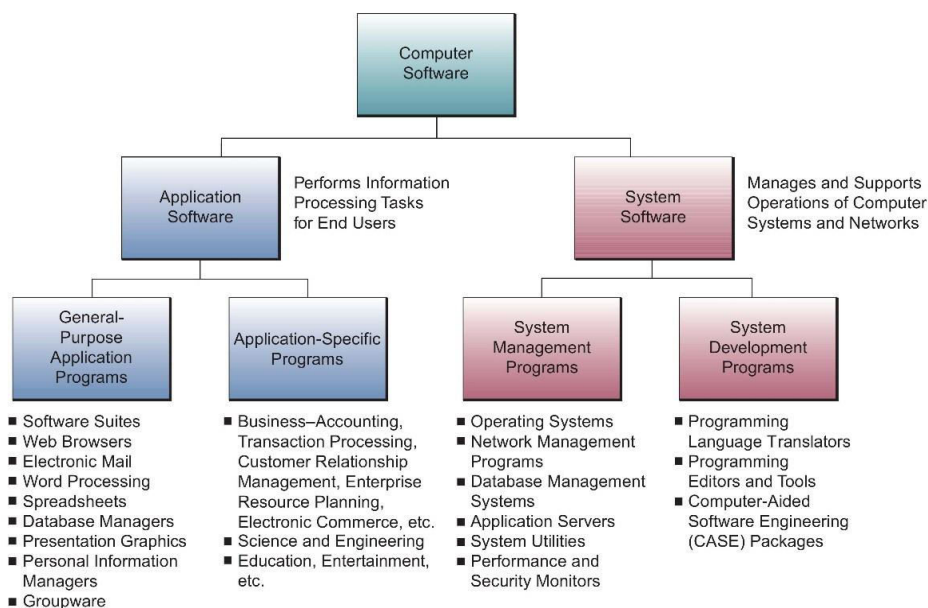
**Task 1: Underline the expressions classifying from general to specific.**

**Task 2: Underline the expressions classifying from specific to general.**



### Speaking 1

**Describe a diagram classifying the software components of your computer.**



### *Types of Computers from a Historical Point of View*

A variety of computers have been designed for different purposes, with different capabilities and costs.

#### **Microcomputers**

A microcomputer is a computer that has a **microprocessor chip** (or multiple microprocessors) as its **central processing unit (CPU)**. They are often called **personal computers** because they are designed to be used by one person at a time. Personal computers are typically used at home, at school, or at a business. Popular uses for microcomputers include word processing, surfing the Web, sending and receiving e-mail, spreadsheet calculations, database management, editing photographs, creating graphics, and playing music or games.

Personal computers come in two major varieties, desktop computers and laptop computers:

**Desktop computers** are large and not meant to be portable. They usually sit in one place on a desk or table and are plugged into a wall outlet for power. The case of the computer holds the motherboard, drives, power supply, and expansion cards. This case may lay flat horizontally on the desk, or it may be a tower that stands vertically (on the desk or under it). The computer usually has a **separate monitor** (either a CRT or LCD) although some designs have a display built into the case. A **separate keyboard** and **mouse** allow the user to input data and commands.

**Notebook or laptop computers** are small and **lightweight** enough to be carried around with the user. They run on battery power, but can also be plugged into a wall outlet. They typically have a **built-in LCD display** that **folds down** to protect the display when the computer is carried around. They also feature a **built-in keyboard** and some kind of **built-in pointing device** (such as a **touchpad**).

While some laptops are less powerful than typical desktop machines, this is not true in all cases. Laptops, however, cost more than desktop units of equivalent processing power because the smaller components needed to build laptops are more expensive.

There were also less-powerful versions of notebook computers called **subnotebooks**, and **netbooks** that are used mainly to access the Internet, but now we have tablets and smartphones.

#### **Tablet Computers and Smartphones**

A **tablet computer** (often just called a **tablet**) generally has the format of a **handheld slate** consisting of a large **LCD touchscreen** used for both input and output. Tablets typically include a Wi-Fi and/or cellular network data connection to access the Internet. Tablets run applications specifically designed for these touchscreen devices, but they also can do some activities such as **word processing** or **spreadsheets**, although the lack of a physical keyboard usually makes such activities more cumbersome on tablets than they are on desktop or notebook machines. Examples of tablet computers include the **Apple iPad** and machines from various manufacturers that run the **Android OS**.

**Smartphones** are **high-end** mobile phones that typically run operating systems similar to the tablet computers discussed above, so they often share the same applications as tablets. They combine the features of a mobile phone, PDA, camera, music player, GPS device, etc. Many smartphones use a touchscreen for input, but some include physical keyboards.

#### **Personal Digital Assistants and Palmtop Computers**

A **personal digital assistant (PDA)** was a **handheld microcomputer** that traded off power for small size and greater **portability**. They typically used a **touch-sensitive LCD screen** for both output and input (the user drew characters and pressed icons on the screen with a **stylus**). PDAs communicated with desktop computers and with each other either by cable connection, infrared (IR) beam, or radio waves. PDAs were normally used to keep track of appointment calendars, to-do lists, address books, and for taking notes.

A **palmtop or handheld PC** was a very small microcomputer that also sacrificed power for small size and portability. These devices typically looked more like a tiny laptop than a PDA, with a **flip-up screen** and **small keyboard**. They used Windows Embedded Compact or a similar operating system for handheld devices.

Some PDAs and palmtops contained wireless networking or cell phone devices so that users could check e-mail or surf the Web on the move.

#### **Workstations/Servers**

A workstation<sup>1</sup> is a powerful, high-end microcomputer. They contain one or more microprocessor CPUs. They may be used by a single-user for applications requiring more power than a typical PC (rendering complex graphics, or performing intensive scientific calculations). Alternately, workstation-class microcomputers may be used as server computers that supply files to client computers over a network or the Internet. This class of

<sup>1</sup> The term 'workstation' also has an alternate meaning. In networking, any client computer connected to the network that accesses server resources may be called a workstation. Such a network client workstation could be a personal computer or even a 'workstation' as defined at the top of this section.



powerful microcomputers can also be used to handle the processing for many users simultaneously who are connected via **terminals**; in this respect, **high-end workstations** have essentially supplanted the role of minicomputers.

There are classes of computers that are **not microcomputers**. These include supercomputers, mainframes, and minicomputers.

### Minicomputers

A minicomputer is a **multi-user** computer that is less powerful than a mainframe. This class of computers became available in the 1960's when large scale integrated circuits made it possible to build a computer much cheaper than the then existing mainframes (minicomputers cost around \$100,000 instead of the \$1,000,000 cost of a mainframe). An example of a minicomputer is a PDP-11, model 40, an early member of DEC's 16-bit minicomputer family.

### Mainframes

A mainframe computer is a large, powerful computer that handles the processing for many users **simultaneously** (up to several hundred users). The name mainframe originated after minicomputers appeared in the 1960's to distinguish the larger systems from the smaller minicomputers.

Users connect to the mainframe using terminals and submit their tasks for processing by the mainframe. A **terminal** is a device that has a screen and keyboard for input and output, but it does not do its own processing (they are also called **dumb terminals**<sup>2</sup> since they cannot process data on their own). The processing power of the mainframe is time-shared between all of the users. A personal computer may be used to '**emulate**' a dumb terminal to connect to a mainframe or minicomputer; you run a program on the PC that pretends to be a dumb terminal.

Mainframes typically cost several hundred thousand dollars. They are used in situations where a company wants the processing power and information storage in a centralized location. Mainframes are also now being used as high-capacity server computers for networks with many client workstations or for serving files over the Internet.

### Supercomputers

A supercomputer is a **mainframe computer** that has been optimized for speed and processing power. The most famous series of supercomputers were designed by the company founded and named after Seymour Cray. The Cray-1 was built in the 1976 and installed at Los Alamos National Laboratory. Supercomputers are used for extremely **calculation-intensive tasks**, **simulating nuclear bomb detonations**, **aerodynamic flows**, and **global weather patterns**. A supercomputer typically costs several million dollars. Recently, some supercomputers have been constructed by connecting together large numbers of individual processing units (in some cases, these processing units are standard microcomputer hardware).



## Vocabulary Practice 2

Task 1: Name the types of computers in the pictures A – H.



A .....



B .....



C .....



D .....



E .....



F .....



G .....



H .....

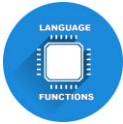
<sup>2</sup> Dumb terminals are not considered to be network workstations (client workstations on the network are capable of running programs independently of the server, but a terminal is not capable of independent processing).

**Task 2: Match the possible users 1 – 7 below to each type of the computer A - H (sometimes more than one user is possible).**

- 1 ..... travelling salesperson giving marketing presentations
- 2 ..... large company processing payroll data
- 3 ..... businessman keeping track of appointments while travelling
- 4 ..... large scientific organisation processing work on nuclear research
- 5 ..... marketing research person collecting data from the general public
- 6 ..... graphic designer
- 7 ..... elementary school pupil who needs to carry a computer to lessons

**Task 3: Fill in the type of computer according to the description.**

- 1 ..... – a computer with a large size, amount of storage, processing power and high level of reliability, which is primarily used by large organizations requiring high volumes of data processing
- 2 ..... – a small and extremely lightweight mobile computing device (a mini laptop) with a small keyboard, but usually not CD/DVD drive, which has little processing power and storage space
- 3 ..... – a very small portable device that functions as a personal information manager
- 4 ..... – a large computer used for extremely calculation-intensive tasks such as simulating nuclear bomb detonations, aerodynamic flows, and global weather patterns



### Language Functions: Qualifying and Comparing

Comparing qualities and finding differences or similarities are common functions in ICT. When you want to buy a new device, or you read articles about the latest computer or mobile phone, or need to make a decision about the most suitable ICT system for you, you may have to use and understand expressions like the ones in the following examples:

#### **Qualifying adjectives**

You can buy a **low-end**, **mid-range** or **high-end** computer.

To run **highly demanding** applications you'll need a **fast** processor, **plentiful** RAM and a **spacious** disk.

Peripherals and software must be **compatible** with the new computer.

The system should be **expandable**, i.e. it should allow you to add on new peripherals.

Most standard computers offer **integrated**, built-in, sound cards.

You can also buy **separate** external speakers.

Make sure the system you buy is **reliable**, i.e. it's not likely to go wrong.

#### **Comparison**

A flat-panel monitor is **slimmer than** a CRT.

A PDA is **more manageable than** a laptop.

Laser printers offer **higher quality than** ink-jet models but ink-jet printers cost less money.

You can type **more easily** with a separate keyboard.

Free programs are **as good as** proprietary ones.

A broadband line is **the best option** to download multimedia.

This laptop is **by far the cheapest** of the three.

**The more** memory you have, **the faster** you'll be able to load your files.

#### **Contrast**

**In contrast**, this laptop is very fast and has a large screen.

**While** a dial-up connection is usually cheap, it is very slow.

A scanner can be useful **but** it isn't an essential peripheral.

**Unlike** CRT monitors, TFT ones are light.



### Similarity

**Similarly/Likewise**, it has a high capacity hard disk.

**Both** brand name **and** clone computers have similar features.

Online shops **as well as** local retailers offer good value hardware.

### Task 1: Complete these sentences with qualifying adjectives from above.

I wanted a powerful computer to work with ..... (1) multimedia applications, so I decided to buy a ..... (2) computer with a ..... (3) microprocessor, good graphics and sound cards and ..... (4) RAM.

I didn't know whether to buy a new or a used desktop. I just need it to write documents, but I was advised to buy as much as I could afford. Finally, I bought a ..... (5) but new desktop with 256 MB of memory, enough for my needs.

I didn't want my new computer to become outdated too quickly. That's why I made sure it would be easily ..... (6) with enough space for add-in cards.

Although many computers on the market have hard disk drives with a capacity of 80 to 160 GB, many home users want more ..... (7) drives because of their need for additional storage.

This 'Wireless Enterprise Communicator' is the first realistic alternative to carrying around ..... (8) devices. It offers an ..... (9) mobile phone, GPS, barcode reader and hand-held computer.

Before you subscribe to a music subscription service, make sure you have a ..... (10) player that supports the music formats available.

Systems and devices are becoming more and more ..... (11) because reliability means manufacturers save money by having fewer tech support calls.

### Task 2: Complete the text about the advantages and disadvantages of laptops and desktop with words from above.

..... (1) desktops and laptops have ..... (2) components but they are built in a different way.

..... (3) desktops have ..... (4) space to expand the system, they are less manageable ..... (5) laptops. On the other hand, laptops are fully portable: they are lighter and ..... (6) and so more practical if you travel a lot and need to take your computer with you.

..... (7) desktops, the screen, keyboard and mouse of a laptop are integrated. However, most laptop owners prefer to have a separate mouse ..... (8) the touchpad. Similarly, as the keyboard is miniaturized, some people buy an external one for use at home. You can type ..... (9) easily if you use a full-size keyboard.

A laptop's CPU is slower ..... (10) access to data may be quicker, so its performance can be ..... (11) good as a desktop's.

It's hard to say what the ..... (12) option is. But remember: in the computer world, ..... (13) smaller the device, the more money it costs.



### Speaking 2

**Work in pairs and decide what to buy: a tablet or a laptop. Both devices have advantages and disadvantages. Compare these two devices in terms of:**

size    portability    weight    price    efficiency    speed    versatility



### Listening

Read the descriptions from the computer shop website. Listen to four people talking about their computer needs and choose the most suitable computer for each person. Give reasons for your choice.

Speaker 1: .....

Speaker 2: .....

Speaker 3: .....

Speaker 4: .....

#### A Sun workstation

Two AMD Opteron processors at 3.0 GHz  
4 GB RAM; 32 GB maximum  
1 terabyte hard drive and dual DVD drive  
19" Sun TFT flat-panel LCD  
Supports several graphics formats  
Allows you to handle your toughest technical, scientific, and business-critical applications  
Supports Solaris, Windows and Linux  
£3,249

#### B Gateway C-120 convertible notebook

Intel Core 2 Duo ULV processor at 1.06 GHz  
12.1" WXGA TFT touch screen  
Gateway Executive stylus pen  
1024 MB DDR2 SDRAM  
80 GB serial ATA hard drive  
DVD-ROM drive (optical DVD burner)  
Integrated modem and Bluetooth  
Windows Vista Home Premium  
Thin and lightweight (1.17", 2.4 kg)  
£805

#### C Sony Vaio AR laptop (VGN-AR51E)

Intel Core 2 Duo Processor at 2 GHz  
2 GB DDR2 SDRAM  
200 GB hard drive DVD+/-RW optical drive  
17" WXGA high-definition LCD screen  
Memory Stick slot  
Three USB 2.0 ports  
Integrated wireless LAN  
Built-in 'Motion Eye' digital camera  
Lithium-ion battery  
Windows Vista Ultimate  
£899

#### D Dell Inspiron 531 desktop PC

AMD Athlon 64 X2 Dual Core Processor  
3072 MB DDR2 SDRAM  
Dell 22" Wide Flat Panel  
256 MB NVIDIA GeForce 8600 GT video card  
1.0 TB Hard Drive  
16x DVD+/- RW Drive  
Integrated 7.1 Channel High Definition Audio  
Windows Vista Home Premium  
Optional features: Windows Media Center, integrated TV Tuner, and a Blu-ray disc drive for high-definition content  
From £849



### Speaking 3

Work in pairs, A and B. Choose one device from the list provided and describe its configuration and use. Your partner must find out what type of the device it is.

#### Student A

tablet computer  
laptop computer  
PDA  
minicomputer

#### Student B

smartphone  
desktop computer  
workstation  
mainframe

## Unit 3 WORDLIST

<b>accelerate</b> [æk'seləreɪt]	zrychlit, urychlit
<b>aerodynamic flow</b> [eəəʊdaɪ'næmɪk fləʊ]	aerodynamický tok
<b>application software</b> [æplɪ'keɪʃ(ə)n 'sɒf(t)weə]	aplikační software
<b>Arithmetic Logic Unit (ALU)</b>	aritmeticko-logická jednotka
[ə'riθmətɪk 'lɒdʒɪk 'ju:nɪt; eɪəl'ju:]	
<b>battery power</b> ['bæt(ə)ri 'paʊə]	bateriový, napájený baterií
<b>built-in</b> [bɪlt'ɪn]	vestavěný
<b>calculation-intensive task</b>	početně náročné úkoly
[kælkju'leɪʃ(ə)n ɪn'tensɪv tɑ:sk]	
<b>case</b> [keɪs]	počítačová skříň
<b>cathode-ray tube (CRT)</b>	katodová obrazovka/(Braunova) trubice
['kæθəʊd reɪ tju:b; si:ɑ:'ti:]	
<b>character</b> ['kærəktə]	znak, značka, symbol
<b>classifying</b> ['klæsɪfaɪn]	třídění, rozdělování do skupin
<b>client computer</b> ['klaɪənt kəm'pjʊ:tə]	počítač, který přistupuje ke vzdálené službě na jiném počítačovém systému (serveru)
	příkaz, instrukce
<b>command</b> [kə'mɑ:nd]	řadič
<b>Control Unit (CU)</b> [kən'trəʊl 'ju:nɪt; si:ju:]	neskladný, těžko ovladatelný
<b>cumbersome</b> ['kʌmbəs(ə)m]	správa databáze
<b>database management</b>	
['deɪtəbeɪs 'mænɪdʒm(ə)nt]	
<b>desktop</b> ['desktp]	desktop (tzn. počítačová skříň je naležato)
<b>desktop computer</b> ['desktp kəm'pjʊ:tə]	stolní počítač
<b>digit</b> ['dɪdʒɪt]	číslice, cifra
<b>digital camera</b> ['dɪdʒɪt(ə)l 'kæm(ə)rə]	digitální fotoaparát
<b>display method</b> [dɪ'spleɪ 'meθəd]	zobrazovací metoda
<b>drive</b> [draɪv]	mechanika
<b>dumb terminal</b> [dʌm 'tɜ:mɪn(ə)l]	terminál, který závisí na hostitelském počítači
<b>editing</b> ['edɪtɪŋ]	korektura, úprava
<b>efficiency</b> [ɪ'fɪʃ(ə)nsɪ]	účinnost, efektivita
<b>emulate</b> ['emjuleɪt]	emulovat; napodobovat, imitovat
<b>expandable</b> [ɪk'spændəb(ə)l]	rozšiřitelný
<b>expansion card</b> [ɪk'spænj(ə)n kɑ:d]	rozšiřující karta
<b>file</b> [faɪl]	soubor
<b>flash drive</b> [flæʃ draɪv]	flashová paměť, flash disk
<b>flip-up screen</b> [flɪpʌp skri:n]	rozevírací obrazovka (u věček)
<b>fold down</b> [fəʊld daʊn]	složit se, složený
<b>general-purpose</b> ['dʒen(ə)r(ə)l 'pɜ:pəs]	univerzální
<b>global positioning system (GPS)</b>	globální polohovací systém
['gləʊb(ə)l pə'zɪʃ(ə)nɪŋ 'sɪstəm; dʒi:'pi:'es]	
<b>global weather patterns</b>	globální meteorologické modely
['gləʊb(ə)l 'weðə 'pat(ə)nz]	
<b>handheld slate</b> ['hændheld sleɪt]	lehké, malé a přenosné elektronické zařízení s vlastním napájením ve tvaru tabulky
<b>hard disk drive</b> [hɑ:d disk draɪv]	pevný disk, jednotka pevného disku
<b>high-end</b> [haɪ'end]	špičkový, pro náročné
<b>highly demanding</b> ['haɪli dɪ'mɑ:ndɪŋ]	vysoce náročný
<b>human-readable form</b> ['hju:mən'ri:dəb(ə)l fɔ:m]	člověkem čitelný formát
<b>icon</b> ['aɪk(ə)n]	ikona
<b>infrared (IR) beam</b> [ɪnfə'red (aɪ ɑ:) bi:m]	infračervený paprsek
<b>input device</b> ['ɪnpʊt dɪ'vaɪs]	vstupní zařízení
<b>integrated</b> ['ɪntɪgreɪtɪd]	integrováný, jednotný
<b>keyboard</b> ['ki:bɔ:d]	klávesnice
<b>large scale</b> [lɑ:dʒ skeɪl]	rozsáhlých/velkých rozměrů, ve velkém měřítku
<b>Liquid Crystal Display (LCD)</b>	displej na bázi tekutých krystalů
['lɪkwɪd krɪst(ə)l dɪ'spleɪ; elsɪ:'di:]	
<b>lightweight</b> ['laɪtweɪt]	lehký, odlehčený
<b>low-end</b> ['ləʊend]	nižší třídy, pro nenáročné
<b>main memory</b> [meɪn 'mem(ə)rɪ]	vnitřní paměť
<b>manageable</b> ['mænɪdʒəb(ə)l]	ovladatelný

<b>microcomputer</b> ['maɪkrə(ʊ)kəmˈpjʊ:tə]	mikropočítač
<b>mid-range</b> ['mɪdreɪndʒ]	střední třídy/cenové kategorie
<b>minicomputer</b> ['mɪnɪkəmˈpjʊ:tə]	minipočítač
<b>mouse (pl. mice/mouses)</b> [maʊs; maɪs/maʊsɪz]	myš
<b>multi-user</b> [mʌltɪˈjuːzə]	víceuživatelský
<b>netbook</b> ['netbʊk]	netbook (počítač menší než notebook, který se zaměřuje na mobilitu, upřednostňuje nízkou spotřebu, cenu i váhu)
<b>notebook/laptop (computer)</b> ['nəʊtbʊk/ 'læptɒp]	notebook/laptop (přenosný počítač)
<b>operating system (OS)</b> ['ɒpəreɪtɪŋ 'sɪstəm; əʊəs]	operační systém (OS)
<b>optical disc drive</b> ['ɒptɪk(ə)l dɪsk draɪv]	optická mechanika
<b>optimized</b> ['ɒptɪmaɪzɪd]	optimalizovaný
<b>output device</b> ['aʊtpʊt dɪˈvaɪs]	výstupní zařízení
<b>palmtop (computer)</b> ['pɑːmtɒp]	palmtop (počítač do ruky)
<b>payroll data</b> ['peɪrɒl dɪˈteɪtə]	data na výplatní pásce
<b>peripheral</b> [pəˈrɪf(ə)r(ə)l]	periferie
<b>personal digital assistant (PDA)</b>	osobní digitální pomocník (malý kapesní počítač)
['pɜːs(ə)n(ə)l 'dɪdʒɪt(ə)l əˈsɪst(ə)nt; piːdiːˈeɪ]	
<b>plentiful</b> ['plentɪf(ə)l]	početný, hojný
<b>plugged into</b> [plʌɡt 'ɪntu]	zapojený do
<b>pointing device</b> ['pɔɪntɪŋ dɪˈvaɪs]	ukazovací/polohovací zařízení
<b>portability</b> [pɔːtəˈbɪlɪtɪ]	přenosnost
<b>power supply</b> ['paʊə səˈplaɪ]	napájecí zdroj elektr. energie
<b>present</b> [prɪˈzent]	předat; předložit
<b>programming tool</b> ['prəʊɡræmɪŋ tuːl]	programovací nástroj
<b>qualifying</b> ['kwɒlɪfaɪŋ]	posuzování
<b>register</b> ['redʒɪstə]	registr procesoru
<b>render</b> ['rendə]	poskytnout, udělat
<b>scanner</b> ['skænə]	skener
<b>separate keyboard</b> ['sep(ə)rət 'kiːboːd]	samostatná/oddělená klávesnice
<b>separate monitor</b> ['sep(ə)rət 'mɒnɪtə]	samostatný/oddělený monitor
<b>server</b> ['sɜːvə]	server
<b>simultaneously</b> [sɪmlɪˈteɪniəsli]	současně, souběžně, zároveň
<b>smartphone</b> ['smɑːtfəʊn]	smartphone, chytrý telefon
<b>spacious</b> ['speɪʃəs]	prostorový
<b>special-purpose computer</b> ['speʃ(ə)l 'pɜːpəs]	jednouúčelový počítač
<b>spreadsheet</b> ['spredʃiːt]	tabulkový procesor
<b>spreadsheet calculation</b> ['spredʃiːt kɒlkjuːleɪʃ(ə)n]	výpočty pomocí tabulkového procesoru
<b>storage device</b> ['stɔːrɪdʒ dɪˈvaɪs]	paměťové zařízení
<b>stylus</b> ['staɪləs]	dotykové pero
<b>subnotebook</b> [sʌbˈnəʊtbʊk]	subnotebook (předchůdce tabletu; počítač menší než notebook, který má obvykle mechaniku na výměnná média externí)
<b>supercomputer</b> ['suːpəkəmˈpjʊ:tə]	superpočítač (velmi výkonný počítač; spojení mnoha počítačů dohromady)
<b>supply</b> [səˈplaɪ]	dodat, poskytnout, zabezpečovat
<b>system software</b> ['sɪstəm 'sɒf(t)weə]	systémový software
<b>tablet (computer)</b> ['tæblɪt]	tablet
<b>to-do list</b> [təˈduː lɪst]	seznam úkolů
<b>touchpad</b> ['tʌtʃpæd]	touchpad (dotykové polohovací zařízení. jehož účelem je pohybovat kurzorem po obrazovce podle pohybů uživateleova prstu)
<b>touchscreen</b> ['tʌtʃskriːn]	dotykový displej/dotyková obrazovka
<b>touch-sensitive</b> [tʌtʃ 'sensɪtɪv]	citlivý na dotek
<b>tower</b> ['taʊə]	věž (tzn. počítačová skříň je nastojato)
<b>track of appointments</b> [træk ɒv əˈpɔɪntm(ə)nts]	záznam, sled schůzek
<b>utility software</b> [juːˈtɪlɪtɪ 'sɒf(t)weə]	užitná, pomocný program
<b>versatile</b> ['vɜːsaɪl]	univerzální, mnohoúčelový; všestranný
<b>wall outlet</b> [wɔːl 'aʊtlet]	zásuvka ve zdi
<b>webcam</b> ['webkæm]	webová kamera
<b>word processing</b> [wɜːd prəˈsesɪŋ]	zpracování textu
<b>workstation</b> ['wɜːkstetʃ(ə)n]	pracovní stanice (počítač s vysokým výkonem optimalizovaný pro náročnou grafiku a vědecké aplikace)

## Unit 4

### MOTHERBOARD

“There are only 10 types of people in the world: those that understand binary and those that don’t.”

Anonymous

#### LEAD-IN

#### Activity

- 1 Discuss the quote.
- 2 How would you define the motherboard?
- 3 What are the basic components of the motherboard?
- 4 What is the main function of a microprocessor?
- 5 What unit of frequency is used to measure processor speed?

#### TOPIC

#### Text

The motherboard (also called the main circuit board, main logic board, mainboard, or systemboard) is the main **printed circuit board (PCB)** of the computer. It is a thin plate that holds microchips, memory, connectors for the hard drive and optical drives, expansion cards to control the video and audio, connections to the computer's ports (such as USB ports), and with copper circuitry traces that connect the components together. The motherboard connects directly or indirectly to every part of the computer.

..... (1) This unit is a two-inch ceramic square with a silicon microprocessor chip about the size of a thumbnail built into the motherboard's **CPU socket/slot**, which is covered by the **heat sink**, an object that absorbs heat from the CPU. The CPU executes program instructions and supervises the computer's overall operation. It consists of three main parts:

- the **Control Unit (CU)**, which examines the instructions in the user's program, interprets each instruction and causes the circuits and the rest of the components - disk drives, monitor, etc. - to be activated to execute the functions specified;
- the **Arithmetic Logic Unit (ALU)**, which performs mathematical calculations (+, -, etc.) and logical operations (and, or, etc.);
- the **registers**, which are high-speed units of memory used to store and control information. .... (2) Another is the **Instruction Register (IR)** which holds the instruction that is currently being executed.

One area where microprocessors differ is in the amount of data - the number of bits - they can work with at a time. There are 8, 16, 32 and 64-bit processors. The computer's internal architecture is evolving so quickly that the new 64-bit processors are able to address four billion times more 30 information than a 32-bit system.

The programs and data which pass through the central processor must be loaded into the **main memory** (also called the **internal memory**) in order to be processed. .... (3)

The **RAM (Random Access Memory)** is the **main memory** space of the computer and the system's **short-term memory**. The RAM is **volatile (temporary)**, which means that data disappear when the computer is turned off. Whenever a computer performs calculations, it temporarily stores the data in the RAM until it is needed. .... (4)

When a file is saved, the data is written to the **hard drive**, which acts as **long-term storage**. The RAM is measured in **megabytes (MB)** or **gigabytes (GB)**. The more RAM you have, the more things your computer can do at the same time. If there is not have enough RAM, the users may notice that the computer is sluggish when they have several programs open. Because of this, many people add extra RAM to their computers to improve performance.

**Single in-line memory module (SIM)** is a small circuit board that can hold a group of memory chips. Typically, SIMMs hold up to eight (on Macintoshes) or nine (on PCs) RAM chips. The bus from a SIMM to the actual memory chips is 32 bits wide. A newer technology, called **dual in-line memory module (DIMM)**, provides a 64-bit bus.

The **ROM section (Read Only Memory)** is **non-volatile (permanent)** and contains instructions needed by the processor. The ROM does not need power to remember its contents, so this is where a computer stores the programs that are needed to start up (boot up) the computer system. .... (5) This initial program checks to see that everything is in order and looks for storage devices on which it can locate a copy of the **operating system (OS)**; it then loads the first part of the OS into RAM, then hands control over to that program to finish the boot process. The start-up instructions stored on ROM in a computer are part of

the **BIOS (Basic Input Output System)**, which also contains the low-level interface code needed to access the drives, keyboard, and produce simple display output.

The **cache** is a special high-speed buffer storage mechanism which stores copies of the data from frequently used main memory locations. Most CPUs have different independent caches, including instruction and data caches, where the data cache is usually organized as a hierarchy of more cache levels.

Most of today's computers have internal **expansion slots** that allow users to install accelerator cards, video cards, audio/sound cards, network interface cards and co-processors.

As the word implies, an **accelerator card** is a board that increases the processor speed. A **co-processor** is a silicon chip that performs precise tasks and mathematical operations at a very high speed.

**Network interface card/controller (NIC)** allows your computer to communicate over a network and access the Internet. It can either connect with an **Ethernet cable** or through a **wireless connection (Wi-Fi)**.  
..... (6)

**Bluetooth** is a technology for wireless communication over short distances. It is often used in computers to communicate with wireless keyboards, mice, and printers. It is often built into the motherboard or included in a wireless network card. For computers that do not have Bluetooth, a USB adapter, called a **dongle**, can be purchased.

The **video card** is responsible for what you see on the monitor. Most computers have a **graphics processing unit (GPU)** built into the motherboard instead of having a separate video card. Those who like playing graphics-intensive games can add a faster video card to one of the expansion slots to get better performance. The **sound/audio card** is responsible for what you hear in the speakers or headphones. Most motherboards have integrated sound, but you can upgrade to a dedicated sound card for higher-quality sound.

The power and performance of a computer is partly determined by the speed of its microprocessor. A **system clock** provides pulses at fixed intervals to measure and synchronize circuits and units.  
..... (7) For example, a CPU running at 50 MHz (50 million cycles per second) is likely to provide a very fast processing rate and will enable the computer to handle the most demanding applications.

### Task 1: Read the text and complete the missing sentences.

- A One of these registers is the **program counter (PC)** which keeps track of the next instruction to be performed in the main memory.
- B When the computer is first turned on, the program stored in the ROM is fed to the processor.
- C The **CPU** (also called the **processor**) is the brains of the computer where the actual processing data takes place.
- D Thus, when the user runs an application, the microprocessor looks for it on **secondary memory** devices (disks) and transfers a copy of the application into the RAM area
- E If the user is working on a document, spreadsheet, or other type of file, he or she will need to save it to avoid losing it.
- F The clock speed is measured in MHz (megahertz) and refers to the frequency at which pulses are emitted.
- G Many motherboards have built-in network connections, and a network card can also be added to an expansion slot.

### Task 2: Decide whether the statements are true (T) and false (F).

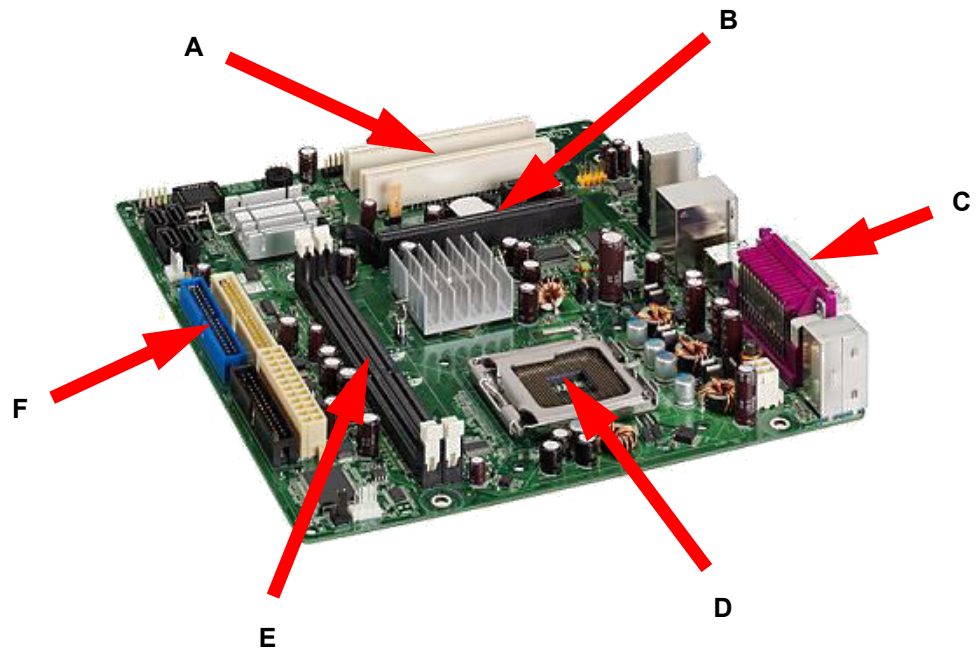
- 1 ..... The CPU directs and coordinates the activities taking place within the computer system.
- 2 ..... The Arithmetic Logic Unit performs calculations on the data.
- 3 ..... 32-bit processors can handle more information than 64-bit processors.
- 4 ..... The program counter holds the instruction that is being executed.
- 5 ..... A chip is an electronic device composed of silicon elements containing a set of integrated circuits.
- 6 ..... Information cannot be processed by the microprocessor if it is not loaded into the main memory.
- 7 ..... RAM and ROM are the components of the main memory.
- 8 ..... 'Permanent' storage of information is provided by RAM.
- 9 ..... BIOS is used to perform hardware initialization during the booting process.
- 10 ..... The speed of the microprocessor is measured in gigahertz or megahertz. One MHz is equivalent to one million cycles per second.
- 11 ..... A co-processor is used to supplement the functions of the primary processor.
- 12 ..... A system clock is a high-speed unit of memory used to store and control data.





### Vocabulary Practice

Task 1: Name the components 1 – 6 and arrange them onto the correct section A – F of the motherboard.



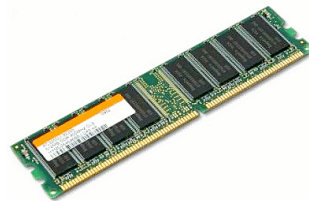
1 .....



4 .....



2 .....



5 .....



3 .....

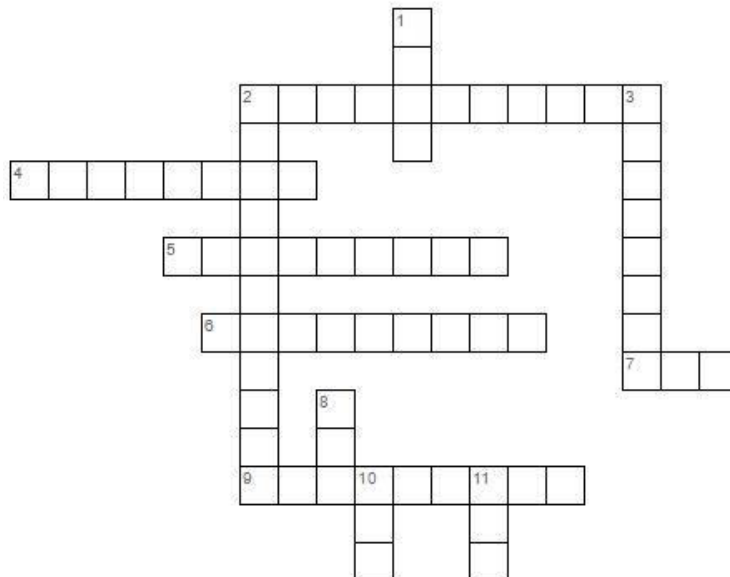


6 .....

**Task 2: Match the sentence beginnings (1 – 6) with the correct endings (A – F).**

- 1 The CPU processes data and .....
- 2 The Control Unit is the part of the CPU that .....
- 3 The arithmetic and logic unit is able to make .....
- 4 The registers are high-speed storage .....
- 5 Data contained in RAM is lost when .....
- 6 ROM memory can only be read .....

- A areas within the CPU.
- B you can't make changes to it.
- C controls the way instructions are executed.
- D the computer is turned off.
- E coordinates the other parts of the computer.
- F calculations: add, subtract, multiply and divide.

**Task 3: Complete the crossword puzzle with the motherboard components.****Across**

- 2 assists the CPU in performing certain types of operations
- 4 a component designed to lower the temperature of the PCU by dissipating heat into the surrounding air
- 5 a synonym for non-volatile
- 6 a wireless technology aimed at simplifying communications between devices and the Internet
- 7 retains its contents when power is turned off
- 9 a synonym for volatile

**Down**

- 1 the built-in software that determines what a computer can do without accessing programs from a disk
- 2 tells the computer's memory, arithmetic/logic unit and input and output devices how to respond to a program's instructions
- 3 a special, high-speed storage area within the CPU where all data must be represented before it can be processed
- 8 loses its contents when the power is turned off
- 10 a thin plate on which chips and other electronic components are placed
- 11 the part of a computer that performs all arithmetic computations





### Video Watching

Watch a video about the central processing unit and its components.

Task 1: Name the logic gates in the pictures A – F.



A .....



B .....



C .....



D .....



E .....



F .....

Task 2: Decide if the following statements 1 – 10 are true (T) or false (F).

- 1 ..... A small part of a semiconductor does not change into a full conductor unless the input wire is on.
- 2 ..... Logic gates are digital binary.
- 3 ..... Logic gates decode operations that need to be performed.
- 4 ..... A high output results only if all the inputs to the AND gate are high.
- 5 ..... A high output results if one or all inputs to the OR gate are low.
- 6 ..... A high output results if one or all inputs to the NOT gate are high.
- 7 ..... A high output results if all the inputs to the NOR gate are low.
- 8 ..... A selector is a particular combination of AND/OR and NOT gates where the output wires turn on in sequence each time the input wire to the selector turns on.
- 9 ..... The output wires turn on and off again very quickly in the clock.
- 10 ..... The Arithmetic Logic Unit is a combinational logic circuit whose outputs will change synchronously in response to input changes.



### Reading 1

#### ClearPic Troubleshooting Guide

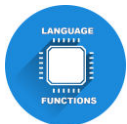
Certain memory requirements are necessary to install and run ClearPic. Check that the computer has at least 500 MB of RAM available. For optimal performance, make sure the computer's CPU has a bit size of at least 32 bits. It should run at a bus speed of 800 MHz. There are several options to fix problems with limited memory. One, is to limit the number of programs running at the same time. Another, is to increase the amount of RAM. First, determine whether your computer uses SIMMs or DIMMs. Make sure that the memory's bus speed matches that of the computer. Purchase the appropriate amount of RAM and attach it to the motherboard. You can also increase your computer's virtual memory. This temporarily stores data on a paging file on the computer's hard drive. To add virtual memory, click on the 'My Computer' icon. Under 'Properties', increase the maximum memory amount.

**Task 1: Read the troubleshooting guide and choose the correct answers.**

- 1 What is the passage mainly about?
  - A the main function of the CPU
  - B where to install the ClearPic file
  - C how to add or modify computer memory
  - D speeds of RAM attached to the motherboard
- 2 What should people do first when increasing available RAM?
  - A check to see if they need SIMMs or DIMMs
  - B increase the amount of virtual memory
  - C temporarily store their data on a paging file
  - D make sure the CPU runs at a speed of 800 MHz
- 3 What is NOT a way to fix a limited memory problem?
  - A increase the amount of virtual memory
  - B buy a new motherboard for the computer
  - C reduce the number of programs running
  - D increase the amount of available RAM

**Task 2: Complete the definitions with the words from the text.**

- 1 Data that doesn't fit in the RAM is stored in .....
- 2 ..... is a memory module that sends up to 64 bits of data to a CPU.
- 3 The computer has a ..... of 64 bits.
- 4 ..... is a unit of measurement that measures the speed of a CPU.
- 5 The purpose of ..... is to enlarge the address space, the set of addresses a program can utilize.
- 6 The smallest unit of computer data is a .....
- 7 ..... is a memory module that sends up to 32 bits of data to a CPU.
- 8 The computer's CPU has a ..... of 800 MHz.

**Language Functions: Describing Function**

An object is defined by describing its function and properties. There are several ways of describing function:

- **used to + infinitive:**  
ROM is **used to store** frequently used instructions and data to control the basic input and output operations of the computer.
- **used for + -ing:**  
ROM is **used for storing** frequently used instructions and data to control the basic input and output operations of the computer.
- **relative pronoun + verb:**  
ROM is non-volatile memory **which/that stores** frequently used instructions and data to control the basic input and output operations of the computer.
- **relative pronoun + is used to + infinitive:**  
ROM is non-volatile memory **which/that is used to store** frequently used instructions and data to control the basic input and output operations of the computer.

