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Практические задания

по дисциплине: «Иностранный язык в профессиональной деятельности»

для подготовки к экзаменационной сессии

студентов 4 курса очной формы обучения

специальности 09.02.07 Информационные системы и программирование,

квалификация: «Разработчик веб и мультимедийных приложений»

2021 - 2022 учебный год

**Часть I.**

**Проверка знания профессиональной лексики.**

|  |  |
| --- | --- |
| (non) impact printer | (бес)контактный принтер |
| offline storage | автономное хранение данных отдельно от компьютера |
| stand-alone | автономный |
| analog computer | аналоговый компьютер |
| hardware | аппаратное обеспечение; аппара­тура; оборудование |
| architecture | архитектура; структура |
| data base | база данных |
| security | безопасность; охрана |
| stock market forecasting | биржевые прогнозы |
| accountant | бухгалтер |
| accounting | бухгалтерский учет |
| to input / to feed in | вводить (информацию) |
| visual display | визуальный индикатор |
| to turn on = to switch on | включать |
| exponentiation | возведение в степень |
| accessory equipment | вспомогательные уст­ройства |
| firmware | встроенное /микропроцессорное программное обеспечение |
| to enter | входить; вводить (данные); заносить, записывать |
| hard-copy output | вывод «твердой» печатной копии |
| soft-copy output | вывод электронной, программно-управляемой копии |
| to turn o ff = to switch off | выключать |
| to perform computations | выполнять вычисления |
| to execute applications programs | выполнять приклад­ные программы |
| to perform | выполнять, производить (действие); осуществлять |
| computing | вычисление, счет; работа на компьютере |
| calculating device | вычислительное устройство |
| subtraction | вычитание |
| graphic plotting tables | графичес­кие планшеты |
| plotter | графопостроитель |
| binary code | двоичный код |
| double-click | двойное нажатие |
| division | деление |
| disk drive | дисковое запоминающее устройство, дисковод |
| display | дисплей; устройство (визуального) отображения; показ |
| advantage/disadvantage | достоинство, преимущество/недостаток |
| unit of data | единица информации |
| to store data and instructions | запоминать информацию и команды |
| to store numbers | запоминать числа |
| memory / storage | запоминающее устройство |
| sound card | звуковая карта (плата) |
| manufacturer | изготовитель; произво­дитель; разработчик |
| keyboard | клавиатура |
| key | клавиша; кнопка; переключатель; ключевой, основной; главный; переключать; набирать на кла­виатуре |
| keyboard input device | клавишное устройство ввода |
| instruction | команда, инструкция, указание |
| stored program computer | компьютер с занесенной в память программой |
| computer literacy | компьютерная грамотность |
| computer-assisted instructions | компьютерные команды |
| laser-beam printer | лазерный принтер |
| transmission line | линия передачи |
| small-scale integrated circuit (IC) | малая интегральная схема (МИС) |
| to move paragraphs around | менять местами абзацы |
| power | мощность, энергия, питание; производительность, быстродействие; способность, возможность |
| telephone dialing | набор номера те­лефона |
| press a button | нажать на кнопку |
| scientific research | научные исследования |
| online storage | неавтономное хранение данных в ЗУ |
| input media | носитель для входных данных |
| output media | носитель для выходных данных |
| equipment | оборудование; аппаратура; приборы; устройства |
| to process | обрабатывать |
| to process data | обрабатывать данные |
| data processing | обработка данных (информации) |
| word processing | обработка текста |
| optical mark reader | оптическое считывающее устрой­ство знаков |
| optical character reader | оптическое считывающее устройство текста |
| to respond | отвечать, реагировать |
| to fall between | падать; попадать в интервал между |
| storage | память; хранение |
| personal computers | персональные компьютеры |
| maintenance | поддержание; сохранение; эксплуатация |
| to plug in | подключать; подсоединять |
| similarly | подобным образом; также; анало­гично |
| income tax | подоходный налог |
| read-only memory (ROM) | постоянное запоминающее устройство (ПЗУ) |
| line printer | построчный принтер; принтер печатания строки |
| power consumption - | потребление (расход) электроэнергии |
| to convert | преобразовывать; переводить (в др. единицы) |
| application software | прикладное программное обеспе­чение |
| application programmer | при­кладной программист |
| application software | прикладные программы |
| application | применение, использование, приложение |
| character printer | принтер с посимвольной печатью |
| page printer | принтер с постраничной печатью |
| letter-quality printer | принтер с типографским каче­ством печати |
| to predict | прогнозировать |
| software | программное обеспечение; про­граммные средства |
| scan | просматривать; сканировать; разверты­вать |
| procedure | процедура, процесс; метод, ме­тодика; алгоритм |
| permitting capacity | разрешающая способность |
| record keeping | регистрация; ведение записей |
| resource | ресурс; средство; возможность |
| touch panel | сенсорная панель |
| data processing system | система обработки данных |
| system software | системное программное обеспечение |
| scanner | сканер; устройство оптического счи­тывания |
| speed of response | скорость реакции (отклика) |
| addition | сложение |
| hybrid computer | смешанного типа, аналого-цифровой компьютер |
| to associate | соединять; объединять; связы­вать |
| associated documentation | соответствующая докумен­тация |
| to match characteristics | сопостав­лять параметры |
| scheduling | составление расписания, графика |
| medium-scale IC | средняя интегральная схема (СИС) |
| ink-jet printer | струйный принтер |
| keyboard terminals | терминал (вывод) с клавишным управлением |
| dot-matrix printer | точечно-матричный принтер |
| to delete | удалять; стирать; очищать память |
| keep buttons depressed | удерживать кнопки в нажатом состоянии |
| to meet the demands | удовлетворять потребности |
| multiplication | умножение |
| general -purpose | универсальный; общего назначения |
| manipulation | управление, обработка, преобразование |
| to control | управлять, регулировать; управ­ление, регулирование |
| to manipulate | управлять; обращаться; преобразовывать |
| to amplify | усиливать |
| to install | устанавливать; размещать; монтиро­вать; настраивать |
| input device | устройство ввода |
| card reader | устройство считывания платы (карты) |
| bar-code scanner / bar-code reader | устройство считы­вания штрих-кода |
| problem-solving device | устройство, обеспечивающее решение задачи |
| unit | устройство; модуль; блок; элемент; со­ставная часть |
| appliance | устройство; прибор |
| to store | хранить, запоминать, заносить (разме­щать) в памяти |
| digital computer | цифровой компь­ютер |
| worksheet | электронная таблица |
| electronic circuit | электронная цепь (схема) |
| cathode-ray tube | электронно-лучевая трубка |

