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М.В. Мельничук, О.Н. Анюшенкова

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Рецензенты:

Закирова Елена Сергеевна,

доктор филол. н., доцент кафедры иностранных языков филологического факультета ФГАОУ ВО «Российский университет Дружбы народов» (РУДН)

Лосева Вероника Валентиновна

кандидат экономических наук, доцент кафедры «Бизнес-информатика» Финансового университета при Правительстве Российской Федерации

Таницура Татьяна Анатольевна

доцент Департамента языковой подготовки
Финансового университета при Правительстве Российской Федерации

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Данное учебное пособие разработано для изучения базового курса английского языка для студентов бакалавриата, обучающихся по направлению «Прикладная информатика», очно-заочной форма обучения.

Основная цель учебного пособия – формирование иноязычной профессиональной коммуникативной компетентности необходимой для общения в профессиональной сфере. Учебное пособие подчинено единой структуре и включает аутентичные тексты, лексико-грамматические и ситуативные задания (case-study). Все темы соответствуют программе и учебным планам подготовки бакалавров данного профиля в соответствии с ФГОС 3+.

Основу комплекса упражнений составляют коммуникативные упражнения, направленные на формирование речевых умений студентов и обеспечивающие высокий уровень практического владения иностранным языком.

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PART I. INFORMATION AND COMMUNICATION TECHNOLOGY

Unit 1. A Brief History of Information and Communication Technology (ICT)

The term “computer” comes from the Latin “computus” and “computare”. Both Latin words mean to determine by mathematical means or by numerical methods. The Internet was invented as a result of researches conducted in the early 1960s by visionary people like J.C.R. Licklider of MIT. The latter saw the added value of allowing computers to share information and he proposed a global network of computers in 1962.

While many people use the terms Internet and the Web interchangeably, they are in fact not synonymous. The Internet is a huge network that connects millions of computers together worldwide. The Web or the World Wide Web, however, is a way of accessing information over the medium of the Internet. It is an information space or a model that is built on top of the Internet where documents and other web resources are identified by URLs (Uniform Resource Locator). The World Wide Web was invented by English scientist Tim Berners-Lee in 1989. He wrote the first web browser in 1990 while employed at CERN in Switzerland. Web 1.0, Web 2.0, and Web 3.0 represent the evolution of the Web in the last two decades.

Web 1.0 was the first stage of the World Wide Web’s evolution. Basically, content creators provided content for the vast majority of users who were only consumers or readers of that content. Web 1.0 was a one-to-many relationship. The most important features of Web 1.0 were as follows:

- It was a read only web.
- It was based on HTML which is a basic computer language.
- It was characterized by static pages (there is no interactivity between users and websites).

Web 2.0 was the next evolution of the Web. It is more sophisticated and is characterized by its social aspect. Unlike Web 1.0, Web 2.0 is a many-to-many relationship. Here are the features of Web 2.0:

- It is a read-and-write web.
- It is based on more sophisticated computer languages (PHP, MySQL, Java Script...).
- The pages are dynamic pages. There is the possibility of interactivity between users and the web.

Web 3.0 is an evolution of the Web as an extension of Web 2.0. It is also called the Semantic Web. It is characterized by connective intelligence, connecting data, concepts, applications and ultimately people. Here are its features:

- Read, write and execute web.

- Users are served more intelligently.
- Personalized information.
- Machine comprehension.
- Cloud Technology.

Web 4.0 or the symbiotic web will lead to an interaction between humans and machines in symbiosis. Machines would be clever on reading the contents of the web and react fast by providing superior quality content.

Web 5.0 or the emotional web is a version that is still developed underground. The web will interact with users and will be able to recognize their emotions. So far the web is neutral as far as emotions are concerned. This will probably change in the future.

Answer the following questions:

1. What does the word “computer” come from?
2. When was internet invented?
3. Are the terms Internet and the Web synonymous?
4. What are the features of Web 2.0?
5. What is next?

Ex.1. Choose the right prepositions (a-d):

a) in b) across c) to d) through

1. Apple is adding a highly anticipated feature Apple Pay, its payments system, that allows users to pay one another within iMessage.
2. The peer-to-peer payments can be made and verified biometric security, such as Touch ID or Face ID.
3. The service will be available iOS devices and the Apple Watch Redesigned control centre.
4. Apple is refreshing its iPhone Control Centre iOS 11.

Ex.2. Choose the missing words.

a	b	c	d	e
supervision	chip	devices	equipment	consumer

1. The ability of tiny computing devices to control complex operations has produced products.
2. Workers use handheld computing to collect data at a customer site, to generate forms and to control inventory.
3. Tiny computers on a are used in medical equipment, home appliances, cars and toys.
4. Computing is getting smaller and it is getting more sophisticated.
5. Computers are part of many machines and devices that once required continual human and control.

Ex.3. Complete the sentences.

1. The Internet is an increasingly attractive hunting ground	a. for maintaining the confidentiality, integrity and availability of IT systems and business data.
2. Organizations of all sizes need to think about the consequences of a supplier providing accidental,	b. but harmful, access to their intellectual property, customer or employee information, commercial plans or negotiations.
3. Most governments have already created regulations that impose conditions	c. for criminals, activists and terrorists motivated to make money.
4. Infosec programs are important	d. on the safeguard and use of Personally Identifiable Information.

Ex.4. Case-study.

Now we are living in the digital age meaning that computers have become an essential part of our lives. Computers help us to perform various tasks. What can people do using computers? What tasks do you perform on your computer at work? What do you do on your computer at home?

Ex.5. Compile the text theses of your own. Give your reasons.**Unit 2. Information Technology (IT)**

Information technology (IT) is the use of any computers, storage, networking and other physical devices, infrastructure and processes to create, process, store, secure and exchange all forms of electronic data. The term information technology was coined by the Harvard Business Review, in order to make a distinction between purpose-built machines designed to perform a limited scope of functions and general-purpose computing machines that could be programmed for various tasks. IT includes several layers of physical equipment (hardware), virtualization and management or automation tools, operating systems and applications (software) used to perform essential functions. User devices, peripherals and software, such as laptops, smartphones or even recording equipment, can be included in the IT domain. IT can also refer to the architectures, methodologies and regulations governing the use and storage of data.

Business applications include databases like SQL Server, transactional systems such as real-time order entry, email servers like Exchange, Web servers like Apache, customer relationship management and enterprise resource planning systems. These applications execute programmed instructions to manipulate, consolidate, disperse or otherwise affect data for a business purpose.

Computer servers run business applications. Servers interact with client users and other servers across one or more business networks. Storage is any kind of technology that holds information as data. Information can take any form including file data, multimedia, telephony data and Web data, data from sensors or future formats. Storage includes volatile random access memory (RAM) as well as nonvolatile tape, hard disk and solid-state flash drives. IT architectures have developed to include virtualization and cloud computing, where physical resources are abstracted and pooled in different configurations to meet application requirements.

A team of administrators and other technical staffers deploy and manage the company's IT infrastructure and assets. The information technology profession is extremely diverse: IT workers can specialize in fields like software development, application management, hardware - desktop support, server or storage administrator - and network architecture. Many businesses seek IT professionals with mixed or overlapping skill sets.

Answer the following questions:

1. What is information technology?
2. What are IT software and hardware?
3. What do business applications include?
4. What IT education and job functions do you know?
5. Why is the information technology profession extremely diverse?

Ex.1. Complete the sentences with a) *a*, b) *an*, c) *the* or d) *no article*:

1. The overall research goal of artificial intelligence is to create technology that allows computers and machines to function in intelligent manner.
2. In twenty-first century, artificial intelligence techniques have experienced **a** resurgence following concurrent advances in computer power, large amounts of data, and theoretical understanding.
3. Artificial intelligence techniques have become essential part of the technology industry, helping to solve many challenging problems in computer science.
4. Many tools are used in artificial intelligence, including versions of search and mathematical optimization, neural networks and methods based on statistics, probability and economics.
5. artificial intelligence field draws upon computer science, mathematics, psychology, linguistics, philosophy, neuroscience, artificial psychology and many others.

Ex.2. Choose the definitions.

1. interface	a. a boundary across which two separate components of a computer system exchange information
---------------------	---

2. modem	b. an undigested and voluminous mass of information about a problem or the state of system
3. dump	c. a device that modulates signals to encode digital information and demodulates signals to decode the transmitted information
4. encryption	d. an electronic visual display that the user can control through simple or multi-touch gestures by touching the screen with a special stylus or pen
5. touchscreen	e. the action or process of putting information or data into code so that people who do not have permission cannot read it

Ex.3. Complete the sentences.

1. Today's cybercriminals are highly skilled and equipped	a. to become an increasing burden on organizations.
2. The patchwork nature of regulation around the world is likely	b. their information security management program.
3. Many large enterprises employ a dedicated security group	c. to implement and maintain the organization's infosec program.
4. Many organizations do not follow a life cycle approach in developing, implementing and maintaining	d. with very modern tools.

Ex.4. Case-study.

Classifying means putting things into groups or classes. We can classify types of computers. How many types of computers do you know? What types of computers do you have at work and at home?

Ex.5. Compile the text theses of your own. Give your reasons.

Unit 3. Big Data

Big data is often characterized by 3Vs: the extreme volume of data, the wide variety of data types and the velocity at which the data must be processed. Such data can come from myriad different sources, such as business sales records, the collected results of scientific experiments or real-time sensors used in the internet of things. Data may be raw or preprocessed using separate software tools before analytics are applied. Data may also exist in a wide variety of file types, including structured data, unstructured data, such as document files; or streaming data from sensors.

Velocity refers to the speed at which big data must be analyzed. This means human analysts must have a detailed understanding of the available data and possess some sense of what answer they're looking for. The need for big data velocity imposes unique demands on the underlying compute infrastructure. The computing power required to quickly process huge volumes and varieties of data can overwhelm a single server or server cluster. Organizations must apply adequate compute power to big data tasks to achieve the desired velocity. This can potentially demand hundreds or thousands of servers that can distribute the work and operate collaboratively.

Achieving such velocity in a cost-effective manner is also a headache. Many enterprise leaders are restrained to invest in an extensive server and storage infrastructure that might only be used occasionally to complete big data tasks. As a result, public cloud computing has emerged as a primary vehicle for hosting big data analytics projects. A public cloud provider can store petabytes of data and scale up thousands of servers just long enough to accomplish the big data project. The business only pays for the storage and compute time actually used, and the cloud instances can be turned off until they're needed again.

Ultimately, the value and effectiveness of big data depends on the human operators tasked with understanding the data and formulating the proper queries to direct big data projects. Some big data tools meet specialized niches and allow less technical users to make various predictions from everyday business data.

Answer the following questions:

1. What is big data?
2. What is it characterized by?
3. Why should organizations apply adequate compute power to big data tasks?
4. How has public cloud computing evolved?
5. What does the value of big data depend on?

Ex.1. Choose missing words.

a) fascinating b) markets c) patented d) allows

1. Machine Learning machines and software agents to automatically determine the ideal behavior within a specific context, in order to maximize its performance.
2. IBM manufactures and computer hardware, middleware and software.
3. Julius E. Pitrap the computing scale in 1885.
4. Digitalization is : just as we've been spellbound by our smartphones and iPhones in recent years.

Ex.2. Choose missing prepositions.

a) of b) with c) by d) from

1. Microsoft Corporation is an American multinational technology company headquarters in Redmond, Washington.

2. Microsoft Corporation best known software products are the Microsoft Windows line operating systems, the Microsoft Office suite, and the Internet Explorer and Edge web browsers.
3. As of 2016, Microsoft Corporation is the world's largest software maker revenue, and one of the world's most valuable companies.
4. Since the 1990s, it has increasingly diversified the operating system market and has made a number of corporate acquisitions.

Ex.3. Choose the missing words.

a	b	c	d	e
tasks	features	chip	computers	balances

1. Computers in phones provide such as call forwarding, call monitoring, and call answering.
2. Computers are designed to take over some of the basic previously performed by people.
3. Smart cards store vital information such as health records, drivers' licenses, bank, and so on.
4. Cars with built in can be programmed to better meet individual needs.
5. Tiny computers on a are used in medical equipment, home appliances, cars and toys.

Ex.4. Case-study.

Some survey findings indicate that marketers are moving from the information' gathering stage to the analytics phase of big data adoption. But a downturn in hiring could stall big data implementation, as the need for human capital is greatest during the analysis and action stages. While it's exciting that most companies are making bigger investments in big data, marketers should not forget that it takes people to make sense of the information

- Is big data is meaningless without manpower?
- Is big data analysis a challenge for most organizations?
- Can an enterprise boost sales, increase efficiency, and improve operations, customer service and risk management with the right big data analytics platforms in place?
- Can a big data analytics help with product development and gain a competitive advantage?
- Does big data require high-performance analytics?

Ex.5. Compile the text theses of your own. Give your reasons.

Unit 4. Computer Networks

Computer networks link computers by commercial lines and software protocols, allowing data to be exchanged rapidly and reliably. Traditionally, networks have been split between wide area networks (WANs) and local area networks (LANs). A WAN is a network connected over long-distance telephone lines, and a LAN is a localized network usually in one building or a group of buildings close together. It is now possible to connect up LANs remotely over telephone links so that they look as though they are a single LAN.

Originally, networks were used to provide terminal access to another computer and to transfer in files between computers. Today, networks carry e-mail, provide access to public databases and bulletin boards, and are beginning to be used for distributed systems. Networks also allow users in one locality to share expensive resources, such as printers and disk-systems.

Distributed computer systems are built using networked computers that co-operate to perform tasks. In this environment each part of the networked system does what it is best at. The high-quality bit-mapped graphics screen of a personal computer or workstation provides a good user interface. The mainframe, on the other hand, can handle large numbers of queries and return the results to the users. In a distributed environment, a user might use his PC to make a query against a central database. The PC passes the query, written in a special language, to the mainframe, which then parses the query, returning to the user only the data requested.

General Features of Operating Systems

An operating system is a master control program which controls the functions of the computer system as a whole and the running of application program. All computers do not use the same operating systems. It is therefore important to assess the operating system used a particular model before initial commitment because some software is only designed to run under the control of specific operating systems. Some operating systems are adopted as 'industry standards' and these are the ones which should be evaluated because they normally to expand resources on the development of application packages. Machines cost of software is likely to be lower in such circumstances as the development costs are spread over a greater number of users, both actual and potential.

Mainframe computers usually process several application programs concurrently, switching from one to the other, for the purpose of increasing processing productivity. This is known as multiprogramming, which requires a powerful operating system incorporating work scheduling facilities to control the switching between programs. This entails reading in data for one program while the processor is performing computations on another and printing out results on yet another.

An operating system is stored on disk and has to be booted into the internal memory (RAM) where it must reside throughout processing so that commands are instantly available. Many microcomputers function under the control of a disk operating system known as DOS.

Answer the following questions:

1. What is WAN?
2. What is LAN?
3. Where were the networks used originally?
4. What are the general features of Operating Systems?

Ex.1. Complete the sentences a) *a*, b) *an*, c) *the* or d) *no article*:

1. A modem is network hardware that modulates one or more carrier wave signals to encode digital information for transmission and demodulates signals to decode the transmitted information.
2. Modems can be used with any means of transmitting analog signals, from light emitting diodes to radio.
3. A common type of modem is one that turns the digital data of a computer into modulated electrical signal for transmission over telephone lines and demodulated by another modem at receiver side to recover the digital data.
4. Artificial intelligence was founded as academic discipline in 1956.
5. The goal is attempting to produce a signal that can be transmitted easily and decoded to reproduce original digital data.

Ex.2. Choose missing words.

a) achieved b) enabled c) has d) being

1. According to Shane Legg, human-level machine intelligence can be ‘when a machine can learn to play a really wide range of games’.
2. IBM continually shifted its business mix by commoditizing markets focusing on higher-value, more profitable markets.
3. The term ‘digitalization’ is currently used more generally to designate the conversion of the whole of society to the use of digital technologies and the increasing involvement of data and machines in business processes by means of digital interfaces.
4. More and more payment cards and point-of-sale terminals are with contactless technology for payments.

Ex.3. Choose definitions.

1. initialization	a. the practice of covertly recording and monitoring keystrokes made on a remote computer, typically using a dedicated software application or piece of implanted hardware
------------------------------	---

2. justification	b. the right or opportunity to have or use something
3. access	c. the format of sectors on the surface of a hard disk drive so that the operating system can access them and setting a starting position
4. chip	d. the process of moving data right or left so that the first or last character occurs in a predefined position
5. keylogging	e. a very small piece of silicon marked with electronic connections that is used in computers and other machines

Ex.4. Case-study.

ICT is not only changing the nature of work, it is also starting to change where that work is done. Now companies are starting to look at the possibilities of teleworking, or telecommuting, where staff work at home or from a telecentre. They use computers and telecommunications equipment to stay in contact with their office. What are the advantages and disadvantages of working from home?

Ex.5. Compile the text theses of your own. Give your reasons.

Unit 5. System Integration

A system integrator (SI) is an individual or business that builds computing systems for clients by combining hardware and software products from multiple vendors. Using a system integrator, a company can support cheaper, preconfigured components and off-the-shelf software to meet key business goals. Creation of these information systems may include designing or building a customized architecture or application, integrating it with new or existing hardware, packaged and custom software, and communications infrastructure.

Organizations often have information systems belonging to different computer generations. These systems contain much valuable data to the organizations concerned. However, these systems are often unable to communicate with each other, due to incompatibilities. Moreover, replacing these systems with new systems is also very costly. Therefore the latest trend is integrating the existing systems with each other with the help of different system integration technologies.

In today's highly competitive and constantly changing world organizations are forced to find ways of functioning effectively and cost efficiently for their survival and success. As a result companies seek out latest technologies. Many

organizations use several generations of systems that rely on a broad range of technologies developed over many years. Unfortunately, many of these business- critical systems are difficult to adapt to allow them to communicate and share information with each other and more advanced systems. There is always the option of replacing these old systems with new ones but it is very costly and time consuming. In addition they contain lots of data and information, which are of great value to organizations.

To keep your business growing at the dramatic rates you plan for, it is essential to have your business software applications integrated around a single codebase, database and business process. The advantages of designing your systems in this manner produce tremendous cost savings and improved business productivity. There are several key processes that you may encounter in your daily operations, such as order management, fulfillment, invoicing, cash collection, expense approvals and financial consolidation. Automating such processes enables you to avoid new hires that would otherwise be required to manage these processes, and redeploy staff to higher-value activities to help your business innovate and grow. When information can be accessed instantly from almost anywhere, without wasting resources on data extraction and tying data from different sources together, employees are better informed and can make more accurate, faster decisions.

Answer the following questions:

1. What is a system integrator?
2. What can a company do using a system integrator?
3. What do the systems that are integrated with new technology bring to the organizations?
4. Why do companies seek out latest technologies?
5. When can employees make more accurate and faster decisions?

Ex.1. Choose missing prepositions.

a) for b) on c) in d) from

1. Microsoft produces a wide range of other consumer and enterprise software desktops and servers, including Internet search, the digital services market, mixed reality, cloud computing and software development.
2. Steve Ballmer replaced Gates as CEO 2000, and later envisioned a ‘devices and services’ strategy.
3. Gates retired his role as Chief Software Architect on June 27, 2008.
4. Since Satya Nadella took over as CEO in 2014, the company has scaled back hardware and has focused on cloud computing.

Ex.2. Choose the missing words.

a	b	c	d	e
messages	components	cost-effectively	efficiency	networking

1. An information system is an integrated set of for collecting, storing, and processing data.
2. Corporations use information systems to reach their potential customers with targeted over the Web.
3. Governments deploy information systems to provide services to citizens.
4. Digital goods, such as electronic books and software, and online services, such as auctions and social, are delivered with information systems.
5. A new technological revolution should increase a productivity of work,, etc.

Ex.3. Complete the sentences with the most suitable preposition.

1. Economic theory deals rational decisions within and outside of markets
a) by b) for c) with d) over e) on
2. Technological advances processing and communicating information facilitate enormous economic transformations.
a) in b) for c) between d) from e) among
3. Information technology has a great impact markets, organization of firms, and methods of innovation.
a) on b) through c) by d) with e) among
4. An information system is an integrated set of components collecting, storing, processing and delivering information.
a) for b) at c) by d) of e) in
5. Business firms and other organizations rely on information systems to carry out and manage their operations, interact their customers and suppliers, and compete in the marketplace.
a) for b) by c) on d) between e) with

Ex.4. Case-study.

By definition, e-government is simply the use of information and communications technology, such as the Internet, to improve the processes of government. Governments were among the first users of computers. Nowadays, local e- government management includes the extended use of information and communication technologies (ICTs) within government for purposes of improving service delivery to citizens or to enhance back-office operations. The implementation of ICT for overall development and advancement of e-government strategies are likely to have a strong preference towards cities and local towns where most of the citizens live.

- Does technology have the potential for improving the way government works?
- Will ICT tools reduce costs?
- Will e-government help to build trust between the Government and citizens?

- Does ICT help to increase the transparency of decision-making processes by making information accessible?
- Should e-government services be developed in light of demand and user value?

Ex.5. Compile the text theses of your own. Give your reasons.

Unit 6. Application Service Providers

If your hard disk is packed to bursting point, the IT department is far too busy to fix your email problems, and your business can't afford to buy the tools that you'd like to develop the company website, then it's time to think about using an application service provider (ASP). Rather than installing software on each machine or server within your organization, you rent applications from the ASP, which provides remote access to the software and manages the hardware required to run the applications from the ASP.

There are a lot of advantages to this approach. The havoc caused by viruses makes the idea of outsourcing your email and office suite services an attractive option. It also gives you more flexibility - you pay for applications when you need them, rather than investing in a lot of costly software which you're then tied to for years. Not having to worry about upgrading to the latest version of your office suite or about battling with the complexities of managing an email system, leaves businesses with more time. Time to focus on what they do best.

Providing applications and storage space for vast numbers of users requires some powerful technology on the part of the ASP. This includes security controls and data storage as well as providing the physical links to customers. ASPs don't own the data centres that store the information. Instead, they lease space from data storage specialists. In this way, they can be confident of meeting customers' increasing storage requirements by buying more space as it's needed.

Efficiency and Quality of Internet Providers' Services

The Internet is a large network formed from 30,000 autonomous systems (AS), operated by thousands of Internet service providers (ISPs). While these ISPs compete with each other for customers and traffic, they must also cooperate and exchange traffic in order to maintain worldwide connectivity. In contrast to the traditional telecommunication markets, there are almost no central organisations in the Internet that enforce cooperation and regulate the market.

Given the competition among ISPs, it is vital that they operate their networks efficiently. Quality of service (QoS) is also important: many emerging multimedia applications such as voice and video communication can greatly benefit from QoS support in a network. This therefore opens further possibilities for value-added services with which providers can differentiate themselves and target new markets.

Hence, efficiency and QoS are crucial for ISPs operating the networks that comprise the Internet. Recent research, represented in the dissertation of Oliver Heckmann, gives new insights into how ISPs can improve in these areas. For his work, Oliver Heckmann was recently presented with the ERCIM Cor Baayen award. The central question of the dissertation is: how can an Internet service provider optimize the efficiency and quality of service of its network?

This work shows that efficiency and QoS strongly depend on three factors:

- the network architecture (how the network is built)
- traffic engineering and network engineering (how the network is adapted to changes)
- the interconnections (how the network is connected with other networks).

A system-oriented approach is therefore employed, in which all these areas are analysed and optimized, while taking into consideration their mutual influences. Efficiency and quality of service strongly depend on three factors. In the context of network architectures, the focus of the research lies on methods for providing QoS. Analytical models are developed in order to determine and analyse the overprovisioning factor of a plain best-effort network compared to networks that support explicit service differentiation. The work shows that the analytical overprovisioning factor ranges between three and five in most cases. Furthermore, the different IETF QoS architectures are evaluated and compared in an experimental study to confirm and extend previous findings.

In this context, a bandwidth broker for Differentiated Services networks is developed. It offers strong QoS guarantees and a high efficiency by overbooking. With the bandwidth broker, the so-called Charny bound can be broken and the utilization of networks with services of the highest QoS can be increased by a factor of about four. The work shows that besides the network architecture, the interconnection structure also strongly influences the efficiency and QoS of an ISP. The interconnection structure describes how the network is connected with its peering and transit networks. Different approaches to optimizing the efficiency, reliability and QoS of the structure are described as decision problems, and are then solved and evaluated. The dissertation shows that with these approaches, cost savings of 5% to 30% can be realized, and QoS improved.

The effectiveness of using traffic engineering to further improve the efficiency and QoS obtained with the network architecture and interconnections is also analysed. Weaknesses in existing approaches are identified and corrected, taking the findings in the rest of the dissertation into account.

New strategies for capacity expansion are therefore elaborated and evaluated in this dissertation. They have significant advantages over the rules of thumb used today, since they also consider the influence of different network architectures and traffic

engineering. The results show that traffic engineering should be explicitly taken into account when planning capacity expansions.

Decide whether the following statements are true, false, or information is not available: a) T (true), b) F (false), c) NA (not available)

1. Many multimedia applications will disappear in a few years.
2. Efficiency and QoS are not crucial for ISPs operating the networks.
3. In the context of network architectures, the focus of the research lies on methods for providing QoS.

Ex.1. Complete the sentences a) *a*, b) *an*, c) *the* or d) *no article*:

1. Most human activities have undergone enormous technological change.
2. Technology helps banks to diversify activities and become more competitive.
3. Word processors and other devices have replaced many human activities in modern business world.
4. Financial institutions use technology to transfer money around the world in seconds.
5. Ordinary investors can now take advantage of huge range of possibilities.

Ex.2. Choose the correct form of the verb in the passive voice.

1. Managing information risks must in a way that is meaningful to the business and is based on how other categories of risk are discussed and calculated.
a) be conducted b) conducted
2. In effect, cyberspace can of as the interconnection of human beings through computers and telecommunication, without regard to physical geography.
a) thought b) be thought
3. The term 'cyberspace' in conjunction with virtual reality, designating the imaginary place where virtual objects exist.
a) is used b) are used
4. Cyberspace more by the social interactions involved rather than its technical implementation.
a) are defined b) is defined
5. Individuals who can interact, exchange ideas, share information, provide social support, conduct business, direct actions, create artistic media, play games, engage in political discussion, and so on, using global network to 'cybernavts'.
a) are referred b) was referred

Ex.3. Complete the sentences with the correct form of the words in capitals:

1. It is the more dramatic such as speech recognition that are poised to shake up interface design. **INNOVATE**
2. Speech will become a major component of user interfaces, and applications will be completely to incorporate speech input. **REDESIGN**
3. Palm-size and handheld PCs, with their cramped keyboards and basic handwriting , will benefit from speech technology. **RECOGNISE**
4. It's no secret that the amount of information – both on the Internet and within intranets – at the fingertips of computer been expanding rapidly. **USE**
5. with the ability to look and listen, intelligent agents will bring personal computers one step closer to behaving more like humans. **COMBINE**

Ex.4. Case-study.

Technology plays a significant role in the constant upgrade and addition of services available to help customers make the most of what their banks have to offer. What services do computers allow banks to provide?

Ex.5. Compile the text theses of your own. Give your reasons.

Unit 7. Cyberspace and Cloud Computing

1. Cyberspace is the notional environment in which communication over computer networks occurs. The word became popular in the 1990s when the uses of the Internet, networking, and digital communication were all growing dramatically and the term 'cyberspace' was able to represent the new ideas and phenomena that were emerging. The term 'cyberspace' first appeared in the work of cyberpunk science fiction author William Gibson in his short story 'Burning Chrome' in 1982. In the next few years, the word became prominently identified with online computer networks. Although the present-day, loose use of the term 'cyberspace' no longer implies or suggests immersion in a virtual reality, current technology allows the integration of a number of capabilities: sensors, signals, connections, transmissions, processors, and controllers sufficient to generate a virtual interactive experience that is accessible regardless of a geographic location.

2. Cyberspace is a domain characterized by the use of electronics and the electromagnetic spectrum to store, modify, and exchange data via networked systems and associated with physical infrastructures. In effect, cyberspace can be thought of as the interconnection of human beings through computers and telecommunication, without regard to physical geography. We say that images and text on the Internet exist in cyberspace, for example. The term is also often used in conjunction with virtual reality,

designating the imaginary place where virtual objects exist. For example, if a computer produces a picture of a building that allows the architect to 'walk' through and see what a design would look like, the building is said to exist in cyberspace.

3. Cyberspace is a global and dynamic domain characterized by the combined use of electrons and electromagnetic spectrum, whose purpose is to create, store, modify, exchange, share and extract, use, eliminate information and disrupt physical resources. As a social experience, individuals can interact, exchange ideas, share information, provide social support, conduct business, direct actions, create artistic media, play games, engage in political discussion, and so on, using this global network.

Cloud Computing

Cloud computing is a kind of internet-based computing, where shared resources and information are provided to computers and other devices on-demand. It is a model for enabling on-demand access to a shared pool of configurable computing resources. The origin of the term 'cloud computing' is unclear. The expression 'cloud' is commonly used in science to describe a large agglomeration of objects that visually appear from a distance as a cloud and describes any set of things whose details are not inspected further in a given context. Another explanation is that the old programs that drew network schematics surrounded the icons for servers with a circle, and a cluster of servers in a network diagram had several overlapping circles, which resembled a 'cloud'.

Cloud computing and storage solutions provide users and enterprises with various capabilities to store and process their data in third-party data centers. It relies on sharing of resources to achieve coherence and economies of scale, similar to a utility (like the electricity grid) over a network. At the foundation of cloud computing is the broader concept of converged infrastructure and shared services.

Cloud computing, or in simpler shorthand just "the cloud", also focuses on maximizing the effectiveness of the shared resources. Cloud resources are usually not only shared by multiple users but are also dynamically reallocated per demand. This can work for allocating resources to users.

Decide whether the following statements are a) true, b) false or c) information is not available in the text:

1. Cyberspace is a domain characterized by the use of electronics and the electromagnetic spectrum to store, modify, and exchange data via networked systems and associated with physical infrastructures.
2. We can't say that images and text on the Internet exist in cyberspace.
3. William Gibson was born in the coastal city of Conway, South Carolina.

Ex.1. Say what you've learned from the text about:

- Cyberspace;

- when the word became popular;
- how Cyberspace is characterized;

Ex.2. Using your own ideas, say what do you think about:

- the term 'cyberspace' first appeared in the work of cyberpunk science fiction author William Gibson.

Ex.3. Discuss (in group or in pairs) your views on:

- Cyberspace is the notional environment.

Ex. 4. Discuss the following thesis:

The term 'cyberspace' no longer implies or suggests immersion in a virtual reality ...

Ex. 5. Fill in the gaps with the following words:

exchange, sufficient, geography, represent, allows, dramatically, characterized, notional, emerging, regardless, interconnection, occurs, capabilities

Cyberspace is the (1)_____ environment in which communication over computer networks (2)_____.

The word became popular in the 1990s when the uses of the Internet, networking, and digital communication were all growing (3)_____ and the term "cyberspace" was able to (4)_____ the new ideas and phenomena that were (5)_____.

Current technology (6)_____ the integration of a number of (7)_____: sensors, signals, connections, transmissions, processors, and controllers (8)_____ to generate a virtual interactive experience that is accessible (9)_____ of a geographic location.

Cyberspace is a domain (10)_____ by the use of electronics and the electromagnetic spectrum to store, modify, and (11)_____ data via networked systems and associated with physical infrastructures. In effect, cyberspace can be thought of as the (12)_____ of human beings through computers and telecommunication, without regard to physical (13)_____.

Ex.6. Compile the text theses of your own. Give your reasons.

Unit 8. Android Operating System

Android is a mobile operating system (OS) currently developed by Google. With a user interface based on direct manipulation, Android is designed primarily for touchscreen mobile devices such as smartphones and tablet computers, with specialized user interfaces for televisions (Android TV), cars (Android Auto), and wrist watches (Android Wear). A virtual keyboard is a software component that allows a user to enter characters. A virtual

keyboard can usually be operated with multiple input devices, which may include a touchscreen, an actual computer keyboard and a computer mouse.

A mobile operating system, also referred to as mobile OS, is an operating system for devices such as a smartphone, tablet, PDA, or other mobile devices. However while some computers are strictly mobile, such as the typical laptop, their operating systems usually used on them, is not considered a mobile one as they were originally designed for bigger stationary desktop computers that historically didn't have or need specific "mobile" features.

Mobile operating systems combine features of a personal computer operating system with other features useful for mobile or handheld use. Most of the following are essential in modern mobile systems: a touchscreen, cellular, Bluetooth, Wi-Fi, GPS mobile navigation, camera, video camera, speech recognition, voice recorder, music player, near field communication and infrared blaster.