An object can also be defined using **which/that/where**:

- Cache memory is a small-sized type of volatile computer memory **that** provides high-speed data access to a processor and stores frequently used computer programs, applications and data.
- The CPU is the brains of the computer **where** the actual processing data takes place.



### Speaking 1

Work in pairs, A and B. Choose and describe functions of the components that the motherboard is made up of. Try to guess which component your partner is describing.

#### Student A

heat sink  
RAM  
accelerator card  
DIMM  
video card  
BIOS

#### Student B

sound card  
system clock  
SIMM  
ALU  
network card  
Bluetooth card



### Reading 2

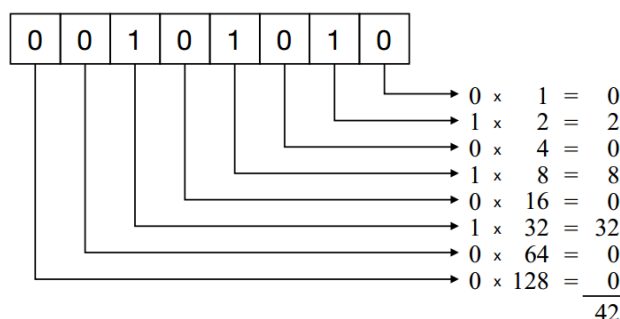
#### Units of Memory

##### Binary code and bits

Information is processed and stored in computers as electrical signals. A computer contains thousands of electronic circuits connected by switches that can only be in one of two possible states: ON (the current is flowing through the wire) or OFF (the current is not flowing through the wire). ..... (1) This is the only way a computer can 'understand' anything. Everything about computers is based upon this binary process. Each 1 or 0 is called a **binary digit**, or **bit** – the smallest unit of information on a machine.

##### Bytes and characters

1s and 0s are grouped into eight-digit codes that typically represent characters (letters, numbers and symbols). **Eight bits together are called a byte.** Thus, each **character** in a keyboard has its own arrangement of eight bits. For example, 01000001 for the letter A, 01000010 for B and 01000011 for C. .... (2):



Examples of conversions:

Symbol	..... (3)	Binary
A	65	01000001
B	66	01000010
C	67	01000011
D	68	01000100

##### ASCII

**ASCII** (pronounced 'ask-key'), which stands for the **American Standard Code for Information Interchange**, ..... (4). ASCII uses 7-digit binary numbers to represent the letters of the alphabet, the numbers 0 to 9, various punctuation marks and symbols, and some special functions, such as the carriage return. **Seven digits in binary code imply that ASCII has room for 128 characters or symbols ( $2^7 = 128$ ), thus 128 possible code combinations can be made with seven places to arrange 1s and 0s).**

##### Kilobytes, megabytes and gigabytes

In order to avoid astronomical figures and sums in the calculation of bytes we use units such as kilobytes, megabytes and gigabytes. .... (5)

Unit of memory	Abbreviation	Exact memory amount
Binary digit	bit or b	1 or 0
Byte	B	8 bits
Kilobyte	KB or K	1,024 bytes ( $2^{10}$ )
Megabyte	MB	1,024 KB, or 1,048,576 bytes ( $2^{20}$ )
Gigabyte	GB	1,024 MB, or 1,073,741,824 bytes ( $2^{30}$ )
Terabyte	TB	1,024 GB, or 1,099,511,627,776 bytes ( $2^{40}$ )

**Task 1: Read the text and complete the missing parts A – E.**

- A** permits computers from different manufacturers to exchange data  
**B** Binary means that each position counts for twice as much.  
**C** These units are used to describe the RAM memory, the storage capacity of disks and the size of any application or document.  
**D** To represent these two conditions we use **binary code** in which **1 means ON** and **0 means OFF**.  
**E** **Decimal**

**Task 2: Complete these descriptions with the correct unit of memory.**

- 1 A ..... is about one trillion bytes (1,000,000,000,000 characters) – about as much text as the books and magazines in a huge library.
- 2 A ..... is about one million bytes – about as much text as a 300-page novel.
- 3 A ..... is about one thousand bytes – equivalent to one sheet of A4.
- 4 A ..... is about one billion bytes (1,000,000,000 characters) – about as much text as 1,000 books.
- 5 A ..... can store a single character, such as the letter e or number 7.



**Listening**

Listen to two people making enquiries in a computer shop. Complete the product descriptions.

**iMac**

Processor speed: ..... (1)  
 RAM: ..... (2)  
 Hard drive capacity: ..... (3)  
 DVD drive included: Yes  
 Operating system: ..... (4)  
 Internet software included: Yes  
 Price: ..... (5)

**MacBook**

Processor speed: ..... (6)  
 RAM: ..... (7)  
 Hard drive capacity: ..... (8)  
 DVD included: ..... (9)  
 Operating system: ..... (10)  
 Internet software included: Yes  
 Price: £ 1,029



### Speaking 2

Role-play a dialogue between a sales assistant and a customer using the instructions and information about the computers below to help you.

**Student A:** You are a sales assistant.

- Greet the customer and offer help.
- Show the customer some models.
- Give technical specs and explanations (describe processor, storage capacity, etc.)
- Compare the two different models.
- Give the required information.
- Give the price and explain different ways of paying.

**Student B:** You are a customer

- Explain what you are looking for.
- Ask for some technical specs (ask for details: processor, RAM, storage capacity etc.)
- Ask about any further technical specs (DVD drive, monitor, communications, etc.)
- Ask about the monitor and other features.
- Ask the price.
- Decide which computer to buy or leave the shop.

Products available	Processor/ Speed	Minimum/ Maximum RAM	Hard disk	Disk drives	Monitor	Other	Price
<i>Toshiba Satellite laptop</i>	2.0 GHz Core 2 Duo processor	2 GB expandable to 4 GB	160 GB	Super Multi drive (double layer)	15.4" wide XGA display	Wi-Fi	£1,099
<i>Dell desktop PC</i>	AMD Athlon at 2.4 GHz	1 GB expandable to 4 GB	320 GB	DVD+/-RW drive	17" LCD		£680
<i>Palm TX handheld</i>	Intel 312 MHz ARM-based processor	128 MB flash memory (non-volatile)			320x480 TFT touch screen	support to memory cards Wi-Fi, Bluetooth Li-ion battery	£216



### Quiz

- One way to connect your computer with other computers is a
  - motherboard.
  - ROM card.
  - SD card.
  - NIC card.
- The power supply provides power for
  - many of the PC peripherals.
  - both the components in the computer and many peripherals.
  - only the PC peripherals.
  - only components in the computer.

- 3 The hard drive is usually
- A a stack of optical platters.
  - B the most expensive form of memory.
  - C sealed in a protective case.
  - D the volatile storage space in the computer system.
- 4 The main circuit board in the computer is called
- A the bus.
  - B the motherboard.
  - C the CPU.
  - D RAM.
- 5 The part of the computer used for calculations is
- A RAM.
  - B the bus.
  - C the CPU.
  - D the motherboard.
- 6 The contents of ..... are erased when the computer is turned off.
- A the motherboard
  - B floppy disks
  - C RAM
  - D the hard drive
- 7 Instructions needed when starting the computer are stored in
- A RAM.
  - B the motherboard.
  - C ROM.
  - D cache.
- 8 A non-volatile storage device
- A is similar to RAM.
  - B maintains data even when the computer's power is turned off.
  - C is not temperature-sensitive.
  - D loses data when the computer's power is turned off.
- 9 Expansion cards
- A consist of volatile memory.
  - B provide additional functionality to the PC.
  - C consist of non-volatile memory.
  - D are where ROM is stored.
- 10 A card that translates binary data into images on a monitor is a
- A translator card.
  - B monitor card.
  - C motherboard.
  - D video card.
-

## Unit 4 WORDLIST

<b>acceleration card</b> [æksele'reɪf(ə)n kɑ:d]	akcelerační karta
<b>American Standard Code for Information Interchange (ASCII)</b> ['æski]	americký standardní kód pro výměnu informací (kódová tabulka, která definuje znaky anglické abecedy a jiné znaky používané v informatice)
<b>AND gate</b> [ænd geɪt] – <b>conjunction</b> [kən'dʒʌŋkʃn]	logický člen/hradlo AND – logický součin (konjunktory)
<b>Basic Input Output System (BIOS)</b> ['baɪɒs]	systém, který implementuje základní vstupně-výstupní funkce pro počítače
<b>binary code</b> ['baɪnəri kəʊd]	binární kód
<b>binary digit</b> ['baɪnəri 'dɪdʒɪt]	binární číslice
<b>bit (b)</b> [bɪt]	bit (b – základní a nejmenší jednotka dat)
<b>Bluetooth</b> ['blu:tʊθ]	Bluetooth (otevřený standard pro bezdrátovou komunikaci propojující dvě a více elektronických zařízení)
<b>buffer storage mechanism</b> ['bʌfə 'stɔːrɪdʒ 'mek(ə)nɪz(ə)m]	vyrovnávací paměťové zařízení
<b>byte (B)</b> [baɪt]	байт (B – jednotka množství dat, která označuje 8 bitů)
<b>cache</b> [kæʃ]	mezipaměť, vyrovnávací paměť
<b>central processing unit (CPU)</b> ['sentr(ə)l prə'sesɪŋ 'juːnɪt; siːpiː'juː]	centrální procesorová jednotka
<b>connector</b> [kə'nektə]	konektor, spojka
<b>copper circuitry trace</b> ['kɒpə 'sɜːkɪtri treɪs]	měděná spojovací cesta
<b>co-processor/coprocessor</b> [kəʊ'prəʊsesə]	koprocesor (specializovaný procesor pro rozšíření funkcí primárního procesoru počítače nebo urychlení výpočtů.)
<b>currently</b> ['kʌrəntli]	aktuálně, momentálně, nyní
<b>decimal</b> ['desɪm(ə)l]	desetinný; desetinné číslo
<b>dongle</b> ['dɒŋɡ(ə)l]	hardwarový klíč, dongle (USB Bluetooth adaptér)
<b>dual in-line memory module (DIMM)</b> ['djuːəl 'ɪnlaɪn 'mem(ə)ri 'mɒdjuːl; dɪm]	paměťový modul paměti RAM určených pro použití v osobních počítačích, pracovních stanicích a serverech, které byly uvedeny na trh společně s nástupem procesorů Intel Pentium (64 bitový modul)
<b>Ethernet</b> ['iːθənet]	Ethernet (název souhrnu technologií pro propojování počítačů počítačové sítě LAN a MAN)
<b>execute</b> ['eksɪkjʊt]	provést, uskutečnit, vykonat
<b>expansion slot</b> [ɪk'spænz(ə)n slɒt]	rozšiřující patice/konektor
<b>gigabyte (GB)</b> ['gɪɡəbaɪt]	gigabajt (GB = 10 <sup>9</sup> bytů)
<b>graphics processing unit (GPU)</b> ['græfɪks prə'sesɪŋ 'juːnɪt; dʒɪːpiː'juː]	grafický procesor
<b>heat sink</b> [hiːt sɪŋk]	pasivní chladič (procesoru)
<b>Instruction Register (IR)</b> [ɪn'strʌkʃ(ə)n 'redʒɪstə; aɪ ɑː]	instrukční registr
<b>kilobyte (KB)</b> ['kɪləbaɪt]	kilobajt (KB = 10 <sup>3</sup> B či přesněji 1024 B)
<b>logic gate</b> ['lɒdʒɪk geɪt]	logický člen/hradlo (základní stavební prvek logických obvodů, který vyčísluje logickou funkci; typicky má jeden či více vstupů a jediný výstup)
<b>long-term</b> [lɒŋ'tɜːm]	dlouhodobý
<b>low-level interface</b> [ləʊ'lev(ə)l 'ɪntəfeɪs]	nízkoúrovňové rozhraní
<b>main/internal memory</b> [meɪn/ɪn'tɜːn(ə)l 'mem(ə)ri]	vnitřní paměť
<b>megabyte (MB)</b> ['megəbaɪt]	megabajt (MB = 10 <sup>6</sup> B či přesněji 1024 kB)
<b>motherboard</b> ['mʌðəbɔːd]	základní deska
<b>network interface card/controller (NIC)</b> ['netwɜːk 'ɪntəfeɪs kɑːd/ kən'trəʊlə; nɪk]	síťová karta
<b>non-volatile memory</b> [nɒn'vɒlətaɪl 'mem(ə)ri]	energeticky nezávislá paměť, stálá paměť

<b>NAND gate</b> [nænd geɪt] – <b>alternative denial</b> [ɔːlˈtəːnətɪv dɪˈnaɪəl] ( <b>Sheffer stroke</b> [ʃefə strəʊk])	logický člen/hradlo NAND – součet negací (Shefferova funkce)
<b>NOR gate</b> [nɔː(r) geɪt] – <b>joint denial</b> [dʒɔɪnt dɪˈnaɪəl] ( <b>Peirce's arrow</b> [piəsɪz ˈæərəʊ])	logický člen/hradlo NOR – součin negací (Peirceova funkce) (součin negací)
<b>NOT gate</b> [nɒt geɪt] – <b>inverter</b> [ɪnvɜːtə] ( <b>negation</b> [niˈgeɪʃn])	logický člen/hradlo NOT – invertor (logická negace)
<b>OR gate</b> [ɔː(r) geɪt] – <b>disjunction</b> [dɪsˈdʒʌŋkʃn]	logický člen/hradlo OR – logický součet (disjunktor)
<b>page/paging file</b> [peɪdʒ/ˈpeɪdʒɪŋ faɪl]	stránkovací soubor (soubor, který se používá pro stránkování jako dočasné úložiště pro výpis paměti)
<b>plate</b> [pleɪt]	deska, plát
<b>port</b> [pɔːt]	port
<b>power supply unit</b> [ˈpaʊə(r) səˈplaɪ ˈjuːnɪt]	napájecí zdroj počítače
<b>printed circuit board (PCB)</b> [prɪntɪd ˈsɜːkɪt bɔːd; piːsiːˈbiː]	deska s plošnými spoji (DPS), tišťák
<b>program counter (PC)</b> [ˈprəʊgræm ˈkaʊntə]/ <b>instruction pointer (IP)</b> [ɪnˈstrʌkʃ(ə)n ˈkaʊntə]	(postupný) čítač instrukcí
<b>Random Access Memory (RAM)</b> [ˈrændəm ˈaksɛs ˈmem(ə)rɪ; rəm]	operační paměť
<b>Read Only Memory (ROM)</b> [riːd ˈəʊnli ˈmem(ə)rɪ; rɒm]	paměť určená pouze pro čtení
<b>secondary memory/storage</b> [ˈsekəndrɪ ˈmem(ə)rɪ / ˈstɔːrɪdʒ]	sekundární/pomocná/podpůrná paměť
<b>short-term</b> [ʃɔːt ˈtɜːm]	krátkodobý
<b>silicon chip</b> [ˈsɪlɪk(ə)n tʃɪp]	křemíkový čip
<b>single in-line memory module (SIM)</b> [ˈsɪŋɡ(ə)l ˈɪnlaɪn ˈmem(ə)rɪ ˈmɒdjuːl; sɪm]	jednoduchý obvod sloužící k instalaci operační paměti (RAM) do počítače, případně jiného zařízení (32 bitový modul)
<b>slot/socket</b> [slɒt/ˈsɒkɪt]	slot, patice (konektor na základní desce pro připojení procesoru)
<b>sluggish</b> [ˈslʌɡɪʃ]	pomalý, zdlouhavý
<b>sound/audio card</b> [saʊnd/ ˈɔːdiəʊ kɑːd]	zvuková karta
<b>start up/boot up</b> [stɑːt ʌp/ buːt ʌp]	zapnout, zapínat
<b>storage</b> [ˈstɔːrɪdʒ]	paměť, paměťové zařízení
<b>system clock</b> [ˈsɪstəm klɒk]	hodiny počítače
<b>terabyte (GB)</b> [ˈterəbaɪt]	terabajt (GB = 10 <sup>12</sup> bytů)
<b>troubleshooting guide</b> [ˈtrʌblʃuːtɪŋ gaɪd]	poradce při potížích
<b>two-inch ceramic square</b> [tuː ɪntʃ sɪˈræmɪk skweə]	dvoupalcový keramický čtvereček
<b>upgrade</b> [ʌpˈɡreɪd]	upgradovat, vylepšit, zlepšit
<b>video card</b> [ˈvɪdiəʊ kɑːd]	videokarta
<b>volatile memory</b> [ˈvɒlətaɪl ˈmem(ə)rɪ]	energeticky závislá paměť, nestálá/dynamická paměť
<b>wireless connection/Wi-Fi</b> [ˈwaɪələs kəˈnekʃ(ə)n/ ˈwaɪfaɪ]	bezdrátové spojení/Wi-Fi
<b>XNOR gate</b> [eksnoː(r) geɪt] – <b>exclusive NOR</b> [ɪkˈskluːsɪv nɔː(r)]	negace exkluzivního logického součtu
<b>XOR gate</b> [eksɔː(r) geɪt] – <b>exclusive OR</b> [ɪkˈskluːsɪv ɔː(r)]	exkluzivní logický součet



## Review 1

### UNITS 1 – 4

#### Task 1: Identify these items.

15 pts/1 pt

- 1 ..... – a monitor that has no processing capabilities; an output device that accepts data from the CPU
- 2 ..... – a microprocessor designed to supplement the capabilities of the primary processor
- 3 ..... – an opening in a computer where a circuit board can be inserted to add new capabilities to the computer
- 4 ..... – a component designed to lower the temperature of the CPU by dissipating heat into the surrounding air
- 5 ..... – a small device able to be connected to and used with a computer, especially to allow access to wireless broadband or use of protected software
- 6 ..... – a small circuit board that has 64-bit path and holds memory chips
- 7 ..... – a register in the control unit of a computer which contains the address of the next instruction to be executed, the address being increased by one after each execution unless an instruction to do otherwise occurs
- 8 ..... – the fastest type of computer which is very expensive and is employed for specialized applications that require immense amounts of calculations
- 9 ..... – a machine-readable representation of the UPC (Universal Product Code) which is read by a scanner that passes over the code and registers the UPC
- 10 ..... – a third-party entity that manages and distributes software-based services and solutions to customers across a wide area network from a central data center
- 11 ..... – memory that loses its contents when the power is turned off including all RAM except the CMOS RAM used for the BIOS
- 12 ..... – the term used to describe a type of data transmission in which a single medium (wire) can carry several channels at once
- 13 ..... – a technology similar in theory to bar codes identification. With it, the electromagnetic or electrostatic coupling in the RF portion of the electromagnetic spectrum is used to transmit signals
- 14 ..... – an individual responsible for maintaining a multi-user computer system, including a local-area network (LAN)
- 15 ..... – the built-in software that determines what a computer can do without accessing programs from a disk

#### Task 2: Fill in the verbs in infinitive according to their definition.

5 pts/1 pt

- 1 ..... – to supervise or manage a person or their work, especially in an official capacity
- 2 ..... – to discover the exact place or position of something
- 3 ..... – to carry out an instruction or program
- 4 ..... – to make something suitable for a new use or purpose; to modify
- 5 ..... – to change or make something from one format or system to another (e.g. data)

**Task 3: Complete each gap in this text with a suitable word from this list.**

**20 pts/1 pt**

angle	design	full	plug
browsing	devices	headed	positions
companion	directly	look	powerful
consumption	efficient	micro	store
contrary	equipped	outlets	units

### ***Meet the Solartab***

Welcome, and thanks for taking a look at the Solartab – the ..... (1), portable and beautiful solar charger:

*A premium solar charger:* The Solartab was born out of the idea of creating a high quality solar charger with attractive design and a truly ..... (2) solar panel. Solar power should never be a mere gimmick – on the ..... (3), we believe it's the future of power ..... (4)! A tablet-sized solar charger makes for a powerful and essential asset that truly liberates you from the power ..... (5) of your home. Every day.

*Unique cover:* We believe in smart ..... (6). Our unique cover does not only give the Solartab a stunning and nostalgic ..... (7), it also works as a stand for the solar panel. Using the stand, you can angle the panel in three different ..... (8), allowing your phone or tablet to always charge as efficiently as possible. Find the right ..... (9) for maximum exposure to sunlight, ..... (10) in your device, and start charging! And even more, the cover will protect the Solartab while it's tucked away in your bag – always ready to join you wherever you're ..... (11) next.

*A powerful asset – day and night:* Thanks to the Solartab's large solar panel you can always charge your device ..... (12) from the sun. Even while listening to your favorite summer tune or ..... (13) the Internet at the same time. But we also ..... (14) the Solartab with a high capacity internal in battery, so you can even ..... (15) solar power – and give your tablet another ..... (16) charge after sunset. Just whip it out during the day, not matter where you are, and you've always got power stored for when you really need it!

*Put the power into your own hands:* With two USB ports and a ..... (17) USB port, the Solartab is ready to keep any your mobile devices going at all times. And instead of simply leeching energy out of your home's power outlets, your ..... (18) will become truly independent ..... (19) – taking advantage of the free and green energy that the sun provides right outside of your doorstep. An environmentally friendly, portable and never-ending source of energy, always ready for use: The Solartab is the perfect ..... (20) to your favorite gadgets!

/Adapted from Kickstarter (2018)/

## Unit 5

### INPUT DEVICES

#### LEAD-IN

#### Activity

- 1 How would you define input devices?
- 2 Which pointing device based on motion of an object do you use most often and why?
- 3 Which pointing devices based on touching a surface do you prefer and why?
- 4 How many ways are there of capturing an image on a computer?

#### TOPIC

#### Text

An **input device** is a peripheral used to provide data and control signals to an information processing system such as a computer or other information appliance, such as smartphones and personal digital assistants (PDAs). Examples of input devices include:

- **keyboards**
- **pointing devices**
- **imaging, video and audio input devices.**

#### Keyboard

A keyboard is an input device where data is keyed in. It is used to enter text information into the computer, as when you type the contents of a report. The keyboard can also be used to type commands directing the computer to perform certain actions. Commands are typically chosen from an on-screen menu using a mouse, but there are often **keyboard shortcuts** for giving these same commands. Inputting data quickly is sometimes referred to as 'touch-typing', 'speed-typing', or simply 'typing quickly'.

The keyboard has several groups of keys. In addition to the keys of the **main keyboard** (used for typing text) with the **alphanumeric group** including **the space bar** which is a horizontal bar in the lowermost row, keyboards usually also have:

- a **numeric keypad** (for entering numerical data efficiently);
- a bank of **editing keys** used in text editing operations such as
  - the **Insert key** - used to switch between the two text-entering modes,
  - the **Delete key** - deletes things to the right of it,
  - the **Backspace key** - deletes things to the left of it,
  - the **Enter key** - used to start a new line or a new paragraph,
  - the **lock keys** – including **Num lock**, **Caps lock** and the **Scroll lock**;
- the **cursor or navigation keys** (the **arrow keys**, the **Home**, **End**, **Page up**, **Page down keys** and the **Tab key**);
- a row of twelve **function keys** along the top (to easily invoke certain program functions);
- the **modifiers** (the **Shift key**, **Control key**, **Alternate key** and the **Fn key**);
- the **system keys** (the **System Request key**, **Escape key** and the **Menu key**).

#### Pointing Devices

The **graphical user interfaces** (GUIs - sometimes pronounced 'gooey' or 'gee-you-eye') which allow users to interact with electronic devices through graphical icons and visual indicators require some kind of device for positioning the on-screen cursor. There are two categories of pointing devices:

- 1 **based on motion of an object:** mouse, trackball, joystick and trackpoint;
- 2 **based on touching a surface:** graphics tablet, touchpad, stylus, and touchscreen.

#### Mouse

A mouse provides a means of pointing to items on a computer screen. It is moved around on a flat surface (usually on a **mouse pad**) until the cursor is in the desired position. The mouse usually has **two buttons** and a **scroll wheel**, which can also act as a third button. There are two kinds of mouse: the optical and wireless mouse.

The **optical mouse** does not use a rolling ball, but instead uses a **light** and a **small optical sensor** to detect the motion of the mouse by tracking a tiny image of the desk surface. Optical mice avoid the problem of a dirty mouse ball, which causes regular mice to roll unsmoothly if the mouse ball and internal rollers are not cleaned frequently.

A **cordless** or **wireless mouse** communicates with the computer via radio waves (often using Bluetooth hardware and protocol) so that a cord is not needed (but such mice need internal batteries).

Pushing and releasing a mouse button is called **clicking**. By clicking a button, a signal is sent to the computer via the processor. Moving the mouse pointer to an item and clicking is called 'clicking on the item' or simply 'clicking the item'. Mice are used to select or deselect an item from a menu by clicking it, when you to activate a program, or when you want to perform what are called **drag and drop** functions. In addition to the **single click** there is also the **double click**. The double click on the **left button** of the mouse is usually used to open a file, disk, or folder. The **right button** of the mouse is used to open the pop-up menu.

Note: The plural of 'mouse' as the computer device is either *mice* or *mouses*. However, the more common plural is *mice*.

### Trackball

A trackball is similar to an **upside-down mouse**, with the **ball** located on top. When the user rolls the ball with fingers, the internal rollers (similar to what's inside a mouse) sense the motion which is transmitted to the computer. Trackballs have the advantage over mice in that the body of the trackball remains **stationary** on a desk, so the user does not need as much room to use the trackball. Early laptop computers often used trackballs (before superior touchpads came along).

### Joystick

A joystick consists of a stick that **pivots on a base** and reports its angle or direction to the device it is controlling. Joysticks are generally used for playing games, and not for controlling the on-screen cursor in productivity software.

### Trackpoint

A trackpoint or **pointing stick** is a small rubber projection **embedded** between the keys of the keyboard. The trackpoint acts like a little joystick that can be used to control the position of the on-screen cursor.

### Graphics tablet

A graphics tablet enables a user to hand-draw images, animations and **graphics**, similar to the way a person draws images with a pencil and paper. It consists of a flat surface upon which the user may 'draw' or trace an image using an attached **stylus**, a pen-like drawing apparatus. The image is displayed on the computer monitor, although some graphics tablets also have a screen.

### Touchpad

A touchpad is a flat surface that can detect finger contact. It is a stationary pointing device, commonly used on laptop computers. At least one physical button normally comes with the touchpad, but the user can also generate a mouse click by tapping on the pad.

### Stylus

A stylus is a small pen-shaped instrument that is used to input commands to a computer screen, mobile device or graphics tablet.

### Touchscreen

A touchscreen is an **electronic visual display** that the user can control through simple or **multi-touch gestures** by touching the screen with a special stylus and/or one or more fingers. Touchscreens play a prominent role in the design of digital appliances such as personal digital assistants (PDAs), mobile phones, interactive whiteboards (smartboards), interactive tables, satellite navigation devices, and video games.

## *Imaging, Video and Audio Input Devices*

### Scanner

A scanner is a device that optically **scans** images, printed text, handwriting, or an object, and **converts** it to a **digital image**.

### Digital camera

A digital camera (or digicam) is a camera that **encodes digital images** and videos digitally and stores them for later reproduction.

**Digital camcorder**

A camcorder is an electronic device combining a video camera and a video recorder, typically used for consumer video recording.

**Webcam**

A webcam is a video camera that **feeds** or **streams** its image in real time to or through a computer to computer network. A webcam can be connected to a computer by a USB cable or built into computer hardware, such as laptops.

**Portable media player**

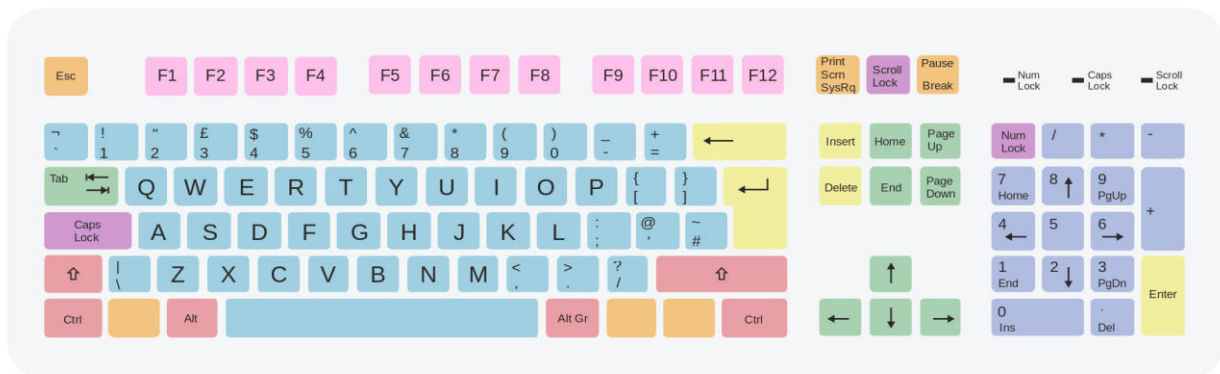
A portable media player (**PMP**) is a portable digital consumer electronics device capable of **storing** and **playing** media such as **audio**, **images**, and **video files**.

**Microphone**

A microphone, colloquially **mic** or **mike**, is an **acoustic-to-electric transducer** or **sensor** that converts sound in air into an electrical signal.

**Vocabulary Practice**

**Task 1: Label the picture of a keyboard with the groups of keys.**



- |  |   |  |  |
|--|---|--|--|
| <span style="display:inline-block; width:15px; height:15px; background-color:lightblue; border:1px solid black;"></span> 1 ..... | <span style="display:inline-block; width:15px; height:15px; background-color:yellow; border:1px solid black;"></span> 3 ..... | <span style="display:inline-block; width:15px; height:15px; background-color:green; border:1px solid black;"></span> 5 .....     | <span style="display:inline-block; width:15px; height:15px; background-color:lightpurple; border:1px solid black;"></span> 7 ..... |
| <span style="display:inline-block; width:15px; height:15px; background-color:pink; border:1px solid black;"></span> 2 .....      | <span style="display:inline-block; width:15px; height:15px; background-color:orange; border:1px solid black;"></span> 4 ..... | <span style="display:inline-block; width:15px; height:15px; background-color:lightpink; border:1px solid black;"></span> 6 ..... | <span style="display:inline-block; width:15px; height:15px; background-color:darkpurple; border:1px solid black;"></span> 8 .....  |

- A Function keys
- B Character keys
- C Navigation keys
- D Numeric keypad
- E Modifier keys
- F Lock keys
- G Enter and editing keys
- H System and GUI keys

**Task 2: Identify the key according to the definition.**

- |         |   |
|---------|---|
| 1 ..... | deletes things to the right of it                                       |
| 2 ..... | starts a new line or a new paragraph                                    |
| 3 ..... | enters a blank area between letters or words                            |
| 4 ..... | move the indicator on a display in a specified direction                |
| 5 ..... | switches between the two text-entering modes                            |
| 6 ..... | produces upper-case letters   |
| 7 ..... | deletes things to the left of it  |
| 8 ..... | moves the cursor horizontally to the right for a fixed number of spaces |

**Task 3: Complete the text about mouse actions with following verbs.**

**A** click    **B** double-click    **C** drag    **D** grab    **E** select    **F** move    **G** control

A mouse allows you to ..... (1) the cursor and move around the screen very quickly. Making the same movements with the arrow keys on the keyboard would take much longer. As you ..... (2) the mouse on your desk, the pointer on the screen moves in the same direction. The pointer usually looks like an I-bar, an arrow, or a pointing hand, depending on what you are doing.

A mouse has one or more buttons to communicate with the computer. For example, if you want to place the insertion point or choose a menu option, you just ..... (3) (press and release) on the mouse button, and the option is chosen. The mouse is also used to ..... (4) text and items on the screen. You can highlight text to be deleted, copied or edited in some way.

The mouse is widely used in graphics and design. When you want to move, press the mouse button, and ..... (5) the image to a new location on the screen. Similarly, the mouse is used to change the shape of a graphic object. For example, if you want to convert a square into a rectangle, you ..... (6) one corner of the square and stretch it into a rectangle.

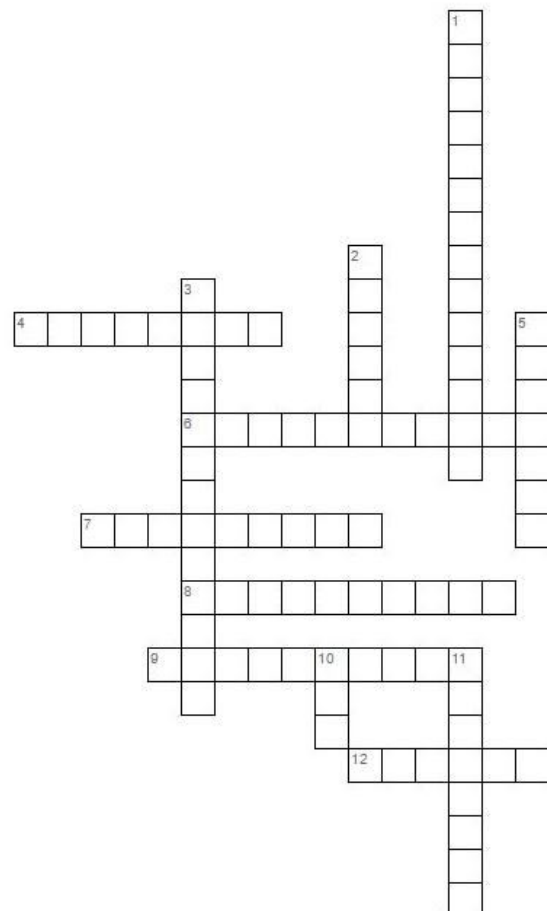
The mouse is also used to start a program or open a document: you put the pointer on the file name and ..... (7) on the name – that is, you rapidly press and release the mouse button twice.

**Task 4: Complete the crossword puzzle with the input devices mentioned in the text.****Across**

- 4** a stick that pivots on a base and reports its angle or direction to the device it is controlling
- 6** a type of electronic display that the user can control through simple or multi-touch gestures
- 7** an upside-down mouse with the ball located on top
- 8** an acoustic-to-electric transducer that converts sound into an electrical signal
- 9** a small rubber projection embedded between the keys of the keyboard
- 12** feeds or streams its image in real time to or through a computer to computer network

**Down**

- 1** enables a user to hand-draw images, animations and graphics, with a special pen-like instrument
- 2** a pointing and drawing device shaped like a pen
- 3** encodes digital images and videos digitally and stores them for later reproduction
- 5** a device that converts printed text to a digital image
- 10** a portable device capable of storing and playing media such as audio, images, and video files
- 11** a stationary pointing device, commonly used on laptop computers



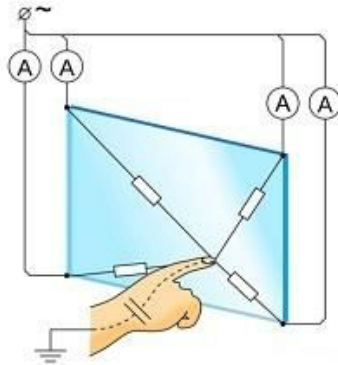




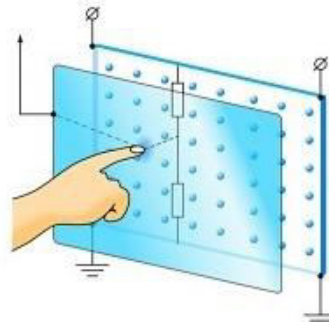
### Listening 1

Listen to the explanation of how touchscreens work. Complete the sentences 1 – 4 with the missing information and decide whether the sentences 5 – 8 are true (T) or false (F) according to what you hear.

- 1 Touchscreens rely on ..... to function.
- 2 The picture ..... illustrates a capacitive touchscreen.

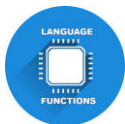


A



B

- 3 Touchscreens must be made of ..... or more separate layers.
- 4 Human cells transfer electricity across .....
- 5 ..... A capacitive touchscreen works a bit like “transparent keyboards”.
- 6 ..... When your finger touches a capacitive touchscreen, it absorbs charge from the spot.
- 7 ..... Only the inner layer works as a conductor in capacitive touchscreens.
- 8 ..... To design touch screen gloves for a capacitive touchscreen, ultra-thin material would be essential.



### Language Functions: Describing Features

Different features can be described using verbs and expressions:

**allow sb to-verb, be designed/used to-verb, have, feature, can, cause, connect, control, work/operate (by + -ing)**

An optical mouse **has** an optical sensor instead of a ball underneath.

It usually **features** two buttons and a wheel.

An optical mouse **can** be replaced by a trackball.

A wireless mouse **works/operates** without cables.

A touchpad is a flat surface that **works by detecting** finger contact.

A stylus **causes** a change in capacitance as it presses two thin membranes of the screen together.

A mouse **allows** the user **to interact** with items on the computer screen.

Complete the description of the play station with the correct form of verbs describing features and functions. Do not use one word more than once.

The PlayStation 3 controller is an input device ..... (1) to control video games on the Sony PlayStation 3. It is ..... (2) with both hands and the thumbs are used to handle the direction and action buttons. It ..... (3) a six-axis sensing system, which ..... (4) the users to move the controller in six different directions: up, down, left, right, forwards and backwards.

The PS3 controller ..... (5) wirelessly via Bluetooth, but it ..... (6) a USB mini port and USB cable which ..... (7) be connected to the PlayStation for wired play and for charging the internal battery.



### Speaking 1

Work in pairs, A and B. Choose one input device and describe its features and functions. Try to guess which device your partner is describing.

#### Student A

portable media player  
webcam  
touchpad  
wireless mouse  
trackpoint  
stylus

#### Student B

trackball  
microphone  
joystick  
graphics tablet  
scanner  
touchscreen



### Listening 2

Listen to the fast explanation of 3D scanning.

Task 1: Decide if the following statements 1 – 5 are true (T) or false (F).

- 1 ..... Some laser scanners use a camera to construct an image.
- 2 ..... All light-based scanners use laser beams.
- 3 ..... Structured light scanning uses laser beams to figure out the shape based on the distortion of the lines from other viewing angles.
- 4 ..... Highly-reflective objects are difficult to scan by means of contact 3D scanners.
- 5 ..... Contact scanners use different probes to produce an accurate image of an object.

Task 2: Complete the gaps 6 – 8 with no more than four words according to the recording.

- 6 Game developers are using 3D scanning to ..... to be used in their games.
- 7 Historians use 3D scanning to ..... old artifacts, statues and even buildings.
- 8 Mechanical engineers scan 3D objects to verify the .....



### Speaking 2

In groups, discuss these questions.

- 1 What are the benefits and possible applications of 3D scanners?
- 2 What kind of tasks would you find speech recognition technology useful for?
- 3 Who would benefit most from advances in speech recognition technology?
- 4 What is the future of speech recognition technology?
- 5 Do you think it will ever be possible to control your computer using only your thoughts?



### Reading

Complete the press release with the following words:

**colour megapixels shot video optical brighter reduction**

Kodak has introduced the EasyShare M753 digital camera, with 7.0 ..... (1) resolution, a huge 2.5-inch LCD screen, and a professional 3x ..... (2) zoom lens. It is the first camera to incorporate proprietary Kodak Perfect Touch Technology. At the touch of a button, this innovative feature creates better, ..... (3) pictures by bringing out detail in shadows without affecting lighter areas. It's ideal for underexposed pictures caused by shooting beyond the flash range or in adverse lightning condition.

The M753 uses the exclusive Kodak Colour Science chip for phenomenal image quality with rich ..... (4) and accurate skin tones. Seventeen programmed scene modes (e.g. party, fireworks, children) and five colour modes (high, low, natural, sepia, and black and white) help capture the best ..... (5) with the least effort.

Other features cropping, auto picture rotation, digital red-eye ..... (6), and blurry picture alert. For capturing more than just still pictures, the camera also features highly-quality (VGA) ..... (7) capture and playback.



### Speaking 2

**In pairs, describe your digital camera, webcam or video camera. The following questions may help you:**

- 1 What do you use the device for?
- 2 Why did you buy that particular make/model?
- 3 What are your favourite functions?
- 4 What improvement would you make to the device and why?