**Часть II.**

**Проверка навыков чтения и перевода технических текстов.**

**Task. Write the annotation to the article. Напишите аннотацию к тексту.**

**Text 1.**

**Testing the computer program**

There are two kinds of errors or bugs with which program­mers must deal. The first type is the coding error. Such errors are syntax errors that prevent the language processor from suc­cessfully translating the source program to object program code. The language processor identifies the nature and the location of the error on the source program listing, so these errors are relatively easy to find and correct. The second type of bug is the logic error. The computer program can be successfully translat­ed, but the program does not produce the desired results. These errors are generally much more difficult to find and to correct than are coding errors. Logic errors can be avoided through careful planning of the program logic, but it is the programmer's responsibility to test thoroughly all of the program's functions, in order to verify that the program performs according to spec­ifications.

There are many tools provided to the programmer to help in debugging the program logic. These tools are called debug packages or tracing routines. They assist the programmer in fol­lowing the logic by printing out calculation results and field values used in making logic decisions in the program. In a few cases it may be necessary to use a memory dump — a printout of the instructions and date held in the computer's memory — in order to find the cause of logic errors.

**Text 2.**

**Running the computer program**

The operating system is a collection of program provided by the computer's manufacturer that allows us to shedule jobs for the computer, to translate source programs into object programs, to sort data stored on secondary storage devices, and to copy data from any input device to any output device. These programs are called control programs, language programs and utility pro­grams.

The control program (often called the supervisor, monitor, or executive) is a main-storage-resident program. Its functions are to schedule jobs, shedule input and output for our programs, and to monitor the execution of our programs.

The language processors are programs that translate source programs into object programs. There are three types of language processors: assemblers, compilers, and interpreters. Each lan­guage has its own language processor.

The service programs are programs that are commonly used in all data processing centers. They have functions that are re­quired by everyone using a computer. Examples of service pro­grams include linkage editors to prepare object programs for execution, a librarian to catalog programs into a library area on magnetic disc, utility programs to transfer data from device to device, and sort-merge programs for sorting data on magnetic tape or disk.

**Text 3.**

**The conversion of symbolic languages**

As we see, most of the symbolic languages are oriented to­ward the particular application areas of business or science (math). The one problem with all symbolic languages is that none of them can be understood by a computer. The symbolic languages may say AP, **ADD,** or use a "plus" sign to indicate an addition step, but the only thing that means addition to a computer is its binary machine code. Wfe have symbolic pro­grams that are relatively easy for humans to understand, but they cannot be understood by computers. On the other hand, we have machine code that is understood by the computer, but it is dif­ficult for humans to use. The solution is a translator that trans­lates the symbolic program into machine code. The translator allows the human to work with relatively easy-to-understand symbolic languages and it allows the computer to follow instruc­tions in machine code. The translation of symbolic instructions to machine code is accomplished through the use of a program called a *language processor.* There are three types of language processors. They are called assemblers, compilers, and interpret­ers. Each translates symbolic instructions to machine code, but each does it differently.