Answer the following questions:

1. What is OS?
2. What OSs do you know?
3. What is Android?
4. What is Android primarily designed for?
5. What features can an OS offer?

Ex.1. Complete the sentences with the words. There are two extra words:

a) organization b) oversees c) focus d) responsible e) environments f) invests g) secure h) everything i) innovate j) employees k) trends l) employer

1. R&D is at the heart of Samsung does.
2. Ongoing investment in Samsung's collaborative global research network plays a critical role in our ability to products today that will enrich people's lives tomorrow.
3. Samsung's team of researchers and engineers include over 50,000 across 42 global research facilities—each one collaborating on strategic technologies to forge new market trends and set new standards of excellence.
4. Samsung's R&D consists of three layers.
5. The Samsung Advanced Institute of Technology (SAIT) identifies growth engines for the future and the securing and management of technology.
6. Samsung's global R&D centers for each business area on technology that is expected to deliver the most promising long-term results.

7. The division teams in each center are for commercializing products scheduled to hit the market within one or two years.

Ex.2. Complete each sentence with a verb in the correct form: -ing or to:

1. People all over the world keep on best mortgage or property using price comparison websites.

a) finding b) to find

2. Clerks in banks learn money flow through online banking.

a) to manage b) managing

3. They decided trade balances.

a) to assess b) assessing

4. Many people can't stand on Saturdays and Sundays.

a) to work b) working

5. Students of economics nowadays tend complex mathematical calculations using powerful computers.

a) to do b) doing

Ex.3. Case-study.

Computers allow banks to provide ATM services, online banking, speed up transactions, accurate tracking, and verification of funds. They also make banking institutions more secure through enhanced security. When are customers asked to enter a four-digit personal identification number (PIN) instead of using a signature to verify payments?

Ex.4. Compile the text theses of your own. Give your reasons.

Unit 9. Cyber Ethics

According to Gadgets and Gizmos, 73 percent of Americans have been victims of cybercrime. Cybercrime isn't limited to the United States. Because the Internet is global, so is cybercrime. Due to the interconnectedness of our societies and the diversity of Internet users (ages, disciplines, education, political cultures, etc.), creating cyber ethics guidelines becomes an ongoing, global conversation. Cyber ethics is not only the code of conducts for computer professionals, but also principles that should be followed by all Internet users. Recommending ethical principles that are acceptable to such a wide range of users is a challenge. For example, the top spam-producing countries according to Sophos are the United States (11.43%), India (8.02%), Republic of Korea (7.94%), Russian Federation (7.52%), and Brazil (5.82%).

Ethical principles must be based on the existing cultures, rules, practices and judicial system of each society. From the legal point of view, the global nature of computer crime could contain several countries in one crime. This makes prosecution very difficult and judicial systems may not be the answer to a more secure Internet.

To combat the threats, many corporations have implemented mandatory⁷ ethics training for all employees, and cyber ethics is incorporated as part of the corporate policies. There have been many attempts from various organizations and government agencies to educate the public on ethical conduct.

Two years ago, the Department of Homeland Security (DHS) launched a campaign to educate Americans on responsible, safe and secure use of the Internet: “Stop. Think. Connect.” Here are a few ethical actions that should be followed by all the Internet users:

Protect your computers and all your on-line devices with safeguards such as up to date anti-virus software, firewall and access controls.

Know that when on the Internet, you are not as anonymous as you may want to be. Although you may be using your own, private computer or Internet device, your online actions could be traced by most web applications. Remember that many applications are recording what you do on the Internet, and the recordings could be retrieved at any time.

Answer the following questions:

1. What is the number of Americans that have been victims of cybercrime?
2. Why is cybercrime global?
3. What are the top spam-producing countries?
4. What makes prosecution difficult?
5. What ethical values should you follow?

Ex.1. Complete the sentences with the most suitable preposition.

1. Corporations use information systems to reach their potential customers with targeted messages the Web, to process financial accounts, and to manage their human resources.
a) by b) for c) with d) over e) among
2. Governments deploy information systems to provide services cost-effectively citizens.
a) in b) to c) between d) from e) with
3. Digital goods, such as electronic books and software, and online services, such as auctions and social networking, are delivered information systems.
a) on b) between c) by d) with e) of
4. Individuals rely on information systems, generally Internet-based, socializing, study, shopping, banking, and entertainment.
a) for b) at c) by d) of e) between

5. The global penetration of the Internet and the Web has enabled access to information and other resources and facilitated the forming of relationships people and organizations on an unprecedented scale.

- a) in b) by c) on d) between e) among

Ex.2. Choose definitions.

1. install	a. the act or process of joining or the condition of being joined
2. junction	b. to put a new program or piece of software into a computer so that you can use it
3. keystroke	c. screen's brightness of a computer
4. luminosity	d. a set of jobs waiting to be done by a computer
5. queue	e. a single action of pressing a key on a typewriter or computer

Ex.3. Case-study.

Whether for entertainment at home, e-learning in school, or social networking in between the two environments, today's children are more exposed to the internet than ever before. In fact, there are now tablets aimed at two-year-olds, and children are getting their first smartphones at younger ages. Add to this the more than four million apps available for download today via iPhone and Android devices, and it's clear to understand why parents and guardians are challenged when it comes to protecting their kids from online threats.

- Can self-education be the first step for protecting children online?
- Should parents regular bring the child's online habits into family conversations?
- Should parents check the Internet history of web browsers their children have access to?
- Is parent control used in your household?
- How can parent control kids' online activity?

Ex.4. Compile the text theses of your own. Give your reasons.

Active Vocabulary

accessible – доступный
 accurate -точный
 add value -добавлять ценность
 application - приложение
 approach- подход
 available- доступный

bandwidth- пропускная способность
benefit from - выгода от

capacity- вместимость
confident- уверенный
conduct - провести
coin- вводить термин
collaboratively- совместно
commitment- обязательство
competitive- конкурентоспособный
comprise- включать
concurrently- одновременно
cyberpunk science fiction - научная фантастика киберпанк

determine-определять
designating the imaginary place - обозначение воображаемого места
disperse- разгонять
distinction- различие

explicitly- явно
extend- расширять

features - особенности
flexibility- гибкость

grow dramatically - резко расти
guidelines-методические рекомендации

huge -огромный

in conjunction with virtual reality- в сочетании с виртуальной реальностью
interchangeably- попеременно

latter- последний

no longer implies - больше не подразумевает
notional environment- условная среда

occasionally-случайно
occur- случаться, происходить
overwhelm-преодолевать

prediction- предсказание

propose- предлагать
prosecution- обвинение
prominently identified - заметно определены

query- запрос

random - случайный
recognize -распознавать

regardless- независимо от
remotely- удаленно

sophisticated –сложный
suggests immersion in - предполагает погружение в

visionary people - дальновидные люди
volatile –изменчивый

PART II. INFORMATION SECURITY

Unit 1. Information Security

Information security is undergoing a critical transformation. Traditionally viewed as a necessary evil or worse, a hindrance to business advancement, now more than ever, it is critical that security strategy aligns to business priorities and enables innovation. And while the recent economic downturn will certainly drive security teams to focus on finding operational efficiencies, it is important to note that efficiencies alone will not be sufficient to get us out of the economic crisis the world is facing.

Political and business experts agree that business innovation is the key to the return of global economic stability and growth. And information security has a critical role to play in the drive toward innovation. Why? Because at the heart of many critical innovations is the secure and fluid exchange of information. We are an information- centric economy, heavily dependent on the information we create and share. We find ourselves in an age of digital warfare where that information is put at risk every day. The goal of the security organization must be to enable the business to safely manage risk to gain maximum business advantage.

What does this mean for today's businesses? It is important to note that how organizations innovate has changed over time from internal groups working side-by-side creating new products in a lab to geographically dispersed teams collaborating across organizational and physical boundaries. Innovation now requires open collaboration, direct interaction with customers, tighter integration with partners, and the incorporation of external talent and resources.

Every government has data or information that it cannot afford to lose or have stolen. Across the globe, the risks to each country's data vary. Governments in global superpowers know they're potential targets for cybercrime. So what are they doing to defend themselves? While the National Audit Office recently published a report judging the poor state of general IT security across UK government departments, central government has made a bold and decisive move in forming the National Cyber Security Centre (NCSC), led by experienced security professionals. The Centre has laid out clear plans for its approach. The government has recognized that it needs to work with industry experts and forward-looking companies to share the responsibility of keeping society safe as networks and software become the lifeblood of our critical infrastructure and daily lives. The NCSC has also made the brave and unusual step of announcing a policy of "active defense" - in simple terms, hacking back the hackers.

Published last year, the NIS Directive aims to solve several of the most troubling practical issues of harmonizing the various standards of Europe member states. The goal is to enable an efficient and effective Europe-wide system of defense against cyber-attacks. Until now, members have implemented defenses and response systems that differ in simple but inconvenient ways, such as having differing definitions of security levels, and different models for security authorities and response bodies.

The Directive also requires each member to operate a Computer Emergency Response Team (CERT) and seeks to tighten control of "essential industries," such as power, water, transportation and big finance, to ensure they are cyber protected as they undergo digital transformation.

China's government approved a broad new cyber-security law aimed at tightening and centralizing state control over information flows and technology equipment. The new legislation requires agencies and enterprises to improve their ability to defend against network intrusions, and demands security reviews for equipment and data in strategic sectors.

Approaches to cybersecurity vary across the globe, but clear to all is the risk that cyber attackers pose to government - and sensitive citizen - data. The world is constantly changing, and recognizing when the attackers are getting ahead is going to be vital.

Answer the following questions:

1. How governments around the globe are tackling data security?

2. What does the new legislation in China require?
3. What is active defense?
4. Do countries in Europe implement common standards to security?
5. Why is it vital to recognize cyber-attacks?

Ex.1. Complete the sentences a) *a*, b) *an*, c) *the* or d) *no article*:

1. Modems are generally classified by maximum amount of data they can send in a given unit of time, expressed in bits per second.
2. ICT provides benefits in terms of production, quality, lowering expenses and communicating.
3. Modems can also be classified by their symbol rate, measured in baud.
4. The baud unit denotes symbols per second, or the number of times per second the modem sends new signal.
5. Modems grew out of need to connect teleprinters over ordinary phone lines instead of the more expensive leased lines which had previously been used for current loop-based teleprinters and automated telegraphs.

Ex.2. Complete the sentences with the correct form of the words in capitals:

1. Customer service has **CHANGE**
2. Customers expect transparency and a high level of attention and from the companies they do business with. **ACCOUNT**
3. Laptops allow to virtually connect with customers at any time of the day. **EMPLOY**
4. Besides traditional email, employees can follow up with leads in ways using tools like Skype, social media outlets like YouTube, Facebook and Twitter and customer service chat platforms. **CREATE**
5. Business can hold private web conferences or create live training sessions in any time zone. **OWN**

Ex.3. Put the words in the correct order to make up sentences:

1. is, dictionaries, used, produce, Multimedia, and, to, encyclopedias.
2. digital, computing, refers, to, in, recording, Video, manipulating, and, storing, video, format.
3. would, If, you, to, make, a, movie, on, digital, wanted, your, computer, first, you, need, to, capture, them, images, with, a, video, camera, and, then, transfer, to, your, computer.
4. now, The, Encyclopedia, available, Britannica, is, online.
5. courses, available, on, history, languages, Educational, science, and, foreign, are, online.

Ex.4. Case-study.

Today, people do a lot of tasks online. People can do banking and shopping right from their computer. With these privileges comes the need to input important information (such as credit card numbers and account numbers) into web pages where you don't know who's reading the information on the other side or who is spying on what you do from a separate location.

- Why is network security important?
- How easy is it to break your computer?
- What makes a strong password?
- What types of passwords should you avoid?

Ex.5. Compile the text theses of your own. Give your reasons.

Unit 2. InfoSec Concepts

Information security, sometimes shortened to InfoSec, is the practice of defending information from unauthorized access, use, disclosure, disruption, modification, perusal, inspection, recording or destruction. This term can be used regardless of the form the data may take (e.g. electronic, physical).

Governments, military, corporations, financial institutions, and private businesses amass a great deal of confidential information about their employees, customers, products, research and financial status.

Should confidential information fall into the wrong hands they could suffer widespread, irreparable military and economic loss, as well as damage to reputation. Protecting confidential information is in many cases an ethical and legal requirement.

Since the early days of communication, military commanders and diplomats understood that it was necessary to provide some mechanism to protect the confidentiality of correspondence and to have some means of detecting tampering.

Cryptography, the use of codes and ciphers to protect secrets, began thousands of years ago. The earliest known use of cryptography is found in non-standard hieroglyphs carved into monuments from the Old Kingdom of Egypt circa 1900 BCE. Some clay tablets from Mesopotamia are clearly meant to protect information—one dated near 1500 BCE. Hebrew scholars made use of simple mono-alphabetic substitution ciphers (such as the Abash cipher) beginning perhaps around 500 to 600 BCE.

The ancient Greeks are said to have known of ciphers. The scytale transposition cipher was used by the Spartan military. The Romans knew something of cryptography (e.g., the Caesar cipher and its variations. Julius Caesar is credited with the invention of the Caesar cipher c. 50 B.C.).

The ciphers are created in order to prevent his secret messages from being read should a message fall into the wrong hands. For the most part protection was achieved through the application of procedural handling controls.

Sensitive information was marked up to indicate that it should be protected and transported by trusted persons, guarded and stored in a secure environment or strong box. Encoding became more sophisticated as machines were employed to scramble and unscramble information.

The volume of information necessitated formal alignment of classification systems and procedural controls. An arcane range of markings evolved to indicate who could handle documents and where they should be stored as increasingly complex safes and storage facilities were developed.

Most of military, economic, and diplomatic information is now collected, processed and stored on electronic computers and transmitted across networks to other computers. Such devices can range from non-networked standalone devices as simple as calculators, to networked mobile computing devices such as smart phones and tablet computers.

One of the information security aspects is information assurance. The act of ensuring that data is not lost when critical issues arise.

These issues include, but are not limited to: natural disasters, computer/server malfunction, physical theft, or any other instance where data has the potential of being lost. One of the most common methods of providing information assurance is to have an off-site backup of the data in case one of the mentioned issues arise.

Ex.1. Say what you've learned from the text about:

- information security (InfoSec);
- information security classification systems;
- non-networked devices and networked devices;
- critical issues for information security.

Ex.2. Using your own ideas, say what do you think about:

- security of networked mobile computing devices.

Ex.3. Discuss (in group or in pairs) your views on:

- security measures for handling confidential documents.

Ex.4. Discuss the following theses:

1. Information security is the practice of defending information.
2. The application of procedural handling controls.

Ex.5. Compile the text theses of your own. Give your reasons.

Ex.6. Fill in the gaps with the following words:

beginning, are clearly meant, substitution, carved, clay tablets, is found

Cryptography, the use of codes and ciphers to protect secrets, began thousands of years ago. The earliest known use of cryptography (1)_____ in non-standard hieroglyphs (2)_____ into monuments from the Old Kingdom of Egypt circa 1900 BCE. Some (3)_____ from Mesopotamia (4)_____ to protect information—one dated near 1500 BCE. Hebrew scholars made use of simple mono-alphabetic (5)_____ ciphers (such as the Abash cipher) (6)_____ perhaps around 500 to 600 BCE.

Ex.7. Compile the text theses of your own. Give your reasons.

Unit 3. Safe Data Transfer

The recent emergence of computerized networks created exciting new opportunities for the design and commercial exploitation of novel digital technologies and business processes. Reflecting this new reality, many researches are devoted to information sciences, and in particular to the foundations of decision theory and game theory, information theory, and agent-based artificial intelligence, the design of electronic markets, the estimation of consumer preferences, quantum information, social choice, and mathematical finance. Secure transactions across the Internet have three goals. First, the two parties engaging in a transaction (say, an email or a business purchase) don't want a third party to be able to read their transmission. Some form of data encryption is necessary to prevent this. Second, the receiver of the message should be able to detect whether someone has tampered with it in transit. This calls for a message-integrity scheme. Finally, both parties must know that they're communicating with each other, not an imposter. This is done with user authentication.

Today's data encryption methods rely on a technique called public-key cryptography. Everyone using a public-key system has a public key and a private key. Messages are encrypted and decrypted with these keys. A message encrypted with your public key can only be decrypted by a system that knows your private key. For the system to work, two parties engaging in a secure transaction must know each other's public keys. Private keys, however, are closely guarded secrets known only to their owners. When I want to send you an encrypted message, I use your public key to turn my message into gibberish. I know that only you can turn the gibberish back into the original message, because only

you know your private key. Public key cryptography also works in reverse – that is, only your public key can decipher your private key's encryption.

To make a message tamper-proof, the sender runs each message through a message-digest function. This function within an application produces a number called a message-authentication code (MAC). The system works because it's almost impossible for an altered message to have the same MAC as another message. Also, you can't take a MAC and turn it back into the original message. The dynamics of the Web dictate that a user-authentication system must exist. This can be done using digital certificates.

Answer the following questions:

1. How many goals do secure transactions across the Internet have?
2. What do today's data encryption methods rely on?
3. What does the sender do to make a message tamper-proof?

Ex.1. Complete the sentences with the most suitable preposition.

1. The progress of electronic commerce the Internet has resulted in a dramatic growth in digital interpersonal communications, distribution of products, and business transactions.
a) among b) for c) between d) over e) from
2. the emergence of smartphones, tablets, and other computer-based mobile devices, information systems have been extended to support mobility as the natural human condition.
a) in b) for c) with d) on e) among
3. Information systems have a great influence society.
a) over b) in c) by d) with e) between
4. Information systems have quickened the pace of daily activities, affected the structure of organizations, changed the type of products bought, and influenced the nature work.
a) from b) between c) by d) of e) in
5. Individuals may own multiple computers the form of smartphones and other portable devices.
a) for b) by c) in d) between e) among

Ex.2. Make up sentences.

1. The competitiveness of most companies is based	a. to track, store, manipulate and distribute the information from gathered data to appropriate persons when necessary.
2. Information systems are used	b. on the effective use of information technologies and information systems.

3. The efficient usage of information systems will give a lot of opportunities	c. to be open anytime anywhere all over the globe.
4. By implementing information systems sharing the information, knowledge, communication and relationships between different countries becomes much easier.	d. to the companies and advantages to their business.
5. Information systems has made it possible for businesses	e. between different countries becomes much easier.
6. One of the best advantages of information systems is	f. the creation of new and interesting jobs.
7. Computer programmers, Systems analyzers, Hardware and Software developers and Web designers are	g. as since technology keeps on changing with each day.
8. Implementing the information systems can save	h. just some of the many new employment opportunities created with the help of IT.
9. Industry experts believe that the Internet has made job security a big issue	i. a great deal of time during the completion of tasks and some labor mechanic works.
10. The hackers distribute the information over the Internet, sell it to rival companies or use it	j. to damage the company's image.

Ex.3. Case-study.

A chip is a very small piece of silicon marked with electronic connections that is used in computers and other machines. Chip technology is used in a sophisticated computer systems. Apart from computers, what other devices use microchips?

Ex.4. Compile the text theses of your own. Give your reasons.

Unit 4. How Computer Viruses Work

A computer virus - an unwanted program that has entered your system without you knowing about it - has two parts, which is called the infector and the detonator. They have two very different jobs. One of the features of a computer virus that separates it from other

kinds of computer program is that it replicates itself, so that it can spread to other computers. After the infector has copied the virus elsewhere, the detonator performs the virus's main work. Generally that work is either damaging data on your disks, altering what you see on your computer display, or doing something else that interferes with the normal use of your computer.

Many viruses have spread through pirated - illegally copied or broken - games. This is easy to avoid. Pay for your games, fair and square. If you use a shared PC or a PC that has public access, such as one in a college PC lab or library, be very careful about putting floppies into that PC's drives without a write-protect tab. Carry a virus- checking program and scan the PC before letting it write data onto floppies. Despite the low incidence of actual viruses, it can't hurt to run a virus checking program now and then.

There are actually two kinds of antivirus programs: virus shields, which detect viruses as they are infecting your PC, and virus scanners, which detect viruses once they've infected you. Viruses are something to worry about, but not a lot. A little common sense and the occasional virus scan will keep you virus-free.

Answer the following questions:

1. What is a computer virus?
2. What is the main feature of a computer virus?
3. How do computer viruses spread?
5. What should a user do to avoid viruses?
6. What kinds of antivirus programs are there?

Ex.1. Complete the sentences a) *a*, b) *an*, c) *the* or d) *no article*:

1. Cloud computing is kind of internet-based computing, where shared resources and information are provided to computers and other devices on-demand.
2. The expression 'cloud' is commonly used in science to describe large agglomeration of objects that visually appear from a distance as a cloud and describes any set of things whose details are not inspected further in a given context.
3. At foundation of cloud computing is the broader concept of converged infrastructure and shared services.
4. Cloud computing relies on sharing of resources to achieve coherence and economies of scale, similar to a utility (like the electricity grid) over a network.
5. Cloud computing and storage solutions provide users and enterprises with various capabilities to store and process their data in third-party data centers.

Ex.2. Complete the sentences with the correct form of the words in capitals:

1. Robots are artificial agents with capacities of and action in the physical world often referred by researchers as workspace. **PERCEIVE**

2. Human–robot interaction is a multidisciplinary field with from human–computer interaction, artificial intelligence, robotics, natural language understanding, design, and social sciences. **CONTRIBUTE**
3. Human–robot interaction has been a topic of both science fiction and academic even before any robots existed. **SPECULATE**
4. The closer the human and the robot get and the more intricate the relationship becomes, the more the risk of a human being injured **RISE**
5. Nowadays in advanced societies, manufacturers robots solve this issue by not letting humans and robots share the workspace at any time. **EMPLOY**

Ex.3. Compile the text theses of your own. Give your reasons.

Unit 5. Intellectual Property

Ideas and knowledge are an important part of trade. Films, music recordings, books, computer software and on-line services are bought and sold because of the information and creativity they contain, not usually because of the plastic, metal or paper used to make them. Creators can be given the right to prevent others from using their inventions — and to use that right to negotiate payment in return for others using them. These are “intellectual property rights”.

There are essentially four types of intellectual property rights relevant to software: patents, copyrights, trade secrets and trademarks. Each affords a different type of legal protection. Patents, copyrights and trade secrets can be used to protect the technology itself.

A patent is a twenty years exclusive monopoly on the right to make, use and sell a qualifying invention. To obtain a U.S. patent, an inventor must apply to the Patent Office and demonstrate that the invention is new, useful, and "nonobvious.”

Software patents can be extremely powerful economic tools. They can protect features of a program that cannot be protected under copyright or trade secret law. For example, patents can be obtained for ideas, systems, methods, algorithms, and functions embodied in a software product: editing functions, user- interface features, compiling techniques, operating system techniques, program algorithms, menu arrangements, display presentations or arrangements, and program language translation methods.

In the case of software, copyright law would protect the source and object code, as well as certain unique original elements of the user interface. The owner of a copyrighted software program has certain exclusive rights: the right to copy the software, to create derivative or modified versions of it, and distribute copies to the public by license, sale or otherwise.

A trade secret is any formula, pattern, compound, device, process, tool, or mechanism that is not generally known or discoverable by others, is maintained in secrecy by its owner, and gives its owner a competitive advantage because it is kept secret. The classic example of a trade secret is the formula to Coca-Cola. A trade secret can theoretically last forever. Many features of software, such as code and the ideas and concepts reflected in it, can be protected as trade secrets. This protection lasts as long as the protected element retains its trade secret status.

Copyright Protection

Copyright protection arises automatically upon the creation of an original work of authorship. There is no need to "apply" for a copyright or register the copyrighted work in order for protection to exist. Generally, the duration of a copyright is the author's life plus fifty years. In the case of software created by an employee in the course of his or her employment, the resulting "work made for hire" would be protected by copyright law for seventy-five years from publication. Unlike patents, copyright law affords no protection to the ideas underlying the program. Ideas and concepts are fair game for competitors to the extent they are not protected by patents or trade secrets.

A trade secret is any formula, pattern, compound, device, process, tool, or mechanism that is not generally known or discoverable by others, is maintained in secrecy by its owner, and gives its owner a competitive advantage because it is kept secret. The classic example of a trade secret is the formula to Coca-Cola. A trade secret can theoretically last forever - for as long as its owner uses reasonable efforts to keep it secret and someone else doesn't independently create or "discover" it. Many features of software, such as code and the ideas and concepts reflected in it, can be protected as trade secrets. This protection lasts as long as the protected element retains its trade secret status. Unlike patents, trade secret protection will not extend to elements of software that are readily ascertainable by lawful means, such as reverse engineering or independent development.

Software Patents

Software patents can be extremely powerful economic tools. They can protect features of a program that cannot be protected under copyright or trade secret law. For example, patents can be obtained for ideas, systems, methods, algorithms, and functions embodied in a software product: editing functions, user-interface features, compiling techniques, operating system techniques, program algorithms, menu arrangements, display presentations or arrangements, and program language translation methods. Since patent rights are exclusive, anyone making, using or selling the patented invention without the patent owner's authorization is guilty of infringement. Penalties are stiff and include triple damages. Once a patent for an invention is granted, subsequent "independent" (i.e., without access to the patented technology) development of the invention by another inventor is still considered infringement.

While a patent can protect the novel ideas embodied in a software program, a copyright cannot. Copyright protection extends to the particular form in which an idea is expressed. In the case of software, copyright law would protect the source and object code, as well as certain unique original elements of the user interface. The owner of a copyrighted software program has certain exclusive rights (with some exceptions): the right to copy the software, create derivative or modified versions of it, and distribute copies to the public by license, sale or otherwise.

Answer the following questions:

1. What are Intellectual property (IP) rights?
2. What forms of IP do you know?
3. What can a patent protect?
4. What can copyrights protect?
5. What features of software can be protected as trade secrets?

Ex.1. Match the words with their definitions.

1. notional	a. one of the parts that a substance or combination is made of
2. virtual	b. existing only as an idea, not as something real
3. domain	c. someone who carries messages between people who are unwilling or unable to meet
4. constituent	d. to make something such as an idea, plan, system, or law start to work and be used
5. intermediary	e. the quality of having the attributes of something without sharing its (real or imagined) physical form
6. responsibility	f. the state or job of being in charge of someone or something and of making sure that what they do or what happens to them is right or satisfactory
7. implement	g. a method or way of expressing something
8. medium	h. important and noticeable
9. spatially	i. relating to the position, area, and size of things
10. tangible	j. a set of websites on the Internet that end with the same letters, for example .com

Ex.2. Put the words in the correct order to make up sentences.

1. Finally, be, cyberspace, seen, can, as, providing, opportunities, new, to, reshape, society, and, culture.
2. brings, Cyberspace, facility, together, service, every, service, and, imaginable, to, expedite, money, laundering.
3. connected, All, of, our, lives, and, functions, aspects, of, our, societies, will, be, by, all-pervasive, and, transformed, hyper, digitalization.
4. comprehensive, new, Winners, in, this, age, who, are, those, can, combine, security, solutions, economy, with, a, market, approach.

5. will, The, Internet, engine, growth, remain, an, for, economic, and, a, platform, for, the, of, free, exchange, ideas.

Ex.3. Complete the sentences with the most suitable preposition .

1. Cyberspace draws attention to remediation of culture new media technologies.
a) in b) among c) through d) over e) on
2. IT companies continually innovate and invest the development of globally deployable products and services.
a) in b) between c) at d) from e) among
3. The phenomenal expansion cyberspace has brought unprecedented economic growth, opportunity, and prosperity.
a) on b) in c) by d) with e) of
4. There are two ways of storing photos a computer.
a) for b) at c) by d) of e) on
5. An intranet may be deployed as an access portal a shared corporate document base.
a) to b) by c) on d) between e) with

Ex.4. Compile the text theses of your own. Give your reasons.

Unit 6. Safe Internet Browsing

Users in all comers of the globe browse the Internet every day. However, it is not free from dangerous threats. Visiting a web page is not a passive activity, but both the computer establishing the connection and the web server that hosts the data to be consulted need to communicate and to do this they must transfer data. This data transfer is not direct and must pass through several computers. Even though secure servers, which encrypt the data to be transferred, are available, the majority of web pages do not implement this security measure.

One of the dangers faced by users when they browse the Internet is a hacker accessing their cookies. The information cookies contain is usually related to the page being visited, which can include user names and passwords and browsing preferences.

Another threat that is becoming one of the most dangerous threats on the Internet is phishing. This technique involves tricking users into thinking that they are visiting a legitimate web page, when they are actually visiting a malicious page. This technique is particularly dangerous when the malicious page simulates an online banking page. Web pages that perfectly imitate the appearance and functions of

well-known banking entities are becoming increasingly common-place on the Internet.

Tips for safe browsing:

When making transactions on the Internet, check that the process is carried out through a secure server. Several characteristics identify these types of servers. One of these is the address that appears in the address bar in the browser, which starts with <https://>. What's more, a padlock or key icon will appear in the browser window. If the padlock is closed or the key is complete (not broken), the server is secure.

Another recommendable measure is to disable the cookies from the toolbar in the browser you are using. Although they must be enabled in order to access some web pages, they can be enabled temporarily.

To avoid falling victim to phishing scams, make sure that the page you are visiting is legitimate. To do this, copy the URL of the web site you want to visit and paste it in the address bar of the browser.

Raise the security zone in the browser to 'medium' or 'high'. This can be done from the toolbar in the browser you are using.

Finally, make sure that you have a reliable antivirus installed, which is updated at least once a day. This will prevent malicious code from slipping into your computer while you are browsing the Internet.

Answer the following questions:

1. Why visiting a web page can be insecure?
2. What is one of the dangers faced by the users?
3. What is fishing?
4. What can a malicious page simulate?
5. What are the tips for safe browsing?

Ex.1. Complete the sentences a) *a*, b) *an*, c) *the* or d) *no article*:

1. Advanced statistical techniques, access to large amounts of data and faster computers enabled advances in machine learning and perception.
2. In computer science, the field of artificial intelligence research defines itself as study of 'intelligent agents'.
3. General intelligence is among field's long-term goals.
4. electron beam travels across the screen and creates a visible image.
5. Through networking, users gain access to information resources.

Ex.2. Complete the sentences with the correct form of the words in capitals:

1. America's top companies in computer industry are usually very **SUCCESS**
2. There's no better example than Apple, the corporation in the U.S. based on market capitalization. **LARGE**
3. The iPhone the most popular smartphone and the iPad is the most popular tablet PC. **BE**

4. Apple's lead position in its markets helps it to be the most company in its industry.
PROFIT
5. Its reputation as the top electronics company even helps it market products.
CONSUME

Ex.3. Case-study.

The Internet contains an unbelievable amount of information, which is really not all that useful unless you can find what you're looking for. After all, it's not the volume of information that's so powerful; it's that somewhere within that enormous haystack is the needle you've been looking for. Search engines are all about finding the needle. Internet searching is one of the easiest and useful ways to use the Internet.

- What search engines do you use?
- What search engine is your favorite? Why?
- Why internet searching is so helpful?
- How do you know what keywords to enter into the search bar?
- What things about Google you might recommend to use?

Ex.4. Compile the text theses of your own. Give your reasons.

Unit 7. Anti-virus Software

An anti-virus software program is a computer program that can be used to scan files to identify and eliminate computer viruses and other malicious software (malware). Anti-virus software typically uses two different techniques to accomplish this:

- Examining files to look for known viruses by means of a virus dictionary;
- Identifying suspicious behavior from any computer program which might indicate infection

In the virus dictionary approach, when the anti-virus software examines a file, it refers to a dictionary of known viruses that have been identified by the author of the anti-virus software. If a piece of code in the file matches any virus identified in the dictionary, then the anti-virus software can either delete the file, quarantine it so that the file is inaccessible to other programs, or attempt to repair the file by removing the virus itself from the file. Dictionary-based anti-virus software typically examines files when the computer's operating system creates, opens, and closes them; and when the files are e-mailed.

The suspicious behavior approach, by contrast, doesn't attempt to identify known viruses, but instead monitors the behavior of all programs. If one program tries to write data to an executable program, for example, this is flagged as suspicious behavior and the user is alerted to this, and asked what to do. The suspicious behavior approach therefore provides protection against brand-new viruses that do not yet exist in any virus dictionaries.

User education is as important as anti-virus software; simply training users in safe computing practices, such as not downloading and executing unknown programs from the Internet, would slow the spread of viruses, without the need of anti-virus software.