## Unit 5 WORDLIST

**acoustic-to-electric transducer**

[ə'ku:stɪk tʊ ɪ'lektrɪk trænss'dju:sə]

**adverse** ['ædvɜ:s]**alert** [ə'lɜ:t]**alphanumeric group/keyboard**

[ælfənju:'merɪk gru:p/'ki:bɔ:d]

**appliance** [ə'pleɪəns]**arrow keys** ['ærəʊ ki:s]**Backspace key** ['bækspeɪs ki:]**ball** [bɔ:l]**button** ['bʌt(ə)n]**Caps lock** [kæps lɒk]**clicking** ['klɪkɪŋ]**convert** [kən'vɜ:t]**cordless/wireless mouse** ['kɔ:dləs/'waɪələs maʊs]**cursor/navigation keys** ['kɜ:sə/ navɪ'geɪʃ(ə)n ki:z]**Delete key** [dɪ'li:t ki:]**digital camcorder** ['dɪdʒɪt(ə)l 'kæmkɔ:də]**digital camera** ['dɪdʒɪt(ə)l 'kæm(ə)rə]**digital image** ['dɪdʒɪt(ə)l 'ɪmɪdʒ]**double click** ['dʌb(ə)l]**drag and drop functions**

[dræg (ə)n drɒp 'fʌŋ(k)ʃ(ə)nɪz]

**editing keys** ['edɪtɪŋ]**electronic visual display/monitor**

[ɪlek'trɒnɪk 'vɪʒʊəl dɪ'spleɪ/'mɒnɪtə]

**embedded** [ɪm'bedɪd]**encode** [ɪn'kəʊd]**Enter key** ['entə ki:]**feature** ['fi:tʃə]**feed (image)** [fi:d ('ɪmɪdʒ)]**flat surface** [flæt 'sɜ:fɪs]**function keys** ['fʌŋ(k)ʃ(ə)n ki:z]**grab** [græb]**graphical user interface (GUI)**

['græfɪk(ə)l 'ju:zə 'ɪntəfeɪs; dʒɪ:'ju:'aɪ]

**graphics tablet** ['græfɪks 'tæblɪt]**hand-draw image** [hænd drɔ: 'ɪmɪdʒ]**highlight** ['haɪlaɪt]**Home key** [həʊm ki:]**input device** ['ɪnpʊt dɪ'vaɪs]**incorporate** [ɪn'kɔ:pəreɪt]**Insert key** [ɪn'sɜ:t ki:]**interact** [ɪntə'akt]**interactive smartboard/whiteboard**

[ɪntə'æktɪv 'smɑ:tbo:d/'waɪtbo:d]

**interactive table** [ɪntə'æktɪv 'teɪb(ə)l]**imaging device** ['ɪmɪdʒɪŋ dɪ'vaɪs]**joystick** ['dʒɔɪstɪk]**keyboard shortcuts** ['ki:bɔ:d 'ʃɔ:tkʌts]**lock keys** [lɒk]**main keyboard** [meɪn 'ki:bɔ:d]**mode** [məʊd]**modifiers** ['mɒdɪfaɪəz]

akusticko-elektrický převodník

nepříznivý

upozornění

alfanumerická klávesnice

přístroj, spotřebič

kurzorové klávesy (klávesy se šipkou pro pohyb nahoru, dolů, vlevo a vpravo)

klávesa pro mazání textu před kurzorem

kulička

tlačítko

přepínací klávesa (klávesa k trvalému přepnutí kláves do druhé úrovně znaků, tzn. většinou na velká písmena)

kliknutí, klikání

konvertovat, převádět

bezdrátová myš

navigační klávesy

klávesa Odstranit

digitální videokamera

digitální fotoaparát

digitální obraz

dvojitě kliknutí

funkce přetažení/přesunutí a uvolnění (tlačítka myši)

editační klávesy

monitor (obrazovka)

vložený, zasazený

kódovat, zakódovat

klávesa Vstup/Zadej

obsahovat; vyznačovat se, disponovat

nahrávat (obraz)

plochý povrch

funkční klávesy

uchopit

grafické uživatelské rozhraní

grafický tablet

ručně nakreslený obrázek

zvýraznit

klávesa umožňující návrat kurzoru na počátek

vstupní zařízení

zahrnout, začlenit

klávesa Vložit

vzájemně se ovlivňovat, vzájemně na sebe působit

interaktivní dotyková tabule

interaktivní dotykový stůl

zobrazovací zařízení

joystick, pákový/křížový ovladač

klávesové zkratky

přepínací/přepínací klávesy

hlavní klávesnice

režim

modifikátory

**mouse pad/mousepad** ['maʊspæd]  
**multi-touch gestures** ['mʌltɪtʃtʃ]  
**numeric keypad** [njuːˈmerɪk 'kiːpæd]  
**Num lock** ['nʌm lɒk]

**operate** ['ɒpəreɪt]  
**optical mouse** ['ɒptɪk(ə)l maʊs]  
**Page up/down key** [peɪdʒ ʌp/daʊn kiː]

**pivot on a base** ['pɪvət ɒn ə 'beɪs]  
**pointing device** ['pɔɪntɪŋ dɪˈvaɪs]  
**pop-up/context/shortcut menu**  
 ['pɒpʌp/ˈkɒntekst/'ʃɔːtkʌt 'menjuː]  
**portable media player (PMP)**  
 ['pɔːtəb(ə)l 'miːdiə 'pleɪə; piːm piː]  
**proprietary technology**  
 [prəˈpraɪət(ə)ri tek'nɒlədʒi]  
**resolution** [rezəˈluːʃ(ə)n]  
**scan** [skæn]  
**scanner** ['skænə]  
**Scroll lock** [skrɔːl lɒk]  
**scroll/mouse wheel** [skrɔːl/maʊs wiːl]  
**shoot** [ʃuːt]  
**shot** [ʃɒt]  
**single click** ['sɪŋɡ(ə)l kɪk]  
**six-axis sensing system**  
 [sɪks'æksɪs sensɪŋ 'sɪstəm]  
**space bar/spacebar** ['speɪsbɑː]  
**speech recognition** [spiːtʃ rekəg'nɪʃ(ə)n]  
**stationary** ['steɪʃ(ə)n(ə)rɪ]  
**stream (image)** [striːm]  
**stylus** ['staɪləs]  
**system keys** ['sɪstəm kiːz]  
**Tab key** [tæb kiː]  
**touchpad** ['tʌtʃpæd]

**trackball** ['trækboːl]  
**trackpoint** ['trækpɔɪnt]

**underexposed** [ʌndəˈrɪk'spəʊzd]  
**unsmoothly** ['ʌnsmuːðli]  
**upside-down** ['ʌpsaɪd daʊn]  
**webcam** ['webkæm]

podložka pod myš  
 vícedotyková gesta  
 numerická klávesnice  
 klávesa k aktivování a deaktivování čísel v  
 numerické části  
 fungovat  
 optická myš  
 klávesa určená k posunu dokumentu o jednu  
 stranu nebo jednu obrazovku výše/níže  
 čep na podstavci  
 ukazovací/polohovací zařízení  
 vyskakovací menu

přenosný multimediální přehrávač

autorizovaná/patentovaná technologie

rozlišení (obrazu)  
 skenovat, snímat  
 skener  
 klávesa pro změnu rolování  
 kolečko myši  
 fotit, fotografovat  
 snímek  
 jediné kliknutí  
 šestiosý sledovací systém

mezerník  
 rozpoznávání řeči  
 nehybný, pevný  
 přehrávat (obraz)  
 dotykové pero, stylus  
 systémové klávesy  
 tabulační klávesa  
 dotyková ploška (polohovací zařízení  
 nahrazující u notebooku myš)  
 kulový ovladač  
 polohovací zařízení přenosných počítačů  
 (malý joystick, který je na klasické QWERTY  
 klávesnici umístěn mezi klávesami „G,“ „H“ a „B“)  
 podexponovaný  
 přerušovaně  
 obrácený, vzhůru nohama  
 webkamera, webová kamera

## OUTPUT DEVICES

Activity

- 1 How would you define output devices?
- 2 What type of display do you have? Can you describe it?
- 3 How many types of printer can you think of?
- 4 Do you prefer built-in or external computer speakers? Why?
- 5 Do you prefer supra-aural headphones or earbuds? Why?

Text**Monitor**

A monitor provides instant feedback by displaying images and text on the screen. Newer monitors, often called **flat-panel displays**, usually have **LCD (Liquid Crystal Display)** or **LED (Light-Emitting Diode)** displays. These are very thin, light in weight and they consume much less power than the older monitors which use **CRT (Cathode-Ray Tube)** displays.

**Basic Features**

Two measurements describe the size of your display: the **aspect ratio** and the ..... (1). Historically, computer displays, like most televisions, have had an aspect ratio of 4:3 – the width of the screen to the height is four to three. For widescreen LCD displays, the aspect ratio is 16:9, very useful for viewing DVD movies, playing games and displaying multiple windows side by side. High-definition TV also uses this format. The viewable **screen size** is measured **diagonally** ..... (2), so a 19" screen measures 19" from the top left to the bottom right.

The **resolution** (the clarity of the image) of the monitor is usually quoted as **width x height**, with the units ..... (3). The resolution depends on the number of pixels. **Pixels** (short for picture elements) are the small dots that make up the image displayed on the screen. For example, '1024 × 768' means the width is 1024 pixels and the height is 768 pixels. This example would normally be spoken as 'ten twenty-four by seven sixty-eight' or 'ten twenty-four by seven six eight'. The sharpness of images is affected by **dot pitch** also called **phosphor pitch**, the distance between the pixels on the screen, so a dot pitch of 0.28 mm or less will produce a sharp image.

**Brightness** is the luminance of images that is measured in  $\text{cd/m}^2$  (candela per square metre).

**Colour depth** refers to the number of colours a monitor can display. This depends on the number of bits used to describe the colour of a single pixel. For example, an old **Video Graphics Array (VGA)** monitor with an 8-bit depth can generate 256 colours and a Super VGA with a 25-bit depth can generate 16.7 million colours. Monitors with a 32-bit depth are used in digital video, animation and video games to get certain effects.

**Refresh rate** is the number of times that the image is drawn each second. If a monitor has a refresh rate of 75 Hz, it means that the screen is scanned 75 times per second. If this rate is low, you will notice a flicker, which can cause eye fatigue.

Inside the computer there is a **video adapter**, or graphics card, which processes images and sends signals to the monitor. CRT monitors use a **Video Graphics Array (VGA)** cable, which converts digital signals into analogue signals. LCD monitors use a **Digital Visual Interface (DVI)** connection. Computers can be connected to ..... (4), which project the image onto a large screen. They are used for presentations and home theatre applications.

**Display technologies**

The **CRT** of a monitor has three **electron guns** (one for primary colour: red, green and blue) that strike inside of the screen, which is coated with substances called **phosphors**, which glow and create a visible image. CRTs are cheap, but they are heavy, can ..... (5) and emit radiation.

An **LCD** is made from flat plates with a liquid crystal solution between them. The crystals block the light in different quantities to create the image. **Active-matrix LCDs** use **thin-film transistor (TFT)** technology, in which each pixel has its own switch. The amount of light the LCD monitor produces is called brightness or luminance, measured in  $\text{cd/m}^2$  (candela per square metre).

In a **plasma screen**, images are created by a plasma discharge which contains noble (non-harmful) gases. Plasma TVs allow for larger screens and wide viewing angles, making them ideal for movies.

A **Light-Emitting Diode (LED)** display is a flat panel display, which uses an array of light-emitting diodes as pixels for a video display.

**Organic Light-Emitting Diodes (OLEDs)** are thin-film LED displays that don't require a backlight to function. The material emits light when stimulated by an electrical current, which is known as electroluminescence. They consume less energy, produce brighter colours and are flexible – i.e. they can be bent and rolled up when they're not being used.

### Printer

A printer is an output device which takes digital information, such as pictures or documents, and prints it on paper. Nowadays it is common for a printer to also be a scanner and photocopier, giving the home-user a very powerful all-in-one tool. Printers vary in cost, speed, print quality, and other factors such as noise or printing method. Technology is evolving so quickly that there is always a printer for every application or need.

**Dot-matrix** printers use pins to print the dots required to shape a character. They can print text and graphics; however, they produce relatively low resolution output – 72 to 180 dots per inch (dpi). They are used to print **multi-part forms**, **self-copying paper** and **continuous-form labels**. They are slower than laser printers but much cheaper.

**Inkjet** printers operate by projecting small ..... (6) onto paper to form the required image. Colour and hues are created by the precise mixing of **cyan**, **magenta**, yellow and black inks, inkjets are fairly fast, quiet, and not as expensive as laser printers. Nevertheless, you can still expect high quality results because there are some inkjet printers on the market with a resolution of 2,400 dpi.

**Laser** printers, invented in 1976, very rapidly produce high-quality text, graphics and photographs by repeatedly passing a ..... (7) back and forth over an electron-charged, cylindrical drum, to define a **differentially-charged image**. They produce output at great speed and with a very high resolution of 1,200-2,400 dpi. They scan the image with a laser beam and transfer it to paper with a special ink powder called **toner**. They are constantly being improved. In terms of speed and image quality, laser printers are preferred by experts for various reasons; for instance, they have a wider range of **scalable fonts** than inkjets, can ..... (8) different language systems, and can produce high-quality graphics; however, they are still expensive for home users.

**Thermal transfer** printers are used to produce colour images by transferring a wax-based ink onto the paper. They are popular for printing bar codes, labels and medium-resolution graphics.

**Imagesetters** produce very high-resolution output (up to 3,540 dpi) on paper or on the actual film for making the **printing plates**. In addition, they are extremely fast. Imagesetters are most often used in **desktop publishing (DTP)**. Although they produce the highest quality output, they have one important disadvantage: they are too expensive for homes or small offices.

In modern ..... (9), images are created on a DTP computer and then output directly to the printing plates, without requiring film as an intermediate step. This technology is called **computer to plate (CTP)**, and the machine used is called a **platesetter**.

**Plotters** use ink and fine pens held in a ..... (10) to draw very detailed designs on paper. They are used for construction plans, engineering drawings and other technical illustrations. Nowadays, traditional plotters are being replaced with wide-format inkjets.

**3D printers** are used for **additive manufacturing (AM)** to synthesize three-dimensional objects. In additive manufacturing processing, **successive layers** of material are formed under computer control to create the object. These objects can be of almost any shape or geometry and are produced from digital model data 3D model or other electronic data source such as an **Additive Manufacturing File (AMF)**. 3D printers are used in medicine, engineering, architecture, art and consumer industry.

### Speakers and headphones

Speakers and headphones are devices that allow a user to hear sound and music. Depending on the model, they may connect to the **audio port** or the USB port. Some monitors also have **built-in speakers**

**Task 1: Read the text and fill the gaps (1 – 10) with the words (A – J).**

- A in inches
- B lithographic printing
- C ink droplets
- D video projectors
- E carriage
- F flicker
- G laser beam
- H in pixels
- I emulate
- J screen size



**Task 2: Decide whether these statements are true (T) or false (F).**

- 1 ..... The images shown on a monitor are generated by the video card.
- 2 ..... The size of the screen is measured horizontally.
- 3 ..... The aspect ratio describes the proportional relationship between its width and its height.
- 4 ..... Higher resolutions result in more pixels per row.
- 5 ..... Brightness of a display is measured in candelas per pixel.
- 6 ..... Three electron guns in a CRT display, one each for red, green, and blue phosphors, paint the screen.
- 7 ..... An architect would be most likely to use an inkjet printer to print large plans.
- 8 ..... The most suitable printer for printing barcode labels is an imagesetter.
- 9 ..... A plotter would be the most suitable printer for printing a large number of high quality black and white printouts.
- 10 ..... The most suitable printer for printing a wage slip using carbonised paper is a dot matrix printer.

**Vocabulary Practice****Task 1: Find the words in the text according to these definitions.**

- 1 ..... the smallest unit on a display screen or bitmapped image (usually a coloured dot)
- 2 ..... an expansion card that generates the video signal sent to a computer display
- 3 ..... the width of the screen in proportion to its height
- 4 ..... also called 'gas discharge display'
- 5 ..... the number of pixels contained in a display, horizontally and vertically
- 6 ..... the number of bits used to hold a colour pixel; this determines the maximum number of colours that can be displayed
- 7 ..... designs and images used in magazines, books, etc.
- 8 ..... output quality of dot-matrix and laser printers, measured in dots per inch
- 9 ..... a particular colour within the colour spectrum
- 10 ..... an ink powder used in laser printers and copiers
- 11 ..... set of characters that can be resized (enlarged or reduced) without introducing distortion
- 12 ..... a rectangular pattern of black lines of magnetic ink printed on an object so that its details can be read by a computer system
- 13 ..... surface that carries a reproduction of the images from which the pages are printed
- 14 ..... in-between; middle
- 15 ..... included as part of something and not separate from it

**Task 2: Describe features and functions of the following input/output devices A – L.****A**

.....

**B**

.....

**C**

.....

D



E



F



G



H



I



J



K



L



**Task 3: Complete the technical specifications of the monitor with the correct words.**

The new Paintview XT-85 combines a television and a computer ..... (1) in one display.	
Type of display	Flat panel LCD
..... (2)	19"
Display ..... (3)	1,280 x 1,024 pixels
Dot pitch	0.294 mm
..... (4)	16.7 million colours
Contrast ratio	1,000:1
..... (5)	450 cd/m <sup>2</sup>
Built-in TV tuner	Yes
Audio	Two 3-watt speakers and a 5-watt subwoofer; headphone jack
The Picture-in-Picture function allows you to watch more than one program at the same time and lets you adjust the size of each window.	



### Listening

Listen to five customers in a computer shop describing their display device needs. Choose the most suitable device (A-E) for each person. Give reasons for your choice.

Speaker 1: .....

Speaker 2: .....

Speaker 3: .....

Speaker 4: .....

Speaker 5: .....

**A NEC MultiSyn LCD monitor**

Screen size: 17"  
Resolution: 1280x1024  
Aspect ratio: 5:4  
Brightness: 400 cd/m<sup>2</sup>

**B Dell UltraSharp LCD monitor**

Widescreen 24" flat panel  
Resolution: 1920x1200  
Colour support: 16.7 million  
Multiple video inputs, flashcard slots and USB ports

**C Cambridge-Hitachi interactive whiteboard**

Allows interaction with a projected computer image  
Board size: 78"  
Connected to the PC via USB  
Pointing device: cordless pen

**D Pioneer 50" Plasma TV**

Resolution: 1280x768 (XGA)  
Blu-ray Disc recorder  
5.1 surround sound system  
(Five audio channels plus one subwoofer)

**E Portable projector**

DLP (Digital Light Processing) technology  
Resolution: 1024x768  
Projection screen

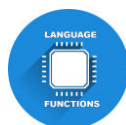


### Speaking 1

**Task 1:** In pairs, discuss which of the display devices from the previous exercise you would most like to own. Give reasons for your choice.

**Task 2:** Describe the 'home cinema' of your dreams. The following ideas may help you:

- Type of display
- Screen size
- Resolution
- Video source (TV, VCR or DVD recorder)
- Sound capabilities



### Language Functions: Giving Advice and Instructions

**Use imperative to give instructions:**

*Get an adjustable chair.*

*Don't put your monitor in front of a window.*

**Use *should* and *shouldn't* + infinitive to give advice or talk about what you think is a good/bad idea:**

*You should look down at the monitor, not up.*

*You shouldn't use a monitor that's fuzzy or distorts the image.*

**Use set phrases like *It's a good/bad idea to-infinitive*:**

*It's a good idea to have a monitor with a tilt-and-swivel stand.*



### Speaking 2

Imagine you are designing an ICT classroom with 16 networked PCs, Internet access and peripherals. In groups, discuss and prepare a list of guidelines for making the ICT classroom more ergonomic. Consider the following points:

- room conditions (space, desks, chairs, lights, ventilation and windows);
- user-friendly and ergonomic devices (keyboards, mice, monitors, wrist rests, copyholders);
- electrical safety (layout of cables, connectors and switches, hotspots for a wireless network);
- noticeboards and posters with health and safety recommendations.



### Video Watching

Watch a video where Skylar Tibbits, a co-director and founder of MIT's Self Assembly Lab shares his experience with the research on 4D printing.

**Task 1:** For questions 1 – 10, choose the correct answer (A, B or C) which fits best according to what you hear.

- 1 A software called *Cadnano* simplifies and enhances the process of designing
  - A three-dimensional DNA nanostructures
  - B four-dimensional DNA nanostructures.
  - C four-dimensional nano-robots.
- 2 The problems in construction and manufacturing that nanoscale technologies don't address are
  - A the delays and additional cost.
  - B the energy consumption and excessive labour techniques.
  - C the environmental changes.
- 3 According to Tibbits, piping systems are threatened because of
  - A the expensive material they are made of.
  - B the fluids they convey.
  - C the changes under the Earth's surface.
- 4 Self assembly is a process of building an ordered structure by means of ..... disordered parts.
  - A disconnection of
  - B interaction among
  - C putting together
- 5 ..... functions as a stimulus to trigger molecular self-assembly.
  - A Chemical composition
  - B Spatial distribution
  - C Random energy
- 6 The most important aspect of Project Cyborg is that allows the scientists to
  - A design both human scale and nanoscale self-assembly systems
  - B produce more adaptive infrastructure in the future
  - C to simulate self-assembly behaviour
- 7 Tibbits and his team are trying to design new scenarios for ..... that have self-assembly structures that can go from one highly functional system to another.
  - A space
  - B time
  - C energy
- 8 4D printed structures evolve as a function of exhibit intelligent behaviour and
  - A space.
  - B time.
  - C energy.

**Task 2:** In groups, discuss the possible problems that 4D printing technology can encounter.



### Speaking 3

**Task 1:** In pairs, choose the most suitable printer for each of these four situations. Give reasons for your choices.

- 1 You want to print documents, web pages and occasional photographs at home.
- 2 A small company needs a printer which will be shared by various users on a local area network (LAN).
- 3 A professional team of architects and engineers need to create accurate representations of objects in technical drawings and CAD.
- 4 A graphic arts business needs a printer to produce catalogues, brochures and other publications.

**Task 2:** In pairs, describe the features of your ideal printer.

## Unit 6 WORDLIST

**3D printer** [θri:di: printə]**active-matrix LCD** [ˈæktiv ˈmeɪtrɪks elsi:ˈdi:]**additive manufacturing (AM)**

[ˈædɪtɪv mænjuˈfæktʃərɪŋ; eiˈem]

**Additive Manufacturing File (AMF)**

[ˈædɪtɪv mænjuˈfæktʃərɪŋ faɪl; eiˈemef]

**array** [əˈreɪ]**aspect ratio** [ˈæspekt ˈreɪʃiəʊ]**audio port** [ˈɔ:diəʊ pɔ:t]**bar code/barcode** [bɑ:ˈkəʊd]**brightness** [ˈbraɪtnəs]**built-in speakers** [bɪlt ˈɪn ˈspi:kəs]**Cathode-Ray Tube (CRT)**

[ˈkæθəʊd reɪ tju:b; si:ɑ:ˈti:]

**carriage** [ˈkærɪdʒ]**coated** [ˈkəʊtɪd]**colour depth** [ˈklɒlə depθ]**computer to plate (CTP)**

[kəmˈpjʊ:tə tu plæt; si:tiˈpi:]

**continuous-form labels**

[kənˈtɪnjuəs fɔrm ˈleɪbəl]

**cyan** [ˈsaɪən]**diagonally** [daɪˈæɡənli]**differentially-charged image**

[dɪfəˈren(t)ʃəli tʃɑ:dʒd ˈɪmɪdʒ]

**Digital Visual Interface (DVI)**

[ˈdɪdʒɪtl ˈvɪʒ(u)əl ɪntəfeɪs; di:vi:ai]

**dot-matrix printer** [dɒtˈmeɪtrɪks ˈprɪntə]**dot/phosphor pitch** [dɒt/ˈfɒsfə pɪtʃ]**electroluminescence** [elektroʊlu:miˈnesəns]**electron gun/emitter** [əˈlektron ɡən/əˈmɪdə]**emit** [əˈmɪt]**flashcard slot** [ˈflæʃ kɑ:d slɒt]**flicker** [ˈflɪkər]**headphones** [ˈhedfəʊnz]**height** [haɪt]**hue** [(h)ju]**imagesetter** [ˈɪmɪdʒsetə]**ink droplet** [ɪŋk ˈdrɒplɪt]**inkjet printer** [ˈɪŋkdʒet ˈprɪntə]**label** [ˈleɪbəl]**laser beam** [ˈleɪzə bi:m]**laser printer** [ˈleɪzə ˈprɪntə]**Light-Emitting Diode (LED)**

[laɪt əˈmɪtɪŋ ˈdaɪəʊd; eli:ˈdi]

**Liquid Crystal Display (LCD)**

[ˈlɪkwɪd ˈkrɪstl ˈdaɪəʊd; elsi:ˈdi:]

**lithographic printing** [lɪθəˈɡræfɪk ˈprɪntɪŋ]**luminance** [ˈlu:mɪn(ə)ns]**magenta** [məˈdʒentə]**monitor** [ˈmɒnɪtə]**multi-part forms** [ˈmʌlti pɑ:t]

3D tiskárna

LCD s aktivní maticí (každý pixel je samostatně kontrolován)

aditivní výroba

soubor aditivní výroby

řada; sada

poměr stran

zvukový port

čárový kód

jas

vestavěné reproduktory

katodová trubice

vozík

pokrytý, potažený, obalený

barevná hloubka

technologie pro přímý osvit tiskových desek

laserem

archy s nalepovacími štítky

modrozelená (barva)

úhlopříčně, diagonálně

obraz (který toner přenesl z válce na papír) je

nabit na opačnou hodnotu než povrch válce

zásuvka rozhraní (tzv. dedikovaný spoj) pro

propojení videozařízení s počítačem

jehličková tiskárna

rozteč bodů

elektroluminiscence

elektronové dělo (emitor)

vyzařovat, vysílat

slot/patice paměťové karty

blikání, třepotání; blikat, třepotat se

sluchátka

výška

odstín

osvitová jednotka (tiskárna s velmi vysokým

rozlišením sloužící k přípravě předloh pro

komerční tisk; princip tvorby obrazu spočívá v

přesném osvětlení filmového pásu laserovým

paprskem)

inkoustová kapka

inkoustová tiskárna

štítek

laserový paprsek

laserová tiskárna

luminiscenční/světelná dioda, LED dioda

displej na bázi tekutých krystalů

litografie, kamenotisk

svítivost

purpurová, nachová (barva)

monitor, obrazovka

formuláře skládající se z více částí

**Organic Light-Emitting Diode (OLED)**

[ɔr'gænik laɪt ə'mɪtɪŋ 'daɪəʊd; ɒvled]

**output device** ['aʊtpʊt dɪ'vaɪs]**phosphor** ['fɒsfə]**photocopier** ['fəʊdəʊkəpiə]**pixel** ['pɪks(ə)l]**plasma screen** ['plæzmə skri:n]**plotter** ['plɒtə]**printer** ['prɪntə]**printing plate** ['prɪntɪŋ pleɪt]**refresh rate** [rɪ'freʃ reɪt]**resolution** [rezə'lu:ʃ(ə)n]**scalable font** ['skeɪləb(ə)l fɒnt]**screen size** ['skri:n saɪz]**self-copying paper** ['selfkɒpiɪŋ]**speaker** ['spi:kə]**subwoofer** ['sʌbwʊfə]**successive layers** [sək'sesɪv 'leɪəz]**surround sound system** [sə'raʊnd saʊnd 'sɪstəm]**switch** [swɪtʃ]**thermal transfer printer**

['θɜ:m(ə)l 'trænzfɜ: 'prɪntə]

**thin-film transistor (TFT)**

['θɪnfɪlm træn'sɪstə; 'ti:ef'ti:]

**toner** ['təʊnə]**three-dimensional**

[θri: dɪ'menʃ(ə)n(ə)l/dai'menʃ(ə)n(ə)l]

**video adapter** ['vɪdɪəʊ ə'dæptə]**Video Graphics Array (VGA)**

['vɪdɪəʊ 'græfɪks ə'reɪ; vi:di:ə:]

**wax-based** ['wæksbeɪst]**width** [wɪdθ]

organická elektroluminiscenční dioda

výstupní zařízení

luminofo

(foto)kopírka

pixel, obrazový bod

plazmová obrazovka

plotter, kreslicí zařízení

tiskárna

tisková deska

obnovovací frekvence

rozlišení

škálovatelné písmo

velikost obrazovky

samokopírovací papír

reproduktor

sub-bassová jednotka (reprosoustava určená

pro reprodukci zvuku nízkých kmitočtů)

souvislé vrstvy

systém zajišťující prostorový zvuk

spínač, přepínač

tepelná tiskárna

tenkovrstvý tranzistor

toner

trojrozměrný

video adaptér

počítačový standard pro počítačovou

zobrazovací techniku, vydaný roku 1987

společností IBM

s voskovým základem

šířka



## Unit 7

### STORAGE DEVICES

#### LEAD-IN

#### Activity

- 1 What is the difference between RAM and mass storage device?
- 2 What is the name of the hard drive on a PC platform?
- 3 Which unit is used to measure hard disk capacity?
- 4 What is the difference between magnetic and optical disc drives?

#### TOPIC

#### Text

Mass storage devices are long-term storage devices, which means the data is still saved even if the computer is turned off or unplugged. .... (1) Unlike the contents of RAM, the data stored on these devices does not vanish when power is turned off. The major categories of storage devices are **magnetic** (hard disk, external/portable hard drive, floppy disk, magnetic tape), **solid-state** (flash drive, flash memory card), and **optical** (CD, DVD, Blu-Ray disc).

#### Hard disk drive (HDD)

A hard disk, hard drive or fixed disk on a computer (usually called C: drive) is a data **secondary storage** device where the software is installed, and where documents and other files are stored. It can hold several gigabytes of data. A hard disk drive uses one or more rigid rapidly rotating disks coated with magnetic material. A tiny electromagnetic **read/write head** on the end of an **actuator arm** magnetizes tiny spots on the disk to store data. **Magnetic spots** magnetized in one direction represent a one; spots magnetized in the opposite direction represent a zero. .... (2)

When you run a program or open a file, the computer copies some of the data from the hard disk onto the RAM. When you save a file, the data is copied back to the hard drive. .... (3) A hard drive spins at over 7,200 rpm (revolutions per minute) and stores data on a stack of metal rotating disks called **platters** that are held by a **spindle**.

New disks need to be **formatted** before you can use them, unless they come preformatted from the manufacturer. When the disk is formatted, the operating system (OS) organizes the disk surface into circular **tracks** and divides each track into **sectors**. The OS creates a **directory** which will record the specific location of files. .... (4) Later on, when you open that file, the OS looks for its entry in the directory, moves the read/write heads to the correct sector, and reads the file in the RAM area. However, formatting erases any existing files on a disk, so do not format disks on which data that you do not want to lose is stored.

The OS allows you to create one or more **partitions** on your hard drive, in effect dividing it into several logical parts. Partitions let you install more than one operating system (e.g. Windows and Linux) on your computer. You may also decide to split your hard drive because you want to store the OS and programs on one partition and your data files on another; this allows you to reinstall the OS when a problem occurs, without affecting the data partition.

The average time required for the read/write heads to move and find data is called **seek time** (or **access time**) and it is measured in milliseconds (ms); most hard drives have a seek time of 7 to 14 ms. Do not confuse this with **transfer rate** – the average speed required to transmit data from the disk to the CPU, measured in megabytes per second.

#### How to protect your hard drive

- Don't hit or move the computer while the hard drive is spinning. Hard drives are very sensitive to vibration and shocks, especially when they are operating; when the read/write head touches the rotating disk, it can scratch and damage the disk surface. This is known as **head crash**.
- .... (5) Wait at least ten seconds to ensure that the drive has stopped spinning.

- Check your hard drive regularly for logical and physical errors. To check and repair a drive, you can use a **disk diagnosis utility** like Windows ScanDisk.
- To minimize the risk of data loss or corruption, should install an up-to-date virus scanner. You should also **back up** your hard drive regularly.

### Floppy disk

A floppy disk, also called a diskette (A: drive), is composed of a flexible **sheet** of plastic, coated with iron-oxide – a **magnetisable** material. A floppy disk drive spins at 360 rpm, so it is relatively slow. They are available in 3.5" sizes. High-density floppy diskettes hold 1.44 MB.

### External hard drive

An external hard disk drive is an external unit with the drive mechanism and the media all in one sealed case. They are used to **make a backup**, spare copy of your files, or to transport data between computers. .... (6) They are available in 2.5" and 3.5" sizes; 2.5" variants are typically called **portable external drives**, while 3.5" variants are referred to as **desktop external drives**.

### Flash drive

A flash drive, also known a thumb or pen drive, is smaller, faster, has thousands of times more capacity, and is more durable and reliable than optical drives. Additionally, flash drives are immune to **electromagnetic interference** (unlike floppy disks), and are unharmed by surface scratches (unlike CDs). .... (7) The storage capacity varies from 16 MB to over a gigabyte.

### Flash memory card

Flash memory cards such as CompactFlash or Secure Digital are found in cameras, PDAs and music players.

### Optical disc drive (ODD)

An optical disc drive uses laser light or electromagnetic waves within or near the visible light spectrum as part of the process of reading or writing data to or from optical discs, such as a **compact disc (CD)** and a **digital video disc (DVD)**. A CD can hold about 670MB and a double-sided DVD can hold 18 GB of data.

### Task 1: Read the text and complete the gaps 1 – 7 with the missing sentences A – G.

- A The faster the hard drive is, the faster your computer can start up and load programs.
- B You shouldn't turn your computer off and on quickly.
- C They are connected to a USB port of the computer.
- D The same electromagnetic head can later sense the magnetic fields of the spots as they pass underneath the head, allowing the data to be read back from the disk.
- E They store documents and programs when they are not currently in use for processing.
- F Available capacities for external hard disk drives ranged from 500 GB to 8 TB.
- G When you save a file, the OS moves the read/write head of the drive towards empty sectors, records the data and writes an entry for the directory.

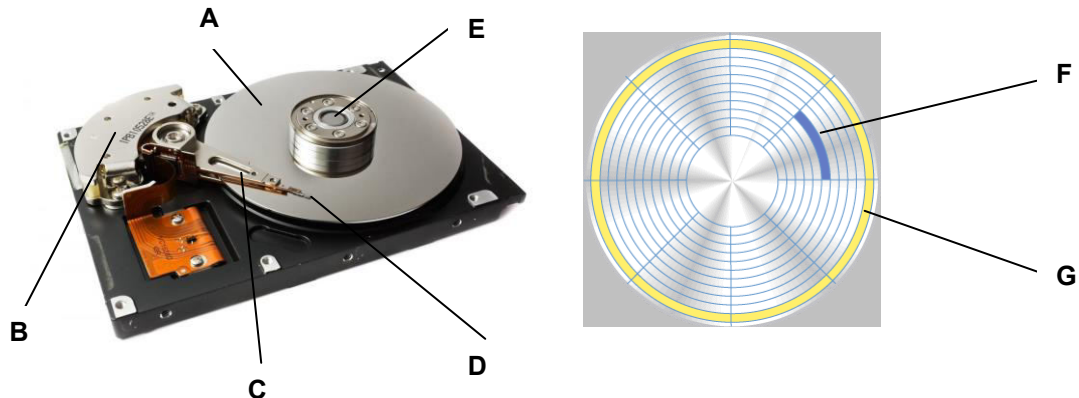
### Task 2: Decide whether the statements 1 – 10 are true (T) or false (F).

- 1 ..... Hard drives are temporary storages.
- 2 ..... Hard disks use rigid rotating disks.
- 3 ..... If you format a hard drive that has files on it, the files will be deleted.
- 4 ..... Hard drives cannot be partitioned to run separate operating systems on the same disk.
- 5 ..... 'Seek time' and 'transfer rate' mean the same thing.
- 6 ..... Disk drives are not resistant, especially in operating mode.
- 7 ..... Optical discs are magnetic.
- 8 ..... All portable external hard drives are solid-state.
- 9 ..... Portable external hard drives are in 2.5" sizes.
- 10 ..... Floppy disks are immune to electromagnetic interference.



### Vocabulary Practice

**Task 1: Read the text and identify the parts (A – G) in the pictures.**



- A .....
- B .....
- C .....
- D .....
- E .....
- F .....
- G .....

**Task 2: Fill in the words from the text to complete these sentences.**

- 1 '.....' means initializing a disk and preparing it to receive data.
- 2 This hard drive is 60 GB IBM model with a fast ..... of 8 ms.
- 3 A ..... is a type of drive that plugs into a USB port and lets you share photos and music with friend.
- 4 A ..... is a type of card used in digital cameras.
- 5 The first rule of data storage is to make a ..... of all important files.
- 6 The ..... is the rate of transmission of data from the disk to the CPU.
- 7 ..... is a disturbance generated by an external source that affects an electrical circuit by electromagnetic induction.
- 8 A ..... is a hard-disk failure that occurs when a read/write head comes in contact with its rotating platter, resulting in permanent and usually irreparable damage.
- 9 ..... are logical divisions into more regions on a hard disk so that the OS can manage information in each region separately.
- 10 ..... is a file system cataloguing structure which contains references to other computer files



### Speaking 1

**In pairs, discuss which device or format would be most suitable for storing the things below. Give reasons for your choices.**

- the operating system and the programs on a home computer
- an electronic encyclopaedia for children
- a movie in digital format
- the music tracks by your favourite artist
- all the files generated by a company in one day
- the photos taken with a digital camera



### Video Watching

Watch a video where Kanawat Senanan, a research assistant at the Department of Electrical and Computer Engineering of the University of Minnesota, talks about hard drives and their ability to store a great deal of information.

For questions 1 – 10, choose the correct answer (A, B or C) which fits best according to what you hear.

- 1 All of the grains in each bit have their magnetizations aligned in
  - A one possible state.
  - B two possible states.
  - C one of two possible states.
- 2 A letter is represented in
  - A 1 bit
  - B 8 bytes
  - C 8 bits
- 3 What is NOT one of the innovations that help increasing areal density of hard drives?
  - A Superparamagnetic effect.
  - B Mathematical algorithms.
  - C Thin film lithography.
- 4 A technology of imbedding a heating element into the head thus controlling its spacing relative to the recording media is called
  - A thin film lithography.
  - B thermal fly-height control.
  - C bit-patterned media.
- 5 Moore's law from 1965 predicted that the information density would double
  - A every year.
  - B every two years.
  - C every three years.
- 6 The superparamagnetic effect can result in
  - A a head crash.
  - B higher power consumption.
  - C a limit on the storage density.
- 7 Perpendicular recording allows information densities
  - A more than 20 Tbit/in<sup>2</sup>.
  - B of up 1Tbit/in<sup>2</sup>.
  - C from 100 to 200 Gbit/in<sup>2</sup>.
- 8 A storage technology which aligns data bits vertically to the drive's platter is called
  - A heat-assisted magnetic recording.
  - B perpendicular recording.
  - C longitudinal recording.
- 9 The lowest recording density is the result of
  - A heat-assisted magnetic recording.
  - B perpendicular recording.
  - C longitudinal recording.
- 10 A storage technology which records data in magnetic islands – one bit per island – is called
  - A bit-patterned recording.
  - B heat-assisted magnetic recording.
  - C perpendicular recording.



## Reading

### Optical Storage

Optical discs can store data at much higher densities than magnetic disks, therefore they are ideal for multimedia applications where images, animation and sound occupy a lot of disk space. Optical drives use a laser to read and write data, so they are not affected by magnetic fields; but they are slower than hard drives. Modern DVD recorders accept all CD and DVD formats.

**CDs** (compact discs) can store up to 650-700 MB of data.

- **CD-ROMs** (read-only memory) are 'read-only' units, so you cannot change data stored on them (e.g. a dictionary or a game)"
- **CD-R** (recordable) discs are write-once devices which let you duplicate CDs.
- **CD-RW** (rewritable) discs enable you to write onto them in multiple sessions, like a hard disk.

**DVDs** (digital versatile discs) are similar in size to CDs (both are 1.2 mm thick and 120 mm in diameter), but they differ in structure and capacity. DVDs have more **tracks** and more **pits** (tiny holes) per track, and can store from 4.7 GB to 17 GB of data, movies, high-definition sound, etc., so they will probably replace CDs. DVD formats include:

- **DVD-ROM** (read-only memory)
- **DVD-R** or **DVD+R** (recordable only once)
- **DVD-RW** or **DVD+RW** (rewritable) can be erased and reused many times

**Portable DVD players** let you watch movies or TV, play games and listen to music wherever you are. They usually run on batteries, have a **widescreen** (rectangular 16:9 format) LCD and support **multi-format playback**, allowing you access to many file formats including DVD video, JPEG pictures, MP3 music, etc. They have two built-in **stereo speakers**, or **headphones** if you do not want to disturb other people.

**Task 1: Find the words in the text according to these definitions.**

- 1 ..... – the CD and DVD formats that can be rewritten many times.
- 2 ..... – the CD and DVD formats that can be written to by the user only once.
- 3 ..... – the CD and DVD formats that can read by a computer but not written to
- 4 ..... – tiny indentations on optical drives.

**Task 2: Complete this product description with words from the text above.**

The Panasonic DVD-LS91 is a top-of the range ..... (1), which provides pure entertainment wherever you go.

It has a big 9 inch built-in ..... (2) LCD, so you can really enjoy movies. The built-in stereo speakers allow you to listen along, or if you want to listen alone, just plug in a pair of ..... (3). This portable machine provides ..... (4), so you can play DVD Audio/Video, CD-R/RW, DVD-RAM, DivX and MP3 files. Its compact design features a built-in rechargeable 6 hour battery pack.

The DVD-LS91 allows 6 hours of playback, and provides a perfect way to entertain yourself and your kids during long trips.



### Listening

Listen to the fast explanation why Blu-ray discs offer advantages over streaming videos.

**Task 1: Decide whether the statements 1 – 6 are true (T) or false (F).**

- 1 ..... A bandwidth cap may influence streaming videos.
- 2 ..... Blu-ray discs have capacity allowing for HD video up to 1080p resolution.
- 3 ..... Pits on a Blu-ray disc can be made smaller than on DVD because of a longer wavelength of blue light.
- 4 ..... Blu-ray disks can hold over eight times as much data as DVDs.
- 5 ..... Two reasons for Blu-ray discs victory over HD DVD are stated.
- 6 ..... Streaming services often offer extras like deleted scenes released by movie studios.
- 7 ..... Lossless audio has not been offered by streaming services so far.

**Task 2: Write down the words and expressions from the recording according to the following definitions.**

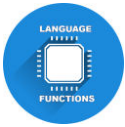
- 8 ..... – an American over-the-top media services provider, headquartered in Los Gatos, California
- 9 ..... – an abbreviation for a television system providing an image resolution that is of substantially higher resolution than that of standard-definition television
- 10 ..... – suddenly stops working
- 11 ..... – a type of the format where the original data are perfectly reconstructed from the compressed data
- 12 ..... – an abbreviation for a series of multichannel surround sound format technologies owned by owned by Xperi Corporation



### Speaking 2

In pairs, look at the products in the computer catalogue and choose the most suitable device 1 – 6 for the purposes A – F. Give reasons for your choices.