(The translator is a program itself. It is part of a group of programs, called the operating systems, that help us to use the computer.)

**Text 4.**

**Programming languages**

Let's assume that we have studied the problem, designed a logical plan (our flowchart or pseudocode), and are now ready to write the program instructions. The process of writing program instructions is called coding. The instructions will be written on a form called a coding form. The instructions we write will be recorded in a machine-readable form using a keypunch, key-to-tape, or key-to-disk, or entered directly into computer; memory through a terminal keyboard.

The computer cannot understand instructions written in just any old way. The instructions must be written according to a set of rules. These rules are the foundation of a programming Language. A programming language must convey the logical steps of the program plan in such a way that the control unit of the CPU can interpret and follow the instructions. Programming languages have improved throughout the years, just as computer hardware has improved. They have progressed from machine-oriented languages that use strings of binary Is and 0s to prob­lem-oriented languages that use common mathematical and/or English terms.

There are over 200 problem-oriented languages. The most common of them are COBOL, FORTRAN, PL/I, RPG, BA­SIC, PASCAL.

**COBOL.** COBOL was the most widely used business-oriented pro­gramming language. Its name is an acronym for Common Јlisi-ncss-Oriented Zanguage. COBOL was designed to solve prob­lems that are oriented toward data handling and input-output operations. Of course, COBOL can perform arithmetic opera­tions as well, but its greatest flexibility is in data handling. CO­BOL also was designed as a self-documenting language. Self-documenting languages are those that do not require a great deal of explanation in order to be understood by someone reading the program instructions. The self-documenting aspect of CO­BOL is made possible by its sentencelike structure and the very generous maximum symbolic field-name length of 30 charac­ters. With a field-name length of up to 30 characters, the name can clearly identify the field and its purpose.

**FORTRAN IV.** The FORTRAN IV language is oriented toward solving prob­lems of a mathematical nature. The name FORTRAN comes from the combination of the words formula translation. The version of FORTRAN IV has been designed as algebra-based programming language. Any formula or those mathematical relationships that can be expressed algebraically can easily be expressed as a FORTRAN instruction. FORTRAN is the most commonly used language for scientific applications.

**PL/I.** PL/I stands for programming language I. It was designed as a general-purpose language incorporating features similar to COBOL for data handling instructions and features similar to FORTRAN for mathematical instructions. PL/I is much more than a combination of the good features of both COBOL and FORTRAN, as it has many capabilities that are unique. Yet, although PL/I is one of the most versatile and the most power­ful of the programming languages, it is not the most commonly used. COBOL and FORTRAN have been available for a longer period of time than PL/I, and many more users work with those languages.

**Text 5.**

**Computer programming**

Programming is the process of preparing a set of coded in­structions which enables the computer to solve specific prob­lems or to perform specific functions. The essence of computer programming is the encoding of the program for the computer by means of algorithms. The thing is that any problem is ex­pressed in mathematical terms, it contains formulae, equations and calculations. But the computer cannot manipulate formu­lae, equations and calculations. Any problem must be specially processed for the computer to understand it, that is — coded or programmed.

The phase in which the system's computer programs are written is called the development phase. The programs are lists of instructions that will be followed by the control unit of the central processing unit (CPU). The instructions of the program must be complete and in the appropriate sequence, or else the wrong answers will result. To guard against these errors in logic and to document the program's logical approach, logic plans should be developed.

There are two common techniques for planning the logic of a program. The first technique is flowcharting. A flowchart is a plan in the form of a graphic or pictorial representation that uses predefined symbols to illustrate the program logic. It is, there­fore, a "picture" of the logical steps to be performed by the computer. Each of the predefined symbol shapes stands for a general operation. The symbol shape communicates the nature of the general operation, and the specifics are written within the symbol. A plastic or metal guide called a template is used to make drawing the symbols easier.

The second technique for planning program logic is called pseudocode. Pseudocode is an imitation of actual program in­structions. It allows a program-like structure without the bur­den of programming rules to follow. Pseudocode is less time-consuming for the professional programmer than is flowcharting. It also emphasizes a top-down approach to program structure.

Pseudocode has three basic structures: sequence, decision, and looping logic. With these three structures, any required logic can be expressed.