There are various methods of encrypting and packing malicious software which will make even well-known viruses undetectable to anti-virus software. Detecting these "camouflaged" viruses requires a powerful unpacking engine, which can decrypt the files before examining them. Unfortunately, many popular anti-virus programs do not have this and thus are often unable to detect encrypted viruses.

Answer the following questions:

1. What is an anti-virus software program?
2. What techniques does it use?
3. How do these two techniques differ?
4. How can user education help?
5. What are the issues of concern?

Ex.1. Put the words in the correct order to make up sentences.

1. individuals, Amongst, on, there, cyberspace, is, believed, to, a, code, be, of, shared, rules, and, ethics.
2. view, Many, the, right, privacy, as, to, most, to, important, a, functional, of, code, cyber ethics.
3. Moral, go, hand, responsibilities, in, when, working, hand, online, global, with, networks.
4. defined, involved, Cyberspace, is, more, technical, the, social, by, interactions, rather, than, its, implementation.
5. computational, The, medium, in, augmentation, cyberspace, is, an, of, the, channel, communication, real, between, people.

Ex.2. Complete the sentences.

a) systems b) computers c) equipment d) features e) creative f) needs g) windows h) supervision i) information j) life

1. Computing is getting smaller and more sophisticated.
2. Computers in phones provide such as call forwarding, call monitoring, and call answering.
3. Smart machines make a little easier and a little more pleasant.
4. With small computing devices people are able to spend more time doing what they do best – being
5. Multimedia are known for their educational and entertainment value.
6. Experts systems software enables to 'think' like experts.
7. Cars with built in computers can be programmed to better meet individual

8. A smart house has a built-in monitoring system that can turn lights on and off, open and close , operate the oven, and more.
9. Computers are part of many machines and devices that once required continual human and control.
10. Smart cards store vital such as health records, drivers' licenses, bank balances, and so on.

Ex.3. Complete the sentences with the most suitable preposition.

1. Multimedia includes a combination text, audio, still images, animation, video, and interactivity content forms.
a) by b) for c) at d) over e) of
2. Multimedia is usually recorded and played, displayed or accessed information content processing devices, such as computerized and electronic devices, but can also be part of a live performance.
a) by b) between c) at d) from e) among
3. The power of multimedia software resides hypertext, hypermedia and interactivity.
a) on b) in c) by d) with e) among
4. If you click on a hypertext link, you can jump to another screen with more information a particular subject.
a) about b) at c) by d) of e) between
5. To capture sounds digital format and play them back, modern PCs contain a sound card.
a) for b) among c) in d) between e) with

Ex.4. Case-study.

As the Internet has grown so has the intelligence and capabilities of hackers.

Software programs have become more and more complicated making it harder to find a small hole or virus. Without proper security software, all it takes is for you to download a free virus-filled application off the Internet and run it. However, even with proper security software hackers can develop new methods of getting into your computer, which makes it of the most importance to constantly update your security software.

- How often do you update your software?
- What anti-virus software do you use?
- Do you have any problems with anti-virus software?
- Which anti-virus software would you recommend?
- What threats are there to computers?

Ex.5. Compile the text theses of your own. Give your reasons.

Unit 8. Office of Corporate Information Systems

The mission of the Office of Corporate Information Systems is to plan and manage the design, development, operation and maintenance of the Department's Integrated

Management Navigation (iManage) program and projects; identify and implement business process automation initiatives; provide technical support for legacy systems operations and maintenance; provide technical support for web design, development and maintenance; manage cyber security and enterprise architecture activities.

The functions of the Office of Corporate Information Systems are:

- 1) plan and manage the design, integration, and implementation of the Department's corporate business systems through the iManage program, ensuring the approved solution addresses the integration of financial management, cost accounting, budget, procurement, human resources and performance measurements;
- 2) operate and maintain corporate financial systems utilizing efficient, cost- effective, and appropriate technology to allow for delivery and dissemination of relevant information;
- 3) maintain compatibility among the corporate business systems to facilitate electronic exchange of data with internal and external stakeholders and maintain interfaces with Headquarters Programs, Field Offices and Management and Operating Contractors;
- 4) provide qualified Information Technology project management support;
- 5) manage the Office of Chief Financial Officer (CFO) Cyber Security Program.

Answer the following questions:

- 1. What is the mission of the Office of Corporate Information Systems?
- 2. What are the functions of the Office of Corporate Information Systems?
- 3. What functions are the most important?

Ex.1. Complete the sentences with the correct form of the words in capitals:

- 1. This is by defining safe zones using lidar sensors or physical cages. **ACHIEVE**
- 2. Thus the presence of humans is completely in the robot workspace while it is working. **FORBID**
- 3. With the advances of artificial intelligence, the autonomous robots could eventually have more proactive behaviors, planning their motion in complex environments. **KNOW**
- 4. To allow this new generation of robots, research is being conducted on human detection, motion planning, scene reconstruction, intelligent through task planning and compliant behavior using force control. **BEHAVE**
- 5. The goal is to build an intuitive, and easy with the robot through speech, gestures, and facial expressions. **COMMUNICATE**

Ex.2. Make up sentences.

1. A Service Level Agreement (SLA) is	a. to corporate apps and resources from almost any network.
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2. SLAs do not define	b. trend for technology to replace the functions performed by humans.
3. The use of SLAs is also common in outsourcing, cloud computing, and other areas	c. the reduced costs justify the capital investment.
4. The Company Portal provides access	d. apps made available to you by your company.
5. Company apps – browse, search and install	e. how the service itself is provided or delivered.
6. Examples of robotic automation include the use of software robots	f. in automating clerical processes in services industries.
7. Robotic automation corresponds to an emerging	g. to either improve quality, cut costs of production or to achieve both of these things.
8. The motive for deploying robots is	h. where the responsibility of an organization is transferred out to another supplier.
9. Where robots replace human labor in high volume repetitive tasks at a lower price point,	i. across many industries.
10. The advent of the Internet has enabled a new trend towards self-service	j. a contract between a service provider and the end user that defines the level of service expected from the service provider.

Ex.3. Make up sentences.

1. The Internet is an increasingly attractive hunting ground	a. to treating security as a project.
2. Today's cybercriminals are highly skilled and equipped	b. that an organization must govern.
3. Most governments have already created regulations that impose conditions	c. for criminals, activists and terrorists motivated to make money.
4. The patchwork nature of regulation around the world is likely	d. to become an increasing burden on organizations.

5. Organizations of all sizes need to think about the consequences of a supplier providing accidental,	e. with very modern tools.
6. Infosec programs are important	f. but harmful, access to their intellectual property, customer or employee information, commercial plans or negotiations.
7. Many large enterprises employ a dedicated security group	g. their information security management program.
8. Many organizations do not follow a life cycle approach in developing, implementing and maintaining	h. on the safeguard and use of Personally Identifiable Information.
9. Without applying a life cycle approach to a information security program and the security management that maintains the program, an organization is doomed	i. to implement and maintain the organization's InfoSec program.
10. A information security program is the set of controls	j. for maintaining the confidentiality, integrity and availability of IT systems and business data.

Ex.4. Case-study.

Have you ever wondered what's possible as a software developer? Do you see it just as programming for PC? In fact, that's quite far from the truth. Software development spans devices, platforms and form factors well beyond PC.

- What is a Software Development Process?
- Is extracting the requirements of a desired software product the first task in creating it?
- Does the architecture of a software system refer to an abstract representation of that system?
- Do you agree that a large percentage of software projects fail because the developers fail to train and support the users?
- Is it true that maintaining and enhancing software to cope with newly discovered problems or new requirements can take far more time?

Ex.5. Compile the text theses of your own. Give your reasons.

Unit 9. Spam: the Digital Epidemic of the XXI Century

Spam or unwanted commercial email has become a real epidemic that, as well as slowing down users' communications, also has a significant financial impact in corporate environments.

According to Spam Filter Software Review, in 2002, in the United States alone, junk mail cost businesses almost 9 billion dollars. What's more, in 2003, 40 percent of the emails circulating around the Internet were spam and each user received an average of 2,200 spam messages a year.

Apart from that, spam can also cause corporate networks to slow down and increase bandwidth consumption, resulting in a dramatic increase in these figures. Therefore, it is obvious that spam protection, especially in corporate networks, must be given priority.

Spam can also be used as a means of spreading an even more dangerous threat: computer viruses. A spam message could easily include an attachment carrying a virus or a link to an apparently interesting website, from which malicious code can be downloaded without the user realizing. In the most extreme scenario, a virus could even be hiding in the message code.

None of these tactics are new; they have already been used to infect computers. However, just because they are known, it does not make them any less dangerous. In networks with a large number of users, it is not difficult for one of those users to download or run a virus hidden in a spam message, which will then spread across the network.

A basic measure to adopt to prevent spam from getting into users' mailboxes is to filter email messages. There are a large number of applications that allow network administrators to define rules that will help identify junk emails. They can configure them to filter email messages by subject, key word, domain, IP address of the sender of the message.

However, spam is evolving at the same pace as security systems, and this means that just filtering messages is not enough. Spammers use all kinds of tricks to slip past any obstacles and for this reason, the system used must also intelligently analyze each message, as well as having the capacity to "learn". This means that it must be able to identify spam messages with minimum administrator intervention.

In companies, correctly identifying spam is not the only problem, but also managing the huge amount of spam messages received every day. Therefore, antispam tools must solve this problem. A good solution is to use a computer dedicated to blocking and deleting spam, installed at the connection between the corporate network and the Internet.

Answer the following questions:

1. What impact can spam have in corporate environments?
2. How much did junk mail cost businesses in the USA?
3. How can spam be used to spread computer viruses?
4. What is the basic measure to prevent computers from infection?
5. What can be a good solution to solve the problem?

Ex.1. Match the words with the definitions.

1. unit	a. carrying out of two or more sequences of instructions at the same time in a computer
2. transmit	b. duplicated or added as a precaution against failure, error, etc.
3. morphing	c. a piece of furniture or equipment that fits together with other pieces of the same type
4. multiprocessing	d. a computer technique used for graphics and in films, in which one image is gradually transformed into another image without individual changes being noticeable in the process
5. polymorphism	e. to send out an electronic signal such as a radio or television signal
6. stream	f. the ability in computer programming to present the same programming interface for differing underlying forms (data types, classes)
7. redundant	g. to transfer (esp. audio or video data) in a continuous flow
8. resolution	h. a device that transmits and receives data using a modulated carrier wave
9. pixel	i. the number of pixels (individual points of color) contained on a display monitor, expressed in terms of the number of pixels on the horizontal axis and the number on the vertical axis
10. modem	k. the basic unit of a digital image, representing a single color or level of brightness

Ex.2. Complete each sentence with a verb in the correct form: *-ing* or *to*.

- Technology offers banks activities and become more competitive.
a) to diversify b) diversifying
- Nowadays, government economists enjoy computer programs in their economic affairs.
a) using b) to use
- I can't afford a new computer now.
a) buying b) to buy
- They hope complex financial calculations in micro-seconds using spreadsheet programs.
a) to do b) doing
- Government departments manage revenue from taxation and measure macroeconomic growth very quickly.
a) calculating b) to calculate

Ex.3. Case-study.

By definition, e-government is simply the use of information and communications technology, such as the Internet, to improve the processes of government. Governments were among the first users of computers. Nowadays, local e- government management includes the extended use of information and communication technologies (ICTs) within government for purposes of improving service delivery to citizens or to enhance back-office operations. The implementation of ICT for overall development and advancement of e-government strategies are likely to have a strong preference towards cities and local towns where most of the citizens live.

- Does technology have the potential for improving the way government works?
- Will it reduce costs?
- Will e-government help to build trust between the Government and citizens?
- Does ICT help to increase the transparency of decision-making processes by making information accessible?
- Should e-government services be developed in light of demand and user value?

Ex.4. Compile the text theses of your own. Give your reasons.

Active Vocabulary

alignment – выстраивание, ранжирование, классификация

amass – перерабатывать и накапливать в огромном количестве

arcane (arcanum, arcana) range of markings – секретный, сокровенный таинственный набор (диапазон) меток, отметок

arcanum, arcane – тайна, колдовской напиток, заклинание, заговор

carve(d) – высекать, вырезать (на камне и т.п.)

circa – около, приблизительно (лат.)

clay tablet – глиняная табличка

confidentiality of correspondence – закрытость переписки

critical issues – жизненно важные, критические аспекты, вопросы

damage to reputation – урон для репутации

disclosure – раскрытие, разглашение

disperse- разгонять

disruption – нарушение, сбой в работе

encourage – вдохновлять, поддерживать, способствовать

ethical and legal requirement – этические и юридические требования (ограничения)

guard(ed) – охранять, охраняемый

handle documents – обрабатывать документы, работать с документами
hieroglyph – иероглиф
hindrance- помеха

information assurance – подтверждение, доверие (уверенность в) информации
information security(InfoSec) – информационная безопасность, защита, защищённость информации
instance (for instance) – пример, например
irreparable military and financial loss – невозполнимые военные или финансовые потери
issues arise – возникает проблема, вопрос

maintenance-техобслуживание
malfunction – сбой, неправильная работа
modification – модификация, изменение
multi-tier classification systems – сложная и взаимосвязанная система классификации

natural disasters – природные бедствия, катастрофы
necessitate – делать необходимым
networked mobile computing devices – мобильные компьютерные устройства, подключённые к интернету
non-networked stand alone devices – устройства, не подключенные к интернету (глобальным информационным сетям), «одинокое устройства»

off-site backup of the data – дополнительные, резервные аварийные меры сохранения информации

perusal inspection – вскрытие почты, проверочное прочтение, просмотр

recording or destruction – списывание (кража) данных или их уничтожение
regardless of – несмотря на, не учитывая, не принимая во внимание
response-ответ, отклик

scramble – беспорядочно смешивать
scramble and unscramble information – делать информацию трудночитаемой (набором бессвязных слов, понятной), и читаемой
secure environment – обезопасить окружающую среду
sensitive information – чувствительная (могущая нанести вред) информация
storage facilities – устройства для хранения
suffer – страдать, нести урон

target-цель

unauthorized access – несанкционированный доступ
undergo-подвергаться
unscramble – делать (информацию) понятной, читаемой

widespread – широко распространённый, широко распространять

PART III. MANAGING ICT

Unit 1. Management Information System

A Management Information System (MIS) focuses on the management of information systems to provide efficiency and effectiveness of strategic decision making. The concept may include systems termed transaction processing system, decision support system, expert system, or executive information system. The term is often used in the academic study of businesses and has connections with other areas, such as information systems, information technology, informatics, e-commerce and computer science.

Management Information System as an academic discipline studies people, technology, organizations, and the relationships among them. This definition relates specifically to "MIS" as a course of study in business schools. Many business schools and colleges of business administration have an MIS department, alongside departments of accounting, finance, management, marketing, and may award degrees (at undergraduate, master, and doctoral levels) in Management Information Systems.

MIS professionals help organizations to maximize the benefit from investments in personnel, equipment, and business processes.

There are different areas of concentration with different duties and responsibilities in information system managers starting from the Chief

Information Officers (CIOs), Chief Technology Officers (CTOs). IT directors and IT security managers. Chief Information Officers (CIOs) are responsible for the overall technology strategy of their organizations. Basically they are more of the decision makers and action takers when it comes down determining the technology or information goals an organization and making sure the necessary planning to implement those goals are being met.

Chief Technology Officers are responsible for evaluating how new technology can help their organization. They usually recommend technological solutions to support the policies issued by the CIO IT directors. They are also in charge of implementing the policies that have been chosen by the other top branches. It is their role to ensure the availability of data and network services by coordinating IT activities.

Answer the following questions:

1. What does a Management Information System focus on?
2. What does Management Information System as an academic discipline study?
3. Why do many business schools and colleges of business administration have an MIS department?
4. What are chief technology officers responsible for?

Ex.1. Complete the sentences with the words.

a) devices	b) system	c) penetration	d) computing	e) tablets	f) providers
g) organizations	h) prototype	i) keyboards	j) computers		

1. People use mainly for viewing published content such as video and news.
2. Electrical with data input and output on a flat information display existed as early as 1888.
3. Application service don't own the data centres that store the information.
4. An operating is stored on disk.
5. Distributed computer systems are built using networked
6. Tablets usually feature on-screen, pop-up virtual for typing.
7. In 2000 Microsoft used the term Tablet PC to describe a handheld device.
8. As a rule business firms and other rely on information systems.
9. Recently the global of the Internet and the Web has enabled access to information.
10. Cloud computing is a kind of internet-based , where shared resources and information are provided to computers and other devices on-demand.

Ex.2. Match the words with their definitions.

1. fallback	a. a domain characterized by the use of electronics and the electromagnetic spectrum to store, modify, and exchange data via networked systems and associated physical infrastructures.
2. cell	b. a small square in a pattern of squares on a computer spreadsheet for writing numbers or words in.
3. cyberspace	c. the system, electronic or manual, which is substituted for the computer system in case of breakdown.
4. garble	d. a measure of the realism of a model or simulation.
5. wireless portal	e. a sequence of packets from a source computer to a destination.
6. buffer	f. a computing hardware- or software-based system that operates without the direct intervention of humans or other agents.
7. fidelity	g. a Web site that supports a user with a smartphone or alphanumeric pager.

8. wildcard	h. a symbol that stands for one or more unspecified characters, used especially in searching text and in selecting multiple files or directories.
9. traffic	i. to alter a message intentionally or unintentionally so that it is difficult to understand.
10. intelligent agent	k. a temporary storage area, usually in RAM.

Ex.3. Case-study.

The MIS degree features a mix between a computer sciences and information systems degrees with a business focus. Like many other sectors, the financial and business world heavily relies upon computers and networking for its continued operation. Today, many common financial tasks such as filing taxes and applying for loans or credit cards are completely computerized.

- Do students in MIS degree typically study management, finance, marketing and economics as well as information systems development and design?
- Is a master's degree beneficial to those wishing to advance in their careers in the field of MIS?
- Why should graduates understand the needs of both the business people using their systems and the computer sciences professionals creating their systems? Give your reasons
- Do network and computer systems administrators install, manage and provide support for the computer networks of organizations?
- What common financial tasks such as filing taxes and applying are completely computerized now?

Ex.4. Compile the text theses of your own. Give your reasons.

Unit 2. Information management technology (IMT)

Information management technology (IMT) is an umbrella term for the processes, systems, hardware, and software a company uses to conduct its day-to-day operations. Information management technology is also considered a professional discipline where a student learns to manage the selection, distribution, and organization of all the technology and related process in a business environment.

The budget line encompassing all those systems and the costs of setting them up and maintaining them will be, for simplicity sake, information management technology. Information management technology is also referred to as information technology (IT) and information management and technology.

Understanding Information Management Technology (IMT)

Information management technology is a critical part of every business. It enables the big data type insights that drive business strategies, the precision underlying retail supply chain management, the records retention policy for compliance, and much more. There are very few business processes that do not depend or cannot benefit from information management technology.

Benefits of Information Management Technology

Information management technology is often seen as a driver of organizational efficiency as technology has traditionally helped workers to be more productive with it than without it. As the applications of technology in business have multiplied, information management technology has been further segmented into more meaningful categories that capture the function of the technology being used. This includes the enterprise-class IMT like enterprise resource management, enterprise relationship management, and enterprise records management.

Any one of these sub-categories refers to a functional system that depends on hardware (computers, terminals, sensors, etc.), process (training, auditing, enforcement) and software. A large corporation will be running many of these systems, some of which will be purchased and some which are proprietary.

Career

Information management technology is, as mentioned above, a discipline as well as a corporate function. It is often housed under a science program, but it can be part of a disciplinary specialty like a bachelor of health administration with a major in information management technology. Generally speaking, these programs will cover:

- Project management
- Data security and role management
- Data organization and analysis
- Systems analysis, design, and organization
- Software and hardware assessment

There are also many specialties within information management and technology when it is considered as a career. Data scientists, for example, work with different data sources and sets to create insights, metrics and key performance indicators.

Workers in information management technology are considered part of the highly skilled workforce and are sometimes referred to as knowledge workers.

Computer network architects handle the creation and maintenance of a business's network, including administering remote access. Computer hardware engineers design hardware and configure machines in ways that optimize them for their specific function.

Decide whether the following statements are a) true, b) false or c) information is not available in the text:

1. The term Information management technology (IMT) includes the processes, systems, hardware, and software a company uses to conduct its day-to-day operations.
2. Information management technology is referred to as information technology (IT).
3. Career in Information management technology means high salaries and promotion.

Ex.1. Say what you've learned from the text about:

- Information management technology (IMT);
- Information management technology enables;
- benefits of Information Management Technology;
- career in Information management technology.

Ex.2. Using your own ideas, say what do you think about:

- applications of technology in business.

Ex.3. Discuss (in group or in pairs) your views on:

- benefits of Information Management Technology for businesses.

Ex.4. Discuss the following theses:

1. Information management technology is a critical part of every business.
2. Workers in information management technology are considered part of the highly skilled workforce and are sometimes referred to as knowledge workers.

Ex.5. Fill in the gaps with the following words.

retention, enables, skilled workforce, related, precision, critical part, distribution, hardware, chain, referred, management, term

Information management technology (IMT) is an umbrella (1)_____ for the processes, systems, (2)_____, and software a company uses to conduct its day-to-day operations. Information (3)_____ technology is also considered a professional discipline where a student learns to manage the selection, (4)_____, and organization of all the technology and (5)_____ process in a business environment.

Information management technology is a (6)_____ of every business. It (7)_____ the big data type insights that drive business strategies, the (8)_____ underlying retail supply (9)_____ management, the records (10)_____ policy for compliance, and much more.

Workers in information management technology are considered part of the highly (11)_____ and are sometimes (12)_____ to as knowledge workers.

Ex.6. Compile the text theses of your own. Give your reasons.

Unit 3. IT Project Management

Project is a temporary attempt undertaken to create a unique product, service or result. IT project management is the process of planning, organizing and defining responsibility for the completion of an organization's specific information technology goals. IT project management includes overseeing projects for software development, hardware installations, network upgrades, cloud computing, business analytics and data management projects and implementing IT services.

In addition to the normal problems that can cause a project to fail, factors that can negatively affect the success of an IT project include advances in technology during the project's execution, infrastructure changes that impact security and data management and unknown dependent relationships among hardware, software, network infrastructure and data.

Traditional project management, as it is used in construction or manufacturing, deals with solid, tangible elements. Managing an IT project is neither easy nor pretty. Information technology is especially slippery because it is always moving, changing, adapting and challenging business. IT project management is further complicated by shifting business needs and demanding stakeholders. An IT project is any information technology project that has an assigned start and end date, often with specific milestones and goals to be met during the development cycle. All IT projects are constrained by three factors: time, cost and scope. For a project to be successful, these three constraints must be in equilibrium. If any constraint is out of balance, the project is headed for disaster.

The specific phases within a project, however, are unique to each project and represent the project life cycle.

- Initiation - the project goal, need or problem is identified.
- Planning - the project manager and the project team work together to plan all of the needed steps to reach a successful project conclusion.
- Execution - once the project plan has been created, the project team goes about executing the project plan to create the deliverables of the project.
- Monitoring and controlling - as the project is being executed by the project team, the project manager monitors and controls the work for time, cost, scope, quality, risk, and other factors of the project.
- Closing - at the end of each phase and at the end of the entire project, project closure happens to ensure that all of the work has been completed, is approved, and ultimately transferred ownership from the project team to operations.

Answer the following questions:

1. What do you understand by project management?
2. What does IT project management include?

3. Why can managing an IT project be complicated?
4. What are the three constrained factors of all IT projects?
5. What are the phases of any project?

Ex.1. Complete each sentence with a verb in the correct form: -ing or to:

1. Networks allow users in one locality expensive resources, such as printers and disk-systems.
a) sharing b) to share
2. E-commerce allows all kinds of commercial transactions.
a) speeding up b) to speed up
3. IT technologies aim easy access to global markets.
a) to provide b) providing
4. Scientists suggested e-commerce by factors that can be grouped under three headings: technology, culture and policy.
a) affecting b) to affect
5. Many scientists seem that government legislation, such as setting targets for Internet connectivity and bandwidth, can have a significant effect on e-commerce penetration.
a) agreeing b) to agree

Ex.2. Choose the correct option to complete the sentences.

1. A smart city program to create attractive, participative, innovative and resilient urban environment encouraging creative solutions.
a) have been aiming b) aims c) had aimed
2. A smart city ICTs into urban management and planning.
a) have incorporated b) incorporates c) are incorporating
3. Scientists to ease the 'creep' factor in rescue robots, hoping to reduce anxiety.
a) are working b) had been working c) has been working
4. Researchers ways to make rescue robots less 'creepy' and more user-friendly.
a) had explored b) had been exploring c) are exploring
5. Everyone machines don't have feelings.
a) have known b) know c) knows
6. Murphy much of his research career to studying the ways in which humans respond socially to technology.
a) have been devoting b) had been devoting c) has devoted
7. He that people unconsciously use social rules when interacting with computers.
a) have been founding b) found c) find
8. Rescue robots as a trapped disaster victim's lifeline for many years.
a) have been serving b) has been serving c) had been serving

Ex.3. Case-study.

Leaders are people who do the right things; managers are people who do things right." Leadership involves creating a compelling vision of the future, communicating that

vision, and helping people understand and commit to it. Managers, on the other hand, are responsible for ensuring that the vision is implemented efficiently and successfully. Of course, these two roles overlap - and, to be fully effective, you need to fulfill both roles.

- What is delegation?
- How can a manager motivate team members?
- Is it a manager's responsibility to develop people?
- Is active listening another important skill for managers?
- Is it well worth mastering the skill of running effective meeting

Ex.4. Compile the text theses of your own. Give your reasons.

Unit 4. IT Operations Analytics

IT environments are increasingly complex, generating an excess of data in the form of real-time network metrics, log files and more. IT environments also undergo constant change. This combination of complexity and frequent changes can make troubleshooting difficult and time consuming, and in some cases make identifying root causes nearly impossible. At the same time, networking experts need to be able to respond quickly and effectively to performance problems and outages. And they need to predict potential issues and automate fixes before users and the business are affected. They also need an IT operations tool that automatically processes the mountain of operational data into relevant, useful information. This is where IT operations analytics (ITOA) comes into play.

ITOA gathers and analyzes data from many different sources within an organization, providing insights that help management make more informed decisions regarding IT operations and business services. At its foundation, ITOA employs big data principles and technologies to automate the collection and analysis of IT operations data, thus allowing the identification of patterns and problems.

IT operations analytics removes most of the manual processes involved in correlating infrastructure changes to application performance, automatically pulling data together to provide a real-time view of systems and applications. This view, along with anomaly discovery and pattern identification, greatly simplifies troubleshooting and resolution.

ITOA software can either be administered on-site, or accessed via a cloud provider. The software gathers data from running (live) systems, including operating systems, hypervisors, network devices and sensors, as well as data from various types of logs, such

as applications, databases, devices and web. The data is warehoused and indexed in a data store.

From there, ITOA normalizes and transforms structured and unstructured data, turning it into usable information. Many ITOA tools "learn" what's normal for a system, network or environment, creating baselines and then identifying patterns in the data to detect anomalies, especially in log data and network captures. Finally, IT operations analytics software sends alerts to a management console that recommends actions for administrators to take to resolve issues.

Answer the following questions:

1. How can you describe IT environments?
2. What can ITOA do?
3. How does IT operations analytics work?
4. Does automation simplify troubleshooting?
5. Where is the data warehoused and indexed?

Ex.1. Choose the correct option to complete the sentences.

1. He for the same computer company for twelve years.
a) has been working b) had been working c) have worked
2. Today's data encryption methods on a technique called public-key cryptography.
a) rely b) has been relying c) had relied
3. Everyone a public-key system.
a) are using b) uses c) have been using
4. Computer networks computers by commercial lines and software protocols.
a) had been linking b) link c) has linked
5. The mainframe large numbers of queries and return the results to the users.
a) have been handling b) are handling c) handles
6. Digital computing technologies economies.
a) has transformed b) has been transforming c) are transforming
7. Traditional firms how to respond to the changes brought about by the digital economy.
a) are assessing b) has been assessing c) is assessing
8. Banks to innovate and use digital tools to improve their traditional business.
a) are trying b) has been trying c) had been trying

Ex.2. Choose the correct form of the verb in the passive voice to complete the sentences.

1. Rescue robots for more than a decade, but the early prototypes were mechanically primitive.
a) had been used b) have been used
2. Messages with the keys.
a) are encrypted and decrypted b) is encrypted and decrypted

3. Distributed computer systems using networked computers that co-operate to perform tasks.

a) are built b) has been built

4. Originally, networks to provide terminal access to another computer and to transfer in files between computers.

a) are used b) were used

5. Networks between wide area networks and local area networks.

a) is split b) have been split

Ex.3. Case-study.

Website optimization starts with understanding your online business objectives. Do you want to provide company background, gather sales leads, or sell online? If you know what you want to achieve, you can then build a website optimization strategy targeted for your unique goals. Think of search engine optimization as a puzzle with many pieces - including content, design, links and tracking. Website optimization involves bringing all these pieces together to create a complete picture that makes your Website attractive to search engines and customers alike.

- Does your website content need to attract users?
- Why is it important to link your website to other websites?
- Do you need to frequently update your website?
- Do you need to use search-friendly web design?

Ex.4. Compile the text theses of your own. Give your reasons.

Unit 5. Digital Identity Project

Canadian banks will use block chain technology to manage consumers' digital identities. The banks bought into the idea of managing digital identities for consumers five years ago. Initially, they focused on authentication: letting customers maintain one user name and password for multiple websites, mainly bank and government sites. The Concierge system, managed by Secure Key, was a way to simplify customers' lives. The system stores 7 million Canadian consumers' credentials currently with 250,000 added each month. On Monday morning, the banks, which include Bank of Montreal, Canadian Imperial Bank of Commerce, Desjardins Group, Royal Bank of Canada, Scotiabank and TD Bank, along with IBM and Secure Key, announced they would build on the progress by making it a fuller identity solution running on IBM's block chain.

When the technology pieces are all in place, customers will be able to use an app to verify their identity to anyone, from an Airbnb owner to a bouncer at a bar, in such a way that that provider only sees what they need to see, and all other personal information is private. And over time, the banks in the program expect to receive revenue from other

participants, say, telecommunications companies or landlords, who use their digital identity service to verify customers.

For the technology base of the expanded digital identity program, SecureKey chose IBM's blockchain-as-a-service offering, which is built on the Linux Foundation's open source Hyperledger Fabric v1.0. It's a permissioned blockchain meant to provide privacy, security and the ability to put the consumer in control of their identity information.

The consumer registers for the identity program at a bank using the bank's normal routines related to Know Your Customer compliance. Through a mobile app the bank provides, customers choose which types of data they want to share with which types of providers.

To commit account takeover, a fraudster would have to have the user's online banking user name and the SIM card from their phone, which would be invalid if the phone was reported lost or stolen. SecureKey and IBM hope to take this offering global.

Answer the following questions:

1. When did Canadian banks get the idea of digital identities?
2. What did they initially focus on?
3. How many consumers' credentials does the System store every month?
4. How can consumers verify their identity?
5. What is block chain meant to provide?

Ex.1. Choose missing words.

a) made b) have c) bears d) being used

1. The term 'digitalization' is currently more generally to designate the conversion of the whole of society to the use of digital technologies and the increasing involvement of data and machines in business processes by means of digital interfaces.
2. An area where digitalization has already progress is the use of cash in payments.
3. Cryptocurrencies a strong similarity to traditional central bank reserves and cash.
4. Holding a cryptocurrency always the completely unpredictable risk of a total loss.

Ex.2. Choose missing prepositions.

a) in b) for c) across d) from

1. Apple's Siri virtual assistant is getting a makeover iOS 11.
2. New Apple's Siri can also be used task management, to take notes and to scan QR codes.

3. The intelligent assistant will monitor what users do their devices to learn how we use apps and services.
4. In iOS 11 Siri can spot interests, such as what news articles you read, and make recommendations these.

Ex.3. Compile the text theses of your own. Give your reasons.

Unit 6. Information Risk Management

A key component of building a security program that enables innovation is moving from "information security" to "information risk management (IRM)." IRM must incorporate the idea that information security is striving for an acceptable level of risk. The goal is to match risk exposure to risk appetite, not wipe out all risk. Having specific expertise in information security per se is still a crucial part of the program as it is essential for determining the optimum security control. Managing information risks must be conducted in a way that is meaningful to the business and is based on how other categories of risk are discussed and calculated.