- |  |   |
|--|---|
| <p><b>A</b> to keep the operating system and the programs on a home computer</p> <p><b>B</b> to watch a movie on a plane or in the back seat of a car</p> <p><b>C</b> to hold your favourite photos and music</p> <p><b>D</b> to make backup copies and to transport files between computers in a big company</p> <p><b>E</b> to hold historical records in the National Library</p> <p><b>F</b> to read, write and rewrite high definition video and TV</p> | <p><b>1 Seagate hard drive</b></p> <ul style="list-style-type: none"> <li>• superfast 8 ms hard drive</li> <li>• capacity ranges from 80 GB to 1 TB</li> </ul> <p><b>2 Iomega portable hard drive</b></p> <ul style="list-style-type: none"> <li>• 160 GB, 2.5" external hard drive</li> <li>• an affordable way to back up all your data, from business documents to emails</li> </ul> <p><b>3 LaCie DVD drive</b></p> <ul style="list-style-type: none"> <li>• 16x DVD writer with free Nero DVD burning software</li> <li>• can play and record both DVD+R and DVD-R discs, plus their rewritable counterparts, as well as all types of CD</li> </ul> <p><b>4 Panasonic portable DVD player</b></p> <ul style="list-style-type: none"> <li>• 8" portable LCD DVD player with car kit</li> <li>• compatible with DVD, Cd, JPEG image CD and MP3-formatted audio CD</li> </ul> <p><b>5 Sony Blu-ray disc drive</b></p> <ul style="list-style-type: none"> <li>• Sony's Vaio AR laptop is the first portable Blu-ray studio</li> <li>• includes a Blu-ray disc drive and a TV tuner, alongside a 17" widescreen display and a 2 GHz Intel Core Duo processor</li> </ul> <p><b>6 Toshiba USB flash drive</b></p> <ul style="list-style-type: none"> <li>• high-speed 16 GB pen drive with a built-in MP3 player</li> <li>• plugs directly into any USB connection</li> </ul> |
|--|---|



### Language Functions: Meetings in IT Companies

#### **Welcoming participants**

*It's nice to see everyone.  
Thanks for being here today.*

#### **Stating objectives**

*We'll be discussing...  
Robin will be examining...*

#### **Asking participants to introduce themselves**

*Why don't you introduce yourself to everyone.  
Tell us a bit about yourself.  
Could you tell us all who you are and say something about yourself?*

#### **Introducing yourself**

*I'm the business development manager.  
I've been with IBM since 2015.  
I've worked for the company for four years.  
I'm based in the Valencia office.  
I work at our Xperi branch.*

#### **Giving your opinion**

*I think...  
We should...  
I'm convinced that we should...  
I tend to think that it's...  
It seems to me that...*

#### **Interrupting**

*Sorry, but...  
Sorry to interrupt, but I feel that...  
Could I come in here?  
I'd like to make a point here if I could.  
Can I just say something about that?*

#### **Ending a meeting**

*Let's finish here.  
I think that's everything.  
I think that brings us to an end.*

#### **Confirming decisions and actions**

*So, to sum up what we've decided...  
Right. I'm going to...  
We've decided to...  
Mark, you'll...*

#### **Thanking someone for a meeting**

*Thank you all for coming in today.  
Thank you very much for your time.  
I would like to thank our software developers.  
Thank you for your hard work. I think we've come up with a lot of good ideas.*

#### **Saying goodbye**

*I look forward to seeing you (all) again soon.  
I hope you have a safe journey.  
Have a safe trip home.*





### Speaking 3

#### Role play: Dealing with people effectively

You are going to role-play four short meetings (**Meeting 1 – 4**). For each meeting, read the situation and the objective below and look at your information in the card (**Student A – D**).

When you are **the chairperson**, start the meeting by outlining the objective. During the meeting, try to make sure that everyone has a chance to participate and deal with any negative tactics that participants use.

#### Meeting 1

##### Situation

Your company designs a mobile phone which has always been popular with older customers because the brand image is safe and reliable. For the last two years there has been a steady decline in market share.

##### Objective

Discuss whether to stay with your current customers or create a new brand image to appeal to another segment of the market.

#### Meeting 2

##### Situation

Your company is sponsoring a new PC magazine aimed at gamers. You are on the committee liaising with the publishers.

##### Objective

Think of five subjects for first articles to suggest to the publisher for the first edition of the magazine.

#### Meeting 3

##### Situation

Your company manufactures motherboards. A mistake by the purchasing department means that you now have a large quantity of fibreglass that is surplus to requirements. It is not possible to return the material to the supplier.

##### Objective

Brainstorm ways that you could put the material to use.

#### Meeting 4

##### Situation

Your company has invested a lot of money creating a brand identity for the new security software. An employee has just discovered that the product name sounds like the word *computer virus* in the language of one country where you plan to market the software.

##### Objective

Discuss possible ways to approach the problem.

#### Student A

**Meeting 1:** You are the chairperson.

Deal with any difficult situations or people.

**Meeting 2:** You are a participant.

You are bored and do not want to participate.

**Meeting 3:** You are a participant.

Be negative about other people's suggestions.

**Meeting 4:** You are a participant.

Respond normally and give your own opinions.

#### Student B

**Meeting 1:** You are a participant.

Respond normally and give your own opinions.

**Meeting 2:** You are the chairperson.

Deal with any difficult situations or people.

**Meeting 3:** You are a participant.

Try to dominate the meeting.

**Meeting 4:** You are a participant.

You are bored and do not want to participate.

#### Student C

**Meeting 1:** You are a participant. Try to introduce irrelevant topics.

**Meeting 2:** You are a participant.

Respond normally and give your own opinions.

**Meeting 3:** You are the chairperson.

Deal with any difficult situations or people.

**Meeting 4:** You are a participant.

You feel negative and don't want to be at the meeting because you have a lot of work to do.

#### Student D

**Meeting 1:** You are a participant.

Try to start a whispered conversation with someone on another topic.

**Meeting 2:** You are a participant.

Be negative about other people's suggestions.

**Meeting 3:** You are a participant.

Respond normally and give your own opinions.

**Meeting 4:** You are the chairperson.

Deal with any difficult situations or people.

**Quiz**

- 1 What is the name given to copies of data or program files?  
**A** Backups  
**B** Programs  
**C** Extras  
**D** Stores
  - 2 Which of the following is an example of a backing storage device?  
**A** Speaker  
**B** Mouse  
**C** Hard drive  
**D** RAM
  - 3 Hard drives are a form of ..... storage.  
**A** optical  
**B** solid state  
**C** magnetic  
**D** sequential
  - 4 Blu-Ray discs are a form of ..... storage.  
**A** solid state  
**B** magnetic  
**C** sequential  
**D** optical
  - 5 Flash drives are a form of ..... storage?  
**A** optical  
**B** solid state  
**C** magnetic  
**D** sequential
  - 6 Serial data access is faster than direct data access.  
**A** True **B** False
  - 7 Hard drive uses direct access.  
**A** True **B** False
  - 8 Magnetic tape storage media uses serial data access.  
**A** True **B** False
  - 9 CD-ROMS can record data over and over again.  
**A** True **B** False
  - 10 What is the order of capacity (smallest to largest) of the following storage media?  
**A** Hard drive - Blu-Ray - DVD - Floppy disk  
**B** Floppy disk - Blu-Ray - DVD - Hard drive  
**C** DVD - Floppy disk - Blu-ray - Hard drive  
**D** Floppy disk - DVD - Blu-Ray - Hard drive
-

## Unit 7 WORDLIST

<b>actuator</b> ['æktʃuətə]	pohon čtecí/zápisové hlavy
<b>actuator arm</b> [æktʃuətə ɑ:m]	rameno čtecí/zápisové hlavy
<b>backup</b> ['bækʌp]	zálohování
<b>back up/make a backup</b> ['bæk ʌp]	zálohotvat
<b>compact disc (CD)</b> [kəm'pækt disk; si:'di:]	kompaktní disk
<b>desktop external drive</b> ['desktp]	stolní/nepřenosný externí disk (rozměr 3,5")
<b>digital versatile/video disc (DVD)</b> ['dɪdʒɪt(ə)l 'vɜ:sətəɪl/ 'vɪdɪəʊ disk; di:vi:'di:]	digitální optický disk, který může obsahovat filmy nebo jiná data ve vysoké obrazové a zvukové kvalitě
<b>directory</b> [daɪ'rekt(ə)ri/dɪ'rekt(ə)ri]	adresář
<b>disk diagnosis utility</b> [disk daɪəg'nəʊsɪs ju:'tɪlɪti]	pomocný program pro kontrolu disku
<b>durable</b> ['djʊərəb(ə)l]	trvanlivý, odolný
<b>electromagnetic interference</b> [ɪlektřə(ʊ)mæg'netɪk ɪntə'fɪə(ə)ns]	elektromagnetická interference
<b>external hard drive</b> [ɪk'stɜ:n(ə)l/ek'stɜ:n(ə)l hɑ:d draɪv]	externí pevný disk
<b>flash drive</b> [flæʃ draɪv]	flashová paměť, flash disk
<b>flash memory card</b> [flæʃ 'mem(ə)ri kɑ:d]	paměťová karta
<b>flexible</b> ['fleksɪb(ə)l]	pružný
<b>floppy disk</b> ['flopi disk]	disketa, floppy disk
<b>formatted</b> ['fɔ:mætɪd]	(z)formátovaný
<b>full-length movie</b> [fʊl'leŋθ 'mu:vɪ]	nezkrácený film
<b>hard disk drive (HDD)</b> [draɪv; ɛɪtʃdi:'di:]	pevný disk
<b>head crash</b> ['hed kræʃ]	kolize čtecí/zápisové hlavy s plotnou disku
<b>high-density</b> [haɪ 'densɪti]	s vysokou hustotou záznamu
<b>magnetic</b> [mæg'netɪk]	magnetický
<b>magnetic spot</b> [mæg'netɪk spɒt]	magnetický bod
<b>magnetisable</b> ['mægnɪtaɪzəb(ə)l]	magnetovatelná
<b>mass storage device</b> [mæs 'stɔ:ɪdʒ di'vaɪs]	velkokapacitní paměťové zařízení
<b>multi-format playback</b> ['mʌltɪfɔ:mæt 'pleɪbæk]	multiformátové přehrávání
<b>optical</b> ['ɒptɪk(ə)l]	optický
<b>optical disc drive (ODD)</b> ['ɒptɪk(ə)l disk draɪv; ɔ:di:'di:]	optický disk
<b>partition</b> [pɑ:'tɪʃ(ə)n]	diskový/paměťový oddíl
<b>pit</b> [pɪt]	jamka
<b>platter</b> ['plætə]	plotna
<b>polycarbonate layer</b> [pɒli'kɑ:bənɛɪt 'leɪə]	polykarbonátová vrstva
<b>portable external drive</b> ['pɔ:təb(ə)l ɪk'stɜ:n(ə)l/ek'stɜ:n(ə)l draɪv]	přenosný externí disk
<b>read/write head</b> [ri:d /raɪt hed]	čtecí/zápisová hlava
<b>read-only memory (ROM)</b> [ri:d 'əʊnli 'mem(ə)ri; rɒm]	paměť určená pouze pro čtení
<b>rechargeable</b> [ri:'tʃɑ:dʒəb(ə)l]	dobíjecí
<b>recordable</b> [ri'kɔ:dəb(ə)l]	schopný zápisu
<b>rewritable</b> [ri:'raɪtəbl]	přepisovatelný
<b>rigid</b> ['rɪdʒɪd]	tuhý, neohebný, pevný
<b>sealed</b> [si:ld]	zatavený
<b>sector</b> ['sektə]	sektor
<b>seek/access time</b> [si:k/'aksɛs taɪm]	přístupová doba
<b>sheet</b> [ʃi:t]	plát, tabulka
<b>solid-state</b> ['sɒlɪdstɛɪt]	pevný
<b>spindle</b> ['spɪnd(ə)l]	osa pevného disku
<b>surface scratches</b> ['sɜ:fɪs skrætʃ ɪz]	povrchové škrábance
<b>track</b> [træk]	stopa
<b>transfer rate</b> [træns'fɜ: reɪt]	rychlost přenosu (dat z pevného disku do procesoru)
<b>universal serial bus (USB)</b> [ju:nɪ'vɜ:s(ə)l 'siəriəl bʌs]	univerzální externí/sériová sběrnice
<b>widescreen</b> ['waɪdskri:n]	širokoúhlý

## Unit 8

### SOFTWARE

“It’s hardware that makes a machine fast. It’s software that makes a fast machine slow.”

Craig Bruce

#### LEAD-IN

#### Activity

- 1 Discuss the quote.
- 2 What are some responsibilities of a software engineer?
- 3 What kind of software do you use regularly? What are its advantages and disadvantages?
- 4 What is your favourite and least favourite piece of software? Why?
- 5 Why do people prefer one operating system to another?
- 6 What is the best cheap/freeware application you have ever downloaded from the Internet?

#### TOPIC

#### Text

What makes the hardware come alive is the software. Software refers to the programs we put on our computers. Programs are basically **coded sets of instructions** that a computer can understand. Software needs to be installed onto a computer before it can be used. .... (1) The Microsoft Office Suite is such a collection of programs and data that allows users to manipulate words, numbers, and data.

There are two major categories of software: **system software** and **application software**.

#### System Software

System software controls a computer’s operations and manages a computer’s resources. System software includes the operating system, utility software, security software and computer programming tools.

##### Operating system (OS)

An operating system is the most important software that runs on a computer. The operating system controls the allocation of hardware resources such as memory space and CPU processing time, and handles the basic input and output for data flowing from and to storage devices and peripherals. .... (2)

A **single-tasking** operating system can only run one program at a time, while a **multitasking** operating system allows more than one program to be running in concurrence. Multitasking allows you to perform multiple tasks at the same time, such copying a chart from an open Excel document and pasting it into a report you have open in Word, all while your web browser is downloading a large file from the Internet in the background.

The most common operating systems for personal computers are:

The **Windows** family – designed by Microsoft and used on most computers. The most recent is Windows Vista.

**Mac OS X** – created by Apple and used on Macintosh computers.

**UNIX** – a multi-user system, found on mainframes and workstations in corporate installations.

**Linux** – open-source software based on UNIX and developed under the GNU General Public License in 1991. Anybody can copy its source code, change it and distribute it. It is used in computers, appliances and small devices.

**Android** – a mobile operating system first developed by a Silicon Valley company by the name of Android Inc.

**Windows Mobile** – used on most PDAs and smartphones.

**Palm OS** – used on Palm handheld devices.

**RIM** – used on BlackBerry communication devices. Developed by Research In Motion.

The **Symbian OS** – used by some phone makers, including Nokia and Siemens.

##### Utility software

Utility software or utilities are programs designed to help **analyze, configure, optimize** or **maintain** a computer. Unlike application software, utilities tend to be smaller in size and perform activities related to the computer system, such as:

- **anti-virus utilities** – scan for computer viruses;
- **backup software** – makes copies of all information stored on a disk and restores either the entire disk or selected files;
- **accessibility software** – makes a PC easier for disabled users to use;
- **disk compression utilities** – compress the contents of a disk, increasing the capacity of the disk;
- **media players** – let you watch DVDs, play music and listen to the radio on the Internet.

### Security software

Security software includes virus checkers and firewalls. A **virus checker** searches files for potentially harmful programs such as viruses, worms, or Trojan horses that are written by malicious programmers. .... (3) A **firewall**, or similar program, protects your computer from unauthorized access over a network or telecom connection.

### Computer programming tools

Computer programming tools include **compilers** (translate a high-level language into a lower-level language – machine code), **assemblers** (translate assembly language into machine code), and **debuggers** (allow programmers to test software for errors 'bugs') for various programming languages.

A **programming language** allows a person to write computer instructions in a language that is easier for a human to understand, but which is then converted into the low level numerical instruction codes that a computer processor unit can execute. The only language a PC can directly execute is **machine code**, which consists of 1s and 0s. .... (4) An example of a low-level language is **C** developed in the early 1970s by Dennis Ritchie for use on the UNIX operating system. **Low-level languages** provide little or no abstraction from a computer's commands in the language map closely to processor instructions. Generally they refer to machine code. **High-level languages** are closer to human languages and they use forms resembling English, which makes programming easier. High-level programming languages include **C++, Java, FORTRAN, COBOL, PASCAL, BASIC, Visual BASIC, Python** and **Ruby**. **Markup languages** are used to create Web documents. They use instructions (mark-ups) to format and link text files. They include **HTML** and **VoiceXML**.

## Application Software

Application software runs on top of the operating system and allows the user to perform a specific task, such as word processing a letter, calculating a payroll in a spreadsheet, manage a database of information, reading e-mail messages, or manipulating digital photographs. .... (5) The document files, such as a report created in Word, or a PowerPoint presentation, or a budget spreadsheet, can then be printed, displayed on a screen, or transmitted to other locations.

Applications are stored on a personal computer as **executable files** (they contain program steps that the computer can execute); documents are stored as **data files**.

### Word processor

A word processor (such as MS Word or WordPerfect) allows you to **enter** and **format** a **text**, some **graphics** and to **create reports** and **letters**.

**Formatting** options include changing the **font size**, **typeface**, **line spacing**, and **page margins**. .... (6) You can also use **document templates** that contain pre-made formatting, styles, and content to allow you to create a document quickly without repeating work unnecessarily.

Modern versions of word processors use a **WYSIWYG editor** ('what you see is what you get'), a system in which content (text and graphics) onscreen during editing appears in a form closely corresponding to its appearance when printed or displayed as a finished product, which might be a printed document, web page, or slide presentation.

### Spreadsheet software

Spreadsheet software, such as **MS Excel**, allows the user to do **numerical calculations** and produce **charts** of the results.

### Graphics software

Graphics software, such as **Adobe Photoshop** and **Illustrator**, are used to create digital media art images and illustrations, or to edit digital images from scanners or digital cameras.

### Presentation software

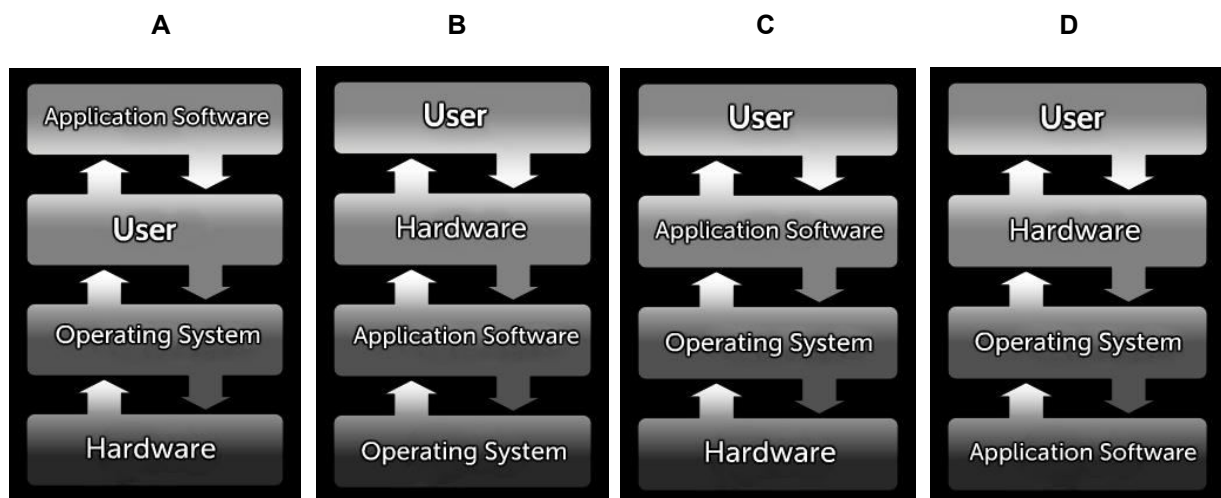
Presentation software, such as **MS PowerPoint**, is used to create presentations of **slides** containing text and graphics and also incorporating sound and visual effects. .... (7)

**Task 1: Read the text and complete the missing sentences.**

- A Viruses and similar programs can perform disastrous activities on your computer system, such as erasing your hard disk.
- B Most applications allow the production and editing of documents which are the data files created by the application programs.
- C It is often sold in sets of several programs and associated data called a software package, and typically comes on a CD-ROM or may be downloaded from the Internet.
- D These presentations can be projected from a computer display projection unit, or the slides can be printed out onto transparencies.
- E You may also define styles that are named formatting specifications that allow you to apply and update consistent formatting throughout a long document.
- F This language is difficult to write, so we use symbolic languages that are easier to use.
- G It also allows you to communicate with the computer without knowing how to speak the computer's language.

**Task 2: Decide whether the following statements are true (T) or false (F):**

- 1 ..... Debugger is a type of application software.
- 2 ..... Multi-tasking OS allows more than one program to be running.
- 3 ..... Utility software helps configure, optimize or maintain a computer.
- 4 ..... The operating system manages the computer's memory.
- 5 ..... Spreadsheets are the types of utility software.
- 6 ..... Application software permits the user to perform different tasks or activities
- 7 ..... Visual Basic is a type of system software.
- 8 ..... A firewall is a type of application software.
- 9 ..... System software manages and integrates a computer's capabilities.
- 10 ..... MS Excel is a type of system software.
- 11 ..... Adobe Photoshop is an application software.
- 12 ..... A file that tells the computer how to perform a specific task is a data file.

**Task 3: Which diagram shows the correct arrangement? Why?****Task 4: Which utility software would you use to do these tasks according to the text?**

- 1 ..... to play and organize multimedia on your computer
- 2 ..... to diagnose and repair damaged disks
- 3 ..... to help computer users with sight, hearing or mobility difficulties
- 4 ..... to make files smaller, so you can send them with emails

**Task 5: Identify the programming language A – J according to the definition 1 – 10.**

- 1 ..... – used for scientific and mathematical applications
- 2 ..... – the code used to create Web pages
- 3 ..... – an object-oriented, high-level, interpreted programming language developed in the 1990's by Japanese programmer Yukihiro Matsumoto.
- 4 ..... – popular for business applications
- 5 ..... – used as a teaching language
- 6 ..... – used to write system software, graphics and commercial programs
- 7 ..... – makes Internet content accessible via speech recognition and phone
- 8 ..... – designed to run on the Web; its applets let you watch animated characters, play music and games
- 9 ..... – now used to create Windows applications; intended for beginners or casual use
- 10 ..... – a high-level, interpreted programming language developed by Guido van Rossum at CWI in the Netherlands

A Ruby  
 B C  
 C HTML  
 D COBOL  
 E Python

F BASIC  
 G FORTRAN  
 H Java  
 I Visual BASIC  
 J VoiceXML

**Vocabulary Practice****Task 1: Complete the text on software using the words below.**

- A applications software  
 B operating system  
 C software  
 D system software

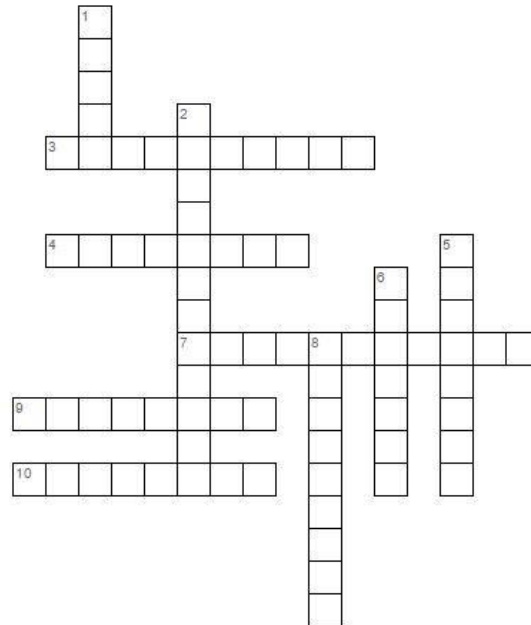
Information provided by programs and data is known as ..... (1). Programs are sets of instructions that make the computer execute operations and tasks. There are two main types of software:

..... (2) refers to all the programs which control the basic functions of a computer. They include operating systems, system utilities (e.g. an anti-virus program, a back-up utility) and language translators (e.g. a compiler - the software that translates instructions into machine code).

The ..... (3) refers to all those applications such as word processors and spreadsheets, which are used for specific purposes. Applications are usually stored on disks and loaded into the RAM memory when activated by the user.

The ..... (4) is the most important type of system software. It is usually supplied by the manufacturers and comprises a set of programs and files that control the hardware and software resources of a computer system. It controls all the elements that the user sees, and it communicates directly with the computer. In most configurations, it is automatically loaded into the RAM section when the computer is started up.



**Task 2: Complete the crossword puzzle.****Across**

- 3** refers to a file containing instructions and data meant for performing a sequence of tasks on a computer
- 4** transforms a high-level programming language into machine code
- 7** enables a user to save, sort and manage data in an arranged form of rows and columns
- 9** refers to software that creates digital media art images and illustrations
- 10** tests and finds errors in other programs

**Down**

- 1** a free open source operating system (OS) based on UNIX that was created in 1991
- 2** enables the performance of more than one computer process at the same time with minimal lag in overall performance
- 5** protects your computer from unauthorized access over a network or telecom connection
- 6** refers to a feature of an application that shows users what they are about to print or produce before the final product is ready
- 8** interprets software programs written in assembly language into machine code

**Task 3: Complete the 'Tasks of the Operating System' using the words A – J below.**

- 1** ..... inputs from the mouse or keyboard.
- 2** ..... outputs to the monitor or printer.
- 3** ..... peripheral devices such as external hard disks, pen drive, web cam etc and makes sure that software needed for the hardware to run is installed.
- 4** ..... files and folders in the system (naming, creating, moving, finding and deleting folders etc).
- 5** ..... applications software to communicate with the system's hardware.
- 6** ..... out system memory efficiently. The operating system will decide how much memory to assign to particular tasks. It also moves data in and out of memory.
- 7** Loads and ..... software applications.
- 8** Manages system ..... for example, allows passwords to be added/changed.
- 9** Handles system problems and ..... the user, for example if a printer is jammed and cannot print, the operating system will stop the print job and alert the user with a warning message.
- 10** Manages the ..... of data to and from a hard disk.

- A** recognises
- B** moving
- C** shares
- D** allows
- E** manages
- F** accepts
- G** alerts
- H** sends
- I** security
- J** runs



### Reading 1

Cleverbox is a manufacturer of a new type of IP router that is bought by telecoms network operators. It has grown rapidly, both organically and through acquisition. This rapid growth is now causing business problems with integration. The Cleverbox IT Director, Jane Simons, sent an email to Elizabeth Hardy, from software development company Talking Software Ltd, outlining their problems.

Complete Jane's mail with the words and expressions below.

- |                |                     |
|----------------|---------------------|
| A applications | E operating system  |
| B customized   | F releases          |
| C data format  | G software licences |
| D helpdesk     | H upgrade           |

Cleverbox uses a single OS across its departments, but many of our departments have ..... (1) their applications and processes, which means that there are ..... (2) and integration problems in the company. On top of this, some departments have been slow to ..... (3), which means that different departments have different software ..... (4).

Things are getting very expensive because all of the ..... (5) we have to buy. Maintaining all of this and providing ..... (6) services for our customers also costs us a lot of money.

To make things even more complicated, our latest acquisition, Smart Route, uses a completely different ..... (7), which means that none of their ..... (8) will work with Cleverbox.



### Listening 1

Task 1: Before you listen, match the words 1 – 12 with the definitions A – L.

- |                        |   |
|------------------------|---|
| 1 ..... bespoke        | A small and medium-sized enterprises            |
| 2 ..... bugs           | B specially produced for someone                |
| 3 ..... cutover        | C detailed description of what is required      |
| 4 ..... modular        | D work finished or completed                    |
| 5 ..... off the shelf  | E strong, reliable                              |
| 6 ..... output         | F standard and commercially available (package) |
| 7 ..... robust         | G in separate, independent sections             |
| 8 ..... rollout        | H errors in a program                           |
| 9 ..... sign off       | I gradual implementation                        |
| 10 ..... SME           | J final move to a new system                    |
| 11 ..... specification | K finish and leave                              |
| 12 ..... steady state  | L working properly and reliably                 |

**Task 2: Listen to Elizabeth's presentation and complete the three slides detailing Talking Software's areas of expertise.**

BUSINESS PROCESSES	
<b>Team</b>	..... (1) Business Process consultants
<b>Tasks</b>	..... (2) business processes
	Provide a ..... (3) or Software Requirements Analysis

SOFTWARE DEVELOPMENT	
<b>Team</b>	Twenty ..... (4), programmers and coders
<b>Tasks</b>	Design ..... (5)
	Code and ..... (6) software
	Test for ..... (7)
	..... (8) existing software products

APPLICATION IMPLEMENTATION	
<b>Team</b>	Ten members of ..... (9) team
	Led by ..... (10)
<b>Tasks</b>	Install:
	- ..... (11) software
	- customized products
	- ..... (12) packages



## Reading 2

**Read the email from an IT employee to a manager.**

Dear Mr. Sanders,

Over in the IT department we've received complaints about the office's computers. The hardware itself is fine. The problem, I believe, is the operating system. The system is rife with communication errors and virus threats. Then, there's the fortune we spend on upgrading our software every year. That's why I'm suggesting we switch to Linux® or some other OS related to Unix. For example, Ubuntu is very popular with users. Linux works with any hardware including both Macs and PCs.

Linux is free, open source and many of its programs have a free software license. We can get Linux distributions from vendors that have entire software packages that we can use. For example, OpenOffice does everything that Microsoft Office does.

I've talked to many staff members about this already. Some expressed concern with the interface. Specifically, most people I talked with thought Linux required entering command lines into a

terminal. Actually, many Linux operating systems use a graphical interface just like the average desktop operating system.

As for networking, Linux comes with a program called Samba. This program allows Linux to interact with Windows-based clients. This means we don't have to worry about printer trouble over the network once the TCP/IP protocol is reconfigured.

Please let me know if you have any follow up questions.

Tim Johnson

**Task 1: Choose the correct answers.**

- 1 The email is mainly about
  - A the benefits of changing operating systems.
  - B how to enter command lines into a terminal.
  - C which Linux distribution is right for the company.
  - D differences between OpenOffice and Microsoft Office.
- 2 The benefit of Samba is that it
  - A creates a graphical interface.
  - B improves printers' efficiency.
  - C is similar to Microsoft Office.
  - D lets different operating systems interact.
- 3 Tim Johnson
  - A uses Linux on his computer.
  - B expects Linux to increase costs.
  - C has only mentioned Linux to Shirley.
  - D thinks Linux has fewer virus threats.

**Task 2: Match the words 1 – 7 with the definitions A – G.**

- |                     |   |
|---------------------|---|
| 1 ..... Ubuntu      | A has word processing and spreadsheet programs  |
| 2 ..... OpenOffice  | B Linux-based operating system                  |
| 3 ..... vendor      | C how users communicate with a computer         |
| 4 ..... terminal    | D allows Linux computers to connect to networks |
| 5 ..... open source | E able to be modified by the user               |
| 6 ..... Samba       | F distributes products and software             |
| 7 ..... interface   | G used to input command lines                   |

**Task 3: Fill in the gaps 1 – 6 with the correct words and phrases A – F.**

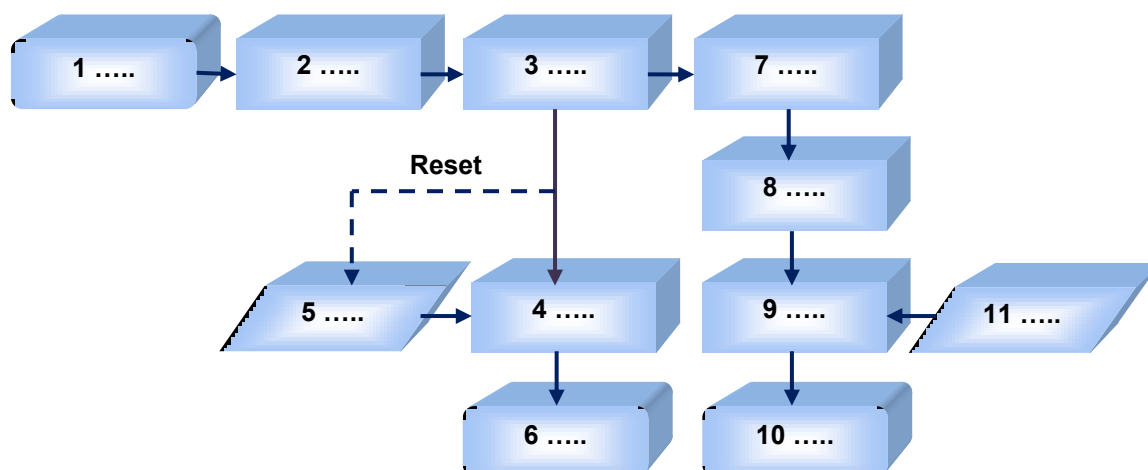
- |                         |   |
|-------------------------|---|
| A Linux                 | 1 You have to enter a ..... to make the system do anything.   |
| B free software license | 2 I can't decide which ..... will work best for me.           |
| C Linux distribution    | 3 You need to reconfigure the computer's ..... to get online. |
| D command line          | 4 The program has a ..... so anyone can use it.               |
| E Microsoft Office      | 5 ..... has an excellent word processing program.             |
| F TCP/IP protocol       | 6 I hate my current OS, so I'm switching to .....             |



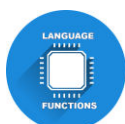
### Listening 2

Listen to a description of the LipMouse algorithm. The LipMouse is a vision-based human-computer interface that tracks user's lip movements.

Complete the parts 1 – 11 of the diagram with the descriptions A – K.



- A Calibration of the results
- B Face localization
- C Determining the lip shape
- D Video image from the USB camera
- E Recognized gesture
- F Reference of the mouth position
- G Relative mouth position
- H Determining the shift from the reference of the mouth position
- I Detecting the region belonging to the lips
- J Mouth region localization
- K Gesture recognition



### Language Functions: Describing Processes

Explaining how something works is a fundamental part of IT professionals' daily life. They often have to describe different processes when they present and demonstrate new ideas and products, and document how they work in an international environment.

The **present simple passive voice** is used to explain how something is made or used:

*A complete business analysis **is performed** ...  
 ... how the information flow **can be processed** ...  
 ... the new system **is being deployed and introduced**.*

For sequencing a process, **sequence connectors** are used to show the different stages of a process:

*First(ly) ..., Initially ..., Second(ly) ..., Then/Next/Later ..., Subsequently ...,  
 Simultaneously ..., Eventually/Finally/Lastly ...*

*The first step/phase/stage is ..., ... begins with, ... commences with ..., Before/ Prior to this..., The next/last step is..., In the following stage..., ... finishes/concludes with...*

The **relative clauses** are used to determine the position:

... *by means of coding and automation tools* **with which** process and data models can be refined and transformed into actual prototypes.

... *the phase* **where** the new system is being deployed and introduced.

The **purpose clauses** are used for stating intention and establishing aim:

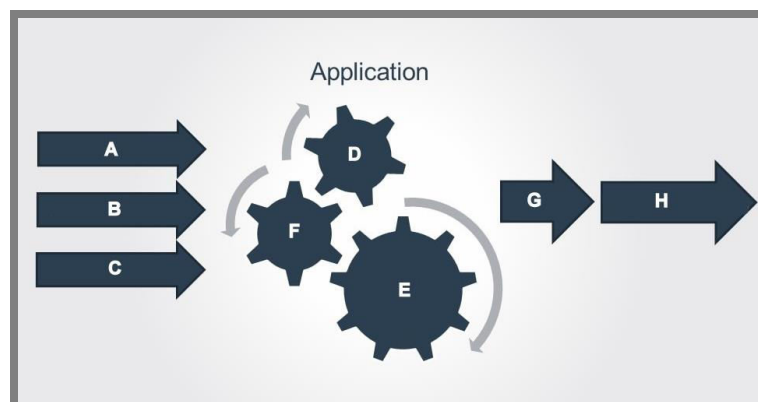
... **so that** it will become relevant to the business model.

... **to find** vital information flows about the customer.

**Task 1: Look at the flow chart of a software development technology and match the letters A – H to the stages below according to the text.**

- |                          |                      |
|--------------------------|----------------------|
| ..... Building           | ..... Demonstration  |
| ..... Implementation     | ..... Testing        |
| ..... Process modelling  | ..... Data modelling |
| ..... Business modelling | ..... Refinement     |

### ***Rapid Application Development (RAD)***



**Task 2: Complete the gaps 1 – 14 in the text with a suitable expression A – N from this list below.**

- |                                |                               |                       |
|--------------------------------|-------------------------------|-----------------------|
| <b>A</b> are converted         | <b>F</b> before               | <b>K</b> so that      |
| <b>B</b> are directly involved | <b>G</b> can be refined       | <b>L</b> subsequently |
| <b>C</b> are implemented       | <b>H</b> first                | <b>M</b> to ensure    |
| <b>D</b> are repeated          | <b>I</b> has been fully built | <b>N</b> where        |
| <b>E</b> are used              | <b>J</b> is recorded          |                       |

Rapid application development (RAD) is a software development methodology, which favours iterative development and the rapid construction of prototypes instead of large amounts of up-front planning. The lack of extensive pre-planning generally allows software to be written much faster, and makes it easier to change requirements.

The rapid development process starts with business modelling, data modelling and process modelling. .... (1), a complete business analysis is performed to find vital information flows about the customer and how the information flow can be processed successfully. Next, all information that has been collected from the business model is assessed and analysed ..... (2) it will be of benefit to the customer. The characteristics of all the data are identified and defined. The relationship between these data ..... (3) and

identified and described in detail so that it will become relevant to the business model. Then, the object data sets defined in the data model ..... (4) into the business information flow which is necessary to achieve specific business objectives that are in accordance with the business model. In this business model changes and improvements ..... (5) immediately.

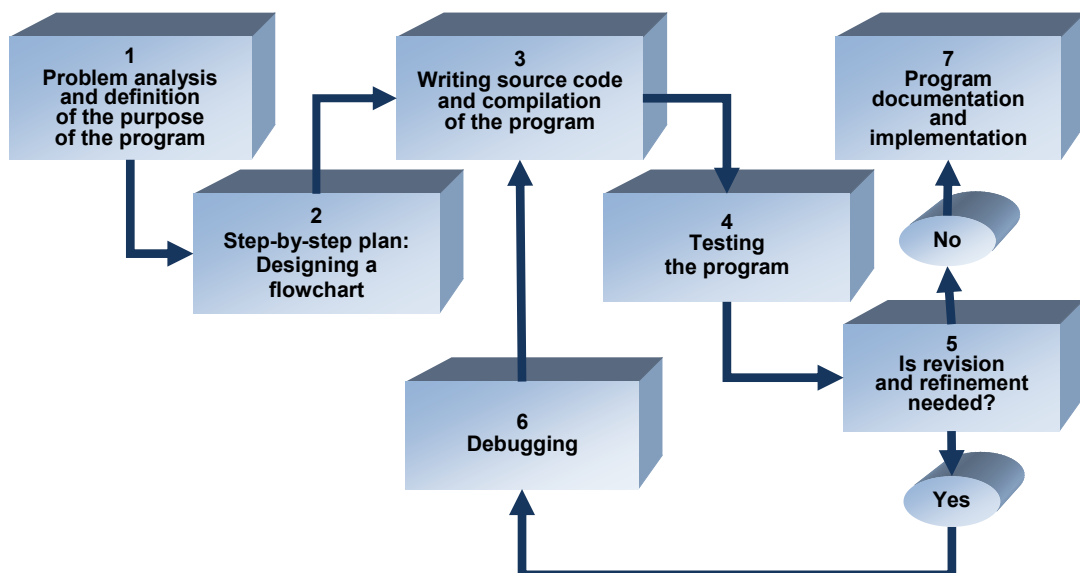
Later, the application phase follows where the current software system ..... (6), and now can be applied by means of coding and automation tools with which process and data models ..... (7) and transformed into actual prototypes. These stages ..... (8) iteratively; further development results in a combined business requirements and technical design statement to be used for constructing new systems.

..... (9), the information flow and the overlaps between the components must be tested thoroughly ..... (10) complete coverage. As most of the programming components have been tested ..... (11), it reduces the risk of potential problems at the end of the process.

Finally, the implementation is the phase where the new system is being deployed and introduced. This also happens in earlier phases. The developed prototypes ..... (12) and there where needed adjusted, extended or further developed. The prototype is the base for the end product. There are exceptional situations ..... (13) the prototypes are totally redesigned. These situations hardly occur because the end-users..... (14) in the design of the prototype.

**Task 3: The diagram illustrates the most important programming stages. In pairs, take turns to describe the individual stages.**

### Programming Stages







### Speaking

**Task 1: In pairs, find out as much as you can about the software your partner uses at home or at work.**

Ask about word processors, spreadsheet programs, databases, videoconferencing, business accounting, email and web browsers.

**Task 2: In pairs, discuss the following questions.**

- 1 What problems have you personally had with software packages?
- 2 What problems have you seen other people or organizations have with their software?
- 3 How were these problems fixed?