**Text 6.**

**Microcomputer system organization**

The organization of a microcomputer system is the same as that of a larger computer system. The microprocessor unit (MPU), usually concentrated in a single chip, consists of the control unit and the arithmetic logical unit. Internal memory is made up of random access memory (RAM) and read-only memory (ROM). Because RAM is only temporary storage, all microcomputers require some instructions to get started after they are turned on, and these are contained in ROM. A micro­computer includes both an MPU and internal memory.

The portion of the system software that is in ROM brings into RAM the additional instructions required to operate the micro­computer. Typically these instructions are stored on a magnetic disk; hence, they are called a disk operating system, or DOS. This start-up process is called bootstrapping. ROM also con­tains other programs that help to make personal computers easy to use, such as a programming language. Computer games are also stored in ROM cartridges.

In addition to the MPU, RAM, ROM, and associated con­trol circuits, other components, called peripheral devices, are needed to make a complete microcomputer system. The prin­cipal peripheral units are: input devices, output devices, mass storage units, and communication components. Like a DOS, the programs that control the flow of data between a microcom­puter and its peripheral devices are a part of systems software.

The most common input device used with personal comput­ers is the keyboard. Most personal computer keyboards have extra keys that perform special functions and that can be used to control the movement of a cursor on a screen. A leverlike device, called a joystick, is also used as an input device, com­monly for playing video games.

**Text 7.**

**Microcomputer system organization**

The CRT (cathode-ray tube) screen used with personal computers is called a monitor. Keyboards and monitors may be part of a single unit that also contains the microcomputer and the disc drives, or they may be separate units. Besides the mon­itor, the most common input units are dot-matrix and letter-quality printers. Dot-matrix printers are suitable for most mi­crocomputer applications. Letter-quality printers are usually used for high-quality office correspondence. Both types of print­ers are considered to be low-speed character printers.

Mass storage units are available over a range of capacities and access times. Floppy disks, or diskettes, are the most common mass storage media. They store patterns of bits on magnetically coated, flexible plastic platters. A floppy disk platter is sealed permanently in a paper jacket with a small window for reading and writing. Hard disk storage systems are also available. They may be fixed or removable. Some mass storage units contain both floppy and hard disk devices.

Low-cost modulator-demodulator devices, called modems, that allow microcomputer systems to communicate over tele­phone lines have become increasingly popular. Modems permit networks of personal computer owners to exchange information or to access large data banks. These data banks may be dedi­cated to special applications, such as law or medicine, or they may provide a variety of consumer services.

**Text 8.**

**Personal computers**

The personal computer can serve as a work station for the individual today. Moreover, as it has become financially feasi­ble to provide a computer for the individual worker, so also tech­nical developments have made the interface between man and machine increasingly "friendly", so that a wide array of com­puter functions are now accessible to people with no technical background.

A personal computer is a small computer based on a micro­processor; it is a microcomputer. Not all computers, however, are personal computers. A microcomputer can be dedicated to a single task such as controlling a machine tool or metering the injection of fuel into an automobile engine; it can be a word processor, a video game or a "pocket computer" that is not quite a computer. A personal computer is something different: a stand­alone computer that puts a wide array of capabilities at the dis­posal of an individual.

The first generation of true personal computers, which came on the market between 1977 and 1981, had eight-bit micropro­cessors; later introduced systems had 16-bits ones. Now 32-bit microprocessor chips are available, and soon they will be includ­ed in complete computer systems.

**Text 9.**

**A modem**

The piece of equipment that allows a computer to commu­nicate with other computers over telephone lines is called a modem. The modem allows the individual to access informa­tion from all over the world and use that information in every­day life. Connecting with banks, Automatic Teller Machines, cash registers to read credit cards, access travel agents, buy prod­ucts, e-mail, access databases, and teleconferencing, the mo­dems provide easy access to many services. Files can be trans­ferred easily, by uploading to another machine, or downloading to your own machine within a matter of minutes. The comput­er modem can be used as a telephone answering system, and documents can be faxed from one computer to another assur­ing fast and easy access to important documents.

A modem takes computer information and changes it into a signal that can be sent over telephone lines. The modem is a bridge between digital and analog signals. The computer is of the digital type, and the telephone using analog technology. The modem converts the "0"s and "l"s of the computer (off-on switches) into an analog signals modulating the frequency of the electronic wave or signal. The modem does just the opposite and demodulate the signal back into digital code. The modem gets its name from MOdulate and the DEModulate.

Most people believe that you need a separate phone line for a modem, but that is not true.Your modem and telephone can share one line, the problem arises when someone else needs to use the tele­phone while the modem is in use. Also disable call waiting, it could disrupt your modem connection while the modem is in use.