So IRM must be integrated into the enterprise risk management framework. As an example, let's look at risk management and innovation in the context of data loss prevention. Many organizations are increasingly using Web-based collaborative tools to facilitate information and knowledge sharing among various user groups in order to improve productivity and eliminate the duplication of efforts. If there is a weakness in your IT security system, wouldn't you prefer to find it before someone else does? Imagine waking up to discover that your IT systems have been hacked. Your company's financial results have been leaked to the media; your confidential business plans have been compromised; your employees' personal files have been posted on the Internet. The market loses confidence in your organization, your share price takes a dive, and your directors are found to be personally responsible for inadequate risk management practices.

Recently, there has been a growing recognition of the need to take a risk-based approach to security. Different organizations are at different stages along this progression, based not only on how they view information security and its importance to the business but also on the maturity of their enterprise risk management program. There are some preconditions that are essential to the success of any security team's efforts. First, the organization must already be using the construct of "risk" in how they make investment and operational decisions. Some organizations may not have the culture for a risk-based

approach as their strategy is still too tactical or "targeted opportunity" focused. The other key prerequisite is that there has to be sustained attention from the top. If there is no attention for enterprise risk management or at least some notion of assessing risk at the board or senior leadership level, then trying to be effective in information risk management is likely beyond the organization's current capability.

Answer the following questions:

1. What is a key component of building a security program?
2. What is Information Risk Management?
3. What is the purpose of Information Risk Management?
4. What should the management do if there is a weakness in their IT security system?
5. What can be the effect of the weaknesses in the IT security system?

Ex.1. Choose the correct form of the verb in the passive voice to complete the sentences.

1. Digital economy as the branch of economics studying zero marginal cost intangible goods over the Internet.
a) have been defined b) has been defined
2. Since 1980s, fiber-optic cable on a large scale, enabling vast amounts of data to be transmitted at a very high speed using light signals
a) had been installed b) has been installed
3. Unlike human painters, robots by the poisonous fumes.
a) are unaffected b) has been unaffected
4. Robots in space projects, nuclear reactor stations, and underwater exploration research.
a) are used b) has been used
5. Tablets with sensors, including cameras and a microphone.
a) had been equipped b) are equipped

Ex.2. Complete the sentences.

1. Information systems has made it possible for businesses	a. just some of the many new employment opportunities created with the help of IT.
2. The efficient usage of information systems will give a lot of opportunities	b. the creation of new and interesting jobs.
3. One of the best advantages of information systems is	c. to the companies and advantages to their business.

4. Computer programmers, systems analyzers, hardware and software developers and Web designers are	d. to be open anytime anywhere all over the globe.
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Ex.3. Case-study.

Improving information management practices is a key focus for many organizations, across both the public and private sectors. This is being driven by a range of factors, including a need to improve the efficiency of business processes, the demands of compliance regulations and the desire to deliver new services. In many cases, ‘information management’ has meant deploying new technology solutions, such as content or document management systems, data warehousing or portal applications.

- Is Information management much more than just technology?
- Does Information management therefore encompasses: people, process, technology and content?
- Are Information management systems only successful if they are actually used by staff?
- Should Information management projects be targeted at the most urgent business needs and issues?
- Is extensive communication from the project team (and project sponsors) critical for a successful information management initiative?

Ex.4. Compile the text theses of your own. Give your reasons.

Unit 7. Functions of Risk Management

Although businesses always had to manage risk, risk management was not recognized as a separate function of business until the beginning of the 20th-century. Then, major corporations, such as railroads and steel companies, started hiring an insurance manager, who purchased all of the insurance for a specific company. However, the responsibilities of the insurance manager did not include the other forms of risk management: risk avoidance, reduction and retention. Only in the 1950s, did risk management start to appear in the printed literature, as it became increasingly recognized that managing risk was one of the most important functions of a business.

Risk management for most firms is probably the responsibility of at least several people. Generally, the larger the organization, the more likely they will have a department devoted to risk management. Additionally, many types of businesses will have specific employees whose duty is to manage particular types of risks. For instance, banks and other

financial institutions generally have one or more people whose only job is to ensure that the bank complies with the laws and regulations affecting it. Many types of risk, such as legal or financial risk, require specialized knowledge, so it is typical that these types of risk will be managed by people specialized in those specific areas.

Generally, a risk management program must involve other departments of the business, since they would be in a better position to address loss exposures in their department. For instance, the accounting program should maintain internal accounting controls to reduce employee fraud, embezzlement, and theft. The finance department can better assess the risk that it is taking with its investments and what effect it will have on the firm. The human resources department will generally have greater expertise in following the rules and regulations for employee benefit programs, pensions, safety programs, and in implementing policies for hiring, promotion, and dismissal. The production department must institute quality control to reduce product defects and improve safety in the workplace. The marketing department must ensure that products are labeled according to regulations and to provide the maximum benefit to the consumer and that the product is distributed safely to the consumer.

Risk management is used by small employers, corporations, nonprofit organizations, and federal, state, and local governments. Even people can benefit from a personal risk management program. Risk management is an important subdivision of most businesses, since the viability of any business will depend on how well it controls and finances risk.

Ex.1 Choose the correct answer.

1. Everyone who earns a salary must pay ... to the government.
a) rent b) duty c) tax
2. I need an ... to put up the money for the new equipment.
a) employee b) investor c) insurer
3. Although prices have fallen, overall ... is higher, so we can still make money.
a) distribution b) production c) consumption
- 4 . Until ... increases, we won't sell many of our most expensive products
a) demand b) request c) monopoly
5. The market for product A is alreadyWe need to diversify if we wish to increase our profits.
a) dissatisfied b) saturated c) taken out
6. The ... towards more colorful fashion is getting stronger. We need to develop new products.
a) trend b) direction c) path

7. After three years of ... , the country's economy is finally looking a lot healthier.
a) overdraft b) recession c) demise
8. We altered our final ... of yearly profits due to more accurate advertising and marketing costs.
a) forecast b) expectation c) wishes
9. The last project did not go well because there was no logical work ... structure.
a) breakdown b) break-out c) break
10. We'll help you manage all types of documents with equal...
a) facility b) easy c) simplification

Ex.2. Choose the correct form of the verb in the passive voice

1. As the business and security teams operate in separate silos, security as an afterthought.
a) have been applied b) is applied
2. It is imperative that security teams understand key business priorities and ensure that they into the planning process early.
a) was brought b) are brought
3. All workers in an organization must to utilize the capabilities of information systems as fully as possible.
a) be trained b) train
4. Orders much faster, making it possible for employees to service more customers in the same amount of time.
a) was processed b) are processed
5. Microsoft by Paul Allen and Bill Gates on April 4, 1975.
a) was founded b) were founded

Ex.3. Choose the correct alternative for each sentence.

1. WORK / JOB

- a) A large part of the we do involves using computers.
b) The company lost out on several because of the newspaper article.

2. PIECE / PEACE

- a) A ... was signed between the two countries.
b) The local network breaks the e-mail message into ... called 'packets'.

3. EQUIPMENT / FACILITY

- a) The company has invested heavily in new
b) The hotel's leisure include a large indoor pool, sauna and sun terrace.

4. ECONOMIC / ECONOMICAL

- a) Prices are rising and the number of jobs is falling. It's not just a business problem, it's a generalproblem.
- b) This car uses less petrol than the other one so this one is the more

Ex.4. Case-study.

Large businesses have big budgets for marketing and promotion and as a result, people gravitate towards buying their products.

What problems does this cause?

What could be done to encourage people to buy local products?

Ex.5. Compile the text theses of your own. Give your reasons.

Unit 8. Principles of Performance Management

Performance Management (PM) is management of employees, departments, and organizations to ensure that goals and objectives are being reached efficiently. Performance management involves defining what effective performance looks like, as developing the tools and procedures necessary to measure performance. When choosing a performance management tool, there's no one-size-fits-all solution. Different business sizes and types may need additional features, so it's important to consider your company's goals, needs, and industries.

Performance management involves the way managers evaluate employees, how employees evaluate their managers and fellow employees, and how individual workers evaluate themselves. The ultimate goal of performance management is to improve the quality of work in the most efficient manner possible. Performance management relies on the analysis of how an organization's employees have historically accomplished tasks in an effort to improve future performance. Effective managers seek to provide feedback to and receive feedback from employees continuously. This allows a manager to determine what motivates employees to work hard, evaluate what obstacles are making it difficult for employees to effectively do their jobs.

In some organizations, managers are expected to provide detailed instructions outlining how employees are to approach a specific task. This type of management approach is referred to as high power-distance. The opposite approach allows employees to act more independently in achieving a stated goal. Managers must recognize which approach works best according to the situation and organizational culture.

Globalization has presented companies with new opportunities for growth, but has also increased the complexities of managing the performance of a workforce coming from different cultures. Managers have to ensure that employees are governed according to a

company's policies, but must also ensure that cultural norms are taken into account. Managers must understand what drives employees to work effectively. While monetary compensation may be considered important in some cultures, others may consider empathy towards the employee's personal and familial wellbeing to be a greater motivator.

A talented and skilled workforce is the lifeblood of every organization. Companies spend over \$120 billion worldwide in order to find and attract top talent. But if organizations don't take the time to continuously develop that talent—which is their most valuable resource—then all the money and effort spent hiring is for naught. Companies must look closely at how they manage and measure employee performance, as well as the technology they use to do so.

Ex.1. Choose the correct answer.

1. If we had more ... to invest, we would build a new factory.
a) asset b) income c) capital
2. We had to ... some money to expand our business.
a) lend b) borrow c) give
3. We face tough ... , but our product has some important advantages
a) employment b) competition c) completion
4. Large organizations may have the structure with complex hierarchies and many layers of
a) management b) recruitment c) compensation
5. We will have a salary ... of 7% this year, just enough to keep up with inflation
a) increase b) decrease c) drop off
6. The director was accused of being ... in the way he ran the company.
a) inflexible b) inevitable c) inflatable
7. They have lowered the price of the product because the average customer ... it.
a) affords b) can't afford c) pays
8. This new software will provide us with the ... we need to help customers quickly.
a) tolls b) tools c) tails
9. A good IT project manager should know about every stage of the software development life cycle
a) proceeds b) percentage c) process

10 . We're investing money in areas where we think we can grow and be

a) profit b) profitable c) profitable

Ex.2. Complete the sentences with the words . There are two extra words:

a) trading b) securities c) headquartered d) development e) produce f) industry g) separated h) globalized i) income j) affiliates k) industrial l) cyberspace

1. Samsung Group is a South Korean multinational conglomerate in Samsung Town, Seoul.

2. Samsung was founded by Lee Byung-chul in 1938 as a company.

3. Over the next three decades, the group diversified into areas including food processing, textiles, insurance, and retail.

4. Samsung entered the electronics in the late 1960s and the construction and shipbuilding industries in the mid -1970s.

5. Following Lee's death in 1987, Samsung was into four business groups – Samsung Group, Shinsegae Group, CJ Group and Hansol Group.

6. Since 1990, Samsung has increasingly its activities.

7. Mobile phones and semiconductors have become its most important source of

8. Notable Samsung industrial include Samsung Electronics, Samsung Heavy Industries, Samsung Engineering, and Samsung C&T.

9. Samsung has a powerful influence on South Korea's economic , politics, media and culture.

10. Its affiliate companies around a fifth of South Korea's total exports.

Ex.3. Complete the sentences (1-6) with the most suitable prepositions (a-e):

1. I need an investor to put.....the money for the new equipment

a) by b) up c) in d) on e) over

2. IT equipment depreciates quickly so we amortize itthree years.

a) over b) at c) with d) in e) by

3. They weren't going to pay so I had to write itas a bad debt.

a) of b) up c) off d) down e) in

4. I deala lot of people in the company and with our customers.

a) -- b) in c) with d) at e) by

5. I didn't spend as much as expected and I wasbudget by \$12,000.

a) at b) in c) on d) with e) under

6. The competition was so fierce we were driventhe market.
a) off b) out c) into d) out off e) in

Ex.4. Case-study.

Getting promotion is one of the biggest drives for people to apply themselves and work hard in the modern work place.

Why do you think people are so driven to get promotion?

What other factors influence people to work hard?

Ex.5. Compile the text theses of your own. Give your reasons.

Unit 9. Change Management

Change management plays an important role in any organization since the task of managing change is not an easy one. When we say managing change we mean to say that making changes in a planned and systemic fashion. With reference to the IT projects we can say the change in the versions of a project and managing these versions properly. Changes in the organization or a project can be initiated from within the organization or externally.

Change management is done by many independent consultants who claim to be experts in these areas. These consultants manage the changes for their clients. They manage changes or help the client make the changes or take up the task themselves to make the changes that must be made. An area of change that needs attention is selected and certain models, methods, techniques and tools are used for making these changes that are necessary for the organization.

When there is a process in an organization it is not an easy task to make changes to this process immediately. Sometimes a single organization may have varied business entities and changes in an entity may be reflected in another entity. In such organizations changes are not so easy. There are different types of organizations which have many branches across the world with varied cultures. Implementing a change in such organizations is a task by itself.

The change process could also be considered as a problem solving situation. The change that is taking place could be the result of a problem that has occurred. You should know that a problem is a situation that requires some action to be taken positively to handle that situation. This positive action is known as problem solving. The change process could be problem solving for a particular situation. In this process there is a move from one to state to another so that the problem gets solved. The change process is leaving the current state and moving to the final state through some structured organized process.

Managing the changes in an organization requires a broad set of skills like political skills, analytical skills, people skills, system skills, and business skills. You should evaluate the financial and political impacts of the changes that can take place. The workflow has to be changed in such a manner to reflect the financial changes that are taking place. Operations and systems in the organization should be reconfigured in such a manner that you get the desired financial impact.

Hence change management plays an important role in an organization. This allows the organization to give a reactive or a proactive response to the changes that happen internally or externally. Knowing the change management and its process would help an organization and its processes to be stable.

Ex.1. Complete the sentences with a) a, b) an, c) the, d) no article

1. Bank of England,nation's largest bank, announced its earnings last week.
2. Severalmembers suggested a more cautious approach.
3. If we invest in.....advertising we'll be able to capture a bigger chunk of the market.
4. We haveresponsibility to our customers to make sure that our products are safe.
5. Your job is to ensure customer satisfaction.

Ex.2. Choose the correct answer.

1. A project which restores company's ... shows that mistakes were also being made by top management.
a) credibility b) creativity c) consultancy
2. We need to ... four new people for people for our office in Manchester.
a) join b) recruit c) resign
3. We value people who are highly ... and want to get on.
a) motivated b) graduated c) regulated
4. If you break the safety rules you can be ... immediately.
a) downsized b) dismissed c) delayed
5. My mother started with one shop and now she heads a huge business
a) empire b) country c) world

6. As innovators, we need to create new trends, not just ... on trends that already exist.
a) throw b) jump c) leap
7. Generally speaking, a good manager ... a smooth production process.
a) ensures b) makes sure c) is sure
8. We're investing money in areas where we think we can grow and be
a) profit b) profitable c) profitable
9. We haven't been very ... in promoting our products
a) action b) acting c) active
10. After you visualize and plan a project, you have to ... it.
a) implement b) imply c) implode

Ex.3. Compile the text theses of your own. Give your reasons.

Ex.4. Case-study.

Some people say that one of the most important areas for government funding should be building the economy, while others believe that education is more important.
Which do you believe is more important? Give reasons for your answer.

Unit 10. Innovation Lab

Deutsche Bank opened an innovation lab in New York. In so doing, it joined the latest trend among large international banks: seeing fintech companies with trendy accommodations in the so-called "Silicon Alley." Barclays opened Rise, an exposed-brick-high-ceilinged-big-windows-loft-space in the Flatiron District, in July 2015. BNP Paribas opened a similar space in its Manhattan office in September. And Accenture and Deloitte, the international consultancies to banks, have recently opened fintech innovation labs in New York, too. The banks want to bring in new ideas, technologies and ways of doing things. It wants to hire people from fintech startups, buy the inexperienced companies outright, or invest in them. The new lab, in the Fulton Center in lower Manhattan, will explore new technologies in areas like artificial intelligence, cloud computing and cyber security. It's the fourth lab Deutsche bank has launched in the past 18 months; the existing three are in Silicon Valley, London and Berlin.

The labs have already produced technology the bank has adopted. One example is software that helps credit risk analysts run scenarios faster and more efficiently. Another helps with network risk management. A third, which came out of the Berlin lab where Deutsche has its retail bank, improves the look and feel of a customer-facing application. The New York lab's mission is to connect the Big

Apple's fintech ecosystem to business units within the bank, which has 7,000 fulltime employees in the New York area.

"We always work in partnership with business," Hardwick, head of innovation at Deutsche Bank, said. "It's not our mandate to go out and find technologies for which there is no customer within the bank. If we haven't found a docking point within the bank for a technology, then we haven't done our job." The labs will likely skew toward capital markets businesses and investment banks given the amount of such activity in New York, she said.

All the Deutsche labs provide sandbox environments in which the bank can try out new technologies without risking any harm to their production systems. These are sometimes sandboxes provided by vendors like IBM and Microsoft, and sometimes internally developed, depending on the application and the types of data needed.

"When a startup brings us an interesting piece of technology, you can imagine that for very good reasons there are a lot of processes that have to be gone through before we can run it on our systems or introduce it to customers," Hardwick said. "To have the sandbox environment, which is offline from production systems, where they can demonstrate the potential of that technology, is really powerful."

Answer the following questions:

1. Where did Deutsche Bank open an innovation lab?
2. What are the other companies that have innovation labs in America?
3. What three technologies has the bank adopted?
4. How many employees does the bank have in New York are?
5. Why is the sandbox environment powerful?

Ex.1. Complete the sentences. There are two extra words:

*a) software b) distributed c) portfolio d) collaboration e) expanding
f) tools g) network h) licensed i) produced j) acquired k) developer
l) web*

1. Macromedia was an American graphics, multimedia and web development company originated in the 1992 and headquartered in San Francisco, California that produced such products as Flash and Dreamweaver.

2. As the Internet moved from a university research medium to a commercial, which was not formerly known to anyone, Macromedia began investing aggressively to web-enable its existing tools and develop new native web only products like Dreamweaver.
3. Macromedia Sun's Java Programming Language in October 1995.
4. By 2002 Macromedia more than 20 products and had 30 offices in 13 different countries.
5. In January 1995, Macromedia Altsys Corporation.
6. Altsys was the of the vector-drawing program FreeHand, which had been licensed by Aldus for marketing and sales.
7. With Macromedia's acquisition of Altsys, it received FreeHand thus its product line of multimedia graphics software to include illustration and design graphics software.
8. Macromedia renamed Splash to Macromedia Flash, and following the lead of Netscape, the Flash Player as a free browser plugin in order to quickly gain market share.
9. Web development company Allaire was acquired in 2001 and Macromedia added several popular server and Web developments tools to its, including ColdFusion, a web application server.
10. In 2003, Macromedia acquired the web conferencing company Presedia and continued to develop and enhance their Flash-based online and presentation product offering under the brand Breeze.

Ex.2. Choose the missing words.

a	b	c	d	e
technology	teams	science	responsibility	systems

1. IT managers monitor the organization's operational requirements, researches strategies and solutions.
2. Medium to large companies are also likely to have an IT manager.
3. IT managers have to take for budgets and for staff.
4. You need to be bright, communicative and be able to earn the trust of your
5. Many of IT managers don't have degrees in computing

Ex.3. Compile the text theses of your own. Give your reasons.

Ex. 4. Case-study.

The performance of staff can have a significant impact on the success of a company.

What can companies do to increase staff productivity?

Unit 11. Fog Computing

Fog computing, also known as fog networking or fogging, is a decentralized computing infrastructure in which data, compute, storage and applications are distributed in the most logical, efficient place between the data source and the cloud. Fog computing essentially extends cloud computing and services to the edge of the network, bringing the advantages and power of the cloud closer to where data is created and acted upon. The goal of fogging is to improve efficiency and reduce the amount of data transported to the cloud for processing, analysis and storage. This is often done to improve efficiency, though it may also be used for security and compliance reasons.

The metaphor fog comes from the meteorological term for a cloud close to the ground, just as fog concentrates on the edge of the network. The term is often associated with Cisco; the company's product line manager, Ginny Nichols, is believed to have coined term. "Cisco Fog Computing" is a registered name; fog computing is open to the community at large.

While edge devices and sensors are where data is generated and collected, they don't have the compute and storage resources to perform advanced analytics and machine-learning tasks. Though cloud servers have the power to do these, they are often too far away to process the data and respond in a timely manner. In addition, having all endpoints connecting to and sending raw data to the cloud over the internet can have privacy, security and legal implications, especially when dealing with sensitive data subject to regulations in different countries.

In a fog environment, the processing takes place in a data hub on a smart device, or in a smart router or gateway, thus reducing the amount of data sent to the cloud. It is important to note that fog networking complements - not replaces - cloud computing; fogging allows for short-term analytics at the edge, and the cloud performs resource-intensive, longer-term analytics.

Because cloud computing is not practical for many internet-of-things (IoT) applications, fog computing is often used. Its distributed approach addresses the needs of IoT and industrial IoT, as well as the huge amount of data smart sensors and IoT devices generate, which would be costly and time-consuming to send to the cloud for processing and analysis. Fog computing reduces the bandwidth needed and reduces the back-and-forth communication between sensors and the cloud, which can negatively affect IoT performance.

Answer the following questions:

1. What is fog computing?
2. What is the goal of fog computing?
3. What is the origin of the term?
4. How does fog computing work?
5. How can fog computing be used for Internet of Things (IoT)?

Ex.1. Choose the missing words.

a	b	c	d	e
perform	access	workstation	queries	databases

1. Originally, networks were used to provide terminal to another computer and to transfer in files between computers.
2. Today, networks carry e-mail, provide access to public and bulletin boards, and are beginning to be used for distributed systems.
3. Distributed computer systems are built using networked computers that cooperate to tasks.
4. The high-quality bit-mapped graphics screen of a personal computer or provides a good user interface.
5. Mainframe can handle large numbers of and return the results to the users.

Ex.2. Complete each sentence with a verb in the correct form: -ing or to:

1. Now financial institutions can afford money around the world in seconds.
a) transferring b) to transfer
2. At the microeconomic level businesses practice money more effectively.
a) investing b) to invest
3. Modern businesses plan more competitive using computer technologies.
a) becoming b) to become
4. Accountants hope costs and profits much faster.
a) calculating b) to calculate
5. Individuals keep on savings on many goods and services using price comparison websites.
a) making b) to make

Ex.3. Case-study.

A web browser is a software application which enables a user to display and interact with text, images, videos, music, and other information that could be on a website. Text and images on a web page can contain hyperlinks to other web pages at the same or different website. Web browsers allow a user to quickly and easily access information provided on many web pages at many websites by traversing these links. Web browsers format is HTML information for display.

- What is the usual file format of a web page?

- Are pages identified by means of a URL (uniform resource locator)?
- What is the most popular web browser?
- Which web browsers are better for certain tasks than others?
- What is the native browser on the iPhone?

Ex.4. Compile the text theses of your own. Give your reasons.

Unit 12. Computer Technology in Africa

Africa presents a unique cultural climate for the introduction of computer technology not only because of its diverse population, varied geography and multifaceted issues but also because of its singular challenges. Africa is composed of 53 countries many gaining independence since 1950 containing 75 unique ethnic groups and approximately 700 million people. The bare necessities of life include water, electricity, roads, education and a right to self-determination. Technology such as computers is considered by some to be important in obtaining such self-determination for Africa especially in the area of education.

South Africa has one of the largest and most successful introductions of computers to the residents in Africa. Funding for the project relied on donations and partnerships from private organizations with extensive volunteer help in accessing open-source software that is available from licensed vendors or free on the Internet. While the project has been plagued by slow Internet speeds, long lines of waiting users, hacking and budgets, the demand for more computers remains high. Residents have used Internet access to build their own businesses, to obtain jobs sometimes overseas, to create some unsanctioned small-scale ventures such as paying an educated user to write one's resume, to write letters, e-mail, play games, complete homework and do research. Older people, unemployed youth and school children have been the most prevalent users of the Internet.

An example of further difficulties surrounding introducing computers in Africa is found in the study of Mozambique one of the poorest nations of the world with 60 percent of its population below the poverty line. Despite their poverty, Mozambicans view their education and access to the Internet as only second to obtaining enough food to eat. However, in non-urban areas where better off residents might make 40 to 60 US dollars a month, access to the Internet could eat up half of their income so community-owned settings have been instituted with some unknown success.

In 2011, Samsung launched its Electronics Engineering Academy in South Africa, Kenya and Nigeria to open up "skilled, well-paying job opportunities" for recent high school graduates. The program is as part of Samsung's broader goal to develop 10,000 electronics engineers across Africa by 2017.

Answer the following questions:

1. Why does Africa present a unique cultural climate for the introduction of computer technology?
2. How have residents used Internet access?
3. How do Mozambicans view their education and access to the Internet?

Ex.1. Complete the sentences.

a) systems b) standards c) programs d) tasks e) availability f) responsible
g) microcomputers h) disk i) control j) environments

1. All computers do not use the same operating
2. Some operating systems are adopted as 'industry
3. Mainframe computers usually process several application concurrently, switching from one to the other.
4. In multi-user an operating system is required to control terminal operations on a shared access basis.
5. The operating system allocates to each terminal in turn.
6. An operating system is stored on and has to be booted into the internal memory.
7. Many function under the control of a disk operating system known as DOS.
8. Chief Technology Officers are for evaluating how new technology can help their organization.
9. Chief Technology Officers ensure the of data and network services by coordinating IT activities.
10. Distributed computer systems are built using networked computers that co-operate to perform

Ex.2. Complete each sentence with a verb in the correct form: -ing or to:

1. Nowadays, government economists enjoy computer programs in their economic affairs.
a) using b) to use
2. Clerks in banks learn money flow through online banking.
a) to manage b) managing
3. We decided our old computer.
a) selling b) to sell
4. Many young people can't stand expensive tablet PCs.
a) to buy b) buying
5. Smart economy seems business life cycle.

a) improving b) to improve

Ex.3. Case-study.

Doctors use diagnostic sonography or ultrasound to visualize organs and other internal structures of the human body. Scientist have now developed a computer model that can predict the sound transmission of improved designs for ultrasound instruments. The computer model is capable of processing large quantities of data and can be run on both a PC and a parallel supercomputer. What are major challenges in producing such models of computers? Give your reasons.

Ex.4. Compile the text theses of your own. Give your reasons.

Unit 13. Computers Help People Work More Creatively

The ability of tiny computing devices to control complex operations has producing consumer products. Tiny computers on a chip are used in medical equipment, home appliances, cars and toys. Workers use handheld computing devices to collect data at a customer site, to generate forms, to control inventory, and to serve as desktop organizers.

Not only is computing equipment getting smaller, it is getting more sophisticated. Computers are part of many machines and devices that once required continual human supervision and control. Today, computers in security systems result in safer environments, computers in cars improve energy efficiency, and computers in phones provide features such as call forwarding, call monitoring, and call answering.

These smart machines are designed to take over some of the basic tasks previously performed by people. They make life a little easier and a little more pleasant. Smart cards store vital information such as health records, drivers' licenses, bank balances, and so on. Cars with built in computers can be programmed to better meet individual needs. A smart house has a built-in monitoring system that can turn lights on and off, open and close windows, operate the oven, and more.

With small computing devices available for performing smart tasks like cooking dinner, programming the DVD recorder, and controlling the flow of information in an organization, people are able to spend more time doing what they do best - being creative.

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store vital information such as health records, drivers' licenses, bank balances, and so on. Cars with built in computers can be programmed to better meet individual needs. A smart house has a built-in monitoring system that can turn lights on and off, open and close windows, operate the oven, and more.

With small computing devices available for performing smart tasks like cooking dinner, programming the DVD recorder, and controlling the flow of information in an organization, people are able to spend more time doing what they do best - being creative. Computers can help people work more creatively. Multimedia systems are known for their educational and entertainment value. Multimedia combines text with sound, video, animation, and graphics, which greatly enhances the interaction between user and machine and can make information more interesting and appealing to people. Experts systems software enables computers to 'think' like experts.

Answer the following questions:

1. What are the possible applications of tiny computers on a chip?
2. Why do computers require continual human supervision and control?
3. What tasks can small computing devices accomplish?
4. How can computers help people work more creatively?

Ex.1. Choose the correct form of the verb in the passive voice to complete the sentences.

1. As the business and security teams operate in separate silos, security as an afterthought.
a) have been applied b) is applied
2. It is imperative that security teams understand key business priorities and ensure that they into the planning process early.
a) was brought b) are brought
3. All workers in an organization must to utilize the capabilities of information systems as fully as possible.
a) be trained b) train
4. Orders much faster, making it possible for employees to service more customers in the same amount of time.
a) was processed b) are processed
5. Microsoft by Paul Allen and Bill Gates on April 4, 1975.
a) was founded b) were founded

Ex.2. Complete each sentence with a verb in the correct form: -ing or to.

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2. Clerks in banks learn money flow through online banking.

- a) to manage b) managing
3. We decided our old computer.
a) selling b) to sell
4. Many young people can't stand expensive tablet PCs.
a) to buy b) buying
5. Smart economy seems business life cycle.
a) improving b) to improve

Ex.3. Case-study.

The interview process looks different for every company, and within a company there could be differences per position, level of the position, and per interviewer. For internships and side jobs you will often only have one interview. Two or three rounds of interviews are more likely for a job. Most interviewers will try to make you feel comfortable and relaxed, though there are some interviewers that will test your response by making you feel uncomfortable. Interview at a recruitment event: already in a short ten minute talk with a company representative at a recruitment event, you make an impression. This talk could be registered in the recruitment system and could have an influence on your application.

- What is a face-to-face interview?
- What is a telephone interview?
- Have you ever had a Skype interview?
- Why do some companies use assessment tests?
- Should you be prepared that you will be asked for your salary expectations during an interview?

Ex.4. Compile the text theses of your own. Give your reasons.

Active Vocabulary

benefit from – получить выгоду от

commit- совершать

consider- считать

critical part - критическая, важная часть

driver of organizational efficiency- ведущий организационной эффективности

enable- давать возможность, позволять

encompass- заключать в себе, охватывать

equipment-оборудование

executive-исполнитель

exposure- выдержка, подвергание

for compliance- на соответствие

for simplicity sake- для простоты

goal-цель

handle- справиться, управлять

highly skilled workforce - высококвалифицированная рабочая сила

installation-установка

meaningful-значимый

mentioned above- упомянутое выше

more meaningful categories - более значимые категории

obtain-получать

retail supply chain management- управление розничной цепочкой поставок

record retention policy - политика хранения записей

remote access- удаленный доступ

relevant-соответствующий

set up- настроить

solution-решение

PART IV. AI

Unit 1. Artificial Intelligence

Artificial intelligence (AI) is the intelligence exhibited by machines or software. It is also the name of the academic field of study which studies how to create computers and computer software that are capable of intelligent behavior. Major AI researchers and

textbooks define this field as "the study and design of intelligent agents", in which an intelligent agent is a system that perceives its environment and takes actions that maximize its chances of success. John McCarthy, who coined the term in 1955, defines it as "the science and engineering of making intelligent machines".

AI research is highly technical and specialized, and is deeply divided into subfields that often fail to communicate with each other. Some of the division is due to social and cultural factors: subfields have grown up around particular institutions and the work of individual researchers. AI research is also divided by several technical issues. Some subfields focus on the solution of specific problems. Others focus on one of several possible approaches or on the use of a particular tool or towards the accomplishment of particular applications.

The central problems of AI research include reasoning, knowledge, planning, learning, natural language processing (communication), perception and the ability to move and manipulate objects. General intelligence is still among the

field's long-term goals. Currently popular approaches include statistical methods, computational intelligence and traditional symbolic AI. There are a large number of tools used in AI, including versions of search and mathematical optimization, logic, methods based on probability and economics, and many others. The AI field is interdisciplinary, in which a number of sciences and professions converge, including computer science, mathematics, psychology, linguistics, philosophy and neuroscience, as well as other specialized fields such as artificial psychology.

Answer the following questions:

1. What is artificial intelligence?
2. What is AI research divided into?
3. What do the central problems of AI research include?
4. What tools are used in AI?
5. Why is the AI field interdisciplinary?

Ex.1. Put the words in the correct order to make up sentences.

1. growing, There, now, a tendency, is, multi-purpose, devices, which, ICT, is, as, known, convergence, for.
2. GPS, of, The, smartphones, technology, may, use, capability, assisted, GPS.
3. are, usually, Cloud, not, shared, resources, by, users, but, are, also, multiple, dynamically, reallocated, per, only, demand.
4. workers, of, robots, in, use, Many, today, the, do, jobs, that, are, especially, for, difficult, human.
5. mechanical, As, supermen, robots, be, may, called, upon, to, do, from, anything, moving, heavy, between, workstations, on, a, factory, floor, to, carrying, bags, of, cement, components.