## Unit 8 WORDLIST

<b>accessibility software</b> [æksesi'bi:li 'sɒf(t)weə]	software zajišťující přístupnost zdravotně postiženým/invalidním uživatelům
<b>acquisition</b> [ækwi'ziʃ(ə)n]	koupě; nabytí
<b>alert</b> [ə'lɜ:t]	varovat, upozornit
<b>analyze</b> [ˈæn(ə)laɪz]	analyzovat, rozebrat
<b>anti-virus/antivirus utility</b> [ˈæntɪvaɪrəs ju:'tɪlɪti]	antivirový pomocný program
<b>application software</b> [æpli'keɪʃ(ə)n 'sɒf(t)weə]	aplikační software
<b>assembler</b> [ə'sembəl]	assembler, sestavující program
<b>backup software</b> ['bækʌp 'sɒf(t)weə]	zálohovací software
<b>bespoke</b> [brɪ'spəʊk]	zakázkový
<b>bug</b> [bʌg]	závada, defekt
<b>chart</b> [tʃɑ:t]	graf, diagram
<b>coded set of instructions</b> [ˈkəʊdɪd set ɒv ɪn'strʌkʃ(ə)nz]	zakódovaná sada příkazů
<b>command line</b> [kə'mɑ:nd laɪn]	příkazový řádek
<b>compiler</b> [kəm'paɪl]	kompilátor, kompilující program
<b>configure</b> [kən'fɪɡ]	(na)konfigurovat, přizpůsobit
<b>customize</b> ['kʌstəmaɪz]	upravit podle potřeb, vyrobit na zakázku
<b>cutover</b> ['kʌtəʊvə]	přechod od starého (hardware/software) systému do náhradního systému, než bude kompletně zaveden nový systém
<b>data file</b> ['deɪtə faɪl]	soubor dat
<b>debugger</b> [di:'bʌɡ]	ladicí program
<b>disabled user</b> [dɪs'eɪbld 'ju:zə]	zdravotně postižený/invalidní uživatel
<b>disk compression utilities</b> [dɪsk kəm'preʃ(ə)n ju:'tɪlɪz]	pomocný program zajišťující kompresi disku
<b>executable file</b> [ɪg'zekjʊtəb(ə)l/eg'zekjʊtəb(ə)l faɪl]	spustitelný soubor, soubor exe
<b>firewall</b> ['faɪəwɔ:l]	firewall (ochrana počítače před viry a nežádoucími průniky do systému)
<b>font size</b> [fɒnt saɪz]	velikost písma
<b>format</b> ['fɔ:mæt]	formátovat
<b>graphics software</b> ['græfɪks 'sɒf(t)weə]	grafický software
<b>high-level language</b> [haɪ'lev(ə)l 'læŋɡwɪdʒ]	vyšší/vysokoúrovňový problémově orientovaný programovací jazyk (přiblížení zápisu zdrojového kódu programu v daném programovacím jazyce k tomu, jak problémy zpracovává svým myšlením člověk)
<b>in concurrence</b> [ɪn kən'kʌr(ə)ns]	souběžně
<b>incorporate</b> [ɪn'kɔ:pəreɪt]	začlenit, zahrnout, zařadit
<b>line spacing</b> [laɪn speɪsɪŋ]	řádkování
<b>low-level language</b> [ləʊ'lev(ə)l 'læŋɡwɪdʒ]	nižší/nízkoúrovňový programovací jazyk (znamená velmi malý nebo žádný rozdíl mezi daným programovacím jazykem a strojovými instrukcemi procesoru)
<b>machine code</b> [mə'ʃi:n kəʊd]	strojový kód
<b>maintain</b> [meɪn'teɪn]	udržovat
<b>markup language</b> ['mɑ:klɒp 'læŋɡwɪdʒ]	značkovací jazyk
<b>media player</b> ['mi:diə 'pleɪ]	multimediální přehrávač
<b>modular</b> ['mɒdjʊlə]	stavebnicový, modulární
<b>multi-tasking OS</b> ['mʌltɪtɑ:skɪŋ əʊes]	víceúlohový OS (provádí několik procesů současně)
<b>multi-user system</b> ['mʌltɪ'ju:zə 'sɪstəm]	víceuživatelský systém
<b>numerical calculations</b> [nju:'merɪk(ə)l kælkjʊ'leɪʃ(ə)nz]	numerické výpočty
<b>off the shelf (software package)</b> [ɒf ðə ʃelf]	standardní a komerčně vyráběný (softwarový balíček)
<b>open-source software</b> [əʊp(ə)n'sɔ:s 'sɒf(t)weə]	otevřený software (počítačový software s technicky a legálně dostupným zdrojovým kódem)
<b>operating system (OS)</b> ['ɒpəreɪtɪŋ 'sɪstəm; əʊes]	operační systém (OS)

**optimize** ['ɒptɪmaɪz]

**output** ['aʊtpʊt]

**page margins** [peɪdʒ 'mɑ:dʒɪnz]

**payroll** ['peɪrəʊl]

**podcast** ['pɒdkɑ:st]

**presentation software**

[prez(ə)n'teɪʃ(ə)n 'sɒf(t)weə]

**programming language**

['prəʊgræmɪŋ 'læŋɡwɪdʒ]

**programming tool** ['prəʊgræmɪŋ tu:l]

**reconfigured** [ri:kən'fɪɡəd]

**release** [rɪ'li:s]

**rife** [raɪf]

**robust** [rə(ʊ)'bʌst]

**rollout** ['rəʊlaʊt]

**security software** [sɪ'kjʊəɪti 'sɒf(t)weə]

**sign off** [saɪn ɒf]

**single-tasking OS** ['sɪŋɡ(ə)ltɑ:skɪŋ əʊes]

**slide** [slaɪd]

**small and medium-sized enterprises (SME)**

[smɔ:l ənd mi:diəm'saɪzd 'entəpraɪzɪz; es em i:]

**software** ['sɒf(t)weə]

**software package** ['sɒf(t)weə 'pækɪdʒ]

**spreadsheet software** ['spredʃi:t 'sɒf(t)weə]

**steady state** ['stedi steɪt]

**system software** ['sɪstəm 'sɒf(t)weə]

**template** ['templət/'templeɪt]

**Transmission Control/Internet Protocol**

**(TCP/IP)** [trænz'mɪʃ(ə)n kən'trəʊl/'ɪntənət  
'prəʊtəkol; ti:si:'pi:/aɪ'pi:]

**typeface** ['taɪpfeɪs]

**utility software** [ju:'tɪlɪti 'sɒf(t)weə]

**vendor** ['vendə]

**virus checker** ['vaɪrəs]

**unauthorized access** [ʌn'ɔ:θəraɪzd 'ækses]

**word processor** [wɜ:d 'prəʊsesə]

**WYSIWYG editor** ['wɪziwɪɡ 'edɪtə]

optimalizovat

produkt, výstup

okraje stránky

mzdy, výplaty, výplatní listina

audio RSS (Rich Site Summary) - metoda šíření informací prostřednictvím zvukových nebo video záznamů

software pro tvorbu prezentací

programovací jazyk

programovací nástroj

překonfigurovaný

vydání, zveřejnění

(po)četný

masivní, odolný

postupné zavádění

bezpečnostní software

zakočit

jednoúlohový OS (provádí pouze jeden proces)

snímek

malé a střední podniky

software (programové vybavení počítače)

softwarový balíček

tabulkový software

rovnovážný/stabilizovaný stav

systémový software

šablona

přenosový řídicí protokol (protokol transportní vrstvy poskytující spojově orientované, spolehlivé služby s řízením datového proudu)

typ písma

pomocné programy, utility

prodejce, obchodník

kontrola virů

neoprávněný přístup

textový procesor

způsob editace dokumentů v počítači, při kterém je verze zobrazená na obrazovce vzhledově totožná s výslednou verzí dokumentu

## Review 2

### UNITS 5 – 8

#### Task 1: Identify these items.

15 pts/1 pt

- 1 ..... – the dimensions of a display resolution; the relative horizontal and vertical sizes of a display
- 2 ..... – the shaft that rotates in the middle of a disk drive
- 3 ..... – a serious disk drive malfunction and usually means that the head has scratched or burned the disk
- 4 ..... – a special program used to find errors in other program, which allows a programmer to stop a program at any point and examine and change the values of variables
- 5 ..... – a key on keyboards that turns insert mode on and off
- 6 ..... – a measurement that indicates the diagonal distance between like-colored phosphor dots on a display screen
- 7 ..... – a joystick used as a pointing device mounted in a computer keyboard
- 8 ..... – a hidden menu that does not appear until you right-click
- 9 ..... – a section of main memory or mass storage that has been reserved for a particular application
- 10 ..... – the intensity of light emitted from a surface per unit area in a given direction which carries information on the brightness of the image
- 11 ..... – the part of a hard disk to which the read/write arms attaches
- 12 ..... – refers to the sharpness and clarity of an image; signifies the number of pixels on the entire screen for graphics monitors
- 13 ..... – a pointing and drawing device shaped like a pen which is used with a tablet or touch screen
- 14 ..... – a pointing device shaped as a mouse lying on its back
- 15 ..... – a long key on a computer keyboard for making a blank between words

#### Task 2: Fill in the verbs in infinitive according to their definition.

5 pts/1 pt

- 1 ..... – to transmit video and audio material over the Internet as a steady, continuous flow.
- 2 ..... – to modify something (e.g. software) to suit a particular individual or task
- 3 ..... – to produce and discharge radiation
- 4 ..... – to prepare a storage medium to receive data
- 5 ..... – to convert information or an instruction into a particular form

**Task 3: Complete each gap in this text with a suitable word from this list.****20 pts/1 pt**

adjust	firmware menu	movement	sRGB
competition	frames	neck	subpixel
contrast	GPU	power	touch sensors
control bar	keyboard	splendidly	triggered
elevate	lightweight	spot	utilized

**BenQ Zowie XL2411 Review – 144Hz E-sports Monitor**

At being almost skeletal regarding accents, the XL2411 is conservative when it comes to cashing in on that near extremist “gaming” design we’d notice on other pro-spec gaming monitors. A rather modest, ..... (1), matte plastic case is all that ..... (2) the display, and although it has its appeal, it’s rather obvious that BenQ is going for an all performance aesthetic. They do manage to sneak in a few design cues here and there that keep things lively, though. One of those mentioned cues happens to be a smoothly protruding bar at the right bottom lip of the monitor that holds an arrayed group of ..... (3) that occupy space that would normally be reserved for physical buttons.

The stand is where most of all that artistic effort was invested, as it’s plain to see. With a sturdy base and a solid ..... (4), it serves its purpose well, made to keep the display still, even if you’re banging away at a ..... (5) just under it. The modulated look works to its advantage and gives the whole monitor a respectable portrait to show off. You can rotate, swivel, ..... (6) and tilt it with just a few actions. Making the adjustment is pretty effortless and intuitive and can be done with just a single hand.

Running at a frequency of 144hz, the 1920×1080 display is more than adequate for an incredibly smooth gameplay experience, with a feature list that’ll be ..... (7) to its fullest with FPS titles. A 1ms response time ensures that you see every single update with that 144fps potential and spot every sly ..... (8), be it from shadows, gunfire or even the oddly lobbed grenade. You also get an incredible amount of responsiveness, making good use every bit of your hardware’s ..... (9) to get you the best possible responsiveness that it can hand out. The XL2411 also comes with support for 16.7 million colors per ..... (10), giving you a pretty decent range of setup to choose from. With these monitors, ..... (11) usually tends to work best, but you can experiment quite a bit to find one that works for you, as the way we see the light tends to vary quite a bit and every ..... (12) seems to have a different idea as to what the color orange really is.

Another interesting feature that’s left hanging on the scales is the ‘Black eQualizer’ feature, which feels like a godsend when you’re playing competitive matches against folks who enjoy being on the sneakier side of the spectrum, but sometimes, it can feel very uncomfortable when it gets ..... (13) unnecessarily. What the Black eQualizer feature does is ..... (14) the contrast on the darker parts of the images and makes them brighter so you can get a good view of whatever happens to be hiding in there, which works out ..... (15) when it works as intended. A lot of the smaller details stand out, and it makes it pleasantly easy to ..... (16) movement in corners or more cramped spaces. The downside to this though is that it can really kill any immersion or atmosphere, and to disable or adjust the aggressiveness, you’ve got to go through the ..... (17) on those fidgety little touch controls that are embedded in the ..... (18). Even with the shortcomings, the feature is incredibly useful and really does give you an advantage, almost to the point where it feels like you’re cheating. The ..... (19) by default is at a pretty good 1000:1, but with Black eQualizer enabled, it tends to switch around as it goes along.

An incredibly good feature list and great image quality make this monitor one of the best entry level ..... (20) spec compliant monitors that are currently on the market. If you find one on sale and are in the market for a budget gaming spec FHD monitor, the XL2411 makes a choice temptingly easy.

/Adapted and abridged from Nolan (2016)/

## Unit 9

### WINDOWS BASICS

“Yesterday it worked.  
Today it is not working.  
Windows is like that.”

Margaret Segall



#### Activity

- 1 Discuss the quote.
- 2 What version of Windows do you prefer? Why?
- 3 What features are commonly found on a computer desktop?
- 4 What is a word processor? What kind of tasks do people use it for?
- 5 Which word processing program is the most popular? Why?



#### Text

##### Graphical User Interfaces

The background screen you see when your computer has finished starting up is called the **desktop**. The desktop consists of **graphical user interfaces (GUIs)**, such as **windows** (a scrollable viewing area on the screen), **icons**, **menus** (at the bottom, top, and/or sides of the screen), **tabs** or **tabbed document interfaces (TDIs)**, and **pointers** which help the user to easily and quickly access **files**, **applications**, or **shortcuts**, with the rest of the screen containing a **desktop background**, or **wallpaper**.

##### Start button

The Start button is situated in the lower left corner of the screen. In Windows 8, you will click the Start button to return to the **Start screen**. In Windows 7 and earlier versions, you will click the Start button to open the **Start menu**.

##### Taskbar

The taskbar or **dock** (for Apple's Mac OS X) is at the bottom of the screen. It contains **shortcuts** to applications and different settings. When you open a program or file, it will appear on the taskbar for easy access, and you can easily switch between different programs (such as Internet Explorer, File Explorer, and Windows Media Player) by selecting them on the taskbar. On the right side of the taskbar, you will see the date and time. There will also be shortcuts to different settings, like Internet settings and sound volume.

##### Recycle bin

The recycle bin (also known as the **trash can**) prevents a user from accidentally deleting files. When you delete a file, it is moved to the recycle bin. If you change your mind, you can move the file back to its original location. To permanently delete the file, empty the recycle bin or trash can.

##### Control Panel

The Control Panel is a part of the Microsoft Windows graphical user interface (GUI) which allows users to view and adjust the computer's settings, such as adding hardware, adding and removing software, controlling user accounts, and changing accessibility options. Simply click a setting to adjust it. For example, click 'Change desktop background' to choose a new wallpaper for your desktop.

#### *Graphical Control Elements*

##### Title bar .....

A title bar is a horizontal bar at the top of the window and part of the window decoration. It displays the name of the program and active document.

##### Menu bar .....

A menu bar is a graphical control element situated at the top of the window. It displays **drop-down menus** (pull-down menus or drop-down lists), such as **File (Home)**, **Edit**, **View**, **Insert**, **Format**, **Tools**, **Table**, **Window**, and **Help**. Each of them has a set of different commands that will perform a specific action within the program.

**Office button .....**

Clicking office button reveal a drop-down menu showing commands for file operations such as **Open**, **Save**, **Save As** and **Print**

**Quick access toolbar .....**

A quick access toolbar is a strip of icons located in the top left corner contains some of the most frequently used commands such as **Print**, **View**, **Undo** and **Redo** are placed. An earlier term used was 'ribbon'.

**Format menu .....**

The format menu provides many of the most common options for formatting selected text, such as **font style**, **font size**, **font weight**, **text alignment** and **colour**.

**Ruler .....**

Ruler measures the **width** and shows the **margins**.

**Scroll bar .....**

A is a long thin strip with **scroll arrows** and a **sliding section** ..... with which continuous text, pictures or anything else can be scrolled including time in video applications, i.e., viewed even if it does not fit into the space in a computer display, or window. There are two scroll bars on the right hand side of the window and at the bottom of the window. **Horizontal** scroll bar is used for shifting the screen left or right. **Vertical** scroll bar is used for shifting the screen up or down.

**Status bar .....**

A status bar is a horizontal bar at the bottom of the window that displays information about the cursor position. It shows the **page number**, **column number** and the **line number**.

**Working area .....**

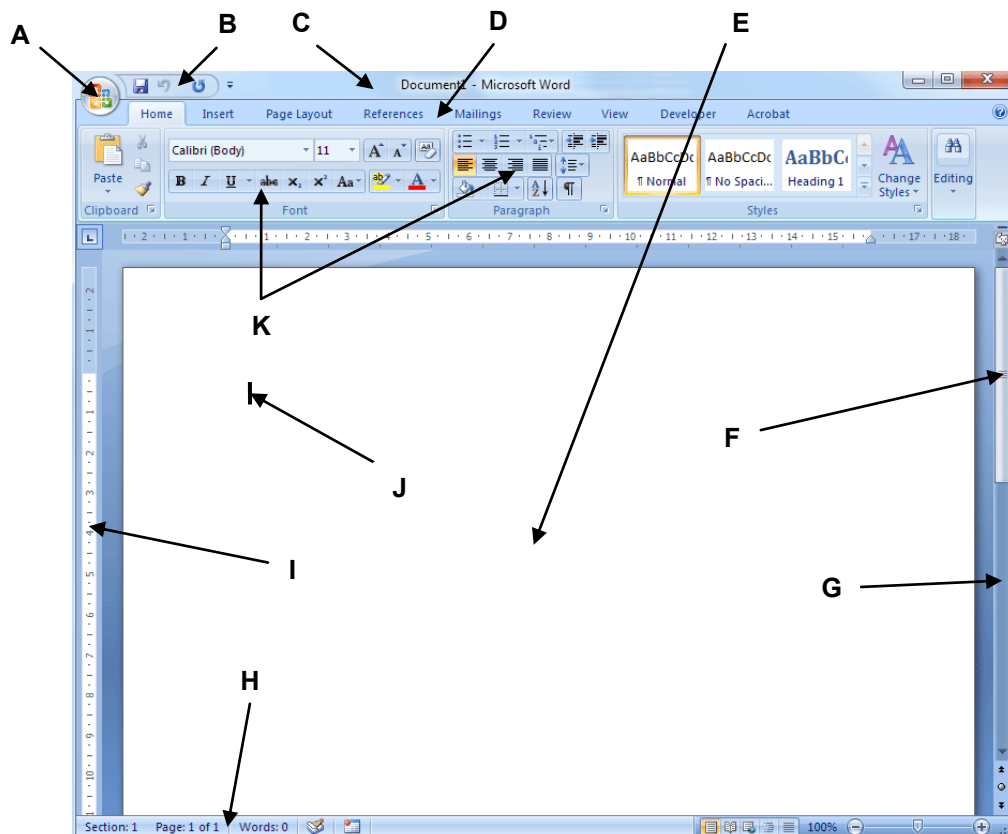
A working area is the area is the document window where you type the text.

**Cursor .....**

A cursor is the blinking vertical line in the working area that shows the **position** on the screen.

**Vocabulary Practice 1**

**Task 1: Identify the graphical control elements in the picture and fill in the letters in the text.**





**Task 2: Find the words in the text according to these definitions.**

- 1 ..... – a graphical control element that allows the user to choose one value from a list
- 2 ..... – a part of the system's GUI, which provides easy management and access to panel components
- 3 ..... – a folder or directory where deleted items are temporarily stored
- 4 ..... – a graphical control element that allows multiple documents or panels to be contained within a single Windows. It is an interface style most commonly associated with web browsers, web applications, and text editors
- 5 ..... – shows which programs or applications are running on the device, as well as provide links and shortcuts to other programs or places
- 6 ..... – the main graphical user interface of an operating system, usually displaying icons, windows and background wallpaper
- 7 ..... – a file that points to the location of another file and serves as a quick way to access it
- 8 ..... – a row of items titles that, when clicked, display drop-down menus of other items or commands

**Speaking 1**


In pairs, compare the Windows 8 user interface with the Mac OS X user interface.



What are the similarities and differences?

Which features do you prefer from each interface?

**Reading*****Working with Windows, Files, Folders and Shortcuts***

Whenever you open a file, folder, or application, it will appear in a new window. You can have multiple items open at the same time in different windows.

To ..... (1), click  to hide the window. You can then click the icon for that window on the taskbar to make it reappear.

To ..... (2), click  to make the window fill the entire screen. The Maximize button will be temporarily replaced by the Restore button . Just click it to return the window to its original size.

To ..... (3), click .

To ..... (4), click and drag the top of the window to move it to the desired location on the screen. When you are done, release the mouse. The window will appear in the new location.

To ..... (5), **hover** the mouse over any **corner** of the window, then click and drag the mouse to make the window larger or smaller. When you are done, release the mouse and the window will be resized.

If you have more than one window open at the same time, you can quickly **switch** between them by clicking the icon for that window on the taskbar.

### File

There are many different types of files you can use. For example, Microsoft Word documents, digital music, digital photos, and digital videos are all types of files. When you use different applications, you will often be **viewing**, **creating**, or **editing** files. Files are usually represented by an **icon**.

There are two main ways to ..... (6):

- 1 Find the file on your computer, and double-click it. This will open the file in its default application.
- 2 Open the application, then use the application to open the file. Once the application is open, you can go to the File menu at the top of the window and select Open.

To ..... (7), click and drag the file to the desired location and then release the mouse. The file will appear in the new location.

There are a few different ways to ..... (8):

- 1 If you are viewing your **files as icons**, can click and drag the mouse to draw a box around the files you want to select. Then release the mouse and the files will be selected. You can now move, copy, or delete all of these files at the same time.
- 2 To select **specific files** from a folder, press and hold the Control key on your keyboard, then click the files you want to select.
- 3 To select a **group of files** from a folder, click the first file, press and hold the Shift key on your keyboard, then click the last file. All of the files between the first and last ones will be selected.
- 4 If you want to select **all files** in a folder at the same time, open the folder and press Ctrl+A (press and hold the Control key on your keyboard and then press A).

### Folder

Windows uses folders to organize all of the different files and applications it contains. **Folder icons** on the computer are designed to look like file folders full of documents or pictures.

To ..... (9):

- 1 Go to the location (such as a folder or the desktop) where you want to create a new folder.
- 2 Right-click a blank area on the desktop or in the folder window, point to New, and then click Folder.
- 3 Type a name for the new folder, and then press Enter.

To ..... (10):

- 1 Click the file or folder, wait about one second, and click again. An editable text field will appear.
- 2 Type the desired name on your keyboard and press Enter. The name will be changed.

To ..... (11):

- 1 Click and drag the file to the Recycle Bin icon on the desktop. Alternatively, you can click the file to select it and press the Delete key on your keyboard.
- 2 To permanently delete the file, right-click the **Recycle Bin** icon and select **Empty Recycle Bin**. All files in the Recycle Bin will be permanently deleted.

### Shortcut

A shortcut is a way to access a file or folder more quickly. If you have a file or folder you use frequently, you can save time by creating a **shortcut** on the desktop. Instead of navigating to the file or folder each time you want to use it, you can simply double-click the shortcut to open it. A shortcut will have a small arrow in the lower-left corner of the icon. If you delete a shortcut, it will not delete the actual folder or the files it contains.

To ..... (12), locate and right-click the desired folder or file, then select Send to → Desktop. A shortcut to the folder or file will appear on the desktop.

Note: Copying a shortcut onto a flash drive will not work. If you want to bring a file with you, you will need to navigate to the actual location of the file and copy it to the flash drive.

Read the text and complete the missing commands.

- A select more than one file at a time
- B resize a window
- C maximize the window
- D rename a file or folder
- E close the window
- F delete a file or folder
- G minimize a window to the taskbar
- H move a file from one location to another
- I move a window
- J create a new folder
- K create a shortcut
- L open a file



### Text

#### Word Processing

Word processor is a computer program which manipulates text and produces documents suitable for printing. Microsoft Word, WordPerfect, WordPad, ThinkFree Office Write and Scrivener are examples of word processing software. Typical features of word processing include formatting, operations cut, copy and paste, undo and redo; spell-checking and grammar-checking; creating tables and working with objects.

Formatting options include:

- **layout** allows you to specify different **margins**
- **headers, footers** and **page numbering**
- **redoing changes** to reverse the undo
- **inserting and editing headers and footers**
- **text alignment** (flush left/right, justify and center)
- **line spacing**
- **bullets and numbering**
- **decreasing/increasing indent**
- **typeface/font family** (Types New Roman, Arial, etc.)
- **font style** (normal, **bold**, *italic*, **bold italic**)
- **font size**
- **font weight**
- **font colour**
- **inserting special symbols**
- **underlining and highlighting the text**

Word processors also include such **basic operations** as:

- **inserting, deleting, and selecting** words, lines or paragraphs
- **copying, cutting, and pasting** words, lines or paragraphs from one place to another
- **dragging and dropping** words or parts of the text
- **undoing changes** to undo your most recent action when you make a mistake (the undo command is usually in the upper-left corner of the window, near the menu bar)

Word processors include dictionary software to:

- perform **spell-checking** and **grammar-checking**
- act as a **thesaurus** to provide alternate words of similar meaning

Example of automatic spelling and grammar checking:

The **red line** indicates a **spelling error**, the **green line** indicates a **grammatical error**, and the **blue line** indicates a **contextual spelling error**.

Word processors also incorporate functions to:

- **search your document contents**
- **search and replace one word with another**
- **merge text from one file into another file**

**To insert an image** stored on your computer, click Insert → Illustrations → Picture and choose what kind of picture you want to insert into your Word document:

- Clip Art
- From File
- From Scanner or Camera
- New Drawing
- AutoShapes
- WordArt
- Organization Chart
- Chart

**To insert a table** in the document:

- Click Table → Insert Table from the dropdown menu
- In the **Insert Table dialog box**, enter the number of columns and rows you want in this table
- In the **AutoFit Behaviour panel**, select Auto, or click the down arrow to choose a specific size.

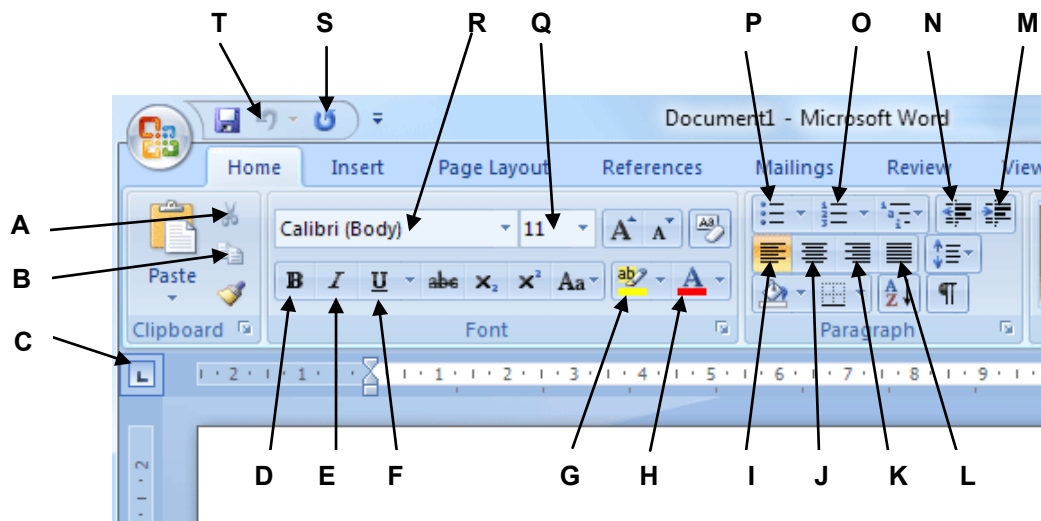
Note 1: There are more ways to create tables in Microsoft Word.

Note 2: A word processor is not always the best package to use to produce a document. If more control over the layout of a page is required or the document is to include a lot of graphics, then a **desktop publishing** package such as Microsoft Publisher would be more suitable.



## Vocabulary Practice 2

Task 1: Name the formatting options.



A .....  
 B .....  
 C .....  
 D .....  
 E .....  
 F .....  
 G .....  
 H .....  
 I .....  
 J .....

K .....  
 L .....  
 M .....  
 N .....  
 O .....  
 P .....  
 Q .....  
 R .....  
 S .....  
 T .....

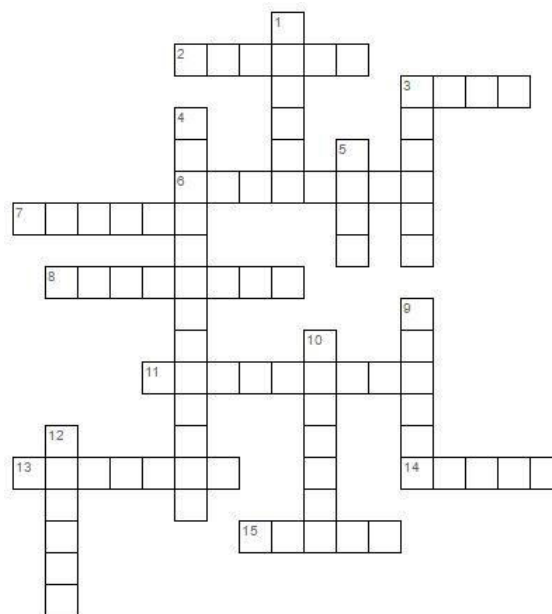
Task 2: Identify the types of error.

A .....  
 B .....  
 C .....

A  
 ↓  
 Dear Mr. Theodore: B  
 I am exceedingly interested in this p  
 and employment background are app  
 While working toward my degree, I w:  
 small firm. I increased my call volum  
 success. I will completes my degree i  
 employment in early June. C

**Task 3: Fill in the commands according to these definitions.**

- 1 ..... – select an object or text and store it in a temporary location often known as the clipboard, which is usually invisible to the user
- 2 ..... – place an object or text in a specific location
- 3 ..... – reverse the action of an earlier action
- 4 ..... – duplicate an object or text
- 5 ..... – eliminate an object or text
- 6 ..... – select an object or text, move it and place it into an alternate area
- 7 ..... – highlight text or pick an object
- 8 ..... – move an object or text from the clipboard to a specific location

**Task 4: Complete the crossword puzzle.****Across**

- 2 an arrangement of text and graphics
- 3 a collection of data or information that has a name
- 6 a special type of file that points to another file or device, which can be placed on the desktop to conveniently access files
- 7 a small graphical element used to highlight or itemize a list
- 8 a design for a set of characters
- 11 a monitor pattern or picture or other graphic representation that forms the background
- 13 an area of the screen in GUI against which icons and windows appear
- 14 measures the width and shows the margins
- 15 the process of combining the various versions of a file or folder

**Down**

- 1 an object that can contain multiple documents
- 3 a line or block of text that is automatically added to the bottom of every page
- 4 a process by which the space between the words in a line is divided evenly to make the text flush with both left and right margins.
- 5 a small picture that represents an object or program
- 9 blinking vertical line in the working area that shows the position on the screen
- 10 a desktop toolbar application that lets you perform tasks such as switching between open windows and starting new applications
- 12 a line or block of text that is automatically added to the top of every page



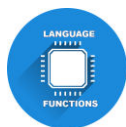
### Listening 1

Listen to two friends, Anna and Ben, talking about how to move text in Word.

**Task 1:** How many steps are involved in carrying out the *Cut and Paste* task?

**Task 2:** Complete the dialogue.

- Anna:** Ben, do you know how I can move this paragraph? I want to put it at the end of this page.  
**Ben:** Er... I think so. .... (1), use the mouse to select the text you want to move.  
 .... (2) choose the *Cut* command from the Edit menu.  
**Anna:** .... (3)?  
**Ben:** Yes. The selected text disappears and goes onto the clipboard.  
 .... (4) you find where you want the text to appear and you click to position the insertion point there.  
**Anna:** Mm, OK. Is that .... (5)?  
**Ben:** Yes, if that's where you want it. .... (6), choose *Paste* from the Edit menu, or hold down *Ctrl* and press *V*. .... (7), check that the text has appeared in the right place.  
**Anna:** Ok, I've .... (8). Is that .... (9)?  
**Ben:** Yes, that's it. If you make a mistake, you can choose *Undo* from the Edit menu, which will reverse your last editing command.  
**Anna:** Brilliant! Thanks a lot.  
**Ben:** That's OK, it's my pleasure.



### Language Functions: Giving and following instructions

To give instructions, we use the imperative form of the verb and sequence words and phrases such as *first(ly)*, *second(ly)*, *next*, *then*, *after this*, *afterwards*, *following this*, *subsequently*, *finally*, *eventually*, *last* etc. You can also use the present simple and possessive pronoun *you*.

*Example of cutting and pasting text:*

- **First(ly)**, scroll down the text to **find** the block of text you want to move.
- **Second(ly)**, position the cursor at the beginning of the block of text.
- **Then**, hold down the left mouse button and **drag** the mouse to **highlight** the block of text.
- **Next**, release the left mouse button.
- **After this**, click on the right mouse button and **select** the cut text option from the pop-up menu or click on the Cut button.
- **Subsequently**, move the cursor to where you want the text to go.
- **Finally**, select the paste (click on the Paste button) text option.

If you want to check that you have understood instructions, you can use expressions such as:

- *Like this?*
- *Is that right?*
- *Ok. I've done that now. What next?*
- *Is that everything?*
- *Anything else?*





### Speaking 2

In pairs, give your partner instructions using sequencing connectors:

Creating a document and saving it on a disk. (Student A)

Inserting a picture from the Internet into a Word document. (Student B)



### Listening 2

Listen to Lucy Boyd giving a training course on basic Excel.

**Task 1: Answer these questions about spreadsheets programs.**

- 1 What is a spreadsheet?
- 2 What are spreadsheets used for?
- 3 What types of data can be keyed into a cell?
- 4 What happens if you change the value of a cell?

**Task 2: Decide whether these sentences are true (T) or false (F).**

- 1 ..... A spreadsheet displays information in the form of a table with a lot of columns and rows.
- 2 ..... In a spreadsheet you can only enter numbers and formulae.
- 3 ..... You cannot change the width of columns.
- 4 ..... Spreadsheet programs can generate a variety of charts and graphs.
- 5 ..... Spreadsheets cannot be used as databases.

## Unit 9 WORDLIST

<b>application/app</b> [æplɪ'keɪʃ(ə)n/æp]	aplikace
<b>AutoFit Behaviour panel</b> [ˈɔ:təʊfɪt bɪ'heɪvjə 'pæn(ə)]	panel automatického přizpůsobení
<b>blinking</b> ['blɪŋkɪŋ]	blikající
<b>bold (font style)</b> [bəʊld (fɒnt staɪl)]	tučné (řez písma)
<b>bold italic (font style)</b> [bəʊld ɪ'talɪk]	tučná kurzíva (řez písma)
<b>bullets</b> ['bʊlɪts]	odrážky
<b>column number</b> [ˈkɒləm 'nʌmbə]	číslo sloupce
<b>contextual spelling error</b> [kən'tekstʃʊəl 'speliŋ 'erə]	kontextová pravopisná chyba
<b>Control Panel</b> [kən'trəʊl 'pæn(ə)]	ovládací panel
<b>copy</b> ['kɒpi]	kopírovat
<b>cursor</b> ['kɜ:sə]	kurzor, ukazatel
<b>cut</b> [kʌt]	vyjmout
<b>decrease indent</b> [dɪ'kri:s ɪn'dent]	zmenšit odsazení
<b>delete</b> [dɪ'li:t]	smazat, vymazat
<b>desktop</b> ['desktp]	plocha
<b>desktop background/wallpaper</b> [ˈdesktp 'bækgraʊnd/ 'wɔ:lpeɪpə]	pozadí plochy, tapeta
<b>dialog box</b> [ˈdaɪəlɒg bɒks]	dialogové okno
<b>drag</b> [dræg]	přesunout, přetáhnout
<b>drop</b> [drɒp]	uvolnit
<b>drop-down/pull-down menu/list</b> [drɒpdaʊn/pʊldaʊn 'menju:lɪst]	rozbalovací nabídka/seznam
<b>edit</b> ['edɪt]	upravit, editovat
<b>Edit</b> ['edɪt]	Úpravy
<b>file</b> [faɪl]	soubor
<b>folder</b> ['fəʊldə]	složka
<b>font colour</b> [fɒnt 'kɒlə]	barva písma
<b>font size</b> [fɒnt saɪz]	velikost písma
<b>font style</b> [fɒnt staɪl]	řez písma
<b>font weight</b> [fɒnt weɪt]	tloušťka písma
<b>footer</b> ['fʊtə]	zápatí
<b>Format</b> ['fɔ:mæt]	Formát
<b>format menu</b> ['fɔ:mæt 'menju]	nabídka „Formát“
<b>grammar-checking</b> [ˈgræmə 'tʃekɪŋ]	kontrola gramatiky
<b>graphical control element/widget</b> [ˈgræfɪk(ə)l kən'trəʊl 'elɪm(ə)nt/ 'wɪdʒɪt]	ovládací prvek
<b>graphical user interfaces (GUI)</b> [ˈgræfɪk(ə)l 'ju:zə 'ɪntəfeɪs; dʒɪ:ju:'aɪ]	grafické uživatelské rozhraní
<b>header</b> ['hedə]	záhlaví
<b>Help</b> [help]	Nápověda
<b>highlight</b> ['haɪlaɪt]	zvýraznit
<b>Home</b> [həʊm]	Domů
<b>hover</b> ['hɒvə]	podržet/balancovat (ukazatelem myši)
<b>icon</b> ['aɪk(ə)n]	ikona
<b>increase indent</b> [ɪn'kri:s ɪn'dent]	zvětšit odsazení
<b>Insert</b> [ɪn'sɜ:t]	Vložení
<b>Insert Table</b> [ɪn'sɜ:t 'teɪb(ə)]	vložte tabulku
<b>italic (font style)</b> [ɪ'tælɪk]	kurzíva (řez písma)
<b>layout</b> ['leɪaʊt]	rozvržení, uspořádání (stránky)
<b>line number</b> [laɪn 'nʌmbə]	číslo řádku
<b>line spacing</b> [laɪn speɪsɪŋ]	řádkování
<b>margin</b> ['mɑ:dʒɪn]	okraj stránky
<b>maximize</b> [ˈmæksɪmaɪz]	maximalizovat, zvětšit
<b>menu</b> ['menju:]	menu, seznam nabídek
<b>menu bar</b> [ˈmenju: bɑ:]	hlavní nabídka
<b>merge</b> [mɜ:dʒ]	sloučit

<b>minimize</b> ['mɪnɪmaɪz]	minimalizovat, zmenšit
<b>normal (font style)</b> ['nɔ:m(ə)]	normální (řez písma)
<b>numbering</b> ['nʌmbəɪn]	číslování
<b>page number</b> [peɪdʒ 'nʌmbə]	číslo stránky
<b>page numbering</b> [peɪdʒ 'nʌmbəɪn]	číslování stránek
<b>paste</b> [peɪst]	vložit
<b>pointer</b> ['pɔɪntə]	ukazatel (myši)
<b>position</b> [pə'zɪʃ(ə)n]	umístění, pozice
<b>Print</b> [prɪnt]	Tisk
<b>quick access toolbar/ribbon</b> [kwɪk 'ækses 'tu:lba:/'rɪb(ə)n]	panel nástrojů „Rychlý přístup“
<b>recycle bin/trash can</b> [ri:'saɪk(ə)l bɪn/ trəʃ kən]	koš
<b>Redo</b> [ri:'du:]	Opakovat psaní/akci
<b>redo changes</b> [ri:'du: tʃeɪn(d)ʒɪz]	znovu provést změny
<b>resize</b> [ri:'saɪz]	změnit/přízpůsobit velikost
<b>ruler</b> ['ru:lə]	pravítko
<b>scroll arrows</b> [skrəʊl 'æəʊz]	šipky posuvníku
<b>scroll bar/scrollbar</b> [skrəʊl 'bɑ:]	posuvník, posuvná lišta
<b>select</b> [sɪ'lekt]	vybrat
<b>shift</b> [ʃɪft]	posunout
<b>sliding section</b> [slaɪdɪŋ 'sekʃ(ə)n]	posuvný oddíl
<b>shortcut</b> ['ʃɔ:tkʌt]	zástupce
<b>spell-checking</b> ['speltʃekɪŋ]	kontrola pravopisu
<b>Start button/menu</b> [stɑ:t 'bʌt(ə)n/'menju]	tlačítko/nabídka Start
<b>Start screen</b> [stɑ:t skri:n]	obrazovka Start
<b>status bar</b> ['stetəs 'bɑ:]	stavový řádek
<b>tabbed document interface (TDI)/tab</b> [tæb]	záložka
<b>Table</b> ['teɪb(ə)]	Tabulka
<b>taskbar (dock for OS X)</b> ['tɑ:sk 'bɑ:/dɒk]	hlavní panel
<b>text alignment</b> [tekst ə'laɪnm(ə)nt]	zarovnání textu
<b>thesaurus</b> [θɪ'sɔ:rəs]	slovník synonym, thesaurus
<b>tiles</b> [taɪlz]	dlaždice
<b>title bar</b> ['taɪt(ə)l 'bɑ:]	záhlaví okna
<b>Tools</b> [tu:lz]	Nástroje
<b>typeface/font family</b> ['taɪpfeɪs/font 'fæmɪli]	typ písma
<b>underline</b> [ʌndə'laɪn]	podtrhnout
<b>Undo</b> [ʌn'du:]	Zpět/Vrátit zpět
<b>undo changes</b> [ʌn'du: tʃeɪn(d)ʒɪz]	anulovat/zrušit změny
<b>Window</b> ['wɪndəʊ]	Okno
<b>View</b> [vju:]	Zobrazení
<b>working area</b> ['wɜ:kɪŋ 'e:riə]	pracovní plocha

## Unit 10

### COMPUTER NETWORKS AND INTERNET ACCESS



#### Activity

- 1 What types of networks do you know?
- 2 Where are different types of networks used?
- 3 What do you need to connect to the Internet?
- 4 What types of connection do you know? How do they differ?



#### Text

The Internet is a global system of interconnected computer networks that use the standard Internet protocol suite – the **Transmission Control Protocol (TCP)** and the **Internet Protocol (IP)** to link several billion devices worldwide. It is an international network of networks that consists of millions of private, public, academic, business, and government networks, of local to global scope, that are linked by a broad array of electronic, wireless, and optical networking technologies. To communicate with one another computers need to use the same TCP/IP.

#### Computer Networks

There are the following types of computer networks:

##### Personal Area Network (PAN)

A PAN lets devices communicate over the range of a person. A common example is a wireless network that connects a computer with its peripherals.

Almost every computer has an attached monitor, keyboard, mouse, and printer. Without using wireless, this connection must be done with cables. So many new users have a hard time finding the right cables and plugging them into the right little holes. To help these users, some companies got together to design a short-range wireless network called **Bluetooth** to connect these components without wires. Bluetooth technology also enables wireless communication between laptop computers, mobile phones and PDAs. It enables devices use short-range radio signals to exchange data quickly and easily. It was developed by a group of computer and telecommunication companies including IBM, Intel, Nokia and Ericsson.