There are three kinds of modems — internal, external, and fax. All modems do the same thing, they allow computers to communicate through telephone lines. This lets computers ex­change information everywhere. Internal Modem is a circuit board that plugs into one of the expansion slots of the comput­er. Internal modems usually are cheaper than external modems, but when problems occur, fixing and troubleshooting the mo­dem can sometimes prove to be quite difficult. External Modem attaches to the back of the computer by way of a cable that plugs into the modem port. It is usually less expensive and very por­table. It can be used with other computers very easily by unplug­ging it and plugging it into another computer. Fax Modem can be hooked up to your telephone and used to send information to your computer. Your computer can also send information to a fax machine. Most computer modems are modems with fax­ing capabilities.

**Text 10.**

**Application of personal computers**

Personal computers have a lot of applications, however, there are some major categories of applications: home and hobby, word processing, professional, educational, small business and engineering and scientific.

*Home and hobby.* Personal computers enjoy great popularity among experimenters and hobbyists. They are an exciting hob­by. All hobbyists need not be engineers or programmers. There are many games that use the full capabilities of a computer to provide many hours of exciting leisure-time adventure.

The list of other home and hobby applications of PCs is al­most endless, including: checking account management, bud­geting, personal finance, planning, investment analyses, tele­phone answering and dialing, home security, home environment and climate control, appliance control, calendar management, maintenance of address and mailing lists and what not.

*Word processing.* At home or at work, applications software, called a word processing program, enables you to correct or modify any document in any manner you wish before printing it. Using the CRT monitor as a display screen, you are able to view what you have typed to correct mistakes in spelling or grammar, add or delete sentences, move paragraphs around, and replace words. The letter or document can be stored on a dis­kette for future use.

*Professional.* The category of professional includes persons making extensive use of word processing, whose occupations are particularly suited to the desk-top use of PCs. Examples of other occupations are accountants, financial advisors, stock brokers, tax consultants, lawyers, architects, engineers, educators and all levels of managers. Applications programs that are popular with persons in these occupations include accounting, income tax preparation, statistical analysis, graphics, stock market forecast­ing and computer modeling. The electronic worksheet is, by far, the computer modeling program most widely used by profes­sionals. It can be used for scheduling, planning, and the exam­ination of "what if situations.

*Educational.* Personal computers are having and will contin­ue to have a profound influence upon the classroom, affecting both the learner and the teacher. Microcomputers are making their way into classrooms to an ever-increasing extent, giving impetus to the design of programmed learning materials that can meet the demands of student and teacher.

Two important types of uses for personal computers in edu­cation are computer-managed instruction (CMI), and comput­er-assisted instruction (CAI). CMI software is used to assist the instructor in the management of all classroom-related activities, such as record keeping, work assignments, testing, and grading. Applications of CAI include mathematics, reading, typing, com­puter literacy, programming languages, and simulations of real-world situations

**Text 11.**

**Personal computers**

Personal computers are supposed to appear in the late 1970s. One of the first and most popular personal computers was the

Apple II, introduced in 1977 by Apple Computer. During the late 1970s and early 1980s, new models and competitive oper­ating systems seemed to appear daily. Then, in 1981, IBM en­tered the fray with its first personal computer, known as the IBM PC. The IBM PC quickly became the personal computer of choice, and most other personal computer manufacturers fell by the way-side. One of the few companies to survive IBM's on­slaught was Apple Computer, which is sure to remain a major player in the personal computer marketplace. In less than a de­cade the microcomputer has been transformed from a calcula­tor and hobbyist's toy into a personal computer for almost ev­eryone.

What is a personal computer? How can this device be char­acterized?

* First, a personal computer being microprocessor-based, its central processing unit, called a microprocessor unit, or MPU, is concentrated on a single silicon chip.
* Second, a PC has a memory and word size that are smaller than those of minicomputers and large computers. Typical word sizes are 8 or 16 bits, and main memories range in size from 16 К to 512 K.
* Third, a personal computer uses smaller, less expensive, and less powerful input, output and storage components than do large computer systems. Most often, input is by means of a keyboard, soft-copy output being displayed on a cathode-ray tube screen. Hard-copy output is produced on a low-speed character printer.
* A PC employs floppy disks as the principal online and offline storage devices and also as input and output media.
* Finally, a PC is a general-purpose, stand-alone system that can begin to work when plugged in and be moved from place to place.

Probably the most distinguishing feature of a personal com­puter is that it is used by an individual, usually in an interactive mode. Regardless of the purpose for which it is used, either for leisure activities in the home or for business applications in the office, we can consider it to be a personal computer.

**Text 12.**

**Scanners**

Scanners provide a capability for direct data entry into the computer system. The major advantage of this direct data entry is that humans do not have to key the data. This leads to faster and more accurate data entry. The two major types of scanners are optical scanners and magnetic-ink character recognition devices.