Ex.2. Case-study.

Artificial intelligence today is properly known as narrow AI (or weak AI), in that it is designed to perform a narrow task (e.g. only facial recognition or only internet searches or only driving a car). However, the long-term goal of many researchers is to create general AI (AGI or strong AI). While narrow AI may outperform humans at whatever its specific task is, like playing chess or solving equations, AGI would outperform humans at nearly every cognitive task.

-How can AI be dangerous?

- People now control the planet, not because we're the strongest, fastest or biggest, but because we're the smartest. If we're no longer the smartest, are we assured to remain in control?

- How long will it take until machines greatly replace human-level intelligence?

- Will AI cause unemployment for humans?

- What could the benefits of Friendly AI be?

Ex.3. Compile the text theses of your own. Give your reasons.

Unit 2. Deep Mind Technologies

Deep Mind Technologies Limited is a British artificial intelligence company founded in September 2010. The company is based in London, but has research centres in California and Canada. Acquired by Google in 2014, the company has created a neural network that learns how to play video games in a fashion similar to that of humans, as well as a Neural Turing machine, or a neural network that may be able to access an external memory like a conventional Turing machine, resulting in a computer that mimics the short-term memory of the human brain.

The start-up was founded by Demis Hassabis, Shane Legg and Mustafa Suleyman in 2010. During one of the interviews, Demis Hassabis said that the start-up began working on artificial intelligence (AI) technology by teaching it how to play old games from the seventies and eighties, which are relatively primitive compared to the ones that are available today. AI was introduced to one game at a time, without any prior knowledge of its rules. After spending some time on learning the game, AI would eventually become an expert in it. The cognitive processes which the AI goes through are said to be very like those a human who had never seen the game would use to understand and attempt to master it. The goal of the founders is to create a general-purpose AI that can be useful and effective for almost anything.

On 26 January 2014, Google announced the company had acquired Deep Mind for \$500 million, that it had agreed to take over Deep Mind Technologies. After Google's

acquisition the company established an artificial intelligence ethics board. The ethics board for AI research remains a mystery.

Deep Mind Technologies' goal is to 'solve intelligence', which they are trying to achieve by combining the best techniques from machine learning and systems neuroscience to build powerful general-purpose learning algorithms. They are trying to formalize intelligence in order to not only implement it into machines, but also understand the human brain. According to some researchers, human-level machine intelligence can be achieved when a machine can learn to play a really wide range of games from perceptual stream input and output, and transfer understanding across games.

Answer the following questions:

1. What did Deep Mind Technologies Limited create?
2. Who began working on artificial intelligence technology?
3. What is Deep Mind Technologies' goal?

Ex.1. Match the words with the definitions.

1. digit	a. computer software and hardware that allows users to interact with text, graphics, sound, and video, each of which can be accessed from within any of the others.
2. access	b. a very small piece of silicon marked with electronic connections that is used in computers and other machines.
3. chip	c. the right or opportunity to have or use something.
4. enroll	d. officially register as a member of an institute or a student on a course.
5. firmware	e. to move information to your computer from another computer system on the Internet.
6. hypermedia	f. one of the written numbers from '0' to '9'.
7. download	g. a fixed form of software programmed into a read-only memory.
8. initialization	h. the practice of covertly recording and monitoring keystrokes made on a remote computer, typically using a dedicated software application or piece of implanted hardware.
9. justification	i. the process of moving data right or left so that the first or last character occurs in a predefined position.
10. keylogging	j. the format of sectors on the surface of a hard disk drive so that the operating system can access them and setting a starting position.

Ex.2. Complete the sentences.

a) prototype	b) iPad	c) content	d) typing	e) assistants	f) ports
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g) touchscreen h) market i) unit j) computer
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1. Alan Kay developed and described the concept of a personal for people of all ages.
2. A tablet, is a mobile computer with a display, circuitry and battery in a single
3. Android was the first of today's dominating platforms for tablet computers to reach the
4. Tablets come equipped with sensors, including cameras, a microphone, an accelerometer and a
5. Tablets may include physical buttons and
6. Tablets are typically larger than smart phones or personal digital measured diagonally.
7. Tablets usually feature on-screen, pop-up virtual keyboards for
8. People use tablets mainly for viewing published such as video and news.
9. The top-selling line of devices was Apple's with 100 million sold between its release in 2010.
10. In 2000 Microsoft used the term Tablet PC to describe a handheld device.

Ex.3. Case-study.

Robots have replaced large numbers of production line workers in the manufacturing industry. What service industries also cut jobs when automated systems were incorporated?

Ex.4. Compile the text theses of your own. Give your reasons.

Unit 3. Robotics as a Branch of Technology

1. A robot is a mechanical or virtual artificial agent, usually an electro-mechanical machine that is guided by a computer program or electronic circuitry. By mimicking a lifelike appearance or automating movements, a robot may convey a sense of intelligence or thought of its own. Robotics is the branch of technology that deals with the design, construction, operation, and application of robots, as well as computer systems for their control, sensory feedback, and information processing. These technologies deal with automated machines that can take the place of humans in dangerous environments or manufacturing processes, or resemble humans in appearance, behavior, and cognition.

2. Many of the robots in use today do jobs that are especially difficult for human workers. These are the types of jobs that require great strength or pose danger. For example, robots are particularly useful in the auto manufacturing industry where parts of automobiles must be welded together. A welding tool used by a human worker weighs about 100 pounds or more and is difficult to handle. As mechanical supermen, robots may

be called upon to do anything from moving heavy components between workstations on a factory floor to carrying bags of cement.

3. Robots shine at installing chips in printed circuit boards because of a capability that robots have that people don't. A robot once properly programmed, will not put a chip in the wrong place. This automatic accuracy is particularly valuable in this kind of industry because locating and fixing mistakes is costly. Earlier robots were usually blind and deaf but newer types of robots are fitted with video cameras and other sensing devices that can detect heat, texture, size, and sound. These robots are used in space projects, nuclear reactor stations, and underwater exploration research.

4. In the meantime, the robotics revolution is already beginning to change the kind of work that people do. The boring and dangerous jobs are now assumed by robots. The possibilities of robot autonomy and potential repercussions have been addressed in fiction and may be a realistic concern in the future.

Range of Robotic Applications

Many of the robots in use today do jobs that are especially difficult for human workers. These are the types of jobs that require great strength or pose danger. For example, robots are particularly useful in the auto manufacturing industry where parts of automobiles must be welded together. A welding tool used by a human worker weighs about 100 pounds or more and is difficult to handle. As mechanical supermen, robots may be called upon to do anything from moving heavy components between workstations on a factory floor to carrying bags of cement.

Spray painting is another task suited to robots because robots do not need to breathe. Unlike human painters, they are unaffected by the poisonous fumes. Robots are better at this task, not because they are faster or cheaper than humans, but because they work in a place where humans cannot.

Third in the list of useful jobs for robots is the assembly of electronic parts. Robots shine at installing chips in printed circuit boards because of a capability that robots have that people don't. A robot once properly programmed, will not put a chip in the wrong place. This automatic accuracy is particularly valuable in this kind of industry because locating and fixing mistakes is costly.

Earlier robots were usually blind and deaf but newer types of robots are fitted with video cameras and other sensing devices that can detect heat, texture, size, and sound. These robots are used in space projects, nuclear reactor stations, and underwater exploration research.

Decide whether the following statements are a) true, b) false or c) information is not available in the text:

1. In a few years more and more humans will be required for tasks that machines cannot do.
2. Many of the robots in use today do jobs that are easy for human workers.
3. The boring and dangerous jobs are now assumed by robots.

Ex.1. Complete the sentences. There are two extra words:

*a) incorporated b) retail c) corporation d) product e) manufacturer f) smart
g) capitalization h) successful i) bought j) permanent k) instilled l) computer*

1. Apple Inc. is a multinational that creates consumer electronics, personal computers, servers, and computer software, and is a digital distributor of media content.
2. The company also has a chain of stores known as Apple Stores.
3. Apple's core lines are the iPhone smart phone, iPad tablet computer, iPod portable media players, and Macintosh computer line.
4. Founders Steve Jobs and Steve Wozniak created Apple Computer on April 1, 1976, and the company on January 3, 1977, in Cupertino, California.
5. For more than three decades, Apple Computer was predominantly a of personal computers, including the Apple II, Macintosh, and Power Mac lines, but it faced rocky sales and low market share during the 1990s.
6. Jobs, who had been ousted from the company in 1985, returned to Apple in 1996 after his company NeXT was by Apple.
7. The following year he became the company's interim CEO, which later became
8. Jobs subsequently a new corporate philosophy of recognizable products and simple design, starting with the original iMac in 1998.
9. With the introduction of the iPod music player in 2001 and iTunes Music Store in 2003, Apple established itself as a leader in the consumer electronics and media sales industries.
10. The company is now also known for its iOS range of phone, media player, and tablet computer products that began with the iPhone, followed by the iPod Touch and then iPad.

Ex.2. Make up sentences.

1. Research on sensing components and software led by Microsoft provide	a. to compute trajectories avoiding collisions with human.
2. A speech recognition system is used	b. people are more uncertain, anticipate less social presence, and have less liking when thinking about interacting with robots.
3. Humanoid robots or even 2 armed robots that can have up to 40 degrees of freedom are unsuited	c. a rather young area of interest, there is active development and research in many areas.

4. Lower-dimensional robots can use potential field method	d. decreased trust toward some robots that closely, but imperfectly, resemble humans.
5. Humans exhibit negative social and emotional responses as well as	e. to interpret human desires or commands.
6. It has been shown that	f. when a robot has no particular use, its presence becomes annoying.
7. Research demonstrates that during initial interactions,	g. better collaborate.
8. A large body of work in the field of human-robot interaction has looked at how humans and robots may better collaborate.	h. for dynamic environments with today's technology.
9. Application-oriented research is used to help bring current robotics technologies	i. to bear against problems that exist in today's society.
10. While human-robot interaction is still	j. useful results for extracting the human kinematics.

Ex.3. Case-study.

A domestic robot is a type of service robot, an autonomous robot that is used for basic household chores. While most domestic robots are simplistic, some are connected to Wi-Fi home networks or smart environments and are autonomous to a high degree. Typically, a robot is endowed with some artificial intelligence so that it can react to it may encounter.

Ex.4. Compile the text theses of your own. Give your reasons.

Unit 4. Human Computer Interaction (HCI)

Human-computer interaction (HCI) is an area of research and practice that emerged in the early 1980s, initially as a specialty area in computer science embracing cognitive science and human factors engineering. HCI has expanded rapidly and steadily for three decades, attracting professionals from many other disciplines and incorporating diverse concepts and approaches. To a considerable extent, HCI now aggregates a collection of semi-autonomous fields of research and practice in human-centered informatics.

Until the late 1970s, the only humans who interacted with computers were information technology professionals. This changed with the emergence of personal computing in the later 1970s. Personal computing, including both personal software (productivity applications, such as text editors and spreadsheets, and interactive computer

games) and personal computer platforms (operating systems, programming languages, and hardware), made everyone in the world a potential computer user, and vividly highlighted the shortages of computers with respect to usability for those who wanted to use computers as tools. The original technical focus of HCI was and is the concept of usability. This concept was originally articulated somewhat naively in the slogan "easy to learn, easy to use".

Although the original academic home for HCI was computer science the field has constantly diversified and outgrown all boundaries. It quickly expanded to encompass visualization, information systems, collaborative systems, the system development process, and many areas of design. HCI is taught now in many departments/faculties that address information technology, including psychology, design, communication studies, cognitive science, information science, science and technology studies, geographical sciences, management information systems, and industrial, manufacturing, and systems engineering.

The second sense in which HCI moved beyond the desktop was through the growing influence of the Internet on computing and on society. Starting in the mid- 1980s, email emerged as one of the most important HCI applications, but ironically, email made computers and networks into communication channels; people were not interacting with computers, they were interacting with other people through computers. Tools and applications to support collaborative activity now include instant messaging, wikis, blogs, online forums, social networking, social bookmarking and tagging services, media spaces and other collaborative workspaces and a wide variety of online groups and communities. New mechanisms for collective activity have emerged including online auctions and crowd sourcing. This area of HCI, now often called social computing, is one of the most rapidly developing.

Answer the following questions:

1. What is HCI?
2. Where did HCI come from?
3. What is the original technical focus of HCI?
4. Where is HCI taught now?
5. What are the tools of social computing?

Ex.1. Choose the correct option to complete the sentences.

1. A smart city program to create attractive, participative, innovative and resilient urban environment encouraging creative solutions.
a) have been aiming b) aims c) had aimed
2. A smart city ICTs into urban management and planning.
a) have incorporated b) incorporates c) are incorporating
3. Scientists to ease the 'creep' factor in rescue robots, hoping to reduce anxiety.

- a) are working b) had been working c) has been working
4. Researchers ways to make rescue robots less 'creepy' and more user-friendly.
- a) had explored b) had been exploring c) are exploring
5. Everyone machines don't have feelings.
- a) have known b) know c) knows
6. Murphy much of his research career to studying the ways in which humans respond socially to technology.
- a) have been devoting b) had been devoting c) has devoted
7. He that people unconsciously use social rules when interacting with computers.
- a) have been founding b) found c) find
8. Rescue robots as a trapped disaster victim's lifeline for many years.
- a) have been serving b) has been serving c) had been serving

Ex.2. Case-study.

Many of the robots in use today do jobs that are especially difficult for human workers. These are the types of jobs that require great strength or pose danger. Where are robots particularly useful? What jobs do robots perform better than humans?

Ex.3. Compile the text theses of your own. Give your reasons.

Unit 5. Networking and Quality of Life

Information systems have a great influence over society. These systems have quickened the pace of daily activities, affected the structure of organizations, changed the type of products bought, and influenced the nature of work. Information and knowledge have become vital economic resources. Intensive industry innovation and academic research continually develop new opportunities. Today even the smallest firms, as well as many households throughout the world, own or lease computers. Individuals may own multiple computers in the form of smartphones and other portable devices. Large organizations typically employ distributed computer systems, from powerful parallel-processing servers located in data centers to personal computers and mobile devices, integrated into the organizational information systems.

The Internet is a network of networks, connecting billions of computers located on every continent. Through networking, users gain access to information resources, such as large databases, and to other individuals, such as coworkers, clients, or people who share their professional or private interests. Internet-type services can be provided within an organization and for its exclusive use by various intranets that are accessible through a browser. For example, an intranet may be deployed as an access portal to a shared corporate document base. To connect with business partners over the Internet in a private

and secure manner, extranets are established as so-called virtual private networks (VPNs) by encrypting the messages.

Quality of life is the general well-being of individuals and societies. It has a wide range of contexts, including the fields of international development, healthcare, politics and employment. Many millions of people enjoy a quality of life today that previous generations could not have dreamed of. Home ownership, private cars and holidays are now standard for most families in industrialized countries. And yet at the same time, billions of people in other countries live without even clean drinking water. How can this be? The answer is that the fortunate few live in countries with sustained economic growth. Economic growth has the indirect potential to alleviate poverty, as a result of a simultaneous increase in employment opportunities and increased labor productivity.

However, employment is no guarantee of escaping poverty. The International Labour Organization (ILO) estimates that as many as 40% of workers are poor, not earning enough to keep their families above the \$2 a day poverty line. For instance, in India most of the chronically poor are wage earners in formal employment, because their jobs are insecure and low paid and offer no chance to accumulate wealth to avoid risks. Other countries found bigger benefits from focusing more on productivity improvement than on low-skilled work. Increases in employment without increases in productivity lead to a rise in the number of ‘working poor’, which is why some experts are now promoting the creation of ‘quality’ and not ‘quantity’ in labor market policies.

Answer the following questions:

1. How do Information systems have a great influence over society?
2. What is The Internet?
3. What is the intranet?
4. What does the quality of life depend on?
5. How do Information systems influence the economic growth?
6. How do Information systems influence employment?

Ex.1. Match the words with the definitions.

1. fallback	a. a domain characterized by the use of electronics and the electromagnetic spectrum to store, modify, and exchange data via networked systems and associated physical infrastructures.
2. cell	b. a small square in a pattern of squares on a computer spreadsheet for writing numbers or words in.
3. cyberspace	c. the system, electronic or manual, which is substituted for the computer system in case of breakdown.
4. garble	d. a measure of the realism of a model or simulation.

5. wireless portal	e. a sequence of packets from a source computer to a destination.
6. buffer	f. a computing hardware- or software-based system that operates without the direct intervention of humans or other agents.
7. fidelity	g. a Web site that supports a user with a smartphone or alphanumeric pager.
8. wildcard	h. a symbol that stands for one or more unspecified characters, used especially in searching text and in selecting multiple files or directories.
9. traffic	i. to alter a message intentionally or unintentionally so that it is difficult to understand.
10. intelligent agent	k. a temporary storage area, usually in RAM.

Ex.2. Complete the sentences.

a) systems b) standards c) programs d) tasks e) availability f) responsible g) microcomputers h) disk i) control j) environments

1. All computers do not use the same operating
2. Some operating systems are adopted as ‘industry’.
3. Mainframe computers usually process several application concurrently, switching from one to the other.
4. In multi-user an operating system is required to control terminal operations on a shared access basis.
5. The operating system allocates to each terminal in turn.
6. An operating system is stored on and has to be booted into the internal memory.
7. Many function under the control of a disk operating system known as DOS.
8. Chief Technology Officers are for evaluating how new technology can help their organization.
9. Chief Technology Officers ensure the of data and network services by coordinating IT activities.
10. Distributed computer systems are built using networked computers that co-operate to perform

Ex.3. Case-study.

The vacancies that are posted online are only the top of the iceberg. There are many invisible vacancies, which you can only find via networking, recruitment agencies, job fairs, direct contact with a company. For the vacancies that are posted online, you need to make use of the right key words in order to find them.

How can you make a good first impression with your CV and cover letter?

- Will you study the company’s web site?
- Can a cover letter be called a motivation letter?

- Do you need to personalize your letter and tailor it to the vacancy as much as possible?
- How should you structure your Curriculum Vitae?

Ex.4. Compile the text theses of your own. Give your reasons.

Unit 6. Technological Revolution and Job Creation

Technological revolution is a relatively short period in history when one technology is replaced by another technology or by the set of technologies. As Nick Bostrom, a Swedish philosopher at the University of Oxford, wrote: “We might define a technological revolution as a dramatic change brought about relatively quickly by the introduction of some new technology.” It is an era of an accelerated technological progress characterized not only by new innovations but also their application and diffusion. A difference between technological revolution and technological change is not clearly defined. The technological change we could see as an introduction of an individual new technology, while the technological revolution as a period in which more new technologies are adopted at the almost same time. These new technologies or technological changes are usually interconnected.

A new technological revolution should increase a productivity of work, efficiency, etc. It may involve not only material changes but also changes in management, learning, social interactions, financing, methods of research etc. It is not limited strictly to technical aspects. Technological revolution rewrites the material conditions of human existence and also reshape culture, society and even human nature. It can play a role of a trigger of a chain of various and unpredictable changes.

The consequences of a technological revolution are not exclusively positive -for example, it can have negative environmental impact and cause a temporal unemployment (so called technological unemployment). The concept of technological revolution is based on the idea that technological progress is not linear but undulatory.

Technology and Job Creation

The battle between man and machines goes back centuries. Are they taking our jobs? Or are they merely easing our workload? A study by economists at the consultancy Deloitte seeks to shed new light on the relationship between jobs and the rise of technology. Their conclusion is cheerful: rather than destroying jobs, technology has been a “great job-creating machine”. Findings by Deloitte such as a fourfold rise in bar staff since the 1950s

or a surge in the number of hairdressers this century suggest to the authors that technology has increased spending power, therefore creating new demand and new jobs.

In the developing world, the pace of change may be slower than many would like but, nonetheless, there are marked examples of technology's role in raising incomes and driving employment opportunities. It's not just the supply chain and information-based jobs spawned by technological innovation that create jobs in less developed countries.

In many cases, it's the technology firms themselves that need trained IT programmers and other professionals to fill knowledge gaps and keep up with the demands of the rapidly growing economy.

Answer the following questions:

1. What is Technological revolution?
2. How is the era of an accelerated technological progress characterized?
3. What are the advantages of a technological revolution?
4. What are the disadvantages of a technological revolution?
5. Do you agree that machines take our jobs?

Ex.1. Choose missing words.

a) based b) stimulates c) sold d) is

1. Alpha Go technology was on the reinforcement deep learning approach.
2. Digitalization economic growth.
3. Ernst & Young (EY) a multinational professional services firm headquartered in London.
4. In March 2010, Newegg 300 counterfeit Intel Core i7-920 CPUs.

Ex.2. Choose the correct option to complete the sentences.

1. Digital networking and communication infrastructures a global platform over which people and organizations devise strategies, interact, communicate, collaborate and search for information.
a) has been providing b) provide c) provides
2. Governments in infrastructure.
a) are investing b) has been investing c) had been investing
3. Digital technology in the form of the Personal Computer and the Internet work, education, government, leisure and entertainment.
a) have already transformed b) has already transformed c) had already transformed
4. The emergence of new digital infrastructures the next radical shift in digital technology.
a) have been heralding b) heralds c) herald
5. The widespread adoption of handheld computers, mobile phones, digital cameras, satellite navigation and embedded sensors the beginning of a shift towards a world of ubiquitous computing.
a) are marking b) mark c) marks

6. Ubiquitous computing a key engine of innovation for our future digital economy.
a) have been representing b) represent c) represents
7. Information technology a great impact on markets, organization of firms, and methods of innovation.
a) are having b) is having c) has
8. Business firms and other organizations on information systems to carry out and manage their operations, interact with their customers and suppliers, and compete in the marketplace.
a) has been relying b) relies c) rely

Ex.3 Case-study.

There is an increasing demand from companies for graduates with a deep knowledge and understanding of the strategic value of information: the career prospects for business information management students today are excellent.

- -What skills and competencies do you need to get a job in business information management?
- What work environment would you like to have?
 - a multinational
 - a small or medium sized company
 - a governmental institution
 - a start-up
 - self - employment
- How can you tell the whole world you are looking for a job?
- How can skills like language or IT tool be developed?

Ex.4. Compile the text theses of your own. Give your reasons.

Unit 7. Nanotech

Nanotechnology or nanotech, the study of the controlling of matter on an atomic and molecular scale, has brought about a revolution in the field of science and technology. Nanotech has the potential to create many new materials and devices with a vast range of applications, such as in medicine, electronics and energy production. Designers have taken a leaf from nanotech and have created gadgets that are worth appreciation.

Taking the most out of a gadget used in day-to-day life, Uzbek designer Donnie Mamanov has come up with an innovative touch-phone that features dynamic nano technology to provide a functional platform to next-gen users. Featuring a semi rounded shape with glossy metallic finish, the concept phone measures 160 mm in length and 60mm in width, with only 7 mm thickness, presenting a slim and sleek device for the geeks. Morph is a concept that demonstrates how future mobile devices might be stretchable and flexible, allowing the user to transform their mobile device into radically

different shapes. So basically you can change it in to a circle, a sphere and maybe even a cone to put your ice-cream in.

The Nanobot was developed within the scope of the concept-movie project 'Fluxion' for Michael Bamber. In his science fiction vision the Nanobots appear for the first time in the middle of the 21st century and are used in the medical area and in the armed forces.

Introducing the new generation of tea infusers, Mexican designer Emma Moreno has come up with an innovative infuser entitled the 'Duo' that uses nanotechnology for heating, giving an entirely new meaning to the traditional way of making tea. The new infuser is simple to use. All you need to do is fill it up, turn it on and choose the heating level, and then put it into your cup where it heats up as soon as it gets in touch with hot water.

Designed as a part of 'La Fin Du Design' Exhibition, the 'Sense' is a wireless device that allows consumers to have a closer approach with their favorite web sites, movies and games, creating a strong sensitive and more emotional connection between users and experiences.

Designed by Hyun-Joong Kim and Kwang-Seok Jeong, the SIG or 'Self-Energy Converting Sunglasses' is the latest innovative device for powering your gadgets. The multifunctional sunglasses come with dye solar cells, used with nanotechnology, lenses that turns sun rays into electrical energy, which is good enough to power all sort of small gadgets.

Decide whether the following statements are true, false, or information is not available: a) T (true), b) F (false), c) NA (not available)

1. Nanotechnology has brought about a revolution in the field of science and technology.
2. The Nanobots appear for the first time in the middle of the 20th century and are used in the medical area and in the armed forces.
3. The Journal of Nanotechnology is an Open Access journal that reports original research in all areas related to the science and technology of nanostructured materials.

Ex.1. Choose the correct form of the verb in the passive voice to complete the sentences.

1. Digital economy as the branch of economics studying zero marginal cost intangible goods over the Internet.
a) are defined b) has been defined
2. Various attempts at categorizing the size of the impact on traditional sectors
a) was made b) have been made
3. Digital goods, such as electronic books and software, and online services, such as auctions and social networking, with information systems.
a) are delivered b) has been delivered

4. As the business and security teams operate in separate silos, security as an afterthought.

a) were applied b) is applied

5. It is imperative that security teams understand key business priorities and ensure that they into the planning process early.

a) was brought b) are brought

Ex.2. Complete the sentences.

a) systems b) computers c) equipment d) features e) creative f) needs
g) windows h) supervision i) information j) life

1. Computing is getting smaller and more sophisticated.

2. Computers in phones provide such as call forwarding, call monitoring, and call answering.

3. Smart machines make a little easier and a little more pleasant.

4. With small computing devices people are able to spend more time doing what they do best – being

5. Multimedia are known for their educational and entertainment value.

6. Experts systems software enables to ‘think’ like experts.

7. Cars with built in computers can be programmed to better meet individual

8. A smart house has a built-in monitoring system that can turn lights on and off, open and close , operate the oven, and more.

9. Computers are part of many machines and devices that once required continual human and control.

10. Smart cards store vital such as health records, drivers’ licenses, bank balances, and so on.

Ex.3. Compile the text theses of your own. Give your reasons.

Active Vocabulary

academic -научный

announce-объявлять

acquire-приобретать

branch –отрасль. ветвь

behavior-поведение

cognitive science

diverse - разнообразный

editor- редактор

encompass- охватывать

existence- существование

exhibit- проявлять

lenses- оптические линзы

perceptual- познавательный,

simultaneous – одновременный

PART V. ICT IN BUSINESS

Unit 1. Digital Economy

A relatively new term is gaining steam as dominant technology trends join into an entity that is larger than even the Internet: the digital economy. Basically, it is what it sounds like it is: an economy based on digital components. But technology moves so quickly that the term may already be somewhat outdated. The digital economy and the traditional economy are merging so successfully that it can be difficult to see where they separate. And that's a good thing. One of the inherent benefits of the digital economy is that walls come down, and options become endless. If a technology can accomplish a goal, in other words, it will be accomplished. Let's take a look at the technology trends that make up the digital economy.

Key to the growth of the digital economy is Big Data, with which companies combine unstructured and structured data, in real time, in order to gather business insights. That's the ideal, anyway. IT professionals, with and without training in data analysis or data science, alongside their peers in other parts of the business, are tasked with identifying the data sets that are available, what new insight could be learned from them, and how to quickly extract and apply those insights to improve products, sales and markets. Right now, the use of machine learning tools helps humans perform complex analysis at the speeds the business requires, and even allows components of platforms to manage themselves for maximum performance. It's predicted that machines will soon truly learn and, with that artificial intelligence, program each other.

Discussions of the Internet of Things (IoT) involve huge numbers. Suffice it to say that we are well on our way to having hundreds of billions of connected machines, devices, sensors and vehicles sharing data directly with one another, without human involvement. One of the most crucial aspects of the digital economy, the Internet of

Things is creating new tangible and data products, new data analysis jobs, and new security threats that will have to be dealt with on the fly.

While ecommerce may come to mind first when we hear the term "digital economy," because of the immense processing demands that it can put on systems that is not the only major impact it is having. Those companies that make use of multiple communication and troubleshooting channels in order to perfect ordering, tracking, upgrading/downgrading services and more will survive.

Digitalization has fundamentally changed the market conditions of the German economy. More than every second company is being compelled to change its business model as the result of digitalization. 70 per cent of companies consider digitalization to be a tremendous challenge. As a result, the digital shift ranks alongside the shortage of skilled workers as a major challenge facing companies, far ahead of other internal and external challenges such as intense competition or strict terms for financing. This was determined by a representative survey of 505 managing directors and executive board members of companies with 20 or more employees commissioned by the digital association Bitkom. 'Mastering the digital shift is the most important challenge facing today's management,' explained Bitkom President Prof. Dieter Kempf.

Business models are changing as the result of digitalization. Companies must adapt or they will be driven out of their market sooner or later. Overall, a clear majority considered the digital shift to be a positive development. 86 per cent of the top managers surveyed considered digitalization to be more of an opportunity than a risk for the company. 10 per cent viewed it more as a risk and only 4 per cent believed that digitalization has no influence on their company.

In the 'digital economy', digitalization concerns all industries and permeates all areas of a company from product development and sales up to and including customer service. It is based on technologies like cloud computing or big data, high-end terminals from tablets up to and including wearables, and increasingly fast fixed-line and mobile data networks. As a result, it permits further networking of devices, machines and vehicles.

According to the results of the survey, nearly three quarters of the managers and executive board members surveyed are taking an open-minded approach to the possibilities of digitalization. One fifth has a neutral stance and 7 per cent view it as negative. A particularly large number of managing directors of small companies with 20 to 49 employees view the digital revolution critically.

Answer the following questions:

1. What is digital economy?
2. What is one of the benefits of the digital economy?
3. What is the key growth of the digital economy?

4. What does Internet of Things (IoT) create?
5. What is the concept of Ecommerce?
6. How many percent of companies consider digitalization to be a tremendous challenge?
7. Why are business models changing?
8. What is digitalization based on?

Ex.1. Make up sentences.

1. Computers and microchips have become	a. in nanometers.
2. Why is a computer called	b. tiny microprocessors with nanotransistors.
3. Computers speed up	c. very popular?
4. Nano devices are measured	d. over a home area network.
5. All home devices will be connected	e. a personal communicator?
6. Apart from computers, what other devices	f. use microchips?
7. Chip makers will make	g. computer systems to operate?
8. Which two components allow	h. financial calculations.
9. Why are video games	i. produce photo-realistic images.
10. Gesture recognition systems	j. part of our everyday lives.

Ex.2. Fill in the gaps with the following words.

vehicles, considered, executive, competition, digitalization, approach, wearables, shortage, customer, facing, concerns, fundamentally, shift, be driven out of, permits, survey

Digitalization has (1)_____ changed the market conditions of the German economy. As a result, the digital (2)_____ ranks alongside the (3)_____ of skilled workers as a major challenge (4)_____ companies, far ahead of other internal and external challenges such as intense (5)_____ or strict terms for financing.

Business models are changing as the result of (6)_____. Companies must adapt or they will (7)_____ their market sooner or later. Overall, a clear majority (8)_____ the digital shift to be a positive development.

In the 'digital economy', digitalization (9)_____ all industries and permeates all areas of a company from product development and sales up to and including (10)_____ service. It is based on technologies like cloud computing or big data, high-end terminals from tablets up to and including (11)_____, and increasingly fast fixed-line and mobile data networks. As a result, it (12)_____ further networking of devices, machines and (13) _____.

According to the results of the (14)_____, nearly three quarters of the managers and (15)_____ board members surveyed are taking an open-minded (16)_____ to the possibilities of digitalization.

Ex.3. Case-study.

Airline pilots use computers to help them control the plane. For example, monitors display data about fuel consumption and weather conditions. How are computers used in airport control towers?

ICT plays a key role in business today. In fact, its use is now very widespread. Can you explain why it is difficult to succeed without it?

Ex.4. Compile the text theses of your own. Give your reasons.

Unit 2. ICT Used in Business

1. Information and Communications Technology (ICT) is an extended term for information technology (IT) which stresses the role of unified communications and the integration of telecommunications (telephone lines and wireless signals), computers as well as necessary enterprise software, middleware, storage, and audio-visual systems, which enable users to access, store, transmit, and manipulate information. The term ICT is also used to refer to the convergence of audio-visual and telephone networks with computer networks through a single cabling or link system. The broadness of ICT covers any product that will store, retrieve, manipulate, transmit or receive information electronically in a digital form, e.g. personal computers, digital television, email, robots.

2. Information and communications technology has a number of applications in business, including decision-making, spreading messages to employees, record-keeping and reliable communication. Many corporations employ ICT because they believe it provides benefits in terms of production, quality, lowering expenses and communicating. However, the implementation and adaptation to certain new types of technology can also come with drawbacks. ICT covers a wide spectrum of specific tools

available for a business to use. These tools include Internet networks, e-mail systems, videoconferencing and smart technology, such as phones and tablets. ICT is utilized in a variety of different industries for different purposes.