##### Local Area Network (LAN)

A LAN is two or more connected computers sharing certain resources in a relatively small geographic location, often in the same building. They can be built with two main types of architecture: **peer-to-peer**, where the two computers have the same capabilities, or **client-server**, where one computer acts as the server containing the main hard disk and controlling other **workstations** or **nodes**, all the devices linked in the network. Examples include home networks and office networks. A family of computer networking technologies for LANs is **Ethernet**.

The computers on the network can share data, and they can also access printers connected to the network. Computers in a LAN need to use the same **protocol**, or standard of communication. Ethernet is one of the most common protocols for LANs. A **router** is needed to link a LAN to another network.

To build a WLAN (Wireless LAN) you need **access points**, radio-based receiver-transmitters that are connected to the wired LAN, and **wireless adapters** installed in your computer to link it to the network. **Hotspots** are WLANs available for public use in places like airports, and hotels, but sometimes the service is also available outdoors (e.g. university campuses, squares, etc.).

##### Metropolitan Area Network (MAN)

A metropolitan area network (MAN) is larger than a LAN, covering an area of a few city blocks to the area of an entire city, often including the surrounding areas. A family of computer networking technologies for MANs is **Ethernet**.

##### Wide Area Network (WAN)

A WAN typically consists of two or more LANs. The computers are farther apart and are linked by telephone lines, dedicated telephone lines, or radio waves. The Internet is the largest Wide Area Network (WAN) in existence. The main transmission paths within a WAN are high-speed lines called **backbones**.

If a personal computer is connected to a network, it is called a **network workstation** (Note: This is different from the usage of the term workstation as a high-end microcomputer). If your PC is not connected to a network, it is referred to as a **standalone computer**. A **server** is a computer that 'serves' many different computers in a network by running specialized software and storing information. For example, webpages are stored on servers.

**Network topology** refers to the shape of a network. There are three basic physical topologies.

- **Star** – there is a central device to which all the workstations are directly connected. This central position can be occupied by a server, or a **hub** or **switch**, a connection point of the elements of a network that redistributes the data.
- **Bus** or **Line** – every workstation is connected to a main cable called a **bus**.
- **Ring** – the workstations are connected to one another in a closed loop configuration. There is no central hub that holds all the data, and communication is sent in one direction around the ring through the use of a **token** (a special series of bits that travels around the ring network).
- **Tree** – a group of stars connected to a central bus.

### Internet Access

Internet access connects individual computer terminals, computers, mobile devices, and computer networks to the Internet, enabling users to access Internet services. Before you can access the Internet, there are three things you need: an **Internet service provider**, a **modem**, and a **web browser**.

An **Internet service provider (ISP)** is an organization that provides services for accessing, using, or participating in the Internet. Internet service providers may be organized in various forms, such as commercial, community-owned, non-profit, or privately owned. They employ a range of technologies to connect users to their network, such as **dial-up**, **broadband**, **3G** and **4G**.

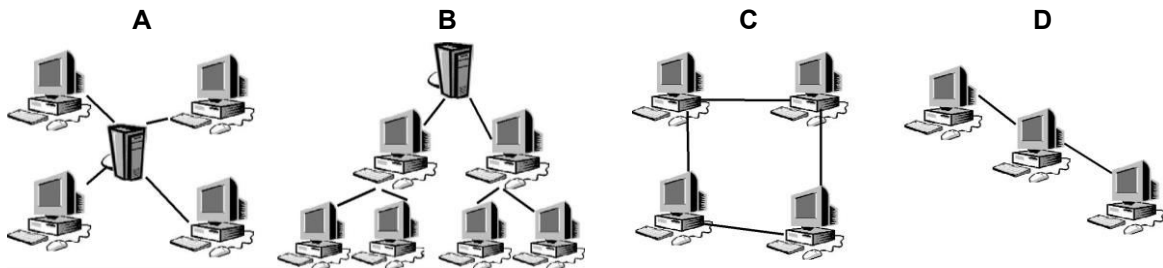
- **Dial-up**  
A dial-up connection (referred to as a **narrowband** connection) connects a computer to the Internet via a modem and a public telephone network. It is the cheapest option, but slower than other kinds of Internet access (the maximum theoretical connection speed is 56 Kbps). The user cannot use the Internet and the phone at the same time unless there are multiple phone lines. To communicate over a phone line, the computer needs a **modem**, which converts the **digital signals** from the computer into **analogue signals** so that data can be transmitted across the phone or cable network.
- **Broadband**  
A broadband connection allows a very fast connection to the Internet. There are several ways of getting online with broadband – **ADSL**, **cable TV**, and **satellite**. Each of these types of access involves connecting to an access point using either a wired Ethernet connection or a wireless connection.  
  
An **ISDN (Integrated Services Digital Network)** capable phone line can provide connection speeds of up to 64 Kbps (single channel) or 128 Kbps (dual channel) using a terminal adaptor often referred to as an ISDN modem. The terminal adaptor removes the need to convert digital signals to analogue signals before they're sent down the telephone line, this results in a more reliable Internet connection.  
  
An **ADSL (Asymmetric Digital Subscriber Line) connection** works over the telephone line and requires a special **ADSL modem**. An ADSL is much faster than a dial-up access (up to 24 Mbps). It does not require the phone service and the Internet and the phone can be used at the same time.  
  
A **cable connection** (requiring a special cable modem) uses a cable TV line to transmit and receive data and requires a **cable modem**. It can be faster (up to 50 Mbps) than a dial-up access, but it is only available where a cable is available.  
  
A **satellite connection** is provided through satellites and requires a **satellite modem** (it does not require phone or cable lines). This kind of access can be used almost anywhere in the world. It is faster than a dial-up access but data is delayed and its speed can be affected by the weather conditions.
- **3G and 4G**  
**3G and 4G** (the **third and fourth generation** of mobile telecommunications technology) **systems** provide high-speed wireless Internet access even when there is no Wi-Fi connection and they are available for mobile phones and computers.

**Task 1: Decide whether the following statements are true (T) or false (F).**

- 1 ..... LANs link computers and other devices that are placed far apart.
- 2 ..... PANs can cover the area of an entire city.
- 3 ..... The word 'protocol' refers to the shape of the network.
- 4 ..... In client-server architecture the two computers have the same capabilities.
- 5 ..... Access points don't need to be connected to a wired LAN.
- 6 ..... Routers are used to link a LAN to another network.
- 7 ..... Wireless adapters are optional when you are using a WLAN.
- 8 ..... Hotspots can be found inside and outside buildings.
- 9 ..... The Internet is an example of WAN.
- 10 ..... Wireless WANs use fibre and cable as linking devices.
- 11 ..... A standalone computer is not connected to a network.
- 12 ..... A hub is in the central position in the ring topology.
- 13 ..... A backbone is a high-speed line that creates the main transmission path within WAN.
- 14 ..... Computers need to use the same protocol (TCP/IP) to communicate with each other.
- 15 ..... ADSL and cable are two types of dial-up connections.
- 16 ..... An ADSL connection is faster than a dial-up connection.
- 17 ..... A cable connection uses existing phone lines and allows simultaneous Internet and phone usage.

**Task 2: Identify the following network topologies.**

- 1 ..... line/bus topology
- 2 ..... ring topology
- 3 ..... star topology
- 4 ..... hierarchical topology

**Task 3: Fill in the type of physical topology of communication networks.**

- 1 .....: All the devices are connected to a central station.
- 2 .....: In this type of network there is a cable to which all the computers and peripherals are connected.
- 3 .....: Two or more star networks connected together; the central computers are connected to a main bus.
- 4 .....: All devices (computers, printers, etc.) are connected to one another forming a continuous loop.

**Speaking 1**

Discuss and write down a list of the advantages and disadvantages of using different network topologies.



### Listening 1

Listen to a description of how a web of networks works. For questions 1 – 10, choose the correct answer (A, B or C) which fits best according to what you hear.

- 1 We say that networks are alive because
  - A it requires a human to understand their concept.
  - B they still evolve.
  - C they form webs that make them look like a living organism.
- 2 A power function concept is NOT described as
  - A the product of a constant and a power of the independent variable.
  - B a big change in one parameter caused by a small change in another parameter.
  - C a function in which an independent variable appears in one of the exponents.
- 3 According to Google's algorithm, number of nodes ..... with the number of references to a search object.
  - A increases
  - B corresponds
  - C links
- 4 As a node increases in size, it eventually becomes
  - A hub.
  - B centre.
  - C network.
- 5 Networks are so powerful because
  - A they are archives of historical information that apply to every person that uses the Internet.
  - B they are the only means to investigate events and activities surrounding major media events.
  - C as daily searches are collected, new clusters of links will rapidly form creating more networks.
- 6 The law that applies to our social networks is
  - A Kleinberg's Law of Social Interaction.
  - B Law of Six Degrees of Separation.
  - C Law of Logarithmic Expansion.



### Reading

#### **Networking Hardware**

Connecting to the Internet requires certain networking hardware, including a **modem**, **router** or **network interface card** and an **access point**, providing a connection. The speed of an Internet connection is known as its ..... (1).

#### **Modem**

A modem (which stands for **modulator-demodulator**) is a device that **modulates** the **digital signal** from the computer into **analogue signal** that can be carried over the phone line. The modem also ..... (2) the analogue signal from the phone line into the digital signal, which it passes to the computer.



**Router**

A router is a specialised computer connected to at least two networks, commonly two LANs or WANs or a LAN and its ISP's network. It forwards data packets and allows you to share a single IP address among multiple network clients. Many routers are ..... (3), allowing you to easily create a **wireless network**.

**Network interface card**

A network interface card (**NIC**, also known as a **network interface controller**, **network adapter**, **LAN adapter**) is a computer hardware component that connects a computer to a computer network. The network card can have a/an ..... (4), a wireless connection, or both. The low cost and ubiquity of the Ethernet standard means that the newest computers have a network interface built into the motherboard. NIC-based connections are widely used in LANs, such as groups of computers in businesses. They can be used in homes, but many users prefer to use wireless connections for the added mobility.

**Access points**

Computers using a/an ..... (5) and **Ethernet cable** connect through an access point. Access points are generally ..... (6), **cable modems**, or **ADSL modems** that provide a link between the Internet service provider and the physical computer. They must be connected to a wired LAN. A wireless access point allows you to connect to an access point without using a physical connection. A wireless access can be configured in your home using a **wireless router** and a computer with a/an ..... (7). Many businesses, such as hotels and coffee shops, provide free wireless access in their buildings for the use of their customers.

**Task 1: Fill the gaps 1 – 7 with the missing words A – G.**

- A routers
- B demodulates
- C Ethernet port
- D wireless interface
- E bandwidth
- F wireless
- G NIC

**Task 2: Choose the correct answer.**

- |   |  |
|---|--|
| <p>1 The speed of the Internet connection is known as its</p> <ul style="list-style-type: none"> <li>A bandwidth</li> <li>B ISP</li> <li>C access point</li> <li>D broadband</li> </ul>   | <p>4 NIC stands for</p> <ul style="list-style-type: none"> <li>A Network Internet Card</li> <li>B Network Interface Controller</li> <li>C Network Interceptor Card</li> <li>D Network Integrated Card</li> </ul> |
| <p>2 A device that converts digital computer data to analogue signals is</p> <ul style="list-style-type: none"> <li>A web browser</li> <li>B Ethernet</li> <li>C modem</li> <li>D I/O port</li> </ul>   | <p>5 A common networking technology is</p> <ul style="list-style-type: none"> <li>A web browser</li> <li>B Ethernet</li> <li>C modem</li> <li>D I/O port</li> </ul>  |
| <p>3 A router is</p> <ul style="list-style-type: none"> <li>A a type of circuit board inside all modems</li> <li>B a specialized computer-based device</li> <li>C a useful concept for understanding all modems</li> <li>D none of the above</li> </ul> | <p>6 An access point is</p> <ul style="list-style-type: none"> <li>A a router</li> <li>B a cable modem</li> <li>C an ADSL modem</li> <li>D all of the above</li> </ul>   |



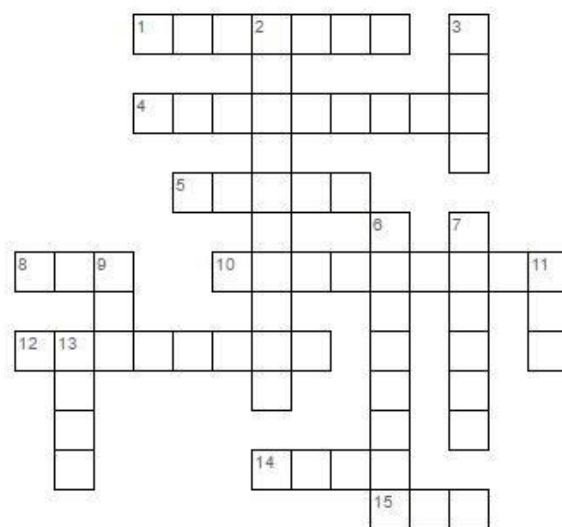
### Vocabulary Practice

#### Task 1: Complete the text on LAN using the words below:

LAN is pronounced 'lan', and stands for ..... (1) Area Network. In a typical LAN, there is a central network ..... (2) which supports a number of ..... (3). Users have to ..... (4) the network server. Pages of information that can be viewed within a LAN are called an ..... (5). A number of LANs connected to each other via ..... (6) or other form of communication are called a ..... (7). To be used as network terminals, each computer needs to have a ..... (8) installed.

- |                   |                       |                    |                    |
|-------------------|-----------------------|--------------------|--------------------|
| <b>A</b> intranet | <b>C</b> log onto     | <b>E</b> satellite | <b>G</b> terminals |
| <b>B</b> Local    | <b>D</b> network card | <b>F</b> server    | <b>H</b> WAN       |

#### Task 2: Complete the crossword puzzle.

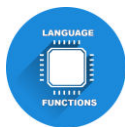


#### Across

- 1** a specific geographic location in which an access point provides public wireless broadband network services to mobile visitors through a WLAN
- 4** a type of data transmission in which a single medium (coaxial cable or optical fibre) can carry several channels at once
- 5** a device that modulates one or more carrier wave signals to encode digital information for transmission and demodulates signals to decode the transmitted information
- 8** a computer network that lets devices communicate over the range of a person
- 10** a wireless technology standard for exchanging data over short distances from fixed and mobile devices, and building PANs
- 12** the main transmission path within a WAN
- 14** a connection point; a device linked in a network
- 15** enables two hosts to establish a connection and exchange streams of data

#### Down

- 2** refers to a computer that is not connected to a network
- 3** an international communications standard for sending voice, video, and data over digital telephone lines or normal telephone wires.
- 6** a family of computer networking technologies commonly used in LANs and MANs
- 7** a device that forwards data packets along two or more networks
- 9** a computer hardware component that connects a computer to a computer network
- 11** a connection point of the elements of a star network topology
- 13** a type of broadband communications technology which is up to 24 Mbps fast



### Language Functions: Troubleshooting

Troubleshooting is **the process of identifying and correcting faults in a computer system**. A service that gives people information and help, especially if they are having problems with a computer, is called a **help desk**. **Help desk technicians** offer computer assistance for all types of problems. They try to **identify their source** and to **propose a solution to them**.

#### Identifying the source of a problem:

##### Questions

*What's gone wrong?*  
*What's up?*  
*Any idea what the problem is?*  
*What do you have trouble with?*

##### Answers

*We're/I'm in big trouble.*  
*I've got a problem... that's why I'm...*  
*It looks like it's the.../something to do with...*  
*I have trouble with my...*

#### Proposing a solution:

##### Questions

*How do you suggest I deal with this?*  
*What's the best way to fix this?*  
*How can I sort this out?*

##### Answers

*Let's just take it one step at a time.*  
*The solution to this problem will require...*  
*You'll just have to...*  
*You should.../You'd better...*  
*Why don't you...?*

#### Keeping track:

##### Questions

*Is everything working/going smoothly?*  
*Can you just confirm/check that you...?*  
*So, how did it go?*

##### Answers

*Yeah. It's working just as I wanted.*  
*Yes, I've checked that .*  
*It couldn't be better.*  
*Not that well, actually.*

#### Match the pieces of advice A – I with the problems 1 – 9.

- 1 ..... My printer is producing fuzzy, not clear, printouts.
  - 2 ..... I get a lot of error messages. Some of my files won't open. They're corrupted, damaged.
  - 3 ..... The monitor flickers, the image is unsteady.
  - 4 ..... My optical drive fails: it won't read or write discs.
  - 5 ..... My machine is running very slowly and it shows low memory error messages.
  - 6 ..... My computer is behaving strangely. I think it's got a virus.
  - 7 ..... I get a 401 message: I'm unauthorized, not allowed to enter that website.
  - 8 ..... I've tried to access a website but I get a 404 Not Found message, as if it didn't exist.
  - 9 ..... I try to connect but I get this message: Network connection refused by server.
- 
- A Haven't you got any antivirus software installed? If I were you, I'd try a free online scan.
  - B Why don't you reset the refresh rate of your monitor?
  - C You may have made a mistake while typing your password. You can't access a website if you aren't recognized as a guest. Try typing again.
  - D The computer may be overheating. Check there's nothing blocking the flow of air. You should also use a recovery tool to retrieve your files.
  - E Your system must be running short of memory. You'd better add some more RAM.
  - F That message shows the web server is busy. Why don't you wait and try again later?
  - G Your discs or perhaps your lens might be dirty. Use some special disc polish.
  - H It might mean that the page is no longer on the internet. Check the URI again. If that doesn't work, you could use a search engine to find similar pages.
  - I The print heads of your printer must be clogged, obstructed with ink. Run the clean cartridge routine or wipe them with a cloth and distilled water.



### Listening 2

Listen to the telephone call between a Big Oil Network Operations Manager and a remote employee in the exploration office. They are trying to locate a network fault.

**Task 1: Complete the left-hand column of the trouble ticket with the words below in the right order.**

- A Ethernet Cable & Port
- B IP Address
- C LAN Hub
- D Network Card
- E Ping Test
- F Power
- G Round Trip Delay
- H Router
- I VPN (Virtual Private Network)

Big Oil Network Fault Management	Trouble Ticket Number 2574
User Name	Florence Knight
Contact Numbers	Office +219 1 356 5011 Mobile 219 7831 565889
Email Address	fknight@bigoil.com
Summary	User has lost voice and data connectivity to her PC this morning
1	Yes/No
2	Connected/Unconnected
3	Functional/Non-functional
4	Tested/Untested
5	Visible/Invisible
6	Responding/Unresponsive
7	10.223.44.867*
8	Successful/Unsuccessful
9	Acceptable/Unacceptable
Trouble Ticket	Open/Closed

\*In order to avoid using an IP address in use a fictional IP address is used here. Real IP addresses consist of four numbers ranging from 0 to 255 separated by dots.

**Task 2: Circle the correct words in the right-hand column.**



### Speaking 2

**Task 1: Have you ever provided technical support or troubleshooting? If yes, could you describe the problem and the way you solved it?**

**Task 2: Role-play two calls to sort out technical problems. Use expressions from the section Language Functions: Troubleshooting.**

## Call 1

## Student A:

Student B will call you to talk about a technical problem. Ask questions to complete the trouble ticket below.

Trouble Ticket Reference	
User Name	
Contact Numbers	Office Mobile
Email Address	
Summary of Problem	
Power	Yes/No
Ethernet Cable & Port	Connected/Unconnected
LAN Hub	Functional/Non-functional
Network Card	Responding/Unresponsive

**Student B:** Call student A to try and solve a technical problem. Answer Student A's questions using the information below. You can give your own name, email address and phone numbers.

- Your ticket reference from when you first reported the fault is 7708.
- The problem you have is that you cannot send or receive emails.
- You have power.
- Your Ethernet cable is connected.
- Your LAN hub isn't working.
- Your network card is OK.

## Call 2

**Student A:** Now call Student B to try and solve a technical problem. Answer Student B's questions using the information below.

- Your ticket reference from when you first reported the fault is 2003.
- You can't make voice calls.
- Your headset appears to be OK.
- The telephony application on your PC is not locked up.
- You can see that your IP address is 10.778.23.199\*
- Your volume is turned down which is why you can't hear anything. When you turn it up it works.

\*This is a fictional IP address.

**Student B:** Now Student A will call you to try and solve a technical problem. Ask questions to complete the trouble ticket below. Decide whether to close the ticket or leave it open for further investigation.

Big Oil Network Fault Management	Trouble Ticket Number 2003
Summary of Problem	
Headset	Damaged/Undamaged
Telephony Application on PC	Locked Up/Functioning
IP Address	
Headset Volume	On/Off
Trouble Ticket	Open/Closed

## Unit 10 WORDLIST

**3G system** [θri:dʒi:'sistəm]

**4G system** [fɔ:dʒi:'sistəm]

**access point** ['ækses pɔɪnt]

**analog/analogue signal** ['ænələg 'sɪgn(ə)l]

**Asymmetric Digital Subscriber Line (ADSL)**

[eɪsɪ'metrɪk 'dɪdʒɪt(ə)l səb'skraɪbə laɪn;  
eɪdɪ:es'el]

**backbone network** ['bækbəʊn 'netwɜ:k]

**bandwidth** ['bændwɪθ]

**broad array** [brɔ:d ə'reɪ]

**broadband** ['brɔ:dbænd]

**bus/line** [bʌs/laɪn]

**cable connection** ['keɪb(ə)l kə'nekʃ(ə)n]

**client-server** ['klaɪənt 'sɜ:və]

**computer networks** [kəm'pjʊ:tə]

**computer terminal** [kəm'pjʊ:tə]

**demodulate** [di:'mɒdjuleɪt]

**dial-up/narrowband connection**

['daɪəlʌp/ 'nəʊəbænd kə'nekʃ(ə)n]

**digital signal** ['dɪdʒɪt(ə)l 'sɪgn(ə)l]

**Digital Subscriber Line (DSL)**

['dɪdʒɪt(ə)l səb'skraɪbə laɪn]

**Ethernet** ['i:θenet]

**help desk/helpdesk technician**

['helpdesk tek'nɪʃ(ə)n]

**home network** [həʊm 'netwɜ:k]

**hotspot** ['hɒtspɒt]

**hub** [hʌb]

**Integrated Services Digital Network (ISDN)**

['ɪntɪgreɪtɪd 'sɜ:vɪs 'dɪdʒɪt(ə)l 'netwɜ:k; aɪesdi:'en]

**interconnected** [ɪntəkə'nektɪd]

třetí generace mobilní sítě (služby spojené s touto generací představují schopnost přenášet jak hlas - telefonní hovor, tak data - stahovaná data, e-mail, zprávy)

čtvrtá generace mobilní sítě (výrazně rychlá internetová mobilní síť navazující na 3G)

přístupový bod k bezdrátové síti (zařízení, ke kterému se klienti připojují)

spojitý/analogový signál (signál, vyjadřující zprávu pomocí neomezeného počtu hodnot určité fyzikální veličiny - amplitudy, kmitočtu apod.)

asymetrická digitální účastnická přípojka

páteřní síť (slouží k propojení dílčích sítí v budovách a zajišťuje přístup k centrálním serverům)

šířka pásma (rozsah frekvencí elektromagnetického signálu nebo rozdíl nejvyšší a nejnižší frekvence, jednotkou je Hertz [Hz])

široká řada

širokopásmový přenos (charakteristika jakékoliv sítě, která přenáší vícenásobné a nezávislé síťové signály v jednom vedení; umožňuje tak koexistenci více sítí na jednom fyzickém vedení - kabelu)

sběrnice/sběrníková (také typ topologie sítě)

kabelové spojení

klient-server

počítačové sítě

počítačový terminál, koncové zařízení přenosu dat (skládá z grafické karty, monitoru a klávesnice; neprovádí žádné počítačové zpracování sám o sobě, vždy je řízen centrálním počítačem)

demodulovat, dekódovat

komutované/vytáčené spojení (způsob propojení dvou počítačů nebo připojení zařízení do počítačové sítě prostřednictvím telefonní sítě)

číslicový/digitální signál (nespojitý v čase i v amplitudě vyjadřující zprávu pomocí omezeného počtu hodnot určité fyzikální veličiny, např. binární signál přenáší data kódovaná jen do dvou hodnot)

digitální účastnická přípojka

(síťová technologie, umožňující vysokorychlostní přenosy na krátké vzdálenosti za použití modemů na koncích vedení)

Ethernet (název souhrnu technologií pro propojování počítačů počítačové sítě LAN a MAN)

technik helpdesku (technické podpory v IT)

domácí síť

aktivní bod (fyzické místo, kde se lidé mohou připojit k internetu)

rozbočovač – aktivní síťový prvek (základ sítí s hvězdicovou topologií), který se chová jako opakovač, což znamená, že veškerá data, která přijdou na jeden z portů, zkopíruje na všechny ostatní porty bez ohledu na to, kterému portu (počítači a IP adrese) data náleží; následně všechny počítače v síti „vidí“ všechna síťová data a u větších sítí to znamená zbytečné přetěžování těch segmentů, kterým data ve skutečnosti nejsou určena

digitální síť integrovaných služeb

propojený

**Internet Protocol (IP)**

[ˈɪntənət ˈprəʊtəkəl; aɪˈpi:]

**Internet Protocol address/IP address**

[ˈɪntənət ˈprəʊtəkəl əˈdres/ aɪˈpi : əˈdres]

**Internet service provider (ISP)**

[ˈɪntənət ˈsɜːvɪs prəˈvaɪdə; aɪesˈpi:]

**link** [lɪŋk]**Local Area Network (LAN)**

[ˈləʊk(ə)l ˈeːrɪə ˈnetwɜːk; læn]

**Metropolitan Area Network (MAN)**

[metrəˈpɒlɪt(ə)n ˈnetwɜːk; mæn]

**modem** [ˈmɒdəm]**modulate** [ˈmɒdjuleɪt]**network interface card/controller (NIC)**

[ˈnetwɜːk ˈɪntəfeɪs kɑːd/ kənˈtrəʊlə; nɪk]

**network topology** [ˈnetwɜːk təˈpɒlədʒi]**network workstation** [ˈnetwɜːk ˈwɜːkstetʃ(ə)n]**node** [nəʊd]**peer-to-peer** [piətuˈpiə]**Personal Area Network (PAN)**

[ˈpɜːs(ə)n(ə)l ˈeːrɪə ˈnetwɜːk; pæn]

**ping (Packet InterNet Groper) test**

[pɪŋ; ˈpækɪt ˈɪntənət ˈgrəʊpə test]

**protocol** [ˈprəʊtəkəl]**ring** [rɪŋ]**round trip delay (RTD)**

[raʊnd trip dɪˈleɪ; ɑːtiːˈdi:]

**router** [ˈruːtə]**Virtual Private Network (VPN)**

[ˈvɜːtʃu(ə)l ˈvɜːtʃu(ə)l ˈnetwɜːk; viːpiːən]

**satellite connection** [ˈsætələɪt kəˈnekʃ(ə)n]**scope** [skəʊp]**server** [ˈsɜːvə]**short-range wireless network**

[ʃɔːtˈreɪndʒ ˈnetwɜːk]

**standalone computer** [ˈstændələʊn kəmˈpjʊːtə]**star** [stɑː]**switch** [swɪtʃ]**token** [ˈtəʊk(ə)n]**Transmission Control Protocol (TCP)**

[trænzˈmɪʃ(ə)n kənˈtrəʊl ˈprəʊtəkəl; tiːciːˈpi:]

**tree** [tri:]**troubleshooting** [ˈtrʌblʃuːtɪŋ]**Wide Area Network (WAN)**

[waɪd ˈeːrɪə ˈnetwɜːk; wæn]

**wireless adapter** [ˈwaɪələs əˈdæptə]**wireless interface** [ˈwaɪələs ˈɪntəfeɪs]

protokol internetu (stejná identifikace konkrétního počítače v prostředí internetu; veškerá data, která jsou z/na dané zařízení přes počítačovou síť posílána, obsahují IP adresu odesílatele i příjemce)

IP adresa (číslo, které jednoznačně identifikuje síťové rozhraní v počítačové síti, která používá internetový protokol)

poskytovatel internetových služeb

spojovat; odkaz, propojení

lokální/místní počítačová síť

metropolitní síť

modem

modulovat, zakódovat

síťová karta, síťový adaptér (přídavná deska připojená ke sběrnici počítače, která umožňuje připojení počítače do sítě a přenos dat)

topologie sítě

pracovní stanice (jakýkoli osobní počítač uživatele připojený do sítě, který neplní funkci serveru)

uzel (jakékoli adresovatelné zařízení připojené k počítačové síti)

klient-klient/P2P

osobní síť (tvořená komunikujícími zařízeními jako mobilní telefon, PDA nebo laptop, které jsou v blízkosti jedné osoby)

test funkčnosti spojení mezi dvěma síťovými rozhraními v počítačové síti

protocol

kruh (typ topologie sítě)

obousměrné zpoždění (doba, která uplyne od vyslání signálu z jedné komunikující stanice na druhou po návrat potvrzení zpátky na první stanici)

směrovač – aktivní síťový prvek určený k propojení dvou a více sítí, který umožňuje sdílet jednu IP adresu mezi více uživateli

virtuální privátní síť

satelitní spojení

rámec, záběr

server

bezdrátová síť na kratší vzdálenosti

samostatný počítač (nepřipojený k žádné datové síti; ke své činnosti nevyžaduje podporu jiného zařízení či systému)

hvězda (typ topologie sítě)

přepínač – aktivní síťový prvek, který inteligentně směřuje síťový provoz (má přehled o tom, který počítač je připojený ke kterému portu a data pak odesílá pouze na daný port)

token (speciální rámec, pomocí kterého se předává vysílací právo mezi adaptery zapojenými v kruhové topologii)

přenosový řídicí protokol (přenosový protokol orientovaný na virtuální spoje)

strom (typ topologie sítě)

řešení problému, hledání závady

rozlehlá počítačová síť

bezdrátový adaptér

bezdrátové rozhraní



## Unit 11

### WORLD WIDE WEB

“You affect the world by what you browse.”

Tim Berners-Lee

#### LEAD-IN

#### Activity

- 1 Discuss the quote.
- 2 When do you browse the Web at school?
- 3 What kind of websites do you like to use?
- 4 What is your favourite browser? Why?

#### TOPIC

#### Text

#### World Wide Web

While the Internet is the physical network of computers all over the world, the World Wide Web is a **virtual network** of **websites** connected by **hyperlinks** (or **links**). Websites are stored on **servers** on the Internet, so the World Wide Web is a part of the Internet.

#### HTML

The backbone of the World Wide Web is made of **HTML files**, which are specially formatted documents that can contain links, as well as images and other media. All web browsers can read HTML files. HTML is an abbreviation of **Hypertext Markup Language**, which, among other things, allows hyperlinks to be created.

A **hyperlink** is a reference to data that the readers can directly follow either by clicking or by hovering, thus enabling them easily to navigate their browsers to related resources. Texts containing hyperlinks are called **hypertexts**. The hyperlinks allow and support non-linear visits to websites. If such links refer to multimedia, i.e. audio-visual elements, then we speak of **hypermedia**.

In addition to HTML, it is common for websites to use technologies like **CSS (Cascading Style Sheets)** and **JavaScript** to do more advanced things.

#### Uniform Resource Locator (URL)

The primary purpose of a **web browser** is to bring information resources to the user. This process begins when the user inputs a URL into the browser to get to a website, for example <http://www.computerworld.com/>. The URL, also known as the **web address**, is a unique identifier for any document on the Internet, which tells the browser exactly where to find the page. All browsers work with URLs. A web address, like <http://www.pcworld.co.uk/gbuk/index.html> follows these syntax rules:

Scheme	Host	Domain	Directory Path	Filename
http://	www.	pcworld.co.uk	/gbuk/	index.html

- **Scheme** - defines the type of Internet service (most common is http)
- **Host** - defines the domain host (default host for http is www)
- **Domain** - defines the Internet domain name of the web server that hosts the website (pcworld.co.uk)
- **Directory path** - defines a path at the server; the place where a web page is located (If omitted: the root directory of the site)
- **Filename** - defines the name of a single web page

The table below lists some common schemes:

Scheme	Full Form	Usage
http	HyperText Transfer Protocol	common web pages; not encrypted
https	Secure HyperText Transfer Protocol	secure web pages; encrypted
ftp	File Transfer Protocol	downloading or uploading files
file	File	a file on your computer

#### Uniform Resource Identifier (URI)

URI is a string of characters used to identify a name of a resource.

**Hypertext Transfer Protocol (HTTP)**

The most commonly used kind of URI starts with **http:** and identifies a resource to be retrieved over the Hypertext Transfer Protocol.

***Finding Information Online***

To **surf** or **navigate** the World Wide Web, access and retrieve web pages or websites, you need a computer with an Internet connection and a **web browser**, a software application used to locate, retrieve and display content on the World Wide Web.

The major web browsers are Internet Explorer, Opera, Firefox, Safari and Chrome. **Internet Explorer** is one of the oldest browsers predominantly used on Windows computers. **Opera** is a web browser developed by Opera Software. The latest version is available for Microsoft Windows, OS X, and Linux operating systems, and uses the Blink layout engine. **Firefox** is a free and open source web browser developed in 2002 for Microsoft Windows, Mac OS X, and Linux coordinated by Mozilla Corporation and Mozilla Foundation. **Safari** is a web browser that was created in 2003 by Apple Inc. included with the OS X and iOS operating systems, but is also available for Windows computers. The most recent major entrant to the browser market is **Chrome**, a freeware web browser developed by Google in 2008.

The web browser stores **cookies** – small pieces of data sent from a website. Cookies were designed to be a reliable mechanism for websites to remember information (such as items added in the shopping cart in an online store) or to record the user's browsing activity.

The most common way to find information online is with a software system designed to search for information on the World Wide Web – a **web search engine** (e.g. Google, Yahoo, Bing), where the website information is compiled by **spiders**, computer-robot programs that collect information from sites by using keywords, or through **web indexes**, subject directories that are selected by people and organized into hierarchical subject categories. Some **web portals** – websites that offer all types of services, e.g. email, forums, search engines, etc. – are also good starting points.

The **search results** are generally presented in a line of results often referred to as **search engine result pages (SERPs)**. The information may be a mix of web pages, images, and other types of files. For understanding SERPs, we need to see that it falls into two categories. There are **paid text ads** off to the side and at the top. In the middle of the page, there are a search engine's unpaid results often referred to as **organic results**, natural, or earned results.

The most relevant website addresses can be stored in your computer using the **bookmarks** or **favourites** function in your browser. Websites usually have a beginning page or **home page**. From this starting point you can navigate by clicking your mouse on hyperlinks in texts or images.

**Vocabulary Practice****Task 1: Fill in the words from the text according to these definitions.**

- 1 ..... – a program that is used to feed pages to search engines (another term for these programs is webcrawler)
- 2 ..... – element in an electronic document that links to another place in the same document or to an entirely different document
- 3 ..... – an example of this is *microsoft.com*
- 4 ..... – listings on search engine results pages that appear because of their relevance to the search terms
- 5 ..... – website or service that offers a broad array of resources and services, such as e-mail, forums, search engines, and online shopping malls
- 6 ..... – the page displayed by a search engine in response to a query by a searcher
- 7 ..... – is synonym for bookmark
- 8 ..... – the global address of documents and other resources on the World Wide Web
- 9 ..... – the underlying protocol used by the World Wide Web to define how messages are formatted and transmitted.
- 10 ..... – subject directories that are selected by people and organized into hierarchical subject categories
- 11 ..... – the place where a web page is located
- 12 ..... – an extension to hypertext that supports linking graphics, sound, and video elements in addition to text elements

**Task 2: Complete the instructions about how to navigate with the words A – H below.**

- |                        |   |
|------------------------|---|
| <b>A</b> client        | • Start up your computer and connect to the Internet.   |
| <b>B</b> web page      | • Open your ..... (1).  |
| <b>C</b> surf          | • Type the ..... (2) to access a website.   |
| <b>D</b> web browser   | • Your web browser sends the request to the correct ..... (3).  |
| <b>E</b> search engine | • The server looks for the document and sends it to the ..... (4) computer.                           |
| <b>F</b> web server    | • Your web browser displays the selected ..... (5) on the screen.                                     |
| <b>G</b> website       | • From the home page of the ..... (6) you can ..... (7) to the other pages by clicking on hyperlinks. |
| <b>H</b> URL           | • If you want to find more websites, use a ..... (8).   |

**Task 3: Match the browser toolbar button 1 – 12 with the function A – K.**

- |                                     |   |
|-------------------------------------|---|
| <b>1</b> ..... Back                 | <b>A</b> Shows a list of the websites you have visited recently.          |
| <b>2</b> ..... Forward              | <b>B</b> Opens the media bar, accessing internet radio, music, video etc. |
| <b>3</b> ..... Stop                 | <b>C</b> Displays the page you were on before.                            |
| <b>4</b> ..... Refresh/Reload       | <b>D</b> Shows the latest version of the page.                            |
| <b>5</b> ..... Home                 | <b>E</b> Opens the search panel.  |
| <b>6</b> ..... Search               | <b>F</b> Displays the page you were on before using the Back button.      |
| <b>7</b> ..... Favourites/Bookmarks | <b>G</b> Displays the page you have set as your home page.                |
| <b>8</b> ..... Media                | <b>H</b> Prints the current page.   |
| <b>9</b> ..... History              | <b>I</b> Stops a page from downloading.                                   |
| <b>10</b> ..... Mail                | <b>J</b> Displays the web addresses you have chosen as your favourites.   |
| <b>11</b> ..... Print               | <b>K</b> Shows email options.   |



### Speaking

**Task 1: Discuss what the picture shows. What do the three boys represent? Why are they pictured like this?**



**Task 2: If you had to include the other browsers (Opera, Safari, Tor, etc.) how would you picture them and why?**



## Reading

### Email

An electronic mail (referred to as **email** or **e-mail**) is a method of exchanging digital messages from an author to one or more recipients. Modern email operates across the Internet or other computer networks. Some early email systems required that the author and the recipient both be online at the same time, in common with **instant messaging (IM)**. Today's email systems are based on a **store-and-forward model**. Email servers **accept, forward, deliver, and store messages**.

An email is a electronic message sent from one computer to another that can also include **attachments**: documents, pictures, sounds and even computer programs. An email is sent to a **mail server** (i.e. electronic post office) where it is stored in a **mailbox**, which holds incoming mail until the recipient downloads it. Users are given an **email address** and a password by an **Internet Service Provider (ISP)**.

#### Email address

An email address is always written in a standard format that includes a **username** (the name a user choose to identify himself/herself), the **@** (at) symbol, and the **email provider's domain** or network address (the website that hosts the user's email account). The final part of the domain name is the **top-level domain (TLD)**, a suffix that adds information about it. Depending on the organization, a provider's domain might end with a suffix like **.com** (for company), **co.uk** (a company in the UK), **.gov** (government websites), **.edu** (schools), **.mil** (military branches), or **.org** (non-profit organizations).

#### Anatomy of an email

Emails usually have two parts: The **header** that generally includes **TO** (name and address of the recipient), **CC** (carbon copy sent to another addressee), **BCC** (blank/blind carbon copy sent to a recipient without the recipient's address appearing in the message) and **SUBJECT** (topic of the message), and the **body**, which is the message itself.

#### Webmail providers

Today, the top three webmail providers are **Yahoo!**, Microsoft's **Outlook.com** (previously Hotmail), and Google's **Gmail**. In the Czech Republic, the most common are **Seznam.cz** and **Centrum.cz**. These providers are popular because they allow users to access their email accounts from anywhere with an Internet connection. They can also access webmail on their **mobile devices**. Many people also have an email address hosted by their company, school, or organization. These email addresses are usually for professional purposes. For example, the people who work or study at the Faculty of Electrical Engineering and Communication, Brno University of Technology have email addresses that end with **@feec.vutbr.cz**.

#### Advantages of emails

- Emails are easy to use. You can organize your daily correspondence, send and receive electronic messages and save them on computers.
- Emails are much faster than **snail mails** (the post). They are delivered at once around the world. No other form of written communication is as fast as an email.
- They can be sent 24 hours a day, 365 days a year.
- They are cheap. When using broadband, each email sent is effectively free.
- Emails can be sent to one person or several people.
- When you reply to an email you can attach the original message so that when you answer the recipient knows what you are talking about. This is important if you get hundreds of emails a day.
- It is possible to send automated emails with a certain text. In such a way it is possible to tell the sender that you are on vacation. These emails are called **autoresponders**.
- Emails do not use paper. They are environment friendly and save a lot of trees from being cut down.
- Emails can also have pictures in them. You can send birthday cards or newsletters as emails.
- Products can be advertised with emails. Companies can reach a lot of people and inform them in a short time.

#### Disadvantages of emails

- The recipient needs access to the Internet to receive email.
- Emails cannot really be used for official business documents. They may be lost and you cannot sign them.
- Your mailbox may get flooded with emails after a certain time so you have to empty it from time to time.
- Emails may **carry viruses** – small programs that harm the computer system.

- **Phishing** is an email scam that is disguised to look like official communication from a legitimate website. These scams fool users into providing sensitive information like passwords, credit card details, bank account numbers etc.
- A **hoax** is an **email chain letter** that warns of impending viruses and tries to scare users into forwarding and continuing the hoax email.
- A **flamebait** is an email usually sent to a message board, written with intent to offend, anger or enrage other persons, so that they will send a flaming email in reply, which may lead to a **flame war** (a heated argument between two individuals).
- Many people send **spam emails** (unwanted emails, junk mails) to others. It takes a lot of time to filter out the unwanted emails from those that are really important.

Note: The origin of the word spam is quite interesting. SPAM is the trademark of a canned luncheon meat made by the American company Hormel. The real origin of the term comes from a 1970 Monty Python's Flying Circus sketch in which Spam is included in every dish. The food is stereotypically disliked, so the word came to be transferred by analogy. The company has a SPAM museum, a SPAM fan club, a SPAMMobile (it is a van not a telephone), and a website ([www.spam.com](http://www.spam.com)).