*Optical scanners* are input devices that can "read" data re­corded on paper. The scanning techniques used involve a light source and light sensors; thus, they are called optical devices. The data to be scanned may be typed or handwritten charac­ters, data-coded as pencil marks, or data-coded as bars. The common optical scanner devices are called optical character readers, optical mark readers, and bar-code readers.

*An optical character reader (OCR)* inputs data by using opti­cal scanning mechanisms that can detect or scan alphabetic and numeric characters printed on paper. If the data are typewrit­ten, they must be typed using a special type font, called an OCR font. Examples of the use of OCR devices include the scanners used by the Postal Service to aid in sorting bulk mail, and as first-draft input for word processing system.

*Optical mark readers (OMR)* are able to detect pencil marks, made on special paper forms. The actual inputting of data through an OMR device involves shining a light on the page being scanned and detecting the reflections from the pencil marks. Pencil marks made with a soft lead pencil (high graph­ite content) will reflect the light. It is this reflection that the OMR device detects.

*Optical bar-code readers* detect combinations of marks or printed bars that represent the data. Bar codes have been used for a number of years for some types of credit card processing and by the post office for mail sorting. It is very common to use bar-code readers in conjunction with point-of-sale devices. The most widely known bar code is the universal product code (UPC), which now appears on almost all retail packages.

*Magnetic-ink character recognition (MICR) devices* were de­veloped to assist the banking industry. MICR devices speed up data input for the banking industry by reading characters im­printed on paper documents using a magnetic ink (an ink that contains iron oxide particles). Check and deposit form process­ing is the largest application of MICR.

**Text 13.**

**Keyboard devices**

There is a wide variety of keyboard devices, or terminals, available for use in entering data directly into a computer. *The visual display terminal (VDT)* is the most popular type of I/O device in use today. It consists of a typewriterlike key­board for inputting and a cathode ray tube (CRT) for display­ing output data. Each character entered through the keyboard is also displayed on the CRT. When keyed the data are held in a small memory, called a buffer, within the terminal itself. The data are not sent on to the computer until the operator presses an enter key on the keyboard. This allows the operator the op­portunity to proofread or verify the data being entered by read­ing the data displayed on the screen. There are three major uses of VDT's: alphanumeric displays, graphic displays, and input through a light pen.

*Alphanumeric displays.* The most common use of the visual display terminal is to display alphanumeric data, that is, char­acter data. Because of their relatively fast output rates and their ability to provide a viewer with an "instant" output, video dis­plays have replaced printers for many applications.

*Graphic displays.* Visual display terminals with a graphic dis­play capability provide a very powerful and versatile tool for many users. Graphic-display devices provide not only a means of displaying high-resolution drawings but also the capability of manipulating and modifying the graphic display. The busi-nessperson can use the graphic display to present data in the form of line charts, bar charts, or pie charts. Graphic displays can be very effective in information systems for business man­ager.

**Text 14.**

**Keyboard devices**

Different types of keyboard devices, such as visual display terminals, teleprinter terminals, and point-of-sale devices are among the keyboard devices.

*A light pen* is a photosensitive penlike instrument which can sense a position on the cathode ray tube (CRT) when the end of the pen is held against the screen. The light pen is an input device. By sensing the position on the screen when you touch it by the light pen, you are inputting data to the main storage. The light pen is commonly used by engineers to modify designs.

*Teleprinter terminals.* There are situations where it is desir­able to have a printed copy of data outputted to a terminal. If a user finds a printed copy to be required, the solution could be a teleprinter terminal. A teleprinter terminal has a keyboard for input and a typewriterlike printer for output. These printers are character printers and are therefore slower output devices than CRT displays.

*A point-of-sale (POS) device* is the electronic equivalent of a cash register, however it is capable of capturing more data than a cash register. Most point-of-sale devices are online terminals attached to a computer for processing the transaction while the customer is making the purchase. The significant features of most of the current electronic POS devices include: the capa­bility of entering extensive information about the sale, the guid­ing of the operator through the possible transactions by a series of lighted indicators or messages, a provision for transmission of the data to a central computer, and the provision for a local computational capability such as price extensions and tax cal­culations.

**Text 15.**

**Input / output devices**

As it is well known, a computer cannot perform or complete any useful work unless it is able to communicate with its external environment. All data and instructions enter and leave the central processing unit through primary storage. Input-output devices are needed to link primary storage to the environment, which is external to the computer system. So input devices are used to enter data into primary storage. Output units accept data from primary storage to provide users with information or to record the data on a secondary storage device. Some devices are used for both the input and output functions.