3. ICT is used primarily to speed up the communications networks in a corporation in addition to a variety of other activities. This makes it an integral part of the decision-making process for many different corporate entities. Companies using this technology have access to efficient and reliable record-keeping tools. It also allows for the efficient and selective spreading of messages between different groups of employees. In some cases, ICT even allows companies to condense multiple jobs into one. In this way, ICT technology helps reduce labor costs in certain industries.

Decide whether the following statements are a) true, b) false or c) information is not available in the text:

1. The broadness of ICT covers any product that will store, retrieve, manipulate, transmit or receive information electronically in a digital form.
2. Many corporations don't employ ICT because they don't believe it provides benefits in terms of production, quality, lowering expenses and communicating.
3. ICT even allows companies to make huge profits.

Ex.1. Fill in the gaps with the following words.

reliable, entities, applications, decision-making, enterprise, broadness, utilized, extended, spreading, unified, enable, retrieve, in addition

Information and Communications Technology (ICT) is an (1)_____ term for information technology (IT) which stresses the role of (2) **communications** and the integration of telecommunications (telephone lines and wireless signals), computers as well as necessary (3)_____ software, middleware, storage, and audio-visual systems, which (4)_____ users to access, store, transmit, and manipulate information.

The (5)_____ of ICT covers any product that will store, (6)_____, manipulate, transmit or receive information electronically in a digital form, e.g. personal computers, digital television, email, robots.

Information and communications technology has a number of (7)_____ in business, including decision-making, (8)_____ messages to employees, record-keeping and (9)_____ communication. ICT is (10)_____ in a variety of different industries for different purposes.

ICT is used primarily to speed up the communications networks in a corporation (11)_____ to a variety of other activities. This makes it an integral part of the (12)_____ process for many different corporate (13)_____.

Ex.2. Say what you've learned from the text about:

- Information and Communications Technology (ICT);
- information technology (IT);
- applications of Information and communications technology;

Ex. 3. Using your own ideas, say what do you think about:

- why many corporations employ ICT.

Ex.4. Discuss (in group or in pairs) your views on:

- the implementation and adaptation to certain new types of technology can also come with drawbacks.

Ex.5. Discuss the following thesis:

The advantages and disadvantages of the implementation of Information and Communications Technology (ICT).

Ex.6. Compile the text theses of your own. Give your reasons.

Unit 3. Technology Can Maximize Business Efficiency

Technology offers countless opportunities to maximize efficiency within your business operations, and therefore, save you time. When your business is operating efficiently, it gives you more time to market your business and increase sales.

Computers and technology allow for faster processing of data, easier retrieval of information, and in some cases - automation can reduce or replace physical employees. When people perform tasks by hand, it can be time consuming and full of human errors. When technology is used for repetitive operations, mistakes are reduced or eliminated, and the time it takes to complete the task is greatly reduced.

Consider how credit cards are accepted as payment with modern technology compared to the past: once upon a time, employees had to take a physical impression of the credit card with a little hand tool that pressed the card against carbon paper and transferred the image onto a piece of paper. Today, credit cards are swiped through a small card reader and payment is made. Orders are processed much faster, making it possible for employees to service more customers in the same amount of time.

In addition to making processes quicker, technology also makes it easy to keep information up to date. Instead of searching through a room of file cabinets and trying to guess how information was stored in order to update a customer address, a few clicks of the mouse and can pull up a customer file from a database. What used to take several minutes to an hour can now be done instantly. When you know what technology can do

for your business, chances are you'll want to implement technological solutions to make your own business more efficient. Due to the mobile nature of many modern businesses, it doesn't make sense to maintain paper-based files and calendars to keep track of information and to-do lists. There are hundreds of web-based project management systems, which can be accessed from any laptop, tablet computer, or mobile device with an Internet connection.

You can choose simple web based project management systems that simply create to-do lists for yourself that you can access wherever you are to stay on task, like Brain Dumps; or a system with a complete suite of management tools like a calendar, projects organized by client, to do lists that allow multiple users to receive tasks and assignments, time sheets to track time spent per project or per client, and even systems which allow password access for each client to view progress. Basecamp is ideal for a full range of web based project management tools, if you manage multiple clients and projects at a time, and if you need multiple people within your organization to access projects and to-do lists.

Different types of technology can help your business maximize efficiency and productivity, decrease expenses and increase profitability. Don't use technology just for the sake of using technology, though. Consider how your business operates and determine which technologies will benefit your organization in terms of saving time and increasing your bottom line.

Decide whether the following statements are true, false, or information is not available: a) T (true), b) F (false), c) NA (not available):

1. There are no web-based project management systems, which can be accessed from any laptop, tablet computer, or mobile device with an Internet connection.
2. Computers and technology allow for faster processing of data, easier retrieval of information, and in some cases - automation can reduce or replace physical employees.
3. Competition among institutions is fierce, and the need for operational efficiency and effectiveness is greater than ever.

Ex.1. Put the words in the correct order to make up sentences.

1. A, application, can, defined, as, an, piece, software, communicating, to, the, multimedia, user, using, several, be, media, for, example, text, images, of, audio, video, and, interactive, animation.
2. fields, Multimedia, are, used, in, sorts, all, of, applications.
3. software, The, of, hypertext, multimedia, power, resides, in, hypermedia, and, interactivity.
4. your, As, long, as, sound, computer, has, a, card, you, can, it, to, sounds, in, digital, format, and, capture, play, them, use, back.

5. radio, stations, Many, live, over, the, broadcast, Internet, using, audio, technology, streaming.

Ex.2. Case-study.

Video-conferencing means people do not need to travel long distances to attend meetings. ICT provides a way for people within an organization to contact each other quickly and share work. Does it also mean that they can work with people around the world? Give your reasons.

Ex.3. Compile the text theses of your own. Give your reasons.

Unit 4. How to Keep Your Online Business Information Secure

Entrepreneurs need to secure the digital data that their businesses generate. This should be a top priority for every business owner. Unfortunately, information-technology security does not get the attention that it deserves. The consequences for many small firms are serious - data theft, fraud and angry customers. Here are a few simple steps that any business can take to prevent unauthorized persons from breaking into its computer systems:

Use strong passwords. Make it mandatory for all employees to use passwords that are difficult to hack. Some simple rules to follow:

Do not use dictionary words. This rule also prohibits using dictionary words with their letters reversed.

Your password should never consist only of numbers.

The same password should not be used for different accounts.

Use all the allowable character types. You will have to ensure that your staff follows the discipline of never revealing their passwords to co-employees. Carry out a security audit. It will take an expert to understand which parts of your information technology infrastructure is susceptible to getting hacked. The security audit will cover the operating systems that you use, your software applications and your company's IT policies and procedures.

Many companies now make extensive use of mobile devices to allow their employees to access the company's business systems. It is essential that you take steps to protect these against malicious attacks.

Encrypt your data. Encrypted data cannot be read by someone who steals your hard drive or your USB drive. The data requires a digital number or key to unscramble it. It is practically impossible for anyone who does not have this key to read your data. If you do not encrypt your data currently, make this a practice right away.

Backup your data. Losing your data files can prove to be a terrible setback for any business. Years of customer data, financial records and employee details can be lost. Recreating all this information can be a herculean task that will involve a great amount of time and money. Backing up data takes very little time and is relatively inexpensive. Many computer users regularly back up data on their hard drives. But a better solution is to save data to a separate location.

Small businesses are as vulnerable as large companies. Many small business owners think that they will not be targeted by hackers because the value of their transactions is minuscule compared to those of larger companies. But this is not true as the cost of launching a cyber-attack has plummeted in recent times. It takes hackers very little effort to break into a small business's computer system and it is well worth their trouble. Every business should lay emphasis on making its information technology platform as secure as possible. A good start is to educate employees about the dangers of unauthorized internet use on company devices.

It is also important to update software regularly and install security patches as advised by the manufacturers of the computer equipment that you use. While it is practically impossible to make a company's computer system foolproof, small business owners can definitely take a number of steps that will make the task of cyber criminals more difficult.

Decide whether the following statements are true, false, or information is not available: a) T (true), b) F (false), c) NA (not available):

1. It is not a good solution to save data to a separate location.
2. Information-technology security does not get the attention that it deserves.
3. Storing the names of your customers, their birth dates and Social Security numbers is very dangerous.

Ex.1. Complete the sentences with the words. There are two extra words.

*a) work b) improved c) implications d) communication e) personal
f) sophisticated g) pervasive h) employers i) email j) keep k) connection
l) usage*

1. ICT has changed the way we , shop and entertain ourselves.
2. Although ICT has life in many ways, we need to be careful about how we use it.
3. Long hours spent at a computer can have for our health and safety.
4. The use of information and technologies (ICT) in the workplace, educational institutions, and the home has grown appreciably in recent years.

5. ICT products are now used by most people, ranging from mobile phones and digital TVs through to computers and the World Wide Web.
6. As information and communication technology has become more it has isolated some of us who find it difficult to use or even intimidating.
7. As technology becomes more , particularly in the workplace, it can become a real barrier to success.
8. Many give their workforce the option to be based at home.
9. A secure Internet provides access to the company's network, shared files, email and printers.
10. Employees can use the company's email system to in touch with the office.

Ex.2. Case-study.

Leaders are people who do the right things; managers are people who do things right." Leadership involves creating a compelling vision of the future, communicating that vision, and helping people understand and commit to it.

- What kind of leader are you?
- Do you follow the classic definition of a leader: someone who aims to influence and motivate employees to meet organizational goals and effectiveness?

Ex.3. Compile the text theses of your own. Give your reasons.

Unit 5. Economics and Information System

Technological advances in processing and communicating information facilitate enormous economic transformations. Information technology is having a great impact on markets, organization of firms, and methods of innovation. It is altering market frictions, firm competition, firms' knowledge of their customers, and improvements in the mechanisms by which prices are adjusted and information is collected.

An information system is an integrated set of components for collecting, storing, and processing data and for delivering information, knowledge, and digital products. Business firms and other organizations rely on information systems to carry out and manage their operations, interact with their customers and suppliers, and compete in the marketplace. For instance, corporations use information systems to reach their potential customers with targeted messages over the Web, to process financial accounts, and to manage their human resources. Governments deploy information systems to provide services cost-effectively to citizens.

The global penetration of the Internet and the Web has enabled access to information and other resources and facilitated the forming of relationships among people and organizations on an unprecedented scale. Through networking, users gain access to

information resources, such as large databases, and to other individuals, such as coworkers, clients, or people who share their professional or private interests.

Competitive Advantage

Technology innovation has little significance in low-income economies, for which the main challenge is to get the basic market factors of land, labour, and capital to work properly. The harnessing of 'global technologies' acquires greater importance as countries move from low to middle income. The institutional characteristics of the knowledge-based economies at the high-income level include continuous training and upgrading of the workforce, high labour mobility across enterprises, and a dynamic combination of fierce competition and cooperation among enterprises. Governments play a crucial role in the higher education, R&D, and market regulation that supports start-ups and high-tech enterprises, while business firms become less hierarchical and form flexible buyer-supplier networks.

The role of ICT therefore varies according to the extent to which a country's market economy has developed the capacity to enter the global market and to sustain competitive advantage. The problem of pursuing the virtuous circle of ICT innovation and development in the global competitive market surfaces again here. The analysis of the role of ICT in terms of competitiveness does not explain how progression on the ranking scale occurs. The linearity of the model and the notion of competitiveness suggest that the more successful economies in the global market are more capable of technology innovation to enhance their economic gain and, thereby, to disadvantage those less techno-economically capable of doing so.

Answer the following questions:

1. What is an information system?
2. Why does Information technology have a great impact on markets, organization of firms, and methods of innovation?
3. How does the global penetration of the Internet and the Web enable access to information and other resources?
4. How does technology innovation provide competitive advantage?

Ex.1. Choose the correct form of the verb in the passive voice to complete the sentences.

1. Cyberspace is the site of computer-mediated communication, in which online relationships and alternative forms of online identity , raising important questions about the social psychology of Internet use.
a) were enacted b) was enacted
2. Cyberspace can as providing new opportunities to reshape society and culture through 'hidden' identities.
a) be seen b) were seen

3. All aspects of our lives and functions of our societies will by all-pervasive and hyper connected digitalization.
 a) be transformed b) is transformed
4. Today, credit cards through a small card reader and payment is made.
 a) is swiped b) are swiped
5. When technology for repetitive operations, mistakes are reduced or eliminated.
 a) are used b) is used

Ex.2. Choose definitions.

1. enroll	a. a fixed form of software programmed into a read-only memory
2. firmware	b. officially register as a member of an institute or a student on a course
3. hypermedia	c. computer software and hardware that allows users to interact with text, graphics, sound, and video, each of which can be accessed from within any of the others
4. download	d. one of the written numbers from '0' to '9'
5. digit	e. to move information to your computer from another computer system on the Internet

Ex.3. Compile the text theses of your own. Give your reasons.

Unit 6. Link between ICT and Economic Growth

A striking feature of the world at the beginning of the 21st century is the gross inequalities between the socio-economic conditions of different communities. The most visible of these relate to the world development problem of inequalities among nations. Contemporary discourses on development consistently identify ICT as a requirement for economic growth and the improvement of social conditions. More recently, however, the link between ICT and development has been articulated in the alarming terms of the 'digital divide'.

There is concern that developing countries are deprived of the opportunities for economic growth and life improvement generally enjoyed by advanced economies because of the scarcity of ICT, particularly limited Internet connectivity. The lack of ICT is understood to be an important factor contributing to the widening of the gap between 'developed' and 'developing' countries, as shown by world socio-economic indicators published in the annual reports of international development agencies, such as those from the World Bank and the United Nations Development Programme. Many high profile

initiatives have been undertaken to remedy this problem. They typically aim to create awareness on the benefits of ICT, raise investment, and promote policy measures for the deployment of telecommunications infrastructures and the diffusion of ICT applications in all societal sectors. ICT innovation is a process that takes place within the formative conditions of a particular social and organizational context.

Measurement of Economic Growth

Economic growth is the increase in the inflation-adjusted market value of the goods and services produced by an economy over time. An economy is growing when the gross national product is increasing year after year. Economic growth is conventionally measured as the percent rate of increase in real gross domestic product, or real GDP. The growth of the ratio of GDP to population (GDP per capita, which is also called per capita income) is more important. An increase in growth caused by more efficient use of inputs (such as physical capital, population, or territory) is referred to as intensive growth. GDP growth caused only by increases in the amount of inputs available for use is called extensive growth.

In economics, "economic growth" or "economic growth theory" typically refers to growth of potential output, i.e. production at "full employment". As an area of study, economic growth is generally distinguished from development economics. The former is primarily the study of how countries can advance their economies. The latter is the study of the economic development process particularly in low-income countries. Measurement of economic growth uses national income accounting.

Right now, the use of machine learning tools helps humans perform complex analysis at the speeds the business requires, and even allows components of platforms to manage themselves for maximum performance. It's predicted that machines will soon truly learn and, with that artificial intelligence, program each other.

Answer the following questions:

1. What does it mean: the gross inequalities between the socio-economic conditions of different communities?
2. What does the term 'digital divide' mean?
3. What is the most important factor contributing to the widening of the gap between 'developed' and 'developing' countries?
4. What is an economic growth?
5. How is the economic growth measured?

Ex.1. Choose missing prepositions.

a) on b) to c) onto d) of

1. Maps in iOS 11 will also include detailed floor plans airports and shopping centres, allowing users to better plan their trips.
2. Apple is rumored to have created an augmented reality tool that could guide users

around by superimposing directions the real world.

3. The feature, called 'Do Not Disturb While Driving' turns the user's iPhone screen black and gives the option to send automatic replies telling contacts they are the road.
4. Apple is adding Maps a speed limit guidance and lane navigation while driving.

Ex.2. Make up sentences.

1. In manufacturing and installation businesses, there is a definite need	a. around the world, whether through social-media websites, emails or visual chat applications.
2. Companies are looking at cloud storage to sync information	b. for secure but flexible testing and payment systems.
3. Tablets and laptops are connecting people	c. to get tasks done on the run, create presentations for meetings and update websites and blogs.
4. Business owners often use tablets and laptops	d. between them and their customers.
5. Business people may need to travel extensively as part of a job	e. money online.
6. Tablets and laptops allow people	f. to meet with clients, perform projects or travel between offices.
7. People can use tablets and laptops to transfer	g. to get work done on the road, so travel time is well spent.
8. Business people can use tablets and laptops to keep in touch	h. with clients and perform other work on the go.
9. Tablets and laptops allow someone to update the company blog, update social media with links and promotions	i. of customers' needs and interests.
10. Using tablets and laptops also shows an understanding	j. and answer emails no matter where he is.

Ex.3. Case-study.

Some people think that the only way to have success in business is to have a unique product. What factors, do you think, influence the success of a company?

Ex.4. Compile the text theses of your own. Give your reasons.

Unit 7. Interconnected Business Environment

Many organizations are increasingly using Web-based collaborative tools to facilitate information and knowledge sharing among various user groups in order to improve productivity and eliminate the duplication of efforts. If there is a weakness in your IT security system, wouldn't you prefer to find it before someone else does? Imagine waking up to discover that your IT systems have been hacked. Your company's financial results have been leaked to the media; your confidential business plans have been compromised; your employees' personal files have been posted on the Internet.

Every organization uses information. Information is an asset that, like other important business assets, is essential to your business and consequently needs to be suitably protected. This is especially important in the increasingly interconnected business environment, where information is now exposed to a growing number and a wider variety of threats and vulnerabilities. Causes of damage such as malicious code, computer hacking and denial of service attacks have become more common, more ambitious, and increasingly sophisticated. Information security is not an 'IT problem', it is a business issue. Obviously compliance with legal and regulatory requirements is important. It provides a very good reason for reviewing your information security practices, but it should not in itself be the sole or even the main driver. If a business wishes to survive, let alone prosper, it must grasp the importance of information security and put in place appropriate measures and processes.

Smart Economy.

A smart city is an innovative city that uses ICTs and other technologies to improve quality of life, efficiency of urban operations and services, competitiveness, while ensuring to meet present and future generations needs with respect to economic, social, territorial balance and environmental issues. A smart city program aims to create attractive, participative, innovative and resilient urban environment encouraging creative solutions. It promotes a virtuous cycle that not only produces economic and social well-being, but also secures the sustainable use of local resources in order to ensure quality of life and stability of business in the long run. A smart city incorporates ICTs into urban management and planning, uses these elements as tools to stimulate the design of innovative services within collaborative planning and eco- citizenship participation.

Smart economy presents miscellaneous challenges: support innovation to “smart” the city; improve collaboration and sharing between public and private stakeholders; encourage an active eco-citizenship and increase the economic stakeholders’ social and environmental responsibility; optimize the allocation of resources and help to reduce

unnecessary spending; generate common and digitalized procedures; provide unique online platforms.

Smart economy aims to improve business life cycle, to make easier and faster to find and access business services, participate in city economic or urban initiatives, communicate with and receive information, contribute to urban development, while staying open to the global environment.

Answer the following questions:

1. What can happen with the company assets if their IT systems have been hacked?
2. What threats and vulnerabilities of IT systems can you name?
3. Why does compliance with legal and regulatory requirements is important?
4. What is a smart city?
5. What is the aim of a smart economy?

Ex.1. Complete each sentence with a verb in the correct form: -ing or to:

1. They have finished complex financial calculations in micro-seconds using spreadsheet programs.
a) to do b) doing
2. Government departments manage revenue from taxation and measure macroeconomic growth very quickly.
a) calculating b) to calculate
3. Modern businesses plan more competitive using computer technologies.
a) becoming b) to become
4. Microfinance allows banks with a social mission.
a) to link b) linking
5. Mainframe computers can afford several application programs concurrently.
a) processing b) to process

Ex.2. Complete the sentences with the correct form of the words in capitals:

1. Laptops have a definite advantage over desktop PCs when it comes to
SCALE
2. In some cases, businesses rely on their employees to work virtually or telecommute, money on a physical office space. **SAVE**
3. For small brick and mortar businesses, the cost and increased performance of local area networks have made wireless networks a viable alternative. **REDUCE**
4. As the business grows, they can scale their office network to meet their demands.
CONNECT
5. Businesses that allow employees to help them increase their content marketing and social media presence stand to gain customer trust and brand **RECOGNISE**

Ex.3. Case-study.

Some people think that the only way to judge someone's success in business is by the amount of money they make.

Is money a true indicator of the success of a business?

In what other ways could success in a business be measured?

Ex.4. Compile the text theses of your own. Give your reasons.

Unit 8. E-Business (Electronic Business)

E-business (electronic business) is the conduct of business processes on the Internet. These electronic business processes include buying and selling products, supplies and services; servicing customers; processing payments; managing production control; sharing information; running automated employee services; recruiting; and more.

E-business can comprise a variety of functions and services, ranging from the development of intranets and extranets to e-service, the provision of services and tasks over the Internet by application service providers. Today, as major corporations continuously rethink their businesses in terms of the Internet, they are conducting e-business to buy parts and supplies from other companies, collaborate on sales promotions, and conduct joint research.

E-services, a business concept developed by Hewlett Packard (HP), is the idea that the World Wide Web is moving beyond e-business and e-commerce into a new phase where many business services can be provided for a business or consumer using the Web. Some e-services, such as remote bulk printing, may be done at a Web site; other e-services, such as news updates to subscribers, may be sent to your computer. Other e-services will be done in the background without the customer's immediate knowledge. HP defines e-services as "modular, quick, electronic services that perform work, achieve tasks, or complete transactions." Using HP's e-services concept, any application program or information resource is a potential e-service and Internet service providers (ISPs) and other companies are logical distributors or access points for such services.

E-businesses have distinct advantages over brick and mortar stores. First, they can be found with search engines without the use of pricey advertising campaigns. Beyond this, e-business allows vendors to track purchases and preferences of customers, leading to marketing catered to each individual. Advantages for e-commerce, which also extend to e-business, are great monetary savings (because of fewer employees and low overhead) and the ability to reach consumers across the globe.

Consumers can access e-commerce and e-businesses at any time of the day or night, from their workplace or in their pajamas. Consumers can search through countless products and services using online databases. Prices are quickly compared online to find the business that offers the best products at the best prices. Consumers are quickly exposed to e-business because it uses more targeted marketing and offers more in-depth education compared to traditional businesses.

Answer the following questions:

1. What is e-commerce?
2. How can e-commerce be conducted?
3. What are the benefits of e-commerce for consumers?
4. What business concept was developed by Hewlett Packard?
5. What are the advantages of e-commerce?

Ex.1. Match the words with the definitions.

1. mailbot	a. carrying out of two or more sequences of instructions at the same time in a computer
2. mock-up	b. duplicated or added as a precaution against failure, error, etc.
3. morphing	c. a software agent in a mail server that is typically used to send an automatic response to the sender
4. multiprocessing	d. a computer technique used for graphics and in films, in which one image is gradually transformed into another image without individual changes being noticeable in the process
5. polymorphism	e. a working full-scale model of a machine, apparatus, etc., for testing, research, etc.
6. stream	f. the ability in computer programming to present the same programming interface for differing underlying forms (data types, classes)
7. redundant	g. to transfer (esp. audio or video data) in a continuous flow
8. resolution	h. a device that transmits and receives data using a modulated carrier wave
9. pixel	i. the number of pixels (individual points of color) contained on a display monitor, expressed in terms of the number of pixels on the horizontal axis and the number on the vertical axis
10. modem	k. the basic unit of a digital image, representing a single color or level of brightness

Ex.2. Complete the sentences.

a) equipment b) features c) balances d) programmed e) people f) experts g) efficiency h) environments i) supervision j) data

1. Tiny computers on a chip are used in medical, home appliances, cars and toys.
2. Workers use handheld computing devices to collect at a customer site, to generate forms, to control inventory, and to serve as desktop organizers.
3. Computers are part of many machines and devices that once required continual human and control.

4. Computers in security systems result in safer
5. Computers in cars improve energy
6. Computers in phones provide such as call forwarding, call monitoring, and call answering.
7. Smart cards store vital information such as health records, drivers' licenses, bank , and so on.
8. Cars with built in computers can be to better meet individual needs.
9. Computers can help work more creatively.
10. Experts systems software enables computers to 'think' like

Ex.3. Case-study.

Electronic commerce or e-commerce is a term for any type of business, or commercial transaction that involves the transfer of information across the Internet. It covers a range of different types of businesses, from consumer based retail sites, through auction or music sites, to business exchanges trading goods and services between corporations. It is currently one of the most important aspects of the Internet to emerge.

- What do you buy online?
- What types of e-commerce do you know?
- Have you ever bought or sold an item on eBay.com?
- How does e-commerce improve market efficiency?

Ex.4. Compile the text theses of your own. Give your reasons.

Unit 9. Customer Relationship Management (CRM)

Customer relationship management (CRM) is a term that refers to practices, strategies and technologies that companies use to manage and analyze customer interactions and data, with the goal of improving business relationships with customers, assisting in customer retention and driving sales growth. CRM systems are designed to compile information on customers across different channels, which could include the company's website, telephone, live chat, direct mail, marketing materials and social media. CRM systems can also give customer-facing staff detailed information on customers' personal information, purchase history, buying preferences and concerns.

CRM software consolidates customer information and documents into a single CRM database so business users can more easily access and manage it. The other main functions of this software include recording various customer interactions (over email, phone calls, social media or other channels, depending on system capabilities), automating various workflow processes such as tasks, calendars, and giving managers

the ability to track performance and productivity based on information logged within the system.

Common features of CRM software include:

- **Marketing automation:** CRM tools with marketing automation capabilities can automate repetitive tasks to improve marketing efforts to customers at different points in the lifecycle. For example, as sales prospects come into the system, the system might automatically send marketing materials, typically via email or social media, with the goal of turning a sales lead into a complete customer.
- **Sales force automation:** Also known as sales force management, sales force automation is meant to prevent duplicate efforts between a salesperson and a customer. A CRM system can help achieve this by automatically tracking all contact and follow-ups between both sides.
- **Contact center automation:** Designed to reduce boring aspects of a contact center agent's job, contact center automation might include pre-recorded audio that assists in customer problem-solving and information dissemination. Various software tools can handle customer requests in order to cut down the time of calls and simplify customer service processes.
- **Geolocation technology:** Some CRM systems include technology that can create geographic marketing campaigns based on customers' physical locations, sometimes integrating with popular location-based GPS apps.

Answer the following questions:

1. What does CRM refer to?
2. What channels can be used to compile information on customers?
3. What do common features of CRM software include?
4. What is social CRM?
5. How can businesses use various tools to interact with customers?

Ex.1. Choose the correct option to complete the sentences.

1. Ubiquitous computing a key engine of innovation for our future digital economy.
a) have been representing b) represent c) represents
2. Events taking place on the Internet in the locations where participants or servers are physically located, but 'in cyberspace'.
a) has not been happening b) is not happening c) are not happening
3. Cyberspace the flow of digital data through the network of interconnected computers.
a) describes b) describe c) have been describing
4. Cyberspace attention to remediation of culture through new media technologies.
a) draws b) draw c) have been drawing

5. Innovative digital services and technologies people, companies and societies improving the ability to collaborate, work more effectively and improve the global economy.

a) has been connecting b) connect c) connects

6. The Internet will an engine for economic growth and a platform for the free exchange of ideas.

a) has been remaining b) remain c) remains

7. IT companies continually in the development of globally deployable products and services.

a) invest b) invests c) has been investing

8. Winners in this new age are those who can combine comprehensive security solutions with a market economy approach, an ability to amass and mobilise the best talent, and can operate effortlessly in a multinational environment.

a) have b) has c) is having

Ex.2. Case-study.

Employers are increasingly looking for new hires who can communicate effectively and problem solve in the workplace. To land a job, it's no longer enough to possess a specific set of hard skills, such as computer programming, machinery, or accounting. These days, companies want employees to come to the table with soft skills that include conflict resolution, effective communication, and adaptability.

- Are good communication skills critically important for success?
- Are respect, communication, problem solving and collaboration integral to being a solid team player in the workplace?
- With that comes the need to be flexible and adaptable in your work environment?
- Are you able to spot potential road blocks and think creatively to find a solution?

Ex.3. Compile the text theses of your own. Give your reasons.

Unit 10. Digital Interaction with Customers

Tablets can provide a customized user experience that businesses can use to create better ways to interact with customers. You've probably heard about businesses using mobile devices to gather analytics on the shopping or buying behaviors of their customers. Tablets also allow hotels to use them as make shift concierge stations. Instead of going down to the front desk to chat with the receptionist, guests can log into the hotel services on the tablet and book reservations, download and print boarding passes, and add notes for hotel employees. People can use tablets to order food and beverages, shop the company store, or purchase tickets for future events.

Tablets as point of sale systems have been around for quite some time, but some companies are taking it one step farther. Starbucks, whose handy app allows customers to pay for their orders and use loyalty rewards programs through mobile devices, now offers customers the option to create a custom order on their smartphones and tablets before they even reach the register. Grocery stores and clothing retailers are among some of the most common types of businesses that have used digital signage for several years. However, using tablets for digital signage allows for a smaller and more personal, private experience for a variety of companies and their customers. Armadillo creates sleek tablet stands for digital signage for clients such as Macy's, TED, and Philips.

Digital Identity Service

Canadian banks will use block chain technology to manage consumers' digital identities. The banks bought into the idea of managing digital identities for consumers five years ago. Initially, they focused on authentication: letting customers maintain one user name and password for multiple websites, mainly bank and government sites. The Concierge system, managed by Secure Key, was a way to simplify customers' lives. The system stores 7 million Canadian consumers' credentials currently with 250,000 added each month. On Monday morning, the banks, which include Bank of Montreal, Canadian Imperial Bank of Commerce, Desjardins Group, Royal Bank of Canada, Scotiabank and TD Bank, along with IBM and Secure Key, announced they would build on the progress by making it a fuller identity solution running on IBM's block chain.

When the technology pieces are all in place, customers will be able to use an app to verify their identity to anyone, from an Airbnb owner to a bouncer at a bar, in such a way that that provider only sees what they need to see, and all other personal information is private. And over time, the banks in the program expect to receive revenue from other participants, say, telecommunications companies or landlords, who use their digital identity service to verify customers.

The consumer registers for the identity program at a bank using the bank's normal routines related to Know Your Customer compliance. Through a mobile app the bank provides, customers choose which types of data they want to share with which types of providers.

Answer the following questions:

1. What can tablets provide a customized user?
2. Where and how can tablets be used in business?
3. How banks identify their customers?
3. What is "digital identity"?

Ex.1. Choose missing words.

a) include b) was c) allow d) developed

1. Tablets may physical buttons and ports for network communications.
2. The top-selling line of devices Apple's iPad.
3. Alan Kay the concept of a personal computer for people of all ages.
4. Laptops employers to connect virtually with customers at any time of the day.

Ex.2. Choose missing prepositions.

a) of b) for c) in d) on

1. Digital economy plays a significant role accelerating global economic development.
2. Mobile operating systems combine features a personal computer operating system with other features useful for mobile or handheld use.
3. Android is designed primarily touchscreen mobile devices such as smartphones and tablet computers.
4. As a rule business firms and other organizations rely information systems.

Ex.3. Choose definitions.

1. mail bot	a. a portable personal computer with a clamshell form factor, suitable for mobile use.
2. stylus	b. a method of publishing to a website or blog from a mobile phone or other handheld device.
3. laptop	c. a software agent in a mail server that is typically used to send an automatic response to the sender.
4. moblog	d. a computer accessory that is used to assist in navigating or providing more precision when using touchscreens.
5. mainframe	e. a large digital computer serving 100 500 users and occupying a special air conditioned room.

Ex.4. Case-study.

Many management interviews are based around assessing not only a person's level of experience and knowledge but also their personality.

Is leadership an innate skill?

What other characteristics do companies look for in a manager?

Ex.5. Compile the text theses of your own. Give your reasons.

Unit 11. Apple Inc. and IBM

Apple Inc. is an American multinational technology company headquartered in Cupertino, California, that designs, develops, and sells consumer electronics, computer software, and online services. Its hardware products include the iPhone smartphone, the iPad tablet computer, the Mac personal computer, the iPod portable media player, and the

Apple Watch smartwatch. Apple's consumer software includes the OS X and iOS operating systems, the iTunes media player, the Safari web browser, and the iLife and iWork creativity and productivity suites. Its online services include the iTunes Store, the iOS App Store and Mac App Store, and iCloud. Apple was founded by Steve Jobs, Steve Wozniak, and Ronald Wayne on April 1, 1976, to develop and sell personal computers. It was incorporated as Apple Computer, Inc. on January 3, 1977, and was renamed as Apple Inc. on January 9, 2007, to reflect its shifted focus toward consumer electronics.