### Task 1: Find words that match these definitions.

- 1 ..... – a file that has been attached as part of an email message
- 2 ..... – a normal postal mail, where an actual physical letter or package is delivered
- 3 ..... – an email that falsely claims to be a legitimate enterprise in an attempt to scam the user into surrendering private information to be used for identity theft
- 4 ..... – the part of the email address that identifies the user of the service
- 5 ..... – the computer that provides you with mail service
- 6 ..... – an area in memory or on a storage device where an email is placed
- 7 ..... – the part of the email where you write the information about the addresses and subject
- 8 ..... – an email that automatically replies to an e-mail message with a prewritten response when that e-mail comes into a specific e-mail or Internet address
- 9 ..... – the part of the email address that identifies the server
- 10 ..... – message which is written to deliberately spread fear, uncertainty and doubt

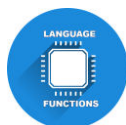
### Task 2: Use the words A – G to complete the text.

#### *Sending an Attachment*

You can send almost any file as an attachment. .... (1) through the folders on your computer until you find the file you want to attach. Click on '..... (2)'. The file will appear in the attachments ..... (3). Then click '..... (4)', and wait while the file uploads. Add more files if you wish. When you have finished adding files, click '..... (5)'.

Some email ..... (6) will only receive attachments up to a certain ..... (7) with one email, for example 10MB. If you need to send a lot of very big attachments, it's sometimes necessary to spread them over a number of separate emails.

- A attach
- B browse
- C field
- D inboxes
- E open
- F send
- G size



### Language Functions: Describing Charts and Graphs

For **making general statement** about the graph or chart you should

- identify the sort of chart or graph  
*The single line graph/multiple line graph/percentage bar chart/single bar chart/paired bar chart/stacked bar chart/pie chart represents/shows ...*
- describe the axes/sections/segments/bars  
*The horizontal/vertical axis shows/indicates...  
The blue segment/section/bar in this pie chart represents...*
- describe the most noticeable thing about the chart or graph  
*Overall, the most obvious trend in the graph is that...*

For **detailed description of the trends** you should

- describe the main change over time  
*e.g. As you can see from the way the red line rises/increases,... the number of... has risen/increased in recent years/between ... and ...*
- describe the most noticeable thing(s)  
*If you look at ..., you can see the percentage of..., which clearly shows that this figure has increased/decreased dramatically.*
- describe the pattern for different things/years/groups (start with the highest figures and work your way down)  
*Android OS market share rose gradually from 3.9 % in 2009 to 84.8 % in 2016.*
- draw a conclusion where you highlight the main trends, mention the important similarities and differences and say what is likely to happen in the future  
*To sum up, .../I'd like to conclude by reminding you that.../To summarise my main points...*

**Some tips** for describing charts and graphs

- Avoid repeating words. Instead, use other words with the same or similar meanings.
- Pick only the biggest, the smallest, the main points, and the main trends.
- Group similar thing together.
- Use sentences with examples (giving numbers).
- Don't write about the line or the bar, e.g. *The line went up, The bar went down.*  
Instead, write about the idea, e.g. **The number of people using... increased/decreased gradually.**
- Don't give any numbers in the conclusion, instead use words like **most/least, the majority, a minority, a small/large number**

**Useful linking words and expressions:** *although, consequently, further, however, in addition, in contrast, moreover, on the other hand, so, thereby, to sum up, whereas, while*

**Useful adjectives:** *gradual, marked, minimal, quick, rapid, sharp, significant, slight, small, stable, steady, steep, sudden*

**Useful verbs:** *decline, decrease, fall, fluctuate, drop, increase, level off/out, peak, plunge, plummet, reduce, remain constant/stable/steady (at), rise, shoot up*

**Task 1: Answer the following questions.**

1 Which adjectives from the list above mean the same as these words?

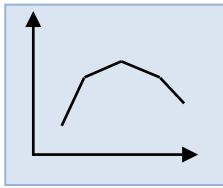
minimal .....  
steady .....  
marked .....  
quick .....

2 What does the noun *fluctuation* mean?

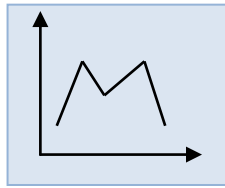
3 What does the verb *level off* mean?



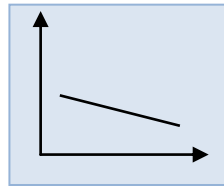
**Task 2: Match the graphs A – H and the sentences 1 – 8.**



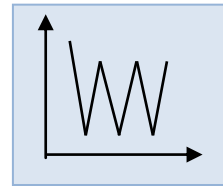
A



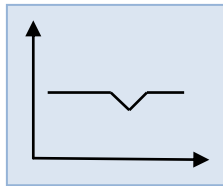
B



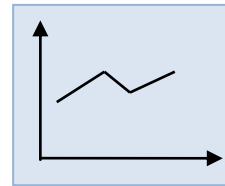
C



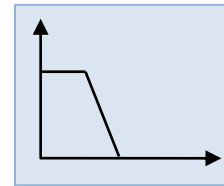
D



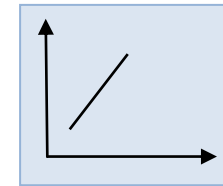
E



F



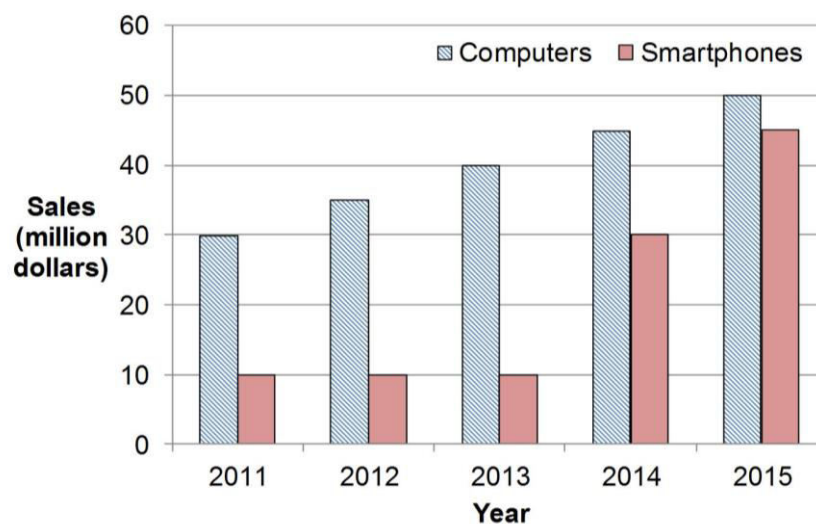
G



H

- 1 ..... Windows 10 user numbers fell steadily.
- 2 ..... Windows 10 user numbers plunged.
- 3 ..... Windows 10 user numbers fluctuated slightly.
- 4 ..... There was a peak in Windows 10 user numbers.
- 5 ..... There was a steep rise in Windows 10 user numbers.
- 6 ..... Windows 10 user numbers were erratic.
- 7 ..... Windows 10 user numbers fluctuated wildly.
- 8 ..... There was a slight dip in Windows 10 user numbers.

**Task 3: Complete the description according to the chart below. Fill in the gaps 1 – 12 with the words marked A – M. There are three extra words that you will not need.**





<b>A</b> at	<b>D</b> by	<b>G</b> levelled off	<b>J</b> rapidly	<b>M</b> steadily
<b>B</b> behind	<b>E</b> continue	<b>H</b> overtake	<b>K</b> reaching	<b>N</b> total
<b>C</b> between	<b>F</b> less	<b>I</b> paired	<b>L</b> stacked	<b>O</b> upward

This ..... (1) bar chart gives information about how much money was spent on computers and smartphones in the country X ..... (2) the years 2011 and 2015.

According to the chart, there were ..... (3) trends in spending on both items. Computer sales increased ..... (4) ..... (5) \$5 million each year. Smartphone sales ..... (6) at \$10 million until 2013 and then increased dramatically, ..... (7) \$45 million dollars in 2015. Although they are still ..... (8) than the value of computer sales, they are only \$5 million ..... (9).

People's total expenditure on those electronic devices rose dramatically in this period. The ..... (10) was \$40 million in 2011 and it rose to \$95 million in 2015.

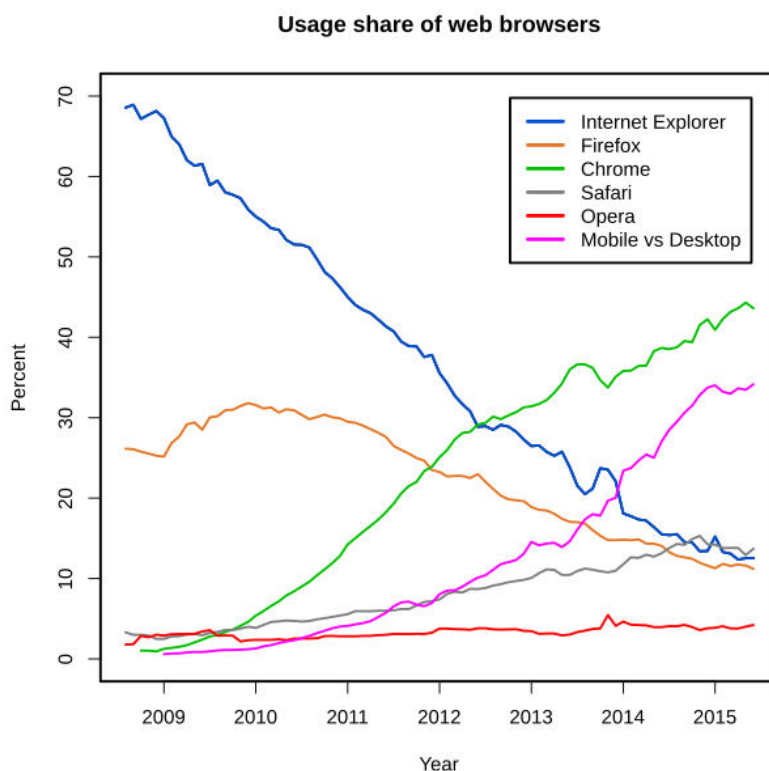
Overall, the sales of both of these items grew, but smartphone sales grew more quickly. If these trends ..... (11), we can expect smartphone sales to ..... (12) computer sales in 2016 or soon after.

**Task 4: Look at the graph below and describe the trends in popularity of each browser. Make sure that you:**

- make a general statement about the information,
- comment on significant features of the information provided by comparing and contrasting data,
- discuss the important features by providing examples or giving reasons,
- draw a conclusion.

**Student A:** Describe the trends in popularity of Internet Explorer, Safari and Mobile vs Desktop browsers.

**Student B:** Describe the trends in popularity of Firefox, Chrome and Opera.



**Quiz**

- 1 The part of the address http://www.intel.eu that represents the protocol is
  - A http
  - B www
  - C intel
  - D eu
- 2 The first page that a web browser loads when it is launched is called
  - A blank page
  - B home page
  - C Google
  - D URL
- 3 A text file that contains the record of visited websites is called
  - A cache
  - B cookie
  - C Internet Service Provider (ISP)
  - D bookmark
- 4 If a web address begins with 'https', it means that
  - A spyware is found on that web site.
  - B there is a high risk of infecting the computer with a virus.
  - C it is a website with a secure communication and secure identification.
  - D the web page is under construction.
- 5 What is the purpose of adding web sites to Favourites?
  - A This is the only way we can send email to site authors.
  - B Opens up the websites every time the browser is started.
  - C Saves web site address for easier future access.
  - D This is the only way we can print the site.
- 6 The 'click.support' part of the email address click.support@intel.com is
  - A user name
  - B domain name
  - C service provider name
  - D client name
- 7 Web browser is ..... used to access the Internet services and resources available through the World Wide Web.
  - A an operating system
  - B a utility software
  - C an application software
  - D None of these
- 8 Web browsers often provide ..... that lets users click icons, buttons, and menu options to view and navigate Web pages.
  - A a graphical interface
  - B an interface
  - C a way
  - D None of these

- 9 Chrome browser is ..... browser when you have enough memory.
- A the slowest
  - B the fastest
  - C not always fast
  - D None of these
- 10 Safari is a web browser developed by
- A Microsoft
  - B IBM
  - C Apple
  - D INTEL
- 11 Safari was included as the default browser in
- A Mac OS X
  - B Windows
  - C Linux
  - D Unix
- 12 Which of the following is a 'text-only' web browser?
- A IE
  - B Lynx
  - C Firefox
  - D Netscape Navigator
- 13 Which of the following browsers were/are available for the Macintosh?
- A Opera
  - B Safari
  - C Netscape
  - D all of them
- 14 Which of the following are alternative names for mobile browsers?
- A mini browser
  - B micro browser
  - C wireless Internet browser
  - D all of these

## Unit 11 WORDLIST

<b>@ (at) symbol</b> [ət]	symbol zavináč
<b>accept</b> [ək'sept]	přijmout
<b>attach</b> [ə'ta:tʃ]	připojit
<b>attachment</b> [ə'tætʃm(ə)nt]	příloha
<b>autoresponder</b> [ˌɔ:təʊrɪ'spɒndə]	počítačový program, který automaticky odpovídá na e-mail
<b>blank/blind carbon copy (BCC)</b> [blæŋk/blaɪnd 'kɑ:b(ə)n 'kɒpi; bi:si:'si:]	skrytá/slepá kopie
<b>body</b> ['bɒdi]	tělo (samotná zpráva)
<b>bookmarks/favourites</b> ['bʊkma:ks/'feɪv(ə)rɪts]	záložky
<b>browser/web browser</b> [web 'braʊzə]	prohlížeč
<b>carbon copy (CC)</b> ['kɑ:b(ə)n 'kɒpi; si:'si:]	kopie (adresáti označení jako „CC“ dostanou automaticky kopii zprávy; seznam příjemců CC je viditelný pro všechny ostatní příjemce, na rozdíl od BCC)
<b>Cascading Style Sheets (CSS)</b> [kæs'keɪdɪŋ staɪl 'ʃi:ts; si:ses]	kaskádové styly (mechanismus pro způsob zobrazení hypertextového dokumentu, např. styl a velikost písma, barvy, rozestupy atd.)
<b>cookies</b> ['kʊkiz]	malé množství dat, která WWW server pošle prohlížeči, který je uloží na počítači uživatele
<b>deliver</b> [dɪ'livə]	doručit
<b>directory path</b> [daɪ'rekt(ə)ri /dɪ'rekt(ə)ri pɑ:θ]	přístupová cesta k dokumentu
<b>domain</b> [də(ʊ)'meɪn]	doménové jméno/doména
<b>download</b> ['daʊnləʊd]	stáhnout, downloadovat
<b>email provider's domain</b> ['i:meɪl prə'vaɪdəz də(ʊ)'meɪn]	doména poskytovatele emailu
<b>encrypted web pages</b> [en'kriptɪd web 'peɪdʒɪz]	zašifrované webové stránky
<b>filename</b> ['faɪlneɪm]	název souboru cílové stránky
<b>File Transfer Protocol (FTP)</b> [faɪl træn'sfɜ: 'prəʊtəkol; efti:'pi:]	protokol pro přenos souborů
<b>flamebait</b> ['fleɪmbet]	
<b>flame war</b> [fleɪm wɔ:]	příspěvek, který v diskuzi na internetu vyvolává prudkou reakci
<b>forward</b> ['fɔ:wəd]	plamenná/svatá válka, příliš ohnivá diskuse, ve které je ignorována zdvořilost
<b>header</b> ['hedə]	přeposlat
<b>hoax</b> [həʊks]	hlavička
<b>home page</b> [həʊm peɪdʒ]	falešná/klamná zpráva
<b>host</b> [həʊst]	domovská stránka
<b>hyperlink/link</b> ['haɪpəlɪŋk]	identifikace síťového uzlu
<b>hypermedia</b> [haɪpə'mi:diə]	odkaz v hypertextovém dokumentu
<b>hypertext</b> ['haɪpətɛkst]	hypermédia (systém organizace textových, grafických, zvukových informací a videa, který uživateli umožňuje posun pomocí asociace, ne pouze sekvenční pohyb z jedné oblasti do druhé)
<b>HyperText Markup Language (HTML)</b> ['haɪpətɛkst 'mɑ:kɒp 'læŋgwɪdʒ; eɪtʃti:em'el]	hypertextový odkaz (systém prezentace informací, které lze prohlížet bez ohledu na jejich řazení a číst dle zájmu, ne pouze postupně, sekvenčně)
<b>Hypertext Transfer Protocol (HTTP)</b> ['haɪpətɛkst træn'sfɜ: 'prəʊtəkol; eɪtʃti:ti:'pi:]	formátovací jazyk pro tvorbu hypertextových dokumentů
<b>identifier</b> [aɪ'dentɪfaɪə]	hypertextový přenosový protokol
<b>inbox</b> ['ɪnbɒks]	identifikátor
<b>instant messaging (IM)</b> ['ɪnst(ə)nt 'mesɪdʒɪŋ]	došlá pošta
<b>Internet Service Provider (ISP)</b> ['ɪntənət 'sɜ:vɪs prə'vaɪdə; aɪes'pi:]	odesílání a přijímání zpráv v reálném čase (zpráva je doručena ve velmi krátké době od odeslání, většinou v rámci stovek milisekund)
<b>junk email</b> [dʒʌŋk 'i:meɪl]	poskytovatel internetového připojení
<b>message</b> ['mesɪdʒ]	
<b>mailbox</b> ['meɪlbɒks]	vyřazená/odpadní pošta
<b>mail server</b> [meɪl 'sɜ:və]	zpráva
	e-mailová schránka
	emailový server

**organic results** [ɔ:'gʌnɪk rɪ'zʌlts]  
**phishing** ['fɪʃɪŋ]

**Refresh/Reload** [rɪ'freʃ/rɪ:'ləʊd]  
**virtual network** ['vɜ:tʃʊəl 'netwɜ:k]  
**paid text ads** [peɪd tekst adz]  
**presenting** [prɪ'zentɪŋ]  
**recipient** [rɪ'sɪpiənt]  
**root directory** [ru:t daɪ'rekt(ə)rɪ /dɪ'rekt(ə)rɪ]  
**scheme (http, https)** [ski:m]  
**search engine** [sɜ:tʃ 'endʒɪn]  
**search engine result pages (SERPs)**  
 [sɜ:tʃ 'endʒɪn rɪ'zʌlt 'peɪdʒɪz]  
**Secure HyperText Transfer Protocol (https)**  
 [sɪ'kjʊə 'haɪpətɛkst træns'fɜ: 'prəʊtɛkɒl]  
**website/site** ['websaɪt]  
**snail mail** [sneɪl 'i:meɪl]  
**spam/spam email** [spæm 'i:meɪl]  
**spider/webcrawler** ['spaɪdə/web'krɔ:lə]

**store-and-forward model**  
 [sto:ənd'fɔ:wəd 'mɒd(ə)l]  
**subject** ['sʌbdʒɪkt]  
**subject directory**  
 ['sʌbdʒɪkt daɪ'rekt(ə)rɪ /dɪ'rekt(ə)rɪ]  
**surf** [sɜ:f]  
**top-level domain (TLD)**  
 [tɒp'lev(ə)l də(ʊ)'meɪn; ti:el'di:]  
**traversing** [trə'vɜ:sɪŋ]  
**Uniform Resource Identifier (URI)**  
 ['ju:nɪfɔ:m rɪ'zɔ:s aɪ'dentɪfaɪə; ju:'ɑ:raɪ]  
**Uniform Resource Locator (URL)**  
 ['ju:nɪfɔ:m rɪ'zɔ:s ləʊ'keɪtə; ju:'ɑ:rel]  
**upload** [ʌp'ləʊd]  
**username** ['ju:zəneɪm]  
**web address** [web ə'dres]  
**web index** [web 'ɪndeks]  
**web portal** [web 'pɔ:t(ə)l]  
**World Wide Web (WWW)**  
 [wɜ:ld waɪd web; dʌblju:, dʌblju:'dʌblju:]

přirozené výsledky  
 rhybaření (*slang.*), podvodné online vylákání a zneužívání důvěrných osobních údajů (vydáváním se za oficiální organizaci ap.)  
 opětovně načíst  
 virtuální síť  
 placené internetové reklamy  
 předkládající, poskytující  
 příjemce  
 kořenový adresář  
 protokol (http, https)  
 (internetový) vyhledávač  
 stránka výsledků zobrazená internetovým vyhledávačem  
 bezpečná verze hypertextového přenosového protokolu  
 webová adresa/stránka  
 běžná/klasická/papírová pošta  
 spam, nevyžádaný/nežádoucí e-mail  
 internetový bot (robot), který systematicky prochází webové stránky a vytěžuje z nich data  
 model „ulož a pošli dál“

předmět (zprávy)  
 předmětový adresář

surfovat, brouzdat (na internetu)  
 doména nejvyššího řádu

křížující, protínající  
 univerzální identifikátor zdroje (univerzální jmenné schéma pro identifikaci dokumentů v prostoru WWW)  
 jednotný popis umístění zdroje (nejužívanější schéma specifikace dokumentu, jako je jeho umístění a typ, v Internetu)  
 nahrávat, uploadovat  
 uživatelské jméno  
 webová adresa  
 předmětové adresáře organizované do hierarchických kategorií  
 webový portál  
 „celosvětová pavučina“ (distribovaný hypertextový informační systém)

## Unit 12

### INTERNET SAFETY

“A hacker to me is someone creative who does wonderful things.”

Tim Berners-Lee

#### LEAD-IN

#### Activity

- 1 Discuss the quote.
- 2 Has your computer ever been infected by malicious software? If so, which and how did you get rid of it?
- 3 Which types of malware are most dangerous? Why?
- 4 How can people prevent computer infections and improve their computer security?

#### TOPIC

#### Text

As more and more technology is integrated into everyday life, it is necessary to be aware of many negative effects of the Internet that can cause personal and professional harm, and may be leading to an erosion of morals, ethics, and basic principles. The Internet's vast reach, constantly changing technologies, and growing social nature have made users vulnerable to **identity theft** including **scam** (email fraud to obtain money or valuables), **plagiarism** (theft of intellectual property), **privacy violations**, such as **cyberstalking** (online harassment or abuse, mainly in chat rooms or newsgroups) and **cyberbullying** (including slander or libel) **addiction** (involving online gambling, gaming and shopping, cyberporn and compulsive surfing on the Web), **sexual exploitation** (including child pornography) and lack of face-to-face communication.

The Internet also exerts negative effects on business. **Piracy**, the illegal copying and distribution of copyrighted software, information, music and video files, is widespread. The popularity of **file swapping** networks, where people are able to illegally download music and films onto their home computers for free, has caused sales of music CDs to drop. The music companies have responded by taking the downloaders to court and putting **anti-copying software** onto their CDs, both of which are very unpopular with the public.

**Crackers**, or black-hat hackers, are computer criminals who use technology to perform a variety of internet-based crimes. The most common type of crime involves malware.

#### Malware

**Malware** (short for **malicious software**) is a general term used to refer to a variety of forms of **hostile**, **intrusive**, or annoying software. It is software created by hackers to **disrupt** computer operation, gather sensitive information, or gain access to private computer systems. Malware includes computer **viruses**, **spyware**, **worms**, **Trojan horses**, **adware**, **phishing**, **pharming**, and most **rootkits**.

..... (1) is a **self-replicating** program that adds itself to an executable file. It is designed to infect a computer by rapidly spreading from one file to another and causing great harm to the data on the infected computer.

..... (2) is a standalone malware computer program that **replicates** itself in order to spread to other computers using a computer network relying on security failures. Unlike a virus, it does not need to attach itself to an existing program.

..... (3) monitors a user's location and aims to gather information about a person or organization without their knowledge and may send such information to another **entity** without the consumer's consent, or **asserts control** over a computer without the consumer's knowledge

..... (4) is a type of malware containing **malicious code** that, when executed, carries out actions typically causing loss or theft of data, and possible system harm. It tricks the user into allowing the program access to their computer, usually through a download or email attachment.

..... (5) is a form of malware that presents unwanted advertisements to the user of a computer.

..... (6) is attempting to acquire information, such as usernames, passwords, and credit card details by **masquerading** as a **trustworthy entity** in an electronic communication. Such e-mails may contain links to websites that are infected with malware.

..... (7) is a technique used to **redirect** a legitimate **website's traffic** to another illegitimate website in order to gain access to a user's banking information such as passwords of Internet bank accounts or credit card details. The term is a new term based on the words 'password harvesting fishing'. It has become of major concern to businesses hosting e-commerce and online banking websites.

..... (8) is software used by a hacker to gain constant **administrator-level access** to a computer or network. It is typically installed through a stolen password or by exploiting **system vulnerabilities** without the victim's consent or knowledge. It is activated each time the victim's system boots up.

..... (9) occurs when malware or spyware replaces your browser's home page with its own in order to **force** more **hits** to a particular website.

..... (10) is a technique that tricks users into clicking on a **malicious link** by adding the link to a **transparent layer** over what appears to be a legitimate web page.

..... (11) keeps visitors from leaving a website by **locking** them into a window, opening multiple windows on the desktop, or **re-launching** their website in a window that cannot be closed.

### ***Tips to Prevent Computer Infection***

- Don't open email attachments from unknown people; always take note of the file extension.
- Run and update **antivirus programs**, e.g. **virus scanners**.
- Install a **firewall**, a program designed to prevent spyware from gaining access to the internal network.
- Make backup copies of your files regularly.
- Don't accept files from high-risk sources.
- Use a **digital certificate**, an electronic way of proving your identity, when you are doing business on the Internet. Avoid giving credit card numbers.
- Don't believe everything you read on the Internet. Have a suspicious attitude toward its contents.

### **Task 1: Match these different types of malware (A – K) with the descriptions (1 – 11).**

- |                        |                            |
|------------------------|----------------------------|
| <b>A</b> Clickjacking  | <b>G</b> Adware            |
| <b>B</b> A worm        | <b>H</b> A rootkit         |
| <b>C</b> Pharming      | <b>I</b> A Trojan horse    |
| <b>D</b> Spyware       | <b>J</b> Browser hijacking |
| <b>E</b> Mousetrapping | <b>K</b> A virus           |
| <b>F</b> Phishing      |                            |

### **Task 2: Identify the Internet crimes the sentences 1 – 6 refer to. Then match them with the advice A – F below.**

- 1** Crackers try to find a way to copy the latest game or computer program.
- 2** A study has revealed that half a million people will automatically open an email they believe to be from their bank and happily send off all security details.
- 3** This software's danger is hidden behind an attractive appearance. That's why it is often wrapped in attractive packages promising photos of celebrities.
- 4** There is a particular danger in Internet commerce and emails. Many people believe they have been offered a special gift only to find out later they have been deceived.
- 5** 'Nimda' spreads by sending infected emails and is also able infect websites, so when a user visits a compromised website, the browser can infect the computer.
- 6** Every day, millions of children spend time in Internet chat rooms talking to strangers. But what many of them don't realize is that some of the surfers chatting with them may be sexual predators.

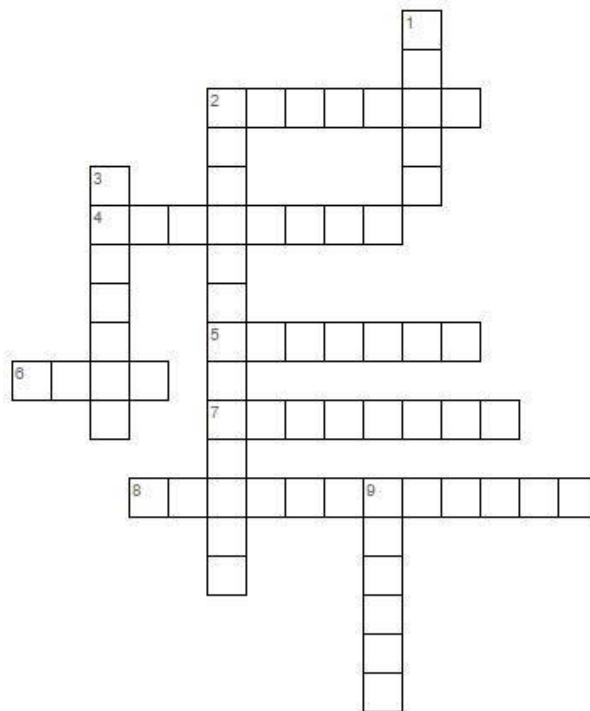


- A People shouldn't buy cracked software or download music illegally from the Internet.
- B Be suspicious of wonderful offers. Don't buy if you aren't sure.
- C It's dangerous to give personal information to people you contact in chat rooms.
- D Don't open attachments from people you don't know even if the subject looks attractive.
- E Scan your email and be careful about which websites you visit.
- F Check with your bank before sending information.



### Vocabulary Practice

**Task 1: Complete the crossword puzzle with different kinds of malware.**



#### Across

- 2 is a general term used to refer to a variety of forms of hostile, intrusive, or annoying software
- 4 attempts to acquire information, such as usernames, passwords, and credit card details by masquerading as a trustworthy entity in an electronic communication
- 5 is installed through a stolen password or by exploiting system vulnerabilities in order to gain constant administrator-level access to a computer or network
- 6 replicates itself across a network and usually performs malicious actions; it does not need to attach itself to an existing program
- 7 redirects a legitimate website's traffic to another illegitimate website in order to gain access to a user's personal information
- 8 tricks users into clicking on a malicious link by adding the link to a transparent layer over what appears to be a legitimate web page

#### Down

- 1 adds itself to an executable file and can cause considerable damage to the data on the infected computer
- 2 keeps visitors from leaving a website by locking them into a window
- 3 collects and sends private information from the infected computer to the third party
- 9 presents unwanted advertisements embedded in the application

**Task 2: Fill in these security tips with the words from the text on page 122.**

- Malicious software, ..... (1), can be avoided by following some basic rules.
- Internet users who like cybershopping should get a ..... (2), an electronic identity card.
- To prevent crackers from breaking into your internal network and obtaining your data, install a ..... (3). It will protect you from ..... (4).
- If you have been hit by a ..... (5), don't panic! Download a clean-up utility and always remember to use an ..... (6) program, for example, a virus ..... (7).

**Listening 1**

Listen to Jon, a bank security officer.

**Task 1: Complete the sentences about bank security.**

- 1 A ..... hacker is a hacker who helps organizations protect themselves against criminal hackers.
- 2 A ..... is a process to check to see who is connected to a network.
- 3 ..... fingerprinting gives information about what operating system people are using.
- 4 128bit SSL ..... encrypt data.
- 5 Anti-virus software can protect against viruses and .....
- 6 ..... phishing is a more targeted form of phishing.

**Task 2: Match the questions 1 – 6 that the interviewer asked Jon to Jon's answers A – E in listening. There is one question that was not asked.**

- 1 ..... What can people do to stay secure online?
- 2 ..... Is there anything else that people should be aware of?
- 3 ..... How do you go about that?
- 4 ..... Is it safe to use credit cards online?
- 5 ..... So, Jon, what sort of work do you do for the bank?
- 6 ..... What's the difference between you and a normal hacker?

**Speaking 1**

Read this short article about a computer infection. In pairs, use the information to complete the text on *Conficker*.

Conficker has been in the news a lot recently. It is a ..... (1), which unlike a virus does not need to be attached to an existing program to infect a machine, and which seems to receive regularly updated instructions from its controllers. It has created a ..... (2) – a network of infected machines. Once infected, these machines are known as ..... (3). At this point no one knows what the purpose of Conficker is. At present it has infected ten million computers. These could be used for a ..... (4) attack where all the infected computers attempt to access one site simultaneously.

It is probably controlled by criminals who want to steal users' personal information, i.e. .... (5). There are a number of ways of doing this: a ..... (6) records information entered via a keyboard, ..... (7) literally means harvesting users' information while they are online. We will probably soon see if Conficker consists of this type of passive monitoring ..... (8) or whether it will mean a more active attack once it receives a new set of instructions.

**Speaker A:** Complete gaps 1 – 4 in the first paragraph of the text with the words and expressions below and ask your partner questions to complete gaps 5 – 8.

For example: *What is stealing users' personal information known as?*

**denial of service      BotNet      worm      zombies**

**Speaker B:** Complete gaps 5 – 8 in the second paragraph of the text with the words and expressions below and ask your partner questions to complete gaps 1 – 4.

For example: *What is the difference between a virus and a worm?*

**pharming      spyware      keylogger      identity theft**



## Listening 2

Listen to an interview with Diana Wilson, a member of the Internet Safety Foundation.

**Task 1: Which answers best describe what she says?**

- 1 Parents should make children aware of
  - A the benefits and risks of the Internet.
  - B the risks of the Internet.
- 2 A web filter program can be used to
  - A prevent access to sites with inappropriate content.
  - B rate web content with labels (similar to the way movies are rated).
- 3 If kids spend too much time online or suffer from internet addiction, parents should
  - A stop them using the Internet.
  - B look for help from specialists.

**Task 2: Complete the interviewer's notes.**

### Risks

- Manipulation of children.
- Invasions of ..... (1).
- Distribution of indecent or ..... (2) material.
- Violence and racist ..... (3).

### Solutions

- There are websites ..... (4) at children.
- Internet ..... (5) programs let parents block objectionable websites.
- Websites should ..... (6) their content with a label, from child-friendly to over 18 only.

**Listening 3**

Listen to the recording about some of the practical and ethical dilemmas that may occur as we progress towards our uncertain future.

**Task 1:** For questions 1 – 10, choose the correct answer (A, B or C) which fits best according to what you hear.

- 1 How many global cyberwar treaties exist today?  
**A** None.  
**B** One.  
**C** It depends on the number of member states of the UN.
- 2 A cyber attack by a sovereign nation that takes down a city power grid constitutes an act of war.  
**A** True  
**B** False  
**C** The law is unclear
- 3 What is the name of the UN rules of cyber engagement.  
**A** None exists.  
**B** The Hague Conventions.  
**C** The Law of War.
- 4 Are cyberwar criminals tried at the International Criminal Court in the Hague?  
**A** No.  
**B** Yes.  
**C** The law is unclear.
- 5 Under the US law a company can legally launch a defensive cyber attack against a sovereign nation after the company has been attacked.  
**A** True  
**B** False  
**C** The law is unclear

**Task 2:** For words and expressions 6 – 10 find synonyms which appear in the recording.

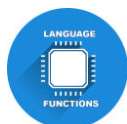
- 6 imagine = .....
- 7 commit = .....
- 8 cruel and violent acts = .....
- 9 reasonable and believable = .....
- 10 inhibit from action = .....



## Speaking 2

Discuss the following questions.

- 1 Which cybercrime from the list below is the most dangerous? Give reasons for your choice.
  - piracy
  - plagiarism
  - cyberstalking
  - phishing
  - spreading of malware
  - distribution of indecent or offensive material
- 2 Is it fair or unfair to pay for the songs, videos, books or articles that you download? Should copyright infringement be allowed online?
- 3 What measures can be taken by governments to stop cybercrime?
- 4 Do you think governments have the right to censor material on the Internet?
- 5 Should the law evolve to create laws that govern cyberwarfare? If so, what changes and at what level (national, international, etc.) should be made to the law to accommodate the changing technology and new frontier in warfare?



## Language Functions: Persuasive Techniques

Persuasive language is used for many reasons, for example, to help to sell products or services, or to convince people to accept a view or idea. Politicians often use persuasive techniques to get their audience to agree with their views on a particular topic. Persuasive language is a very powerful tool for getting what you want.

Here are some **types of persuasive techniques and examples** of how they can be used:

**Flattery** – complimenting your audience:

*A person of your intelligence deserves much better than this.*

**Opinion** – a personal viewpoint often presented as if fact:

*In my view, this is the best thing to have ever happened.*

**Hyperbole** – exaggerated language used for effect:

*It is simply out of this world – stunning!*

**Personal pronouns** – 'I', 'you' and 'we':

*You are the key to this entire idea succeeding – we will be with you all the way. I can't thank you enough!*

**Imperative command** – instructional language:

*Get on board and join us!*

**Triples** – three points to support an argument:

*Safer houses mean comfort, reassurance and peace of mind for you, your family and your friends.*

**Emotive language** – vocabulary to make the audience/reader feel a particular emotion:

*A bionic hand has given him back his life. Its functionality and reliability means he uses it every day and the variety of grip patterns allows him to do simple tasks he once took for granted, quickly and easily.*

**Statistics and figures** – factual data used in a persuasive way:

*80% of graphic designers agreed that this monitor would produce a jaw-dropping image, making their creative work shine.*

**Rhetorical question** – a question which implies its own answer

*Who doesn't want as fast access to the Internet as possible?*

**Task: Make a powerful sales presentation on a selected product/service (hardware or software).**

In your presentation, you should include:

- specific points unique to the target group of customers (to help them solve their specific problem);
- a detailed description of the product/service;
- advantages of buying your product/service
- and/or physical demonstration (e.g. using a video).