The data with which these devices work may or may not be in a form that humans can understand. For example the data that a data entry operator keys into the memory of a computer by typing on a keyboard are readable by humans. However, the data that tell a computer about the performance of an automo­bile engine are not in a form that humans can read. They are electrical signals from an analog sensor. Similarly, output may be on a printed page, which humans can read easily, or upon some other medium where the data are not visible, such as on magnetic tape or disk.

As we know, all of the data flow from input to final output is managed by the control unit in the CPU. Regardless of the na­ture of the I/O devices, special processors called I/O interfaces are required to convert the input data to the internal codes used by the computer and to convert internal codes to a format which is usable by the output device.

**Text 16.**

**Input-output environment**

Data and instructions must enter the data processing system, and information must leave it. These operations are performed by input and output (I/O) units that link the computer to its external environment.

The I/O environment may be human-related or human-in­dependent. A remote banking terminal is an example of a hu­man-related input environment, and a printer is an example of a device that produces output in a human-readable format. An example of a human-independent input environment is a de­vice that measures traffic flow. A reel of magnetic tape upon which the collected data are stored in binary format is an ex­ample of a human-independent output.

*Input-Output Interfaces,* Data enter input units in forms that depend upon the particular device used. For example, data are entered from a keyboard in a manner similar to typing, and this differs from the way that data are entered by a bar-code scan­ner. However, regardless of the forms in which they receive their inputs, all input devices must provide a computer with data that are transformed into the binary codes that the primary memo­ry of the computer is designed to accept. This transformation is accomplished by units called I/O interfaces. Input interfaces are designed to match the unique physical or electrical character­istics of input devices to the requirements of the computer sys­tem. Similarly, when output is available, output interfaces must be designed to reverse the process and to adapt the output to the external environment. These I/O interfaces are also called channels or input-output processors\*(IOP).

The major differences between devices are the media that they use and the speed with which they are able to transfer data to or from primary storage.

*Input-Output Device Speed.* Input-output devices can be clas­sified as high-speed, medium-speed, and low-speed. The devic­es are grouped according to their speed. It should be noted that the high-speed devices are entirely electronic in their operation or magnetic media that can be moved at high speed. Those high­speed devices are both input and output devices and are used as secondary storage. The low-speed devices are those with com­plex mechanical motion or operate at the speed of a human operator. The medium-speed devices are those that fall be­tween — they tend to have mechanical moving parts which are more complex than the high-speed devices but not as complex as the low-speed.

*High-speed devices:* magnetic disk; magnetic tape.

*Medium-speed devices:* card readers; line printers; page print­ers; computer output microfilms; magnetic diskette; optical character readers; optical mark readers; visual displays.

*Low-speed devices:* bar-code readers; character printers; dig­itizers; keyboard input devices; plotters; voice recognition and response units.

**Text 17.**

**Input devices**

There are several devices used for inputting information into the computer: a keyboard, some coordinate input devices, such as manipulators (a mouse, a track ball), touch panels and graph­ical plotting tables, scanners, digital cameras, TV tuners, sound cards etc.

When personal computers first became popular, the most common device used to transfer information from the user to the computer was *the keyboard.* It enables inputting numerical and text data. A standard keyboard has 104 keys and three more ones informing about the operating mode of light indicators in the upper right corner.

Later when the more advanced graphics became to develop, user found that a keyboard did not provide the design capabili­ties of graphics and text representation on the display. There appeared manipulators, a mouse and a track ball, that are usu­ally used while operating with graphical interface. Each software program uses these buttons differently.

*The mouse* is an optic-mechanical input device. The mouse has three or two buttons which control the cursor movement across the screen. The mouse provides the cursor control thus simplifying user's orientation on the display. The mouse's pri­mary functions are to help the user draw, point and select im­ages on his computer display by moving the mouse across the screen.

In general software programs require to press one or more buttons, sometimes keeping them depressed or double-click them to issue changes in commands and to draw or to erase emages. When you move the mouse across a flat surface, the ball located on the bottom side of the mouse turns two rollers. One is tracking the mouse's vertical movements, the other is track­ing horizontal movements. The rotating ball glides easily, giv­ing the user good control over the textual and graphical images.

In portable computers *touch panels or touch pads* are used instead of manipulators. Moving a finger along the surface of the touch pad is transformed into the cursor movement across the screen.

*Graphical plotting tables (plotters)* find application in draw­ing and inputtig manuscript texts. You can draw, add notes and signs to electronic documents by means of a special pen. The quality of graphical plotting tables is characterized by permit­ting capacity, that is the number of lines per inch, and their ca­pability to respond to the force of pen pressing.

*Scanner* is used for optical inputting of images (photogra­phies, pictures, slides) and texts and converting them into the computer form.