Apple is the world's largest information technology company by revenue, the world's largest technology company by total assets, and the world's second-largest mobile phone manufacturer. The company employs 115,000 permanent full-time employees as of July 2015 and maintains 475 retail stores in seventeen countries as of March 2016. It operates the online Apple Store and iTunes Store, the latter of which is the world's largest music retailer. There are over one billion actively used Apple products worldwide as of March 2016.

IBM. Technologies emerged in the 1880s and that would ultimately form the core of International Business Machines (IBM). International Business Machines Corporation (IBM) is an American multinational technology company headquartered in Armonk, New York, United States, with operations in over 170 countries. The company began in 1911 as the Computing-Tabulating-Recording Company (CTR) and was renamed 'International Business Machines' in 1924. By 1933 most of the subsidiaries had been merged into one company, IBM.

IBM manufactures and markets computer hardware, middleware and software, and provides hosting and consulting services in areas ranging from mainframe computers to nanotechnology. IBM is also a major research organization, holding the record for most U.S. patents generated by a business for 25 consecutive years. Inventions by IBM include the automated teller machine (ATM), the floppy disk, the hard disk drive, the magnetic stripe card, the relational database, the SQL programming language, the UPC barcode, and dynamic random-access memory (DRAM). The IBM mainframe, exemplified by the System/360, was the dominant computing platform during the 1960s and 1970s.

IBM has continually shifted its business mix by commoditizing markets focusing on higher-value, more profitable markets. This includes spinning off printer manufacturer Lexmark in 1991 and selling off its personal computer (ThinkPad/ThinkCentre) and x86-based server businesses to Lenovo, and acquiring companies such as PwC Consulting, SPSS, and The Weather Company. Also in 2014, IBM announced that it would go 'fabless', continuing to design semiconductors, but offloading manufacturing to GlobalFoundries.

Nicknamed Big Blue, IBM is one of 30 companies included in the Dow Jones Industrial Average and one of the world's largest employers, with over 380,000 employees. Known

as ‘IBMers’, IBM employees have been awarded five Nobel Prizes, six Turing Awards, ten National Medals of Technology and five National Medals of Science.

Answer the following questions:

1. When did technologies emerge?
2. What does IBM manufacture and market?
3. What inventions were made by IBM employees?

Ex.1. Complete the sentences with the most suitable preposition.

1. The GPS was originally developed use by the United States military purposes.
a) by b) for c) at d) over e) on
2. A GPS device can retrieve the GPS system location and time information in all weather conditions.
a) in b) for c) at d) from e) among
3. In exceptionally poor signal conditions, for example in urban areas, satellite signals may exhibit multipath propagation where signals skip off structures, or are weakened meteorological conditions.
a) on b) in c) by d) with e) at
4. Today, most standalone GPS receivers are used automobiles.
a) for b) at c) by d) of e) in
5. In the 1980s, the United States government allowed the system to be used civilian purposes.
a) for b) by c) on d) between e) with

Ex.2. Complete the sentences.

1. Is cloud computing a kind of internet-based computing,	a. being used in computers?
2. Why do business firms and other organizations	b. produce high-quality text and graphics?
3. How does laser printing	c. rely on information systems?
4. Why are nano tools and processes	d. where shared resources and information are provided to computers and other devices on-demand?

Ex.3. Choose the correct alternative for each sentence.

1. SITE / SIGHT

- a) He managed to get a job on a building
- b) Peace is now in

2. DATA / DATE

- a) The research involves collecting

b) What's the ... of the next meeting?

3. DEVICES / DEVICES

a) The store sells TVs, VCRs, and other electronic

b) She ... a new method for quicker communications between offices every year.

4. PIECE / PEACE

a) A ... was signed between the two countries.

b) Will foreign firms get a ... of the action?

Ex.4. Case-study.

An international company has offices all over the world. There is always a lot of office work in an international company. How can computers be used to perform usual office things?

Ex.5. Compile the text theses of your own. Give your reasons.

Unit 12. Microsoft Corporation

Microsoft Corporation is an American multinational technology company with headquarters in Redmond, Washington. It develops, manufactures, licenses, supports and sells computer software, consumer electronics, personal computers, and services. Its best known software products are the Microsoft Windows line of operating systems, the Microsoft Office suite, and the Internet Explorer and Edge web browsers. Its flagship hardware products are the Xbox video game consoles and the Microsoft Surface tablet lineup. As of 2016, it is the world's largest software maker by revenue, and one of the world's most valuable companies. The word 'Microsoft' is a portmanteau of 'microcomputer' and 'software'.

Microsoft was founded by Paul Allen and Bill Gates on April 4, 1975. It rose to dominate the personal computer operating system market with MS-DOS in the mid-1980s, followed by Microsoft Windows. The company's 1986 Initial Public Offering (IPO), and subsequent rise in its share price, created three billionaires and an estimated 12,000 millionaires among Microsoft employees. Since the 1990s, it has increasingly diversified from the operating system market and has made a number of corporate acquisitions—their largest being the acquisition of LinkedIn for \$26.2 billion in December 2016, followed by Skype Technologies for \$8.5 billion in May 2011.

Microsoft is a market-dominant in the IBM PC-compatible operating system market and the office software suite market, although it has lost the majority of the overall operating system market to Android. The company also produces a wide range of other

consumer and enterprise software for desktops and servers, including Internet search, the digital services market, mixed reality, cloud computing and software development.

Steve Ballmer replaced Gates as CEO in 2000, and later envisioned a ‘devices and services’ strategy. This began with the acquisition of Danger Inc. in 2008, entering the personal computer production market for the first time in June 2012 with the launch of the Microsoft Surface line of tablet computers and later forming Microsoft Mobile through the acquisition of Nokia's devices and services division.

Decide whether the following statements are true, false, or information is not available: a) T (true), b) F (false), c) NA (not available):

1. Microsoft Corporation develops, manufactures, licenses, supports and sells computer software, consumer electronics, personal computers, and services.
2. Microsoft was founded by Paul Allen and Bill Gates on April 8, 1977.
3. The company will produce a wide range of medicine digital products in 2020.

Ex.1. Match the words with the definitions.

1. handshaking	a. to put a new program or piece of software into a computer so that you can use it
2. hardcopy	b. screen's brightness of a computer
3. vendor	c. an automated process of negotiation that dynamically sets parameters of a communications channel established between two entities before normal communication over the channel begins
4. install	d. a permanent reproduction, or copy, in the form of a physical object, of any media suitable for direct use by a person, of displayed or transmitted data
5. queue	e. an enterprise that contributes goods or services
6. junction	f. a set of jobs waiting to be done by a computer
7. kerning	g. the act or process of joining or the condition of being joined
8. keystroke	h. a computer program that transfers data from offline memory into internal storage
9. loader	i. a single action of pressing a key on a typewriter or computer
10. luminosity	k. printing the adjustment of space between the letters of words to improve the appearance of printed text

Ex.2. Case-study.

As a business professional, you may often find yourself pressed for time as you strive to accomplish your professional goals. Companies like Google and Facebook have tapped in to what we already know to be true: making the time for reflection and creative, collaborative-thinking enables greater focus and innovation.

- How do you filter or flag your emails?

- Are you spending hours following news and social media?
- Are you the master of your schedule?
- Do you build your network of professional contacts?
- Do you make a habit of taking care of yourself?

Ex.3. Compile the text theses of your own. Give your reasons.

Unit 13. Corporate Image

Corporate image, or reputation, describes the manner in which a company, its activities, and its products or services are perceived by outsiders. In a competitive business climate, many businesses actively work to create and communicate a positive image to their customers, shareholders, the financial community, and the general public. A company that mismanages or ignores its image is likely to encounter a variety of problems.

Some of the warning signs that a business might have an image problem include high employee turnover, the disappearance of major customers, a drop in stock value, and poor relationships with vendors or government officials. If an image problem is left unaddressed, a company might find many of its costs of doing business rising dramatically, including the costs of product development, sales support, employee wages, and shareholder dividends. In addition, since the majority of consumers base their purchase decisions at least partly on trust, current and future sales levels are likely to suffer as well. Many of today's consumers consider the environmental and social image of firms in making their purchasing decisions.

In businesses of all sizes, it is vital that managers recognize the importance of creating and maintaining a strong image, and that they also make employees aware of it. Corporate image begins within the offices of a company's managers. It should be based on the development of good company policies, rather than on controlling the damage caused by bad company policies. Business owners and managers should take the following steps toward improving their companies' image: focus on the firm's long-term reputation; base actions on substantive policies; insist on candor in all business dealings; and uphold the stakeholders' right to know. After all, a good corporate image can take years to build and only moments to destroy.

Several factors have contributed to the increasing importance of corporate image in recent years. For example, the business climate in the United States has become one of environmental complexity and change. This has forced many business enterprises to significantly alter their strategies to better compete and survive. The acceleration of product life cycles is another vital dimension of the turbulent business environment. Globalization has been still another catalyst in the rise of corporate image programs, as companies have sought ways to spread their reputations to distant markets. A related

factor is that as a corporation expands its operations internationally, or even domestically, through acquisitions, there is a danger that its geographically dispersed business units will project contrary images to the detriment of corporate synergy.

Answer the questions.

Ex.1. Complete the sentences with the correct form of the words in capitals:

1. If you need to improve your skills, find out about ... courses in your area. **TRAIN**
2. If there aren't many jobs in your area, it is worth considering the ... of moving. **POSSIBLE**
3. The more ... forms you fill in, the more your chances of being called for an interview increase. **APPLY**
4. Meetings are good if everyone ... for them very carefully in advance. **PREPARATION**
5. He is the only person here who can ... the situation properly. **ANALYSIS**

Ex.2 Choose the correct answer.

1. We hired a ... to help us with this phase of the project.
a) consultant b) consultation c) consent
2. The company has a reputation for treating their ... well.
a) employed b) employees c) employers
3. If you buy more than 100 of these, we will give you a ... 10%
a) sale b) discount c) rise
4. Our ... system needs to be improved if we are to meet increased demand.
a) consumption b) employment c) distribution
5. Manufacturing, mining, service, government, and commerce are different ... of the economy.
a) themes b) sectors c) estates
6. Investors are interested in a ... company that shows initiative and develops new products.
a) parallel b) thematic c) dynamic
7. Normally, before you are able to get a job, you have to attend a(n) If you do well in that, they offer you the position.
a) arrangement b) meeting c) interview
8. When a small business needs money to fund a new project or to expand, it can borrow on

a) stability b) credit c) initiative

9. A good business plan defines your business and ... your goals.

a) identifies b) indents c) idealizes

10. As innovators, we need to create new trends, not just ... on trends that already exist.

a) throw b) jump c) leap

Ex.3. Case-study.

Sales companies should recruit people who are hungry for money as they will make the most dedicated workers.

Do you think money is the driving force behind hard work?

What factors should be taken into consideration when recruiting staff for sales positions?

Ex.4. Compile the text theses of your own. Give your reasons.

Unit 14. A Model for Digital Agriculture

The industrialization of agriculture began some 100 years ago. Today we are witnessing its digitalization. Digitalization is fascinating: just as we've been spellbound by our smartphones in recent years, watching funny videos and sharing pictures of adorable cats, in the future young farmers are likely to don their digital glasses or consult other devices that will help them analyse their work and make decisions. This data might be collected by self-piloted multicopters, which analyse the state of the field according to empirical formulas and effectively provide specific cultivation tips for individual plants – for organic or conventional farming. A bit more manure here, some of the latest insecticide there? Should the tomato be deprived of water a tiny bit longer so that it develops the perfect flavour? And can the next purchase of feed pellets be put off until next week after the markets have calmed down?

These are some questions that agricultural companies are already beginning to answer. For example, there is a six-legged robot named Prospero roaming test fields in the United States and planting individual kernels of corn in exactly the right spot for the plant to take root. And for several years now, Bonirobot has been wandering the fields of Germany unassisted, testing the ground and picking weeds that threaten the main crop. You don't have to be a clairvoyant to recognize that agriculture is also undergoing rampant digitalization. The automation movement is as inevitable as the tasting of the forbidden fruit. The promises of technology are all too seductive, and the promises of greater efficiency all too tempting.

Should digitalization aim to reduce costs in the short term, or preserve environmental resources in the long term? Compared to the rest of the world, our agricultural practices are very sustainable whether they carry the organic label or not. And our farmers are highly knowledgeable and competent. This is why we should get involved now and decide which problems should be tackled by future technologies.

Answer the following questions:

1. What can self-piloted multicopters do in agriculture?
2. How is a six-legged robot named Prospero used in the fields?
3. Why is the automation movement inevitable?

Ex.1. Choose the correct option to complete the sentences.

1. The global penetration of the Internet and the Web access to information and other resources and facilitated the forming of relationships among people and organizations on an unprecedented scale.
a) has enabled b) have enabled c) enable
2. With the emergence of smartphones, tablets, and other computer-based mobile devices, information systems to support mobility as the natural human condition.
a) have been extended b) has been extended c) had been extended
3. Recently, there a growing recognition of the need to take a risk-based approach to security.
a) have been b) has been c) had been
4. The progress of electronic commerce over the Internet in a dramatic growth in digital interpersonal communications.
a) has resulted b) had resulted c) have resulted
5. Causes of damage such as malicious code, computer hacking and denial of service attacks more common, more ambitious increasingly sophisticated.
a) had become b) has become c) have become
6. Even a small scale security breach could your business without access to its critical IT systems for hours or days.
a) leaves b) left c) leave
7. If a business wishes to survive it must the importance of information security and put in place appropriate measures and processes.
a) has been grasping b) grasp c) grasps
8. Cyberspace a global and interconnected domain that spans geographic borders and national jurisdictions.
a) is b) are c) is being

Ex.2. Complete the sentences.

1. Information systems are used	a. to track, store, manipulate and distribute the information from gathered data to appropriate persons when necessary.
2. Implementing the information systems can save	b. on the effective use of information technologies and information systems.
3. The competitiveness of most companies is based	c. a great deal of time during the completion of tasks and some labor mechanic works.
4. The hackers distribute the information over the Internet, sell it to rival companies or use it	d. to damage the company's image.

Ex.3. Case-study.

Manufacturers use new technology to design and build products. At the design stage, they use computer-aided design (CAD) software to produce new ideas and designs. In the production stage, many companies use robots. Why do companies use robots to do the work of people in complex and dangerous procedures? Can robots work longer hours than people without getting tired or bored? Give your reasons.

Ex.4. Compile the text theses of your own. Give your reasons.

Unit 15. Multi-Purpose Devices

1. Methods used for input and output from ICT systems vary a lot. Input and output formats are the different kinds of media that are used to either gather up and collect data and instructions or to display, present or issue the outputs of processing. Up until recently most media formats required dedicated devices - for example, digital cameras to take digital photographs, scanners to digitise images for use on a computer, or DVD players for video playback - so you needed the correct device in order to work with each media format.

2. There is now a growing tendency for multi-purpose ICT devices, which is known as convergence. The driving force is the communication power of the Internet, and the increasing availability of small high-powered electronic technology. This means that you can now get an all-in-one box that can do the same thing as several different ones did before it. Here are some examples: combined printers, scanners and photocopiers; televisions with built-in Internet connections and web browsers; mobile phones that can take photos, record video, access the Internet and play back music; applications that allow phones to do even more things beyond taking photos, videos or running browsers. For example, the phone all-in-one with a camera allows you to take pictures, but an app will allow you to edit it, add a filter and send it overseas for free.

3. Smart devices are electronic devices, generally connected to other devices or networks via different wireless protocols such as Bluetooth, NFC, Wi-Fi, 3G, etc., that

can operate to some extent interactively and autonomously. Several notable types of smart devices are smartphones, phablets and tablets, smartwatches, smart bands and smart key chains. The term can also refer to a device that exhibits some properties of ubiquitous computing, including artificial intelligence. Smart devices can be designed to support a variety of form factors, a range of properties pertaining to ubiquitous computing and to be used in three main system environments: physical world, human-centered environments and distributed computing environments.

Decide whether the following statements are a) true, b) false or c) information is not available in the text:

1. ICT systems will be replaced by nano-systems soon.
2. Smart devices can't be designed to support a variety of form factors.
3. Several notable types of smart devices are smartphones, phablets and tablets, smartwatches, smart bands and smart key chains.

Ex.1. Match the words with their definitions.

1. interface	a. a boundary across which two separate components of a computer system exchange information.
2. touchscreen	b. an electronic visual display that the user can control through simple or multi-touch gestures by touching the screen with a special stylus/pen and-or one or more fingers.
3. modem	c. an undigested and voluminous mass of information about a problem or the state of a system.
4. dump	d. a device that modulates signals to encode digital information and demodulates signals to decode the transmitted information.
5. encryption	e. a method of publishing to a website or blog from a mobile phone or other handheld device.
6. mail bot	f. a large digital computer serving 100 500 users and occupying a special air conditioned room.
7. laptop	g. a computer accessory that is used to assist in navigating or providing more precision when using touchscreens.
8. mainframe	h. a software agent in a mail server that is typically used to send an automatic response to the sender.
9. stylus	i. a portable personal computer with a clamshell form factor, suitable for mobile use.

10. moblog	j. the action or process of putting information or data into code so that people who do not have permission cannot read it.
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Ex.2. Choose the correct alternative for each sentence.

1. PRODUCTION / PRODUCTIVITY

- a) We will increase pay if the employees raise their
- b) If we don't get another order soon, we'll have to cut and maybe close a factory.

2. SITE / SIGHT

- a) He managed to get a job on a building
- b) Peace is now in

3. ECONOMICS / ECONOMIES

- a) He expects Europe's over the long run to grow faster than the US's.
- b) They studied at Oxford University.

4. PLAIN / PLANE

- a) The markings along the route are quite
- b) The highly conductive surface layer induced in diamond by hydrogen termination has been used to fabricate in gate transistors.

Ex.3. Case-study.

Nowadays many people have become overly attached, obsessed with and even addicted to their smartphones. Smartphone addiction can cause other problems, as well, including lost productivity and poor work performance, which can have serious career repercussions. It can also have a negative impact on relationships with family and friends.

- Do you need a face-to-face conversation if you can chat online?
- Do you have separation anxiety over a phone?
- What can smartphone addicts do to break the hold these devices have on them?
- Would it be hard to imagine our personal or professional lives without smartphones?
- Is it good to set limits on smartphone use?

Ex.4. Compile the text theses of your own. Give your reasons.

1. Portable computers are lightweight, compact and affordable. Laptops are wildly popular within different groups of people because they deliver specialized experiences to their users. For many users, a laptop has become their preferred computing device because it allows them to complete all the tasks they would need on a desktop but with the convenience of mobility and flexibility. A laptop, often called a notebook or notebook computer, is a portable personal computer with a "clamshell" form factor, a keyboard on the lower part of the "clamshell" and a thin LCD or LED computer screen on the upper portion, which is opened up to use the computer. Laptops are folded shut for transportation, and thus are suitable for mobile use. A laptop combines the components, inputs, outputs, and capabilities of a desktop computer, including the display screen, speakers, a keyboard, pointing devices (such as a touchpad), a processor, and memory into a single unit.

2. Most laptops also have integrated webcams and built-in microphones. The device can be powered either from a rechargeable battery or by power supply from an AC adapter. Hardware specifications, such as the processor speed and memory capacity, significantly vary between different types, makes, and models. Laptops are commonly used in a variety of settings, such as at work, in education, and for personal multimedia and home computer use. Laptops, like smartphones and tablets, enable employees to take the online world with them. For business owners, laptops allow their organization to work wherever they may be to remain productive. Laptops have changed the way companies work, communicate and expand. As businesses seek to find new customers beyond their locale, employees find themselves travelling, training or servicing customers further away from home. While checking email is the number one smartphone activity, laptops are still necessary to perform work-intensive tasks. Collaborating on presentations and reports are just two of the many ways laptops continue to assist travelling or virtual employees in remaining productive in different locations

Laptops and Business Communication.

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Decide whether the following statements are a) true, b) false or c) information is not available in the text:

1. Laptops are folded shut for transportation.
2. Laptops can't enable employees to take the online world with them.
3. Laptops won't be produced in a decade.

Ex.1. Match the words with their definitions.

1. mailbot	a. carrying out of two or more sequences of instructions at the same time in a computer
2. mock-up	b. duplicated or added as a precaution against failure, error, etc.
3. morphing	c. a software agent in a mail server that is typically used to send an automatic response to the sender
4. multiprocessing	d. a computer technique used for graphics and in films, in which one image is gradually transformed into another image without individual changes being noticeable in the process
5. polymorphism	e. a working full-scale model of a machine, apparatus, etc., for testing, research, etc.
6. stream	f. the ability in computer programming to present the same programming interface for differing underlying forms (data types, classes)
7. redundant	g. to transfer (esp. audio or video data) in a continuous flow
8. resolution	h. a device that transmits and receives data using a modulated carrier wave
9. pixel	i. the number of <u>pixels</u> (individual points of color) contained on a display monitor, expressed in terms of the number of pixels on the horizontal axis and the number on the vertical axis
10. modem	k. the basic unit of a digital image, representing a single color or level of brightness

Ex.2. Choose the correct option to complete the sentences.

1. The global penetration of the Internet and the Web access to information and other resources and facilitated the forming of relationships among people and organizations on an unprecedented scale.
a) has enabled b) have enabled c) enable
2. With the emergence of smartphones, tablets, and other computer-based mobile devices, information systems to support mobility as the natural human condition.
a) have been extended b) has been extended c) had been extended
3. Recently, there a growing recognition of the need to take a risk-based approach to security.
a) have been b) has been c) had been
4. The progress of electronic commerce over the Internet in a dramatic growth in digital interpersonal communications.
a) has resulted b) had resulted c) have resulted
5. Causes of damage such as malicious code, computer hacking and denial of service attacks more common, more ambitious increasingly sophisticated.
a) had become b) has become c) have become
6. Even a small scale security breach could your business without access to its critical IT systems for hours or days.
a) leaves b) left c) leave
7. If a business wishes to survive it must the importance of information security and put in place appropriate measures and processes.
a) has been grasping b) grasp c) grasps
8. Cyberspace a global and interconnected domain that spans geographic borders and national jurisdictions.
a) is b) are c) is being

Ex.3. Choose the correct alternative for each sentence.

1. PERSONNEL / PERSONAL

- a) Many of herbelongings had been stolen.
- b) Smith's company has a problem: their employees want a 20% pay increase.

2. DEVICE / DEVISE

- a) The store sells TVs, VCRs, and other electronic
- b) She ... a method for quicker communications between offices last year.

3. CUSTOMERS / CLIENTS

- a) Supermarkets use a variety of tactics to attract and retain
- b) She advises on their investments.

4. COST / PRICE

- a) The.....of rebuilding the supermarket will be 12 million pounds.

b) What's theof this laptop?

Ex.4. Case-study.

Librarians use computers to catalogue and classify all the materials received in the library. How can computers assist visitors and customers of the library to find some specific information?

Ex.5. Compile the text theses of your own. Give your reasons.

Unit 17. Tablet Computers

A tablet computer, or simply a tablet, is a mobile computer with a display, circuitry and battery in a single unit. In 1968, computer scientist Alan Kay developed and described the concept of a personal computer for children of all ages. This is a conceptual portable educational device that would offer functionality similar to that supplied via a laptop computer or a tablet or slate computer. The target audience was children.

The tablet computer and its associated operating system began with the development of pen computing. In 2000 Microsoft used the term Tablet PC to describe a prototype handheld device. Microsoft attempted to define the Microsoft Tablet PC as a mobile computer for field work in business. But their devices failed, mainly due to pricing and usability. Developed in the last two decades of that century, tablet devices became popular in 2010

Tablets come equipped with sensors, including cameras, a microphone, an accelerometer and a touchscreen, with finger or stylus gestures substituting for the use of computer mouse and keyboard. Tablets may include physical buttons (for example: to control basic features such as speaker volume and power) and ports (for network communications and to charge the battery). They usually feature on-screen, pop-up virtual keyboards for typing. Tablets are typically larger than smart phones or personal digital assistants measured diagonally. People use tablets mainly for viewing published content such as video and news.

Tablets Provide a Customized User Experience.

A key component among tablet computers is touch input on a touchscreen. This allows the user to navigate easily and type with a virtual keyboard on the screen or press other icons on the screen to open apps or files. The system must respond to touches rather than clicks of a keyboard or mouse, which allows integrated hand-eye operation, a natural use of the somatosensory system. Touchscreens usually come in two forms: resistive and capacitive. Resistive touchscreens are passive and respond to pressure on the screen. They allow a high level of precision, useful in emulating a pointer but may require calibration.

Because of the high resolution, a stylus or fingernail is often used. Stylus-oriented systems are less suited to multi-touch. Capacitive touchscreens tend to be less accurate, but more responsive than resistive devices that's why they require a conductive material, such as a finger tip, for input.

Tablets can provide a customized user experience that businesses can use to create better ways to interact with customers. You've probably heard about businesses using mobile devices to gather analytics on the shopping or buying behaviors of their customers. Tablets also allow hotels to use them as make shift concierge stations. Instead of going down to the front desk to chat with the receptionist, guests can log into the hotel services on the tablet and book reservations, download and print boarding passes, and add notes for hotel employees. People can use tablets to order food and beverages, shop the company store, or purchase tickets for future events.

Answer the following questions:

1. What are tablets equipped with?
2. What do people use tablets for?
3. What is a a touchscreen?
4. What are the 2 main forms of touchscreens?

Ex.1. Match the words with the definitions.

1. interface	a. a boundary across which two separate components of a computer system exchange information.
2. touchscreen	b. an electronic visual display that the user can control through simple or multi-touch gestures by touching the screen with a special stylus/pen and-or one or more fingers.
3. modem	c. an undigested and voluminous mass of information about a problem or the state of a system.
4. dump	d. a device that modulates signals to encode digital information and demodulates signals to decode the transmitted information.
5. encryption	e. a method of publishing to a website or blog from a mobile phone or other handheld device.
6. mail bot	f. a large digital computer serving 100 500 users and occupying a special airconditioned room.
7. laptop	g. a computer accessory that is used to assist in navigating or providing more precision when using touchscreens.
8. mainframe	h. a software agent in a mail server that is typically used to send an automatic response to the sender.

9. stylus	i. a portable personal computer with a clamshell form factor, suitable for mobile use.
10. moblog	j. the action or process of putting information or data into code so that people who do not have permission cannot read it.

Ex.2. Complete the sentences with the words.

a) prototype	b) iPad	c) content	d) typing	e) assistants	f) ports
g) touchscreen	h) market	i) unit	j) computer		

1. Alan Kay developed and described the concept of a personal for people of all ages.
2. A tablet, is a mobile computer with a display, circuitry and battery in a single
3. Android was the first of today's dominating platforms for tablet computers to reach the
4. Tablets come equipped with sensors, including cameras, a microphone, an accelerometer and a
5. Tablets may include physical buttons and
6. Tablets are typically larger than smart phones or personal digital measured diagonally.
7. Tablets usually feature on-screen, pop-up virtual keyboards for
8. People use tablets mainly for viewing published such as video and news.
9. The top-selling line of devices was Apple's with 100 million sold between its release in 2010.
10. In 2000 Microsoft used the term Tablet PC to describe a handheld device.

Ex.3. Choose the missing words.

a	b	c	d	e
touchscreen	component	electronics	features	users

1. Android is designed primarily for mobile devices such as smartphones and tablet computers, with specialized user interfaces for televisions, cars and wrist watches.
2. A virtual keyboard is a software that allows a user to enter characters.
3. Despite being primarily designed for touchscreen input, Android also has been used in game consoles, digital cameras, regular PCs and other
4. Mobile operating systems combine of a personal computer operating system with other features useful for mobile or handheld use.
5. Cloud resources are usually shared by multiple

Ex.4. Compile the text theses of your own. Give your reasons.

Unit 18. Benefits of Using Tablets and Laptops in Business

Tablets and laptops are connecting people around the world, whether through social-media websites, emails or visual chat applications. Business owners often use tablets and laptops to get tasks done on the run, create presentations for meetings and update websites and blogs. Business people may need to travel extensively as part of a job to meet with clients, perform projects or travel between offices. Tablets and laptops allow people to get work done on the road, so travel time is well spent. In addition, workers will not be behind on their work once a trip is done. People can use tablets and laptops to transfer money online. This means that business people can meet with customer or clients and handle the transaction while both parties are present. This gives the buyer more control and confidence, as he is present when the money is drawn from his account.

Business people can use tablets and laptops to keep in touch with clients and perform other work on the go. Tablets and laptops allow someone to update the company blog, update social media with links and promotions and answer emails no matter where he is. Another benefit of using tablets and laptops in a business is the view of the company from the general public. A business that stays up-to-date with technology is compatible with other operating systems and can accept emails and documents from clients and collaborative companies using older systems. Using tablets and laptops also shows an understanding of customers' needs and interests, especially companies operating in the technological industry.

Answer the following questions:

1. How does business use tablets and laptops?
2. What are the advantages for customers to use tablets and laptops?
3. What are the disadvantages for customers to use tablets and laptops?

Ex.1. Complete the sentences with the words.

a) equipment	b) features	c) balances	d) programmed	e) people	f) experts
g) efficiency	h) environments	i) supervision	j) data		

1. Tiny computers on a chip are used in medical, home appliances, cars and toys.
2. Workers use handheld computing devices to collect at a customer site, to generate forms, to control inventory, and to serve as desktop organizers.
3. Computers are part of many machines and devices that once required continual human and control.
4. Computers in security systems result in safer
5. Computers in cars improve energy

6. Computers in phones provide such as call forwarding, call monitoring, and call answering.
7. Smart cards store vital information such as health records, drivers' licenses, bank, and so on.
8. Cars with built in computers can be to better meet individual needs.
9. Computers can help work more creatively.
10. Experts systems software enables computers to 'think' like

Ex.2. Choose the correct alternative for each sentence.

1. EMPLOYERS / EMPLOYEES

- a) are people who are employed by companies.
- b) are people who give jobs to others.

2. DATA / DATE

- a) The research involves collecting
- b) What's the ... of the next meeting?

3. ADVERTISING / ADVERTISEMENT

- a) Our ... budget is 10% less than last year.
- b) Did you see the big ... for a new Managing Director for Acme in this morning's newspapers?

4. STUFF / STAFF

- a) Joan is the only lawyer we have on
- b) There are some CD systems and there, and laser disks.

Ex.3. Case-study.

Laptops are not as powerful as desktop PCs. But many companies replace all of the office PCs with laptops. What are the main advantages of using laptops instead of desktop PCs? How about disadvantages?

Ex.4. Compile the text theses of your own. Give your reasons.

Unit 19. Diffusion of ICT in All Sectors of the Economy and Society

The technology enhances the functioning of the markets because it provides information to producers and consumers in order to help them make efficient choices ICT has been incorporated into business and government activities. The market is the mechanism through which ICT is associated with economic development. The relationship between ICT and market-driven development is presented in a self-referential way. The existing capacity of ICT in the socio-economic fabric is considered a condition of 'readiness' for further ICT development through network-based activities.

The diffusion of ICT in all sectors of the economy and society, together with the liberalization of the telecommunications sector, are set up as desirable policy targets in their own right. And it is assumed that market mechanisms are required to achieve the developmental potential of the technology. For example, 'quality of learning' is taken to be the extent to which ICT is incorporated into education, and the privatization of telecommunications is identified as the main criterion for assessing network policy. However, at present there is little evidence that ICT contributes to better educational systems, even in industrialized societies, while there are studies showing that market mechanisms cannot be relied upon to provide telecommunications access for poor communities in remote areas of developing countries.

Instruments for Economic and Social Gains.

The discourse of international development agencies on the role of ICT merits attention in information systems research because it constitutes part of the institutional context of the micro-level processes involved in the formation of information systems. This discourse influences the legitimacy of professional interventions towards specific objectives and sensitizes 'users' to a particular view of the way ICT may affect their lives.

The current emphasis on the digital divide as the major contemporary problem facing developing countries also determines the way the meaning of ICT-based information systems is understood in universal terms. It conveys specific views on why Internet connectivity is important and what it should achieve for even the remotest communities of the world. For example, interventions to develop community ICT services in poor regions bear implicit promises for economic benefits through participation in the global market and for rationalized citizens/government interactions. Moreover, there is a tendency to see such ICT centres as sustainable businesses in their own right. In other words, a universal discourse on ICT and development constructs and spreads in developing countries specific development visions of new, technology-mediated modem lives.