The length of presentation should be 5 – 7 minutes

## Unit 12 WORDLIST

**administrator-level access**

[əd'mɪnɪstreɪtə 'lev(ə)l 'aksɛs]

**adware/advertising-supported software**

[ˈædwɛə/ˈædvɛtɪzɪŋsə 'pɔ:tɪd 'sɒf(t)weə]

**anti-copying software** [ˈæntɪkɒpɪŋ 'sɒf(t)weə]**antivirus program** [ˈæntɪvaɪrəs 'prəʊgræm]**assert control** [ə'sɜ:t kən'trəʊl]**browser hijacking** [ˈbraʊzə 'haɪdʒækɪŋ]**clickjacking** [kɪkɪdʒækɪŋ]**cracker/black hat** [ˈkrækə/blæk hæʔ]**cyber bullying/cyberbully**

[ˈsaɪbəˌbʊlɪŋ/ˈsaɪbəˌbʊlɪ]

**cyberstalking** [ˈsaɪbəstɔ:kɪŋ]**digital certificate** [ˈdɪdʒɪt(ə)l sə'tɪfɪkət]**disrupt** [dɪs'rʌpt]**executable file**

[ɪg'zekjʊtəb(ə)l/eg'zekjʊtəb(ə)l faɪl]

**exploit** [ɪk'splɔɪt]**file swapping** [faɪl swɒpɪŋ]**firewall** [ˈfaɪəwɔ:l]**force** [fɔ:s]**harassment** [hə'ræs(ə)nt/'harəs(ə)nt]**hit** [hɪt]**hostile** [ˈhɒstɪl]**identity theft** [aɪ'dentɪti θeft]**illegitimate** [ɪlɪ'dʒɪtɪmət]**infect** [ɪn'fekt]**intrusive** [ɪn'tru:sɪv]**keylogger** [ˈki:lɒgə]**legitimate** [lɪ'dʒɪtɪmət]**libel** [ˈlaɪb(ə)l]**lock** [lɒk]**malicious code** [mə'ɪʃəs kəʊd]**malicious link** [mə'ɪʃəs lɪnk]**malware/malicious software**

[mə'ɪʃəs 'sɒf(t)weə]

**masquerade** [mɑ:skə'reɪd]**mousetrapping** [ˈmaʊstrapɪŋ]**password** [ˈpɑ:swɜ:d]**pharming** [ˈfɑ:mɪŋ]

přístup na správcovské úrovni

software financovaný reklamou (označení pro produkty znepríjemňující práci nějakou reklamní aplikací od běžných bannerů až po neustále vyskakující pop-up okna nebo ikony v oznamovací oblasti)

software zabraňující vytváření nelegálních kopií

antivirový program

prosadit/uplatnit kontrolu/ovládání

útok na uživatele webových stránek prostřednictvím změny nastavení vyhledávače, které způsobí nahrazení domovské stránky chybovou stránkou nebo stránkou únosce

útok na uživatele webových stránek, při kterém uživatel nějakou činností na zdánlivě neškodné stránce (např. kliknutím na tlačítko či obrázek) spustí akci, kterou nepředpokládal

jedinec, který se pokouší o přístup do výpočetního systému bez patřičného oprávnění s cílem zcizit informací nebo způsobit škody vlastníkovému systému kyberšikana

kyberstalking (dlouhodobé pronásledování a obtěžování oběti pomocí ICT)

digitální certifikát

narušit, přerušit, zkomplikovat

spustitelný soubor, soubor exe

zneužívat, využívat

výměna souborů

firewall (ochrana počítače před viry a nežádoucími průniky do systému)

přinutit, vnutit

obtěžování, pronásledování

napadení

nepřátelský, agresivní

krádež identity

nezákonný, protizákonný

zavírat

vtíravý, neodbytný, vlezlý

software, který snímá otisky jednotlivých kláves a sleduje veškeré činnosti uživatele napadeného počítače

zákonný, legitimní

křivé nařčení, očerňování

uzamknout

škodlivý/nebezpečný kód

škodlivý/nebezpečný odkaz

malware/zákeřný software (program určený ke vniknutí nebo poškození počítačového systému)

vydávat se, přestrojit se

útok na uživatele webových stránek, při kterém uživatel kliknutím myši na zdánlivě neškodné stránce spustí akci, která mu znemožní stránku opustit

heslo

farmaření (*slang.*), podvodné získávání citlivých údajů od obětí prostřednictvím napadení DNS (systém doménových jmen) a přepsání IP adresy, což způsobí přesměrování klienta na falešné stránky internet bankingu po napsání URL banky do prohlížeče



**phishing** ['fɪʃɪŋ]

**piracy** ['paɪəsi]

**plagiarism** ['pleɪdʒərɪz(ə)m]

**privacy violation** ['praɪvəsi/'prɪvəsi vaɪə'leɪʃn]

**redirect** ['rɪːdɪrekt/ 'rɪːdaɪrekt]

**re-launch** [riː'ləʊn(t)]

**replicate** ['replɪkeɪt]

**rootkit** ['ruːtkɪt]

**scam** [skæm]

**security failure** [sɪ'kjʊərɪti 'feɪljə]

**self-replicating** [self 'replɪkeɪtɪŋ]

**sexual exploitation** ['seksʊəl eksplɔɪ'teɪʃ(ə)n]

**slander** ['slɑːndə]

**spear phishing** [spɪə 'fɪʃɪŋ]

**spyware** ['spaɪweə]

**targeted** ['tɑːɡɪtɪd]

**transparent layer**

[træns'pær(ə)nt 'leɪə]

**trick** [trɪk]

**Trojan horse** ['trɔʊdʒ(ə)n hɔːs]

**trustworthy entity** ['trʌs(t)wɜːði 'entɪti]

**virus** ['vaɪrəs]

**virus scanner** ['vaɪrəs 'skænə]

**black-hat hacker/cracker**

[waɪt 'hæt 'hækə/'krækə]

**white-hat hacker** [blæk 'hæt 'hækə]

**worm** [wɜːm]

rhybaření (*slang.*), podvodné online vylákání a zneužívání důvěrných osobních údajů (vydáváním se za oficiální organizaci ap.)

internetové pirátství

plagiátorství

porušení/nedodržení soukromí

přesměrovat

znovu spustit

reduplikovat se/zdvojovat se

škodlivý kód, který proniká do operačního systému a maskuje přítomnost zákeřného software v počítači

podvodný investiční program zneužívající emailu

bezpečnostní porucha/selhání

automatické rozesílání kopií sebe sama

sexuální zneužívání

pomluva, urážka na cti

cílenější rhybaření na konkrétní firmu, osobu

hovorový výraz pro software financovaný reklamou (spy = špeh)

zacílený

stránky k nerozeznání od skutečných stránek

podvést, oklamat, obelstít

Trojský kůň (program, který disponuje prostředky, jež umožní tvůrci programu přístup do systému, kde je program umístěn)

důvěryhodný subjekt

virus, vir

antivirový skener

počítačový zločinec a narušitel počítačových sítí

specialista na počítačovou bezpečnost, který se zaměřuje na penetrační a další testy pro zajištění bezpečnosti informačních systémů

červ (program, který vytváří své kopie do jiných systémů; na rozdíl od počítačových virů se to děje v distribuovaném systému, např. síťovém prostředí a pro svou reprodukci se nepotřebuje připojit k jinému programu)

## Review 3

### UNITS 9 – 12

#### Task 1: Identify these items.

15 pts/1 pt

- 1 ..... – a vulnerability used by an attacker to collect an infected user's clicks
- 2 ..... – the practice of sharing computer data or space on a network
- 3 ..... – a LAN architecture that uses a bus or star topology and supports data transfer rates of 10 Mbps
- 4 ..... – a copy of an e-mail message sent to a recipient without the recipient's address appearing in the message
- 5 ..... – the fraudulent practice of directing Internet users to a bogus website that mimics the appearance of a legitimate one, in order to obtain personal information such as passwords, account numbers, etc.
- 6 ..... – the amount of data that can be transmitted in a fixed amount of time or range within a band of frequencies or wavelengths
- 7 ..... – an e-mail utility that automatically replies to an e-mail message with a prewritten response when that e-mail comes into a specific e-mail or Internet address
- 8 ..... – the authoring language used to create documents on the Web
- 9 ..... – the term used to describe any link in any part of a software system that is intended to cause security breaches or damage to a system
- 10 ..... – a message posted to a public Internet discussion group with the intent of provoking an angry response or argument over a topic
- 11 ..... – software that contains advertisements embedded in the application
- 12 ..... – a central connection point in the star network topology, which does not distinguish to which port data packets should be sent
- 13 ..... – a program that automatically fetches web pages which is used to feed pages to search engines
- 14 ..... – a distinct subset of the Internet with addresses sharing a common suffix or under the control of a particular organization or individual
- 15 ..... – a record of the address of a website or other data made to enable quick access

#### Task 2: Fill in the verbs in infinitive according to their definition.

5 pts/1 pt

- 1 ..... – to change the direction of something, especially to send it to a different place
- 2 ..... – to use someone/something for your own advantage
- 3 ..... – to use a mouse or other device to position the cursor over a particular area of a computer screen so as to cause a program to respond without clicking a button on the device
- 4 ..... – to make exact copies of themselves (of computer viruses)
- 5 ..... – to send an email that you have received to someone else

**Task 3: Complete each gap in this text with a suitable word from this list.**

**20 pts/1 pt**

alerts	encryption	IP address	operators
banking Trojans	executable file	legitimate	outbreak
cybercrime	exploits	machine translated	spam messages
decrypting tool	files	malicious	tasks
desktop	income	note	threat

***WannaCry Ransomware Spreads Across the Globe, Makes Organizations Wanna Cry About Microsoft Vulnerability***

*What Is WannaCry?* The WannaCry ..... (1) started showing up on May 12, 2017, but it relies on a number of elements that have been around for a while. It even offered a sneak preview when it showed up in Trojan.Win32.CryptoFF attacks in Peru. WannaCry, WanaCrypt or Wcry for short, is ransomware that works like other malware of its type, with a few intricacies that highlight the sophistication of its ..... (2). First, the malware uses ..... (3) that were supposedly leaked by a group that calls itself Shadow Brokers. The result of leaking exploits very often gives rise to ..... (4) actors who use them for their nefarious purposes, which is what happened in this case. Second, the malware uses strong, asymmetric ..... (5), employing the RSA 2048-bit cipher to encrypt ..... (6). This method is considered relatively slow when compared to symmetric encryption, but it is very strong and virtually impossible to break. Third, the malware's architecture is modular, a feature known to be used in ..... (7) software, but also in complex malware projects such as ..... (8). Most ransomware is not modular, but rather simplistic, and carries out its ..... (9) without any modularity. This means that the authors behind Wcry are more likely to be a group of people, more than just one developer, and even possibly one of the organized ..... (10) gangs that distribute malware such as Dridex and Locky. Bottom line, we are not dealing with amateurs. This widespread attack is of high severity, and although the vulnerability should have been patched a while back, many organizations have been hit and the count keeps rising.

*Display Ransom Note:* Unlike most ransomware that uses an image to display the ransom note to the infected users, Wcry uses a/an ..... (11). That file is not the malware; it is a simple program that displays the ..... (12) to the victim. The image displayed to each victim depends on the ..... (13) mapping to the country he or she is located in. The malware's authors have adapted numerous different language formats to Wcry; those are often reported as ..... (14) and rather clunky in terms of syntax. To make sure the victim sees the ransom note immediately, it places it as the foremost window on the ..... (15) by using SetForegroundWindow(). In some of the instances, X-Force researchers noticed that the malware included a tool that changes the victim's desktop wallpaper with instructions on how to find the ..... (16) dropped by the malware.

*Ransomware Is an Ominous, Global Problem:* Ransomware was the most prevalent online ..... (17) in 2016, with over 40,000 attacks per day at times, and reaching well over 65 percent of all ..... (18) that carry malicious payloads. IBM X-Force researchers tracking spam trends noted that the rise in ransomware spam in 2016 reached an exorbitant 6,000 percent, going from 0.6 percent of spam emails in 2015 to an average of 40 percent of email spam in 2016. The situation is only worsening in 2017. The FBI and international law enforcement have issued ..... (19) about this threat. The FBI estimated that ransomware is on pace to become a \$1 billion source of ..... (20) for cybercriminals by the end of 2016, a number that is expected to continue to rise in 2017.

/Adapted and abridged from Kesseem (2017)/

### HISTORY OF A COMPUTER

"I think it's fair to say that personal computers have become the most empowering tool we've ever created. They're tools of communication, they're tools of creativity, and they can be shaped by their user."

Bill Gates



#### LEAD-IN

#### Activity

- 1 Discuss the quote.
- 2 What were some important events in the history of a computer?
- 3 Do you know any famous scientists who influenced the development of computers?
- 4 Which of the famous IT experts do you find the most interesting and impressive? Why?



#### TOPIC

#### Text

All the present-day automatic control systems in the world would not have been possible without the invention of computers. When **Charles Babbage** (1791-1871), regarded as a 'father of the computer', a professor of mathematics at Cambridge University, invented the first **calculating machine** in 1812, he could hardly have imagined the situation we find ourselves in today.

In 1941 **Konrad Zuse** (1910-1995) presented the **Z3**, the world's first fully functional and programmable computer. In 1946 the **ENIAC** (Electronic Numerical Integrator and Computer) of **John Presper Eckert** (1919-1995) and **John Mauchly** (1907-1980) followed, beginning the computing era. The **arithmetic operations** of these machines allowed engineers to develop completely new technologies and achieve new objectives, including the Apollo missions and the NASA moon landing.

**John von Neumann** (1903-1957) was a Hungarian-born mathematician and computer scientist who outlined the **architecture** of a **stored-program computer**, including electronic storage of programming information and data, which eliminated the need for more clumsy methods of programming such as punched cards and paper. He demonstrated prodigious expertise in hydrodynamics, ballistics, meteorology, game theory, statistics, and the use of mechanical devices for computation. After World War II, he concentrated on the development of Princeton's Institute for Advanced Studies computer.

Computers were once huge machines filled with **vacuum tubes** and difficult to work with. But after the invention of **transistor** in 1947 by **William B. Shockley** (1910-1989), **John Bardeen** (1908-1991) and **Walter Brattain** (1902-1987); **semiconductor** in 1959, and **microchip** in 1968, they became portable, practical, and affordable enough for home use. In 1968, **Marcian Hoff** (1937) invented the **first microprocessor** at Intel and thus ignited the development of the personal computer.

Before their advent in the late 1970s, the only computers possibly available were **computer-terminal based architectures** owned by large institutions. In these, the technology was called 'computer time share systems', and used minicomputers and mainframe computers. These central computer systems frequently required large rooms - roughly, a handball-court-sized room could hold two to three small minicomputers and its associated peripherals, each housed in cabinets much the size of three refrigerators side by side (with blinking lights and tape drives). In that era, **mainframe computers** occupied whole floors and their big hard disk was a mere ten to twenty Megabytes. Earlier PCs were generally called desktop computers, and the slower Pentium-based personal computer of the late 1990s could easily outperform the advanced minicomputers of that era.

The first generations of personal **microcomputers** were usually sold as **electronic kits** (bags full of loose components which the buyer had to solder together before the system could be used), and required a somewhat skilled person to assemble and operate them. These were usually called microcomputers, but the name '**personal computer**' was also used. Later generations were sometimes interchangeably called by the names 'home computer' and 'personal computer'. By the mid-1980s, 'home computer' was becoming a less common label in favour of 'personal computer'. These computers were **pre-assembled** and required little technical knowledge to operate.

Some of the first computers that might be called 'personal' were early **minicomputers** such as the **LINC** and **PDP-8**. By today's standards they were very large (about the size of a refrigerator) and their price was extremely high (tens of thousands of US dollars), and thus were rarely purchased by an individual. However, they were much smaller, less expensive, and generally simpler to operate than many of the mainframe

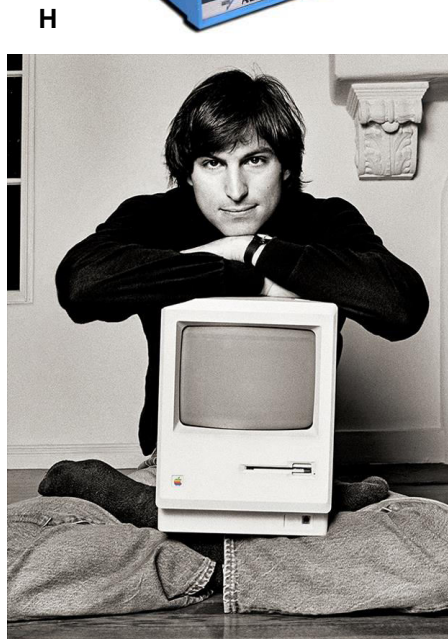
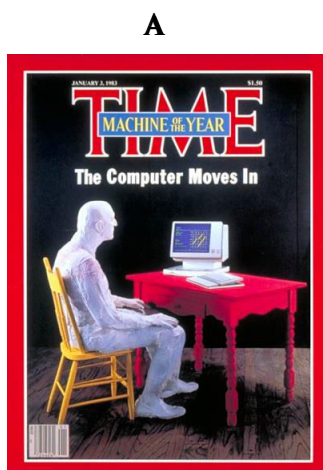


computers of the time. Therefore, they were accessible for individual laboratories and research projects. In addition, they were relatively interactive and soon had their own operating systems. The minicomputer era largely was a precursor to personal computer usage and an intermediary step from mainframes.

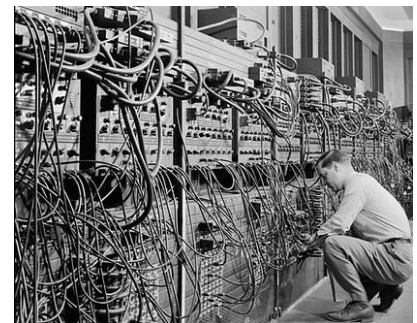
Development of the **single-chip microprocessor** was a significant progress towards the popularization of cheap, easy to use, and truly **personal computers**. The first true 'personal computer' was the **Altair 8800**, released in 1975. It did not use a keyboard, had neither monitor nor printer, and had only 256 bytes of RAM. However, it was arguably this computer that spawned the development of such corporations as **Apple Inc.**, founded by **Steve Jobs** (1955-2011), **Steve Wozniak** (1950) and **Ronald Wayne** (1934) on 1 April 1976, as well as **Microsoft**, founded by **Bill Gates** (1955) and **Paul Allen** (1953) on 4 April 1975. Without the Altair 8800 there would be no Pentium-run, 80-gigabyte PCs today. Other computers followed quickly, such as the **Commodore 64** and the **Atari 600** (both from 1982). Though these computers stored information on tape rather than disks, they had keyboards and colour graphics, and could run many programs, including games.

Good **word processor programs** also appeared for many home computers, in particular the introduction of **Microsoft Word** for the Apple Macintosh in 1985. On January 3, 1983 the personal computer was named the 'Machine of the Year' in by *Time Magazine*. During the 1990s, the power of personal computers increased radically, blurring the formerly sharp distinction between personal computers and multi-user computers, such as mainframes.

**Task 1: Match the pictures A – H to the numbers 1 – 8.**



D



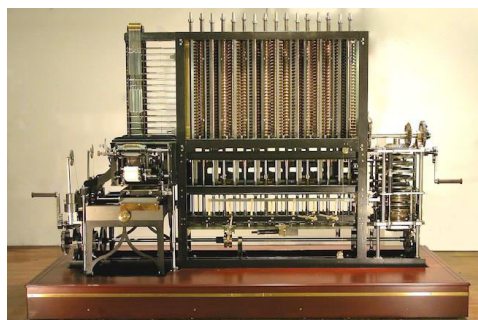
G



E



F



- 1 ..... Babbage's analytical engine
- 2 ..... Konrad Zuse
- 3 ..... Marcian Hoff
- 4 ..... ENIAC
- 5 ..... Altair 8800
- 6 ..... Time Magazine cover
- 7 ..... John von Neumann
- 8 ..... Steve Jobs in 1984

**Task 2: Complete the sentences using the letters A – I.**

- 1 ..... was a professor of mathematics at Cambridge University who invented the first calculating machine in 1812.
- 2 ..... presented the Z3, the world's first fully functional and programmable computer.
- 3 The ENIAC (Electronic Numerical Integrator and Computer) was built by .....
- 4 ..... invented the transistor.
- 5 ..... invented the first microprocessor.
- 6 In the 1970s ..... occupied whole floors and their big hard disk was a mere ten to twenty Megabytes.
- 7 The first computers that might be called 'personal' were early minicomputers such as .....
- 8 The first true 'personal computer' was the ..... released in 1975.
- 9 Apple Inc. was founded by ..... on 1 April 1976.
- 10 Microsoft was founded by ..... on 4 April 1975.

- A the LINC and PDP-8
- B the Altair 8800
- C Bill Gates and Paul Allen
- D Charles Babbage
- E Konrad Zuse
- F W. B. Shockley, J. Bardeen, W. Brattain
- G Steve Jobs, Steve Wozniak and Ronald Wayne
- H John P. Eckert, John Mauchly
- I mainframe computers
- J Marcian Hoff



**Reading**

***The First Computer Programmer***

Ada Lovelace was the daughter of the poet Lord Byron. She was taught by Mary Somerville, a well-known researcher and scientific author, who introduced her to Charles Babbage in June 1833. Babbage was an English mathematician, who first had the idea for a programmable computer.

In 1842 and 1843, Ada translated the work of an Italian mathematician, Luigi Menabrea, on Babbage's Analytical Engine. Though mechanical, this machine was an important step in the history of computers; it was the design of a mechanical general-purpose computer. Babbage worked on it for many years until his death in 1871. However, because of financial, political, and legal issues, the engine was never built. The design of the machine was very modern; it anticipated the first completed general-purpose computers by about 100 years.

When Ada translated the article, she added a set of notes which specified in complete detail a method for calculating certain numbers with the Analytical Engine. In 1953, more than a century after her death, Ada's notes on Babbage's Analytical Engine were republished. The engine has now been recognised as an early model for a computer and her notes as a description of a computer and software. She also saw possibilities in it that Babbage hadn't: she realised that the machine could compose pieces of music. The computer programming language 'Ada', used in some aviation and military programs, is named after her.

**Read the text and decide whether the statements are true (T) or false (F).**

- 1 ..... Ada Lovelace's teacher introduced her to Charles Babbage.
- 2 ..... Babbage programmed the first computer.
- 3 ..... Ada translated Babbage's article in 1842 and 1843.
- 4 ..... The Analytical Engine was electronic.
- 5 ..... Luigi Menabrea designed the first computer.
- 6 ..... Babbage finished the machine before he died.
- 7 ..... Babbage's design was ahead of its time.
- 8 ..... Ada's work was instantly recognised as being the first computer program.
- 9 ..... Babbage saw that his machine could write music.
- 10 ..... Ada wrote military and aviation computer programs.



**HISTORY OF A COMPUTER: WORDLIST**

<b>accessible</b>	přístupný
<b>affordable</b>	cenově dostupný/přijatelý
<b>anticipate</b>	předběhnout; předvídat, očekávat
<b>arguably</b>	prokazatelně, velmi pravděpodobně
<b>arithmetic operations</b>	početní úkony, aritmetické operace
<b>assemble</b>	sestavit, smontovat
<b>blur</b>	zamlžit, zastřít
<b>calculating machine</b>	kalkulačka
<b>compatible</b>	kompatibilní, slučitelný
<b>computer architecture</b>	architektura počítače
<b>computer-terminal based architecture</b>	počítač s terminály
<b>electronic kit</b>	elektronická stavebnice
<b>general-purpose computer</b>	univerzální počítač
<b>intermediary step</b>	prostředník, spojovací článek
<b>loose components</b>	volné součástky
<b>mainframe (computer)</b>	mainframe, střediskový/sálový počítač
<b>microchip</b>	mikročip
<b>microprocessor</b>	mikroprocesor
<b>microcomputer</b>	mikropočítač
<b>minicomputer</b>	minipočítač
<b>operating system (OS)</b>	operační systém (OS)
<b>portable</b>	přenosný
<b>pre-assembled</b>	předem sestavený
<b>semiconductor</b>	polovodič
<b>single-chip microprocessor</b>	jednočipový mikroprocesor
<b>significant progress</b>	významný pokrok
<b>spawn</b>	podnítit
<b>stored-program computer</b>	počítač s programem v paměti
<b>tape</b>	páska
<b>transistor</b>	tranzistor
<b>vacuum tube</b>	elektronka
<b>word processor</b>	textový procesor

## Extra Activites

### HISTORY OF THE INTERNET

“The Internet has always been, and always will be, a magic box.”

Marc Andreessen

#### LEAD-IN

#### Activity

- 1 Discuss the quote.
- 2 How would you define the Internet?
- 3 Make a list of all the things you can use the Internet for.
- 4 What were some important events in the Internet history?

#### TOPIC

#### Text

The Internet has become a multi-purpose international medium. It can be used for educational purposes, research, working, advertising, e-commerce, and banking. People also use the Internet for blogging, playing games, downloading and listening to music, downloading and watching films. A lot of people use social networking services on the Internet to communicate with friends and family, share interests, activities, backgrounds or real-life connections.

The Internet has its origin in a project developed by **the U.S. Department of Defense** in **1969**. Their first net called the ..... (1) was based on concepts and designs by Americans **Leonard Kleinrock** (1934) and **Paul Baran** (1926-2011), and the British scientist **Donald Davies** (1924-2000). The idea was to create a decentralised network of computers which would continue to function even if individual sections of the network were to stop working, for example due to a nuclear attack. Kleinrock received a contract from ARPA to setup the Network Measurement Center which in 1969 would be the home of the first ..... (2) – one of four machines that started the Internet.

Later the military forces separated their own net called the ..... (3) and the rest of the ARPANET was available to universities. The National Science Foundation (NSF) took care of this net called the **NSFNET** in the 1980s.

The first web browser ..... (4), one of the most widely-used applications of the Internet, was originally developed in 1990 by a scientist **Tim Berners-Lee** (1955) at **the Swiss research institute CERN** (Conseil Européen pour la Recherche Nucléaire, i.e. European Organization for Nuclear Research) to enable quick and easy access to huge amounts of information without having to learn complicated commands. It was later renamed ..... (5).

Up to this point only a relatively small proportion of the world's population had had a contact with the Internet, but since then there has been an explosion in its use, which is still continuing at a tremendous rate.

In 1993, browser software was further innovated by **Marc Andreessen** (1971) at the National Center for Supercomputing Applications (NCSA) with the release of ..... (6) (later **Netscape**), 'the world's first popular browser', which made the World Wide Web system easy to use and more accessible to the average person. Andreessen's browser sparked the Internet boom of the 1990s.

The introduction of the NCSA Mosaic web browser in 1993, one of the first graphical web browsers, led to an explosion in web use. Marc Andreessen, the leader of the Mosaic team at NCSA, soon started his own company, named Netscape, and released the Mosaic-influenced ..... (7) in 1994, which quickly became the world's most popular browser, accounting for 90% of all web use at its peak.

Microsoft responded with its **Internet Explorer** in 1995 (also heavily influenced by Mosaic), initiating the industry's first browser war. Bundled with Windows, Internet Explorer gained dominance in the web browser market; Internet Explorer usage share peaked at over 95% by 2002.

**Opera** debuted in 1996; although it has never achieved widespread use, having less than 2% browser usage share as of February 2012 according to Net Applications, having grown to 2.14 in April 2011 its Opera-mini version has an additive share, in April 2011 amounting to 1.11 % of overall browser use, but focused on the fast-growing mobile phone web browser market, being preinstalled on over 40 million phones. It is also available on several other embedded systems, including Nintendo's Wii video game console.

In 1998, Netscape launched what was to become the Mozilla Foundation in an attempt to produce a competitive browser using the open source software model. That browser would eventually evolve into **Firefox**, which developed a respectable following while still in the beta stage of development; shortly after the release of Firefox 1.0 in late 2004, Firefox (all versions) accounted for 7.4% of browser use. As of August 2011, Firefox has a 27.7% usage share.

Apple's ..... (8) had its first beta release in January 2003; as of April 2011, it has a dominant share of Apple-based web browsing, accounting for just over 7.15% of the entire browser market.

The most recent major entrant to the browser market is Google's **Chrome**, first released in September 2008. Chrome's take-up has increased significantly year on year, by doubling its usage share from 7.7 percent to 15.5 percent by August 2011. This increase seems largely to be at the expense of Internet Explorer, whose share has tended to decrease from month to month. In December 2011 Google Chrome overtook Internet Explorer 8 as the most widely used web browser.

### Internet innovations

One of the Internet innovations a ..... (9) is a combination of the latest cable and radio technology, which means that huge amounts of electronic data can now be transmitted from computer to computer at incredibly high speeds. Benefits for a user are that it enables much faster, more reliable Internet connection; it is turned on all the time (you pay a fixed sum every month, so you do not have to keep dialling up); you can do two Internet operations at the same time (e.g. collect emails and download a picture from the Internet).

Another innovation is a ..... (10), which is a network of information and services that can be accessed via mobile phone. Its benefits are that there is the freedom to use a laptop or notebook without connecting it to a phone line as long as you do not go too far away from the wireless hub, which is the main unit of the network that is connected to a phone line.

### Task 1: Fill in the gaps 1 – 10 with the missing information A – J.

- A the World Wide Web
- B Mosaic
- C broadband
- D ARPANET (Advanced Research Project Agency Network)
- E Safari
- F Nexus
- G Interface Message Processor (IMP)
- H Netscape Navigator
- I Wireless Application Protocol (WAP)
- J MILNET (Military Network)

**Task 2: Choose the correct answer.**

- 1 The Internet was originally developed by
    - A the Swiss research institute CERN
    - B American Department of Defense
    - C National Science Foundation
    - D North Atlantic Treaty Organization
  - 2 The first net was called the
    - A NET
    - B ARPANET
    - C MILNET
    - D NSFNET
  - 3 The World Wide Web was developed in
    - A the Swiss research institute CERN
    - B American Department of Defense
    - C National Science Foundation
    - D North Atlantic Treaty Organization
  - 4 The World Wide Web was developed by
    - A Charles Babbage
    - B Tim Berners-Lee
    - C Bill Gates
    - D Leonard Kleinrock
  - 5 The first browser was called
    - A Internet Explorer
    - B World Wide Web
    - C Nexus
    - D Viola WWW
  - 6 The web browser released in 1993 by the NCSA was
    - A Mosaic
    - B Opera
    - C IE
    - D Safari
  - 7 The most recent browser out of the following is
    - A Opera
    - B Safari
    - C Chrome
    - D Firefox
-

## HISTORY OF THE INTERNET: WORDLIST

<b>accessible</b>	dostupný, přístupný
<b>account for</b>	podílet se, mít podíl
<b>at the expense of</b>	na úkor (čeho)
<b>blogging</b>	blogování
<b>boom</b>	rozmach, vzestup
<b>broadband</b>	širokopásmový
<b>decentralised</b>	decentralizovaný
<b>dominant share</b>	dominantní/převládající podíl
<b>double</b>	zdvojnásobit
<b>e-commerce</b>	elektronický obchod
<b>explosion</b>	prudký nárůst
<b>gain dominance</b>	získat převahu/rozhodující vliv
<b>graphical web browser</b>	grafický webový prohlížeč
<b>initiate</b>	zahájit, spustit, iniciovat
<b>Interface Message Processor (IMP)</b>	rozhraní procesoru zpráv
<b>military forces</b>	vojenské síly
<b>most widely-used</b>	nejpoužívanější
<b>multi-purpose</b>	víceúčelový
<b>peak</b>	vrchol, maximum, nejvyšší stupeň; dosáhnout vrcholu/maxima, kulminovat
<b>release</b>	vydání, zveřejnění
<b>respond</b>	(za)reagovat, ozvat se
<b>social networking services</b>	služby poskytované sociálními sítěmi
<b>spark</b>	podnítit, rozpoutat, vyvolat
<b>tend</b>	mít sklon, směřovat, tíhnout
<b>tremendous rate</b>	obrovská intenzita/rychlost
<b>U.S. Department of Defense</b>	Ministerstvo obrany Spojených států amerických
<b>web browser</b>	webový prohlížeč
<b>Wireless Application Protocol (WAP)</b>	bezdrátový aplikační protokol

## Extra Activites

### CASE STUDIES

#### Case Study 1

##### *Start-Up Fever*

##### **Brief**

Open your eyes because start-up fever has hit the market once again. Let's be honest. Your chances are minimal: You are a poor student with a minimum income and there is a lot of business competition; however, you are young and bright, and you are full of great ideas which can be easily monetized. Now it's showdown: time to gather some resources.

##### **Task 1:**

You have 8 minutes to prepare a business plan you are currently thinking about (maybe you are not yet, but now it's time to come up with something good). It might be anything, from an unconventional pub/bar project, the implementation of a brand new software product to building machinery for coal mining.

##### **Task 2:**

Split into a few groups (4 – 5 max.)

a) One of you is an applicant presenting a product to bankers and investors. Explain why your product is unique, what it is going to bring to the market, what the current situation on the market is etc. These people are bankers, so you have to be persuasive. Keep it short and effective. You have 1 – 2 minutes to convince "sharks" to invest in your company.

b) The rest of the group is a board of bankers/potential investors. As you know, these people are keen on their cash flow, so choose carefully what you invest in. Consider every idea and write down how much you would invest in the current applicant.

Everybody has to play the role of an applicant and the most funded person is the winner.

##### **Task 3:**

Now, the winners from all groups have been able to successfully fund their dream product. They had drawn a lot of attention from network users, and now as money is still coming in, they must stand up to the crowd on Kickstarter.com. It is known that first-time investors are even rougher than loan sharks. You must defend your product because being discredited in the eyes of the public is very bad for marketing.

a) The rest of the group is a crowd made up of: hesitant investors who are not sure yet, people who want to know every technical detail, people who are angry with your product (giving it a bad review), news reporters, lawyers, accountants, investors and bankers. You can play any of these roles. Your task is easy: Present an applicant with all possible problems that can arise in connection with your role. Allowed: relevant/irrelevant questions, blaming, cross-questioning, murmur, manipulation, etc. The applicants are fighting for their points, so make them work for it.

b) As an applicant, you must handle this situation. Answer all questions politely and control the crowd. Sometimes you even need to stand up to someone.

Note: The winners who handle the situation should get some points (and in the business class with competitive people, even a chance to change sides).

You have 3 – 8 minutes.

Case Study 2**Women Managers in the IT Sector****Brief**

The CEO of a large IT company is worried about the small number of women in senior management positions in the company. He/she has called a meeting of the non-executive directors to discuss what can be done about this. These are people with a long experience in business who oversee the management of the IT company.

**Task:**

Work in groups of five: the CEO and four directors. The CEO is holding a meeting with the non-executive directors. You should discuss your belief that the company does not have enough managers and directors and agree on an acceptable solution.

Read your role card and think about how you can express the beliefs outlined there in your own words. You should also think about possible responses to anyone who disagrees with you.

**CEO**

You chair the meeting, and explain the situation – that you think the company does not have enough women managers and directors. Explain why you think this is a problem, and that you want constructive suggestions to solve it. You choose who will speak first. You will not select Director D to begin, as you suspect that he (probably not she) has very negative views on this matter. At the end of the meeting, you can briefly summarize the directors' suggestions, and inform them which ideas you think are the best and most practical.

**Director A**

You think the problem is simple: it lies in the job advertisements prepared by the HR department. They often contain a picture of a man in a suit, carrying a briefcase, with a text containing words like aggression, competitiveness and dynamism. They also often have a paragraph with the heading 'The Perfect Candidate' that begins 'He will be...'. The company needs to rethink its job advertising. If it wants to attract more women, it could use pictures of women, and words like *collaboration*, *innovation* and *enthusiasm*. Such advertisements might also attract a different kind of man to apply for jobs. The company could also reconsider its selection processes: you could insist, for example, that at least one of three candidates interviewed for each management job is a woman.

**Director B**

You think the problem lies with the traditional career paths in companies. Many women who have children do so in their 30s, and are not able to devote all their time to their job. Unfortunately, this is often the age (typically between about 28 and 35) when companies identify and promote people they think have a high potential for future leadership. If the company also tried to identify leaders at younger and older ages, it might find more potential women leaders, including women who have come back from a career break of a few years. This would also encourage women who take a break to return to the company.

**Director C**

You think that if the company wants to attract and retain women with strong management and leadership potential, it needs to offer childcare. The company could set up a nursery for pre-school-age children, near the company's headquarters. This would allow mothers to be near their children while they are at work, and might encourage them not to take a career break when their children are young. This day care would not be free, but managers with high salaries would be able to pay for it, so it wouldn't necessarily cost the company anything. All this would give the company a big competitive advantage over its rivals.

**Director D**

You are not convinced that there is a problem. The company is successful, and has a lot of hard-working, full-time managers. You are very much against the idea of encouraging career breaks. People coming back from a career break for childcare are often not aware of the latest developments in the company, in the industry, or in the business world in general. Furthermore, if you offer career breaks to women, some men will start demanding them too, or other things like increased flexibility, or part-time positions, and the company will become inefficient and very difficult to run. You also think – even though you are a bit worried about saying this – that mothers should not work, but should stay at home looking after their children.



## Review 4

### MOCK CREDIT TEST

#### Task 1: Identify these items.

15 pts/1 pt

- 1 ..... – an electronic device in a computer that issues a steady high-frequency signal that synchronizes all the internal components
- 2 ..... – a device that forwards data packets along networks
- 3 ..... – an email that automatically replies to an e-mail message with a prewritten response when that e-mail comes into a specific e-mail or Internet address
- 4 ..... – the main graphical user interface of an operating system, usually displaying icons, windows and background wallpaper
- 5 ..... – a special type of file in some operating systems that points to another file or device
- 6 ..... – the fastest type of computer that channels all its power into executing a few programs as fast as possible
- 7 ..... – a program that is used to feed pages to search engines
- 8 ..... – part of a hard disk responsible for moving and controlling the read/write arm
- 9 ..... – a symbol that appears on the display screen and that you move to select objects and commands
- 10 ..... – a pointing device typically embedded between the G, H and B keys on a QWERTY keyboard
- 11 ..... – malicious software used by a hacker to gain constant administrator-level access to a computer or network and activated each time a victim's system boots up
- 12 ..... – a high-capacity transmission technique using a wide range of frequencies, which enables a large number of messages to be communicated simultaneously
- 13 ..... – a folder or directory where deleted items are temporarily stored
- 14 ..... – the time a program or device takes to locate a single piece of information and make it available to the computer for processing
- 15 ..... – refers to the sharpness and clarity of an image (e.g. in the case of dot-matrix and laser printers, it indicates the number of dots per inch)

#### Task 2: Fill in the verbs in infinitive according to their definition.

5 pts/1 pt

- 1 ..... – to find and bring back information
- 2 ..... – to eliminate an object or text
- 3 ..... – to modify (e.g. software) to suit a particular individual or task
- 4 ..... – to convert a document or picture into digital form for storage or processing on a computer
- 5 ..... – to prepare a second copy of a file, program, etc. that can be used if the main one fails or needs extra support

**Task 3: Complete each gap in this text with a suitable word from this list.**

**20 pts/1 pt**

apps	hard drive	power	removed
back up	lost	power button	running
boot process	low-power	pressing	security
both	open documents	RAM	shutting down
function	operating system	regularly	users

### ***Shutting Down Computers and Mobile Devices***

Some users choose to leave their computers or mobile devices ..... (1) continually and rarely turn them off. Computers and devices that are left on always are available, and users often run ..... (2) or other similar programs while the computer or device is not being used. These users also do not need to wait for the ..... (3), which can be time consuming on older computers. Other users choose to shut down their computers and mobile devices ..... (4). These users might be concerned with ..... (5), want to reduce energy costs, or prefer to clear memory often. To turn off a computer or mobile device, you may be required to use ..... (6) commands, press keyboard key(s), push a ..... (7), or a combination of these methods.

Power options include ..... (8) (powering off) the computer or mobile device, placing it in sleep mode, or placing it in hibernate mode. .... (9) sleep mode and hibernate mode are designed to save time when you resume work on the computer or device. *Sleep mode* saves any ..... (10) and running programs or apps to ..... (11), turns off all unneeded functions, and then places the computer in a ..... (12) state. If, for some reason, power is ..... (13) from a computer or device that is in sleep mode, any unsaved work could be ..... (14). *Hibernate mode*, by contrast, saves any open documents and running programs or ..... (15) to an internal ..... (16) before removing power from the computer or device.

The ..... (17) of the power button on a computer or mobile device varies, and ..... (18) typically are able to configure its default behavior. For example, you typically can place a computer or mobile device in sleep mode by quickly ..... (19) its power button or closing its lid or cover (for example, on a laptop or a tablet). Pressing and holding down the power button may remove all ..... (20) from the computer or mobile device.

/Adapted from Vermaat, et al. (2017)/

# **ANSWER KEY TO REVIEWS AND EXTRA ACTIVITIES**



## **English for Information Technology**

**Eva Ellederová**

**REVIEW 1****Task 1:**

- 1 dumb terminal
- 2 co-processor/coprocessor
- 3 expansion slot
- 4 heat sink
- 5 dongle
- 6 dual in-line memory module (DIMM)
- 7 program counter (PC)/instruction pointer (IP)
- 8 supercomputer
- 9 barcode
- 10 Application Service Provider (ASP)
- 11 volatile memory
- 12 broadband
- 13 radio-frequency identification (RFID)
- 14 system administrator/sysadmin
- 15 Basic Input Output System (BIOS)

**Task 2:**

- 1 to oversee
- 2 to locate
- 3 to execute
- 4 to adapt
- 5 to convert

**Task 3:**

- 1 powerful
- 2 efficient
- 3 contrary
- 4 consumption
- 5 outlets
- 6 design
- 7 look
- 8 positions
- 9 angle
- 10 plug
- 11 headed
- 12 directly
- 13 browsing
- 14 equipped
- 15 store
- 16 full
- 17 micro
- 18 devices
- 19 units
- 20 companion

**REVIEW 2****Task 1:**

- 1 aspect ratio
- 2 spindle
- 3 head crash
- 4 debugger
- 5 Insert key
- 6 dot pitch/phosphor pitch
- 7 trackpoint
- 8 pop-up/context/shortcut menu
- 9 partition
- 10 luminance
- 11 actuator
- 12 resolution
- 13 stylus
- 14 trackball
- 15 spacebar

**Task 2:**

- 1 to stream
- 2 to customize
- 3 to emit
- 4 to format
- 5 to encode

**Task 3:**

- 1 lightweight
- 2 frames
- 3 touch sensors
- 4 neck
- 5 keyboard
- 6 elevate
- 7 utilized
- 8 movement
- 9 power
- 10 subpixel
- 11 sRGB
- 12 GPU
- 13 triggered
- 14 adjust
- 15 splendidly
- 16 spot
- 17 firmware menu
- 18 control bar
- 19 contrast
- 20 competition

**REVIEW 3****Task 1:**

- 1 clickjacking
- 2 file swapping
- 3 Ethernet
- 4 blank/blind carbon copy (BCC)
- 5 pharming
- 6 bandwidth
- 7 autoresponder
- 8 HyperText Markup Language (HTML)
- 9 malicious link
- 10 flamebait
- 11 adware/advertising-supported software
- 12 hub
- 13 spider/webcrawler
- 14 domain
- 15 bookmarks/favourites

**Task 2:**

- 1 to redirect
- 2 to exploit
- 3 to hover
- 4 to replicate
- 5 to forward

**Task 3:**

- 1 outbreak
- 2 operators
- 3 exploits
- 4 malicious
- 5 encryption
- 6 files
- 7 legitimate
- 8 banking Trojans
- 9 tasks
- 10 cybercrime
- 11 executable file
- 12 note
- 13 IP address
- 14 machine translated
- 15 desktop
- 16 decrypting tool
- 17 threat
- 18 spam messages
- 19 alerts
- 20 income

## Extra Activities

### HISTORY OF A COMPUTER

#### Topic Text

##### Task 1:

1 F	3 E	5 B	7 G
2 C	4 D	6 A	8 H

##### Task 2:

1 D	4 F	7 A	10 C
2 E	5 J	8 B	
3 H	6 I	9 G	

#### Reading

1 T	4 F	7 T	10 F
2 F	5 F	8 F	
3 F	6 F	9 F	

### HISTORY OF THE INTERNET

#### Topic Text

##### Task1:

1 D	4 A	7 H	10 I
2 G	5 F	8 E	
3 J	6 B	9 C	

##### Task 2:

1 B
2 B
3 A
4 B
5 B
6 A
7 C



**REVIEW 4****Task 1:**

- 1 system clock
- 2 router
- 3 autoresponder
- 4 desktop
- 5 shortcut
- 6 supercomputer
- 7 spider/webcrawler
- 8 actuator
- 9 cursor/pointer
- 10 trackpoint
- 11 rootkit
- 12 broadband
- 13 recycle bin/trash can
- 14 access time/seek time
- 15 resolution

**Task 2:**

- 1 to retrieve
- 2 to delete
- 3 to customize
- 4 to scan
- 5 to back up

**Task 3:**

- 1 running
- 2 back up
- 3 boot process
- 4 regularly
- 5 security
- 6 operating system
- 7 power button
- 8 shutting down
- 9 Both
- 10 open documents
- 11 RAM
- 12 low-power
- 13 removed
- 14 lost
- 15 apps
- 16 hard drive
- 17 function
- 18 users
- 19 pressing
- 20 power

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### **List of Audio and Video Recordings:**

What's Inside a CPU:

<https://www.youtube.com/watch?v=NKYgZH7SBjk>

How Touchscreens Work:

<https://www.youtube.com/watch?v=KIZUrpZwYOQ>

3D Scanning Explained As Fast As Possible:

<https://www.youtube.com/watch?v=tap6NbuGeeg>

The Emergence of 4D Printing:

[https://www.ted.com/talks/skylar\\_tibbits\\_the\\_emergence\\_of\\_4d\\_printing](https://www.ted.com/talks/skylar_tibbits_the_emergence_of_4d_printing)

How Do Hard Drives Work?:

<https://ed.ted.com/lessons/how-do-hard-drives-work-kanawat-senanan>

Blu-ray Explained As Fast As Possible:

<https://www.youtube.com/watch?v=SqUUHizWrpY>

LipMouse Algorithm:

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Network Theory:

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Cyberwarfare:

<https://ed.ted.com/lessons/defining-cyberwarfare-in-hopes-of-preventing-it-daniel-garrie>

IT Careers; Job Interview; Types of Computers; Computer Specifications; Display Devices; Word Processing; A Course on Excel; Internet Safety:

Esteras, S. R. (2009). *Infotech English for computer users*. Cambridge: Cambridge University Press.

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