*Digital videocameras* have been spread recently. They enable getting videoimages and photographs directly in digital comput­er format. Digital cameras give possibility to get high quality photos.

*Sound cards* produce sound conversion from analog to digi­tal form. They are able to synthesize sounds. Special game-ports and joysticks are widely used in computer games.

**Text 18.**

**Output devices. Printers**

Printers provide information in a permanent, human-read­able form. They are the most commonly used output devices and are components of almost all computer systems. Printers vary greatly in performance and design. Vfe will classify printers as character printers, line printers and page printers in order to identify three different approaches to printing, each with a dif­ferent speed range. In addition, printers can be described as ei­ther impact or nonimpact. Printers that use electromechanical mechanisms that cause hammers to strike against a ribbon and the paper are called impact printers. Nonimpact printers do not hit or impact a ribbon to print.

*Character printers* print only one character at a time. A type­writer is an example of a character printer. Character printers are the type used with literally all microcomputers as well as on computers of all sizes whenever the printing requirements are not large. Character printers may be of several types. *A letter-quality printer* is a character printer which produces output of typewriter quality. Letter-quality printers typically have speeds ranging from 10 to 50 characters per second. *Dot-matrix print­ers* form each character as a pattern of dots. These printers have a lower quality of type but are generally faster printers than the letter-quality printers — in the range of 50 to 200 characters per second. One of the newest types of character printer is *the ink-jet printer.* It sprays small drops of ink onto paper to form print­ed characters. The ink has a high iron content, which is affect­ed by magnetic fields of the printer. These magnetic fields cause the ink to take the shape of a character as the ink approaches the paper.

*Line printers* are electromechanical machines used for high-volume paper output on most computer systems. Their print­ing speeds are such that to an observer they appear to be print­ing a line at a time. They are impact printers. Trie speeds of line printers vary from 100 to 2500 lines per minute. Line printers have been designed to use many different types of printing mechanisms. Two of the most common print mechanisms are the drum and the chain. *Drum printers* use a solid, cylindrical drum, rotating at a rapid speed. Speeds of dram printers vary from 200 to over 2000 lines per minute. *Chain printers* have their character set on a rapidly rotating chain called a print chain. Speeds of chain printers range from 400 to 2400 lines per minute.

*Page printers* are high-speed nonimpact printers. Their print­ing rates are so high that output appears to emerge from the printer a page at a time. A variety of techniques are used in the design of page printers. These techniques, called electrophoto­graphic techniques, have developed from the paper copier tech­nology. *Laser-beam printers* use a combination of laser beam and electrophotographic techniques to create printer output at a rate equal to 18000 lines per minute.

**Text 19.**

**Magnetic media devices**

Some of the devices mentioned above can perform both the input and output functions. Magnetic disc, magnetic diskette, and magnetic tape are examples of such devices. Magnetic discs, diskettes, and tapes can record data as output from primary stor­age and can also serve as input devices returning the data to primary storage.

Data are recorded on magnetic discs and magnetic tapes ei­ther by outputting the data from primary storage or by using a data recorder. Data recorders are not input devices, and they are not connected to the computer system. Instead they are offline recorders. The magnetic media recording devices are key-to-disk, key-to-diskette, and key-to-tape machines.

Key-to-disk devices are used as data recording stations in multistation shared-processor systems. They are able to correct data before storing it on a magnetic disk and before its entry into the main computer system.

Key-to-diskette systems store data on flexible discs, called diskettes. Diskettes are inexpensive and reusable.

Key-to-tape devices can record data on reels, on cassettes, and on tape cartridges. The magnetic tape reels produced by key-to-tape systems are in a computer-compatible format for subsequent direct data input into a computer. However, data on cartridges and cassettes often are transferred to higher-speed media, such as a full-sized reel of magnetic tape or magnetic disc, for data transfer to the computer.

**Часть III.**

**Составить диалог по заданным ситуациям.**

1. Назначение встречи по телефону (Making an appointment by phone).

2.Телефонный разговор по вопросу трудоустройства (Telephone conversation on employment issues).

3. Телефонный разговор по вопросу переноса встречи (Telephone conversation to reschedule a meeting).

4. Телефонный разговор. Оставить сообщение. (Telephone conversation. Leave a message).

5. Телефонный разговор с секретарем компании (Telephone conversation with the company secretary).

6. Бронирование мест в отеле (A hotel reservation).

7. Бронирование авиабилетов (Booking a plane reservation).

8. Запрос информации об авиарейсах (Inquiring flight information).

9. Покупка билетов на поезд. (Buying train tickets).

Составил преподаватель: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Т.А. Егорова