ICT is as an instrument for economic and social gains within a market regime, and it plays the kind of developmental role. The socio-economic conditions are favorable for the mutual re-enforcement of ICT innovation and an effective market.

For many information systems scholars and professionals, such a general association of ICT with socio-economic effects is of questionable validity. It is well understood in information systems studies that the actual 'effects' of ICT in the place where it is used cannot be identified in terms of the potential of the new technologies as manifested in the laboratory or as realized in other social settings. ICT innovation is a process that takes place within the formative conditions of a particular social and organizational context.

With specific reference to the question of ICT and development, the literature on information systems in developing countries includes a substantial amount of empirical evidence, mainly case studies, that reveals the situated manner in which information systems projects take shape within communities striving to improve their life conditions.

At the organizational level of analysis, information systems researchers and professionals are well aware of the tension between the situated nature of the course of change and general, apparently rational, theoretical propositions on the way ICT impacts - or should impact - on organizational performance.

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Answer the following questions:

1. How does the technology enhance the functioning of the markets?
2. What is economic development?
3. What does it depend on?

Ex.1. Complete each sentence with a verb in the correct form: *-ing* or *to*:

1. They have finished complex financial calculations in micro-seconds using spreadsheet programs.
a) to do b) doing
2. Government departments manage revenue from taxation and measure macroeconomic growth very quickly.
a) calculating b) to calculate
3. Modern businesses plan more competitive using computer technologies.
a) becoming b) to become
4. Microfinance allows banks with a social mission.
a) to link b) linking
5. Mainframe computers can afford several application programs concurrently.
a) processing b) to process

Ex.2. Complete the sentences with the words.

a) management b) cycle c) technologies d) goods e) strategies f) worth g) impact h) stakeholders i) innovative j) environment
--

1. A smart city is an city that uses ICTs.
2. A smart city program aims to create attractive, participative, innovative and resilient urban encouraging creative solutions.
3. Smart economy presents miscellaneous challenges: support innovation to “smart” the city, improve collaboration and sharing between public and private
4. A smart city incorporates ICTs into urban and planning.
5. Smart economy aims to improve business life
6. Digital computing are greatly transforming economies.
7. Digital economy has been defined as the branch of economics studying zero marginal cost intangible over the Internet.

8. Digital networking and communication infrastructures provide a global platform over which people and organizations devise
9. The digital economy is three trillion dollars today.
10. The growth of the digital economy has widespread on the whole economy.

Ex.3. Choose the correct option to complete the sentences.

1. Today even the smallest firms, as well as many households throughout the world, computers.
a) had been owning or leasing b) has been owning or leasing c) own or lease
2. Individuals on information systems, generally Internet-based, for socializing, study, shopping, banking, and entertainment.
a) has been relying b) had relied c) rely
3. Political and business experts that business innovation is the key to the return of global economic stability and growth.
a) agree b) agrees c) has been agreeing
4. Through networking, users access to information resources, such as large databases, and to other individuals, such as coworkers, clients, or people who share their professional or private interests.
a) gain b) has been gaining c) had been gaining
5. Innovation now open collaboration, direct interaction with customers, tighter integration with partners, and the incorporation of external talent and resources.
a) have been requiring b) require c) requires
6. Forward-thinking security leaders tremendous progress in driving tighter linkages between business innovation goals and security actions.
a) has been making b) have made c) has made
7. Without the right security strategy, business innovation could be stifled or the organization at great risk.
a) has been putting b) put c) puts
8. A critical element a more structured and strategic approach to organizational risk assessment.
a) have been taking b) has been taking c) had been taking

Ex.4. Compile the text theses of your own. Give your reasons.

Unit 20. Perspective of Technology Management

Technology is a Greek word derived from the synthesis of two words: *techne* (meaning art) and *logos* (meaning logic or science). So loosely interpreted, technology means the art of logic or the art of scientific discipline. Technology is inherently difficult to manage because it is constantly changing, often in ways that cannot be predicted. Technology management is the set of policies and practices that leverage technologies to build, maintain, and enhance the competitive advantage of the firm on the basis of proprietary knowledge and know-how.

The role of the technology management function in an organization is to understand the value of certain technology for the organization. Continuous development of technology is valuable as long as there is a value for the customer and therefore the technology management function in an organization should be able to argue when to invest on technology development and when to withdraw.

Technology management deals with the design, development, operation and use of technological products and services to help increase efficiency and deliver value to an organization. Technology management is closely related to other disciplines such as business intelligence and analytics, IT, user experience design, innovation management and strategic management.

Technology managers have the responsibility to implement and maintain the technological infrastructure of hardware devices, software programmes, networks and communication systems. They also develop creative solutions to business and technology issues, offer specialized IT support and play an important role in the overall decision process within companies.

There are many new products and technologies coming up daily. Using the right technology for a particular task is the best way to do the task efficiently. Moreover, most of the companies use lots of technologies and they may not know the kind of technologies that is present in their company after a period of time.

Apart from IT companies other companies also bring out many products using many technologies. It is very hard to anticipate the impact of the new technologies on the current process. You should have a comprehensive knowledge of the new technologies and the existing technologies to take advantage of the emerging technologies. Only with this knowledge you would be able to invest in these technologies and make a profit out of that technology. Only a few companies have facilities to do research on the new technological areas and to invest in them. Other companies rely on the consultants to choose the technology that is needed for their process and projects. Collaborations and joint ventures are on the way to use such technologies so that their interests are protected.

Answer the following questions:

Ex.1. Complete the sentences (1-6) with the most suitable prepositions (a-e):

1. My team is responsiblethe designing of new models for production.
a) at b) by c) for d) on e) in
2. The government wants to help businessour area to grow.

a) with b) in c) at d) of e) over

3. The processselecting candidates is a difficult one.

a) in b) with c) of d) on e) for

4. Large organizations may have the structurecomplex hierarchies and many layers of management.

a) of b) on c) for d) with e) between

5. An organization chart is a diagram showing relationshipsdifferent jobs and departments.

a) of b) with c) between d) among e) in

6. I now have a better ideamanagerial work in general.

a) of at) c) about d) for e) with

Ex.2. Choose the correct option to complete the sentences.

1. We will have a salary..... of 7% this year, just enough to keep up with inflation

a) increase b) decrease c) drop off

2. The market for product A is already.... . We need to diversify if we wish to increase our profits.

a) dissatisfied b) saturated c) taken out

3. The ... towards more colorful fashion is getting stronger. We need to develop new products.

a) trend b) direction c) path

4. Manufacturing, mining, service, government, and commerce are different ... of the economy.

a) themes b) sectors c) estates

5. Investors are interested in a ... company that shows initiative and develops new products.

a) parallel b) thematic c) dynamic

6. When a small business needs money to fund a new project or to expand, it can borrow on

a) stability b) credit c) initiative

7. What angered me wasn't his resignation but the ... in which he did it.

method b) manner c) aspect

8. We used advertising to ... interest in the product and then educated people on how to use it.

introduce b) adopt c) generate

9. Any problems ... from the new contract are not my concern. I warned against signing it.

a) arriving b) producing c) arising

10. The director was accused of being ... in the way he ran the company.

a) inflexible b) inevitable c) inflatable

Ex.3. Case-study.

Most employers do job interviews before offering a position to a person.

Do you think this is the best way to do it, or are there better alternatives?

What is the best method of choosing employees in your opinion?

Give reasons for your answer and include any relevant examples from your own experience.

Ex.4. Compile the text theses of your own. Give your reasons.

Unit 21. Operations Management

Operations management refers to the administration of business practices to create the highest level of efficiency possible within an organization. It is concerned with converting materials and labor into goods and services as efficiently as possible to maximize the profit of an organization. Operations management teams attempt to balance costs with revenue to achieve the highest net operating profit possible.

Operations management involves utilizing resources from staff, materials, equipment and technology. Operations managers acquire, develop and deliver goods to clients based on client wants and the abilities of the company.

Operations management handles various strategic issues including determining the size of manufacturing plants and project management methods, and implementing the structure of information technology networks. Other operational issues include the management of inventory levels, including work-in-process levels and raw materials acquisition; quality control; materials handling; and maintenance policies. Operations management entails studying the use of raw materials and ensuring minimal waste occurs. Managers utilize numerous formulas such as the economic order quantity formula to determine when and how large of an inventory order to process and how much inventory to hold on hand.

Operations management understands local and global trends, customer demand and the available resources for production. Operations management approaches the acquisition of materials and use of labor in a timely, cost-effective manner to deliver customer expectations. Inventory levels are monitored to ensure excessive quantities are on hand. Operations management is responsible for finding vendors that supply the appropriate goods at reasonable prices and have the ability to deliver the product when needed.

Another large facet of operations management involves the delivery of goods to customers. This includes ensuring products are delivered within the agreed time commitment. Operations management also typically follows up with customers to ensure the products meet quality and functionality needs. Finally, operations management takes the feedback received and distributes the relevant information to each department to use in process improvement.

An individual working in operations management must have an understanding of the various processes within a company. An operations manager is involved in coordinating and developing new processes while reevaluating current structures. Organization and productivity are two key drivers of being an operations manager, and the work often requires versatility from the operations manager.

Ex.1. Complete the sentences with a) a, b) an, c) the, d) no article

1. I know there's an increase, but I don't understand the reasons behindincrease.
2. This is notkind of product that a consumer will use only once.
3. If you can think ofbetter way to do this, please let me know.
4. Recent market trends show that there issignificance increase in the use of our products among couples with two or more children.
5. I know there are..... more effective ways to get this done.

Ex.2. Choose the correct option to complete the sentences.

1. A good IT project manager should know about every stage of the software development life cycle ...
a) proceeds b) percentage c) process
2. The last project did not go well because there was no logical work ... structure.
a) breakdown b) break-out c) break
3. We'll help you manage all types of documents with equal ...
a) facility b) easy c) simplification
4. For certain types of businesses, a list of people who have already ... an interest in buying your products should be included in the business plan.
a) said b) expressed c) exclaimed

5. good business plan defines your business and ... your goals.
a) identifies b) indents c) idealizes
6. As innovators, we need to create new trends, not just ... on trends that already exist.
a) throw b) jump c) fly
7. Generally speaking, a good manager ... a smooth production process.
a) ensures b) makes sure c) is sure
8. After you visualize and plan a project, you have to ... it.
a) implement b) imply c) implode
9. We haven't been very ... in promoting our products
a) action b) acting c) active
- 10 . We're investing money in areas where we think we can grow and be
a) profit b) profitable c) profitable

Ex.3. Case-study.

100 years ago people thought that the human race was steadily making progress in all areas of life. Nowadays, there is less certainty that it is so.

In what areas do you think the most important progress has been made so far?

In what areas are more things needed to be done? Give reasons for your answer.

Ex.4. Compile the text theses of your own. Give your reasons.

Unit 22. Innovation and Creativity

The term “innovation” dates from the fifteenth century and means “the introduction of something new,” or “a new idea, method or device.” Innovation is an important topic in the study of economics, business, technology, sociology, policy making and engineering.

Organizations of every sort need to innovate if they are to survive and thrive. This may involve developing new products or services, improving existing products or services, or making changes to existing working practices or procedures. Managers need to seek better alternatives to their organization's products or services and operational processes. This may often require taking risks and clearly specifying the benefits expected from the innovation.

Innovation is different from invention: inventions are often the result of an individual's ingenuity in creating a new product idea, whereas innovation generally

involves a team working together to develop business solutions and significant competitive advantage for their organization.

Innovation is also different from creativity: creativity involves thinking of novel and appropriate ideas, whereas innovation is the process by which ideas are turned into practice or product. Innovation and new ideas can come from within a manager's team, from elsewhere in the organization, or from customers, suppliers, and other stakeholders.

Popular approaches to fostering innovation through creativity include:

1. Create a stimulating environment. Offices that include stimulating objects such as journals, art, games and other items - some of which may not even be directly related to your business - serve as sources of inspiration. In addition, structuring the work area by removing physical barriers between people will improve communication and promote creative interaction.
2. Reward efforts through positive psychological reinforcement. Encourage your employees to take risks, rewarding them for creative ideas and not penalizing them when they fail. In doing so, you'll enable people to more readily take on assignments that stretch their potential (and that of your organization), discussing in advance any foreseeable risks and creating the necessary contingency plan. Encourage employees at all levels to contribute suggestions for improving current business operations.
3. Encourage different points of view through outside perspectives. Innovation can often spring from a review of how your customers view and use your products and services. Soliciting their opinions can provide valuable insight into potential areas for improvement as well as areas where you're succeeding.

Ex.1. Match the words (1-10) with their definitions (a-j):

- | | |
|------------------|---|
| 1. external | a) special ability to do something well |
| 2. effectiveness | b) facts or details about a person, company, product, etc. |
| 3. planning | c) something that is available for sale |
| 4. information | d) how successful an investment, company, etc., is and how much profit it makes |
| 5. goal | e) someone who has an important position in business, making decisions |
| 6. product | f) a purpose or something that you want to achieve |
| 7. performance | g) an idea about what you may do in the future |

- | | |
|--------------|--|
| 8. executive | h) the act of deciding how to do something |
| 9. skill | i) coming from outside a company, organization, or country |
| 10. plan | j) the ability to be successful and produce the intended results |

Ex.2. Choose the correct option to complete the sentences

1. I didn't like the way the company was being run so I
a) resigned b) sacked c) terminated
2. We know that advances in technology mean you could be offering your ... and services to people in Brighton, Beijing or Buenos Aires at the same time.
a) consumers b) products c) income
3. The local chamber of ... had invited a group of Japanese investors to the area.
a) commodities b) consumers c) commerce
4. The global ... hit badly, many other firms round here were closing down or shipping out.
a) recession b) boom c) increase
5. We were forced to downsize, but then saw the changing situation as an opportunity, rather than a
a) thread b) threat c) chance
6. Using web-technologies, we managed to expand our ... by around 300%.
a) turn b) takeover c) turnover
7. The advice, then, is to find the market that ... your company.
a) suits b) inappropriate c) sues
8. It's important to resolve conflict quickly to produce a ... atmosphere in the workplace.
a) destructive b) constructive c) construction
9. This year business is booming, so we can start thinking about ... our investments.
a) decreasing b) failing c) increasing
10. We face tough ... , but our product has some important advantages.
a) employment b) competition c) completion

Ex.3. Case-study.

Many small, local shops are closing as they are unable to compete with large supermarkets in the area.

How does this effect local communities?

How could this situation be improved?

Give reasons for your answer.

Ex.4. Compile the text theses of your own. Give your reasons.

Active Vocabulary

accomplish- выполнять, совершать

broad- обширный

convergence- конвергенция, сближение

corporate entities- юридические лица

challenge- вызов

compel – принуждать

compatible- совместимый, согласованный

drawback-недостаток

enterprise software- корпоративное программное обеспечение

extended term- длительный срок

gesture- жест, знак

influence on - влияние на

immense- необъятный, безмерный, обширный

implementation- реализация

market conditions- рыночные условия

malicious- злонамеренный, вредоносный, опасный

middleware- промежуточное программное обеспечение

neutral- нейтральный

permit- разрешать

performance- производительность, результативность, эффективность

predict- прогнозировать

rank- ранжировать, расставлять по порядку
refer – ссылаться, относиться
retrieve- извлекать
reveal- открывать

separate- отделять
shift – переход, смена, сдвиг
stance – позиция
substitute - заменять, заменитель

tremendous- огромный

vehicle- транспортное средство

wearable- пригодный для носки

utilize- использовать

АНГЛО-РУССКИЙ СЛОВАРЬ КОНТЕКСТУАЛЬНЫХ ЗНАЧЕНИЙ АКТИВНОЙ ЛЕКСИКИ

a – adjective – прилагательное
adv – adverb – наречие
cj – conjunction – союз
n – noun – существительное
prep – preposition – предлог
v – verb – глагол

А

abandonment *n* отказ, ликвидация
able *a* способный
about *prep* о
above *prep* над
absorb *v* поглощать, впитывать
accept *v* принимать
acceptance *n* принятие
accessible *a* доступный
accordingly *adv* соответственно
account *n* счёт
accurately *adv* точно
achieve *v* достигать
acknowledge *v* признавать
acknowledgement *n* подтверждение
acquire *v* получать, овладеть
activity *n* деятельность
adapt *v* адаптировать, приспособливаться
add *v* добавлять, прибавлять
additional *a* дополнительный
adoption *n* принятие
advantage *n* преимущество

advertisement *n* реклама
advice *n* совет
affect *v* влиять
aid *n* помощь, поддержка
aim *n* цель
aim *v* нацеливаться
alert *a* бдительный, внимательный
alignment *n* выравнивание, регулировка
allocate *v* распределять
allocation *n* размещение
allow *v* позволять, разрешать
alongside *prep* наряду с, вместе с
among *prep* среди
appear *v* появляться
application *n* применение
apply *v* применять
appointment *n* назначение
appraisal *n* оценка, анализ
approach *n* подход
appropriate *a* соответствующий
appropriately *adv* соответственно
argue *v* утверждать, спорить
arise *v* возникать, происходить
arrange *v* устраивать, организовывать
as *conj* когда, поскольку
assembly *n* сборка, монтаж
assess *v* оценивать
assumption *n* предположение
attach *v* прикреплять, присоединять
attempt *v* пытаться
attend *v* уделять внимание, следить
attentive *a* внимательный
attitude *n* отношение
attract *v* привлекать
attraction *n* привлечение
availability *n* наличие, доступность
available *a* доступный
avoid *v* избегать
aware *a* осведомлённый

В

background *n* основа
bar code *n* штрих-код
before *conj* до

behavior *n* поведение
below *adv* внизу
benefit *v* извлекать пользу
between *prep* между
bias *n* предвзятость, предубеждение
boring *a* скучный,
both ... and *conj* как... так и
briefly *adv* кратко
broad *a* широкий
budget *n* бюджет
burden *n* бремя
business *n* компания

С

calculate *v* подсчитывать
capability *n* способность
capacity *n* вместимость, потенциал
capture *v* овладеть, захватить
certain *a* определённый
certainty *n* определённость, уверенность
certify *v* подтверждать
chain *n* цепочка, последовательность
challenge *v* бросать вызов
cheap *a* дешёвый
check *v* проверять
checkout *n* контроль, проверка
choice *n* выбор
choose *v* выбирать
chunk *n* порция, часть
chunking *n* разделение
circumstance *n* обстоятельство
clarify *v* разъяснять
clearly *adv* ясно, точно
close *a* близкий, тесный
closely *adv* тесно, близко
codify *v* систематизировать
coherent *a* когерентный, последовательный
collaborative *a* совместный, общий, коллективный
commitment *n* обязательство
common *a* обычный
compare *v* сравнивать
compatible *a* совместимый
competitive *a* конкурентный
competitor *n* конкурент

complementarity *n* взаимозависимость, взаимодополняемость
 complementary *a* дополнительный, добавочный
 complete *v* завершать
 completely *adv* полностью
 compliment *v* приветствовать, дополнить
 comprehensive *a* подробный, детальный, полноценный
 concern *v* касаться, относиться
 conclude *v* заключать
 condition *n* условие
 conduct *v* проводить
 confident *a* уверенный
 confidently *adv* уверенно
 confirm *v* подтверждать
 confuse *v* запутывать, сбивать с толку
 congruent *a* конгруэнтный, соответствующий
 consciously *adv* сознательно
 consequence *n* следствие, результат
 consider *v* рассматривать
 consideration *n* рассмотрение, обсуждение
 consist (of) *v* состоять (из)
 consistent *a* последовательный, совместимый, устойчивый
 constitute *v* составлять
 contemporary *a* современный
 contingent *a* случайный
 contribute *v* вкладывать
 conventional *a* обычный, стандартный
 convey *v* передавать, переносить
 convince *v* убеждать
 cope *v* справляться
 core *a* основной
 correspondingly *adv* соответственно
 cost *n* стоимость
 counter *n* обратное, отражение удара
 cover *v* покрывать, охватывать
 cumulative *a* совокупный, суммарный
 current *a* текущий, сегодняшний
 customer *n* клиент
 custom-made *a* изготовленный на заказ

D

daily *adv* ежедневно
 data *n* данные, информация
 database *n* база данных
 deal (with) *v* иметь дело (с)

decrease *v* уменьшать
deep *a* глубокий
define *v* определять
delegate *v* передавать полномочия, поручать
deliberate *a* преднамеренный
delivery *n* доставка
depend (on) *v* зависеть (от)
dependent *a* зависимый
deployment *n* размещение, развёртывание
derive *v* получать
describe *v* описывать
destroy *v* разрушать
deterministic *a* детерминированный
devolve *v* передавать
differ *v* отличаться
differentiation *n* разграничение, дифференциация
differently *adv* иначе
dimension *n* измерение, аспект, направление
directly *adv* непосредственно, сразу
disappear *v* исчезать
disperse *v* рассредоточивать
disseminate *v* распространять
distinct *a* чёткий, отчётливый
distinction *n* различие, разделение
distinctive *a* отличительный
dramatically *adv* существенно, резко
draw *v* привлечь, извлечь
due to *prep* благодаря

Е

easily *adv* легко
easy *a* лёгкий
economize *v* экономить
effective *a* эффективный
effectively *adv* эффективно
efficiency *n* эффективность
either... or... *conj* или... или...
elaborate *v* разрабатывать
eliminate *v* устранять, удалять, ликвидировать
elsewhere *adv* повсюду, в другом месте
embody *v* включать, содержать, воплощать
emerge *v* появляться
emergency *n* чрезвычайное происшествие, авария
emergent *a* возникающий

employee *n* работник, служащий
employer *n* работодатель
employment *n* занятость, работа
enable *v* позволять, давать возможность
encourage *v* поощрять, вдохновлять
endanger *v* подвергать опасности
engage *v* заниматься
enhance *v* улучшать
ensure *v* обеспечивать, гарантировать, обнадёживать
entail *v* повлечь за собой
entirely *adv* полностью, совсем
entrant *n* участник
entrepreneurial *a* предпринимательский
environment *n* окружающая среда
equipment *n* оборудование
especially *adv* особенно
essence *n* сущность
essential *a* существенный
establish *v* устанавливать
even *adv* даже
event *n* событие
exceed *v* превышать
excellence *n* превосходство, преимущество
exchange *n* обмен
exchange *v* обменивать
exclusive *a* эксклюзивный
execution *n* выполнение
exercise *v* осуществлять, выполнять
exert *v* влиять, оказывать влияние
expand *v* расширять
expect *v* ожидать
expectation *n* ожидание
experience *v* испытывать
explicit *a* точный, чёткий
explore *v* исследовать
extend *v* расширять
extent *n* степень, мера, размер
external *a* внешний
extract *v* извлекать
extrinsic *a* внешний

Г

facilitate *v* способствовать, содействовать
facility *n* установка, возможность

familiar *a* знакомый, привычный
fare *n* тариф, стоимость
fatigue *n* усталость
favor *v* способствовать, предпочитать
favorable *a* благоприятный
find (found) *v* находить
find out *v* выяснять, обнаруживать
fit *v* подходить
flash drive *n* флэш-накопитель
flexibility *n* гибкость
flexible *a* гибкий
fluent *a* беглый, плавный
follow *v* следовать
for *prep* для
formal *a* формальный, официальный
former *a* предыдущий
framework *n* структура
frequent *a* частый
from *prep* из

G

gain *v* добиться, приобретать
genuinely *adv* подлинно, истинно
goal *n* цель
gossip *n* сплетня
gradually *adv* постепенно
groupware *n* групповая работа
guide *v* руководить, управлять
guideline *n* указание, направляющая линия

H

habit *n* привычка
hand out *v* выдавать
handle *v* управлять
hardware *n* аппаратное обеспечение
hearing *n* слух
however *conj* однако

I

identify *v* определять
immediate *a* немедленный, мгновенный
imperative *a* обязательный, насущный
implement *v* осуществлять
implication *n* причастность, соучастие

imply *v* подразумевать
impose *v* насаждать
improve *v* улучшать
inadequate *a* неадекватный
inappropriate *a* неподходящий, неадекватный
incentive *n* стимул, мотивация
income *n* доход, прибыль
incorporate *v* включать
increase *v* увеличивать
increasingly *adv* в большей степени
incremental *a* поэтапный, дополнительный
incur *v* нести, брать на себя
indeed *adv* действительно
independence *n* независимость
in-depth *a* тщательный
indicate *v* указывать
indispensable *a* необходимый, обязательный
inevitably *adv* неизбежно
infinite *a* бесконечный
inflexible *a* негибкий, жёсткий
informal *a* неформальный, неофициальный, непринуждённый
inherent *a* присущий, свойственный
initial *a* первоначальный
inner *a* внутренний
insight *n* понимание, знание
insist *v* настаивать
install *v* устанавливать
institute *v* учреждать, вводить
institution *n* заведение
insurance *n* страхование
insurer *n* страховщик
intend *v* намереваться
intense *a* интенсивный, активный
intentionally *adv* намеренно, специально
interact *v* взаимодействовать
interaction *n* взаимодействие
interchange *n* обмен
interdependence *n* взаимозависимость
internal *a* внутренний
interpret *v* объяснять
interpretive *a* пояснительный
intimacy *n* тесная связь
intrinsic *a* внутренний
inventory *a* кадастровый, инвентарный

inventory *n* опись, инвентаризация
investigation *n* исследование
involve *v* вовлекать, включать
irrespective *a* безотносительный
issue *n* вопрос, проблема, задача, тема
iterative *a* повторяющийся

J

joint *a* совместный
judge *v* судить, оценивать

K

keen *a* проницательный

L

lack *v* испытывать недостаток
landscape *n* ландшафт, пейзаж
latter *a* последний
layout *n* дизайн
lie *v* находиться, лежать
likely *a* возможный
likely *adv* вероятно
link *n* связь
link *v* соединять
literate *a* грамотный
loan *n* заём
local *a* местный, локальный
log *n* файл регистрации
look for *v* искать
lower *v* понижать

M

main *a* главный
major *a* главный
manual *a* ручной
manufacture *v* производить, выпускать
match *v* соответствовать, отвечать
matter *v* иметь значение, значить
mean *v* значить, обозначать
means *n* средство
mediate *v* занимать промежуточное положение
medium *n* средство, среда
meet *v* отвечать, удовлетворять
mindset *n* мышление

mirror *v* отражать
mission *n* цель, предназначение
monitor *v* отслеживать

N

narrow *a* узкий
negotiate *v* вести переговоры
network *n* сеть
numeric *a* числовой

O

objective *n* цель
obtain *v* получать
occur *v* происходить, случаться
offer *v* предлагать
offset *n* замещение
off-the-shelf *a* самый современный
onto *prep* на, в
opportunity *n* возможность
otherwise *conj* иначе
outcome *n* следствие, результат, итог
out-of-date *a* устаревший, несовременный
output *n* результат, итог
over *adv* в течение
overall *a* общий
overcome *v* преодолевать

P

paperless *a* безбумажный
particular *a* особенный
patient *n* пациент
pattern *n* образец
payment *n* плата, платёж
perceive *v* воспринимать
perception *n* восприятие
permanent *a* постоянный
pick up *v* забирать, подбирать
plausible *a* вероятный
pointer *n* указатель
pool *v* объединять
possibility *n* возможность
predispose *v* predispose, predispose
prefer *v* предпочитать
preference *n* предпочтение, преимущество

premises *n* помещения
prescribe *v* предписывать
present *v* представлять
previous *a* предыдущий
price *n* цена
primary *a* первичный
principal *a* основной
prior *a* предварительный, заблаговременный
procedure *n* порядок, процедура, процесс
process *v* обрабатывать
prominent *a* значимый, важный
promoter *n* организатор, учредитель
prone *a* склонный
property *n* свойство, характеристика
proposal *n* предложение
propose *v* предлагать
provide *v* обеспечивать
purchase *n* покупка
put off *v* откладывать

Q

quality *n* качество, свойство
quote *v* цитировать

R

raise *v* поднимать
range *n* диапазон, спектр
range *v* варьировать
rapidly *adv* быстро
rare *a* редкий
receive *v* получать
recipient *n* адресат, получатель
reciprocal *a* обоюдный, взаимный
recognize *v* узнавать
record *v* записывать
redistribute *v* перераспределять
reduce *v* уменьшать
redundant *a* излишний, чрезмерный
refer *v* относиться
regard *n* отношение
regard *v* рассматривать
reinforce *v* усиливать, подкреплять
reject *v* отвергать
relate *v* относиться

relation *n* отношение
relationship *n* отношение, связь
relatively *adv* относительно
relevant *a* соответствующий, уместный
reliable *a* надёжный
remain *v* оставаться
remote *a* отдалённый
repetitive *a* однообразный, повторяющийся
replace *v* заменить
represent *v* представлять
require *v* требовать
requirement *n* требование
researcher *n* исследователь
residual *a* остаточный
resource *n* источник
respond *v* отвечать, реагировать
response *n* ответ
responsibility *n* ответственность
retail *v* продавать в розницу
retailer *n* розничный торговец
retain *v* сохранять, удерживать
reward *n* награда
rigid *a* строгий, чёткий
routine *a* обычный, стандартный
rumor *n* слух
run *v* управлять, работать

S

schedule *v* планировать
scholarship *n* стипендия
scientific *a* научный
scope *n* масштаб
secondary *a* вторичный
security *n* безопасность
seek *v* искать
self-sufficient *a* самодостаточный
sense *n* чувство, здравый смысл
sequential *a* последовательный
service *v* служить
set up *v* устанавливать
severe *a* суровый, жёсткий
shape *v* формировать
share *v* разделять, делиться
significance *n* значение

significant *a* важный
significantly *adv* значительно
similar *a* похожий
since *сj* так как
smell *n* обоняние
so far *adv* пока что
so that *сj* так чтобы
software *n* программное обеспечение
sophisticated *a* современный, передовой, сложный
sparse *a* немногочисленный, разреженный
spot *n* место, участок
spread *n* распространение
still *adv* всё ещё
stock *n* запас, фонд
stockbroking *n* операции с ценными бумагами
storage *n* хранение
store *v* хранить
strain *n* напряжение
strengthen *v* укреплять
subjective *a* субъективный
subordinate *n* подчинённый
subset *n* подгруппа
substantial *a* существенный
substitute *n* заменитель
successive *a* последовательный
successively *adv* последовательно, подряд
such as *сj* такой как
sufficient *a* существенный
suggest *v* предлагать
suit *v* подходить, устраивать
suitable *a* подходящий
supplier *n* поставщик
surveillance *n* наблюдение, контроль
survey *v* обследовать, обзирать
survive *v* выживать

Т

take account *v* учитывать, принимать во внимание
take place *v* происходить
tap *v* использовать
target *n* цель
target *v* направить, нацелиться
taste *n* вкус
telecommuting *n* дистанционное присутствие

teleworking *n* дистанционная работа
term *n* термин
than *conj* чем
thereafter *adv* впоследствии
though *conj* хотя
threaten *v* угрожать
tightly *adv* плотно, тесно
touch *n* осязание
touch *v* касаться
trace *v* прослеживать
trail *n* путь, маршрут
trust *v* доверять

U

ubiquitous *a* повсеместный
unable *a* неспособный
unacceptable *a* неприемлемый
uncertainty *n* неопределённость
unclear *a* неясный
uncluttered *a* неперегруженный
undermine *v* разрушать
uniform *a* единообразный, унифицированный
unusual *a* необычный
unauthorized access – несанкционированный доступ, взлом, утечка (информации)
urgency *n* срочность, неотложность
urgent *a* срочный, неотложный
ultimately affect – чрезвычайно серьёзно воздействовать
universal values – универсальные, общечеловеческие ценности
unwillingness of political pundits – нежелание политических мужей (влиятельных фигур)

V

validate *v* подтверждать
valuable *a* ценный
value *n* значение, ценность
value *v* ценить
values espoused by the national society – ценности всецело разделяемые и поддерживаемые обществом (государством)
variable *n* переменная величина, параметр
variables external – внешние переменные факторы
various *a* различный
vary *v* различаться
vehicle *n* транспортное средство

vendor *n* поставщик
venture *a* венчурный
venture *n* предприятие
view *n* взгляд
virtue *n* достоинство
virtue *n* преимущество
visible *a* видимый
vision *n* зрение
violentnon-state actors *n* – противостоящие непримиримые и жестокие
негосударственные формирования, организации
vital – жизненно важный
viz. – а именно (лат.) (videlicet)
voluntary accession – добровольное принятие, одобрение, вступление

W

whereby *adv* посредством чего
whether *cj* ли
which *cj* который
while *cj* в то время как
widen *v* расширять
wise *a* мудрый
with *prep* с
within *prep* в
without *prep* без
workflow *n* документооборот

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