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Практическое пособие для организации самостоятельной работы

для студентов
очной формы обучения
специальности

09.02.07 Информационные системы и программирование

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Сборник содержит профессиональные тексты и практические задания, направленные на развитие навыков чтения профессионально – ориентированных текстов, совершенствование коммуникативных навыков в области информационно-компьютерных технологи.

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ПРОФЕССИИ В ОБЛАСТИ КОМПЬЮТЕРНЫХ ТЕХНОЛОГИЙ (CAREERS IN COMPUTING)

1. Проверьте, можете ли вы перевести названия следующих специальностей:

- a) systems analyst;
- б) software engineer/designer;
- в) computer salesperson;
- г) computer systems support person;
- д) computer systems analyst programmer;
- е) hardware engineer;
- ж) network support person.

2. Если вы затрудняетесь найти русские эквиваленты для английских названий специалистов, прочитайте следующие описания их работы, выпишите их основные обязанности на английском языке, соотнесите описания работы с названиями специалистов и переведите эти названия на русский язык.

1. Studies methods of working within an organization to decide how tasks can be done efficiently by computers. Makes a detailed analysis of the employer's requirements and work patterns to prepare a report on different options for using information technology. This may involve consideration of hardware as well as software. Either uses standard computer packages or writes

a specification for programmers to adapt existing software or to prepare new software. May oversee the implementation and testing of a system and acts as a link between the user and the programmer.

2. Maintains the link between PCs and workstations connected in a network. Uses telecommunications, software and electronic skills, and knowledge of the networking software to locate and connect faults. This may involve work with the controlling software, on the wiring, printed circuit boards, software or microchips on a file server, or on cables either within or outside the building.

3. Researches, designs, and develops computers, or parts of computers and the computerized element of appliances, machines, and vehicles. Also involved in their manufacture, installation, and testing. May specialize in different areas: research and development (r & d),

design, manufacturing. Has to be aware of cost, efficiency, safety, environmental factors, as well as engineering aspects.

4. Produces the programs which control the internal operations of computers. Converts the system analyst's specification to a logical series of steps. Translates these into the appropriate computer language. Often comply programs from libraries or subprograms, combining these to make up a complete system program. Designs, tests and improves programs for computer- aided design and manufacture, business applications, computer networks and games.

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

6. They are analyst programmers who are responsible for maintaining updating and modifying the software used by a company. Some specialize in software and electronic skills, and knowledge

of the which handles the basic operation of the computers. This involves the use of machine codes and specialized low-level computer languages. Most handle applications software. May sort out problems encountered by users. Solving problems may involve amending an area of code in the software, retrieving files and data lost when a system crashes, and a basic knowledge of hardware.

7. Creates the software programs used by computers. May specialize in the internal operating systems using low-level computer language, or in applications programs. May specialize in one aspect of the work, e.g. programming, systems design, systems analysis or cover them all. May support the system through advice and training, providing user manuals, and by helping users with any problems that arise.

ИНТЕРНЕТ (THE INTERNET)

Интернет (The Internet)

1. *Прочитайте статью и определите, истинны (Т) или ложны (F) следующие утверждения:*

1. The Internet first started in the USA.
2. The Internet and the WWW are different.

3. Berners-Lee invented the Internet.

4. One file on the WWW can have two or more addresses.

5. There are 40 million Internet users today.

The Internet originated in the early 1970s when the United States wanted to make sure the people could communicate after the nuclear war. This needed a free and independent communication *network* without a centre and it led to a network of computers that could send each other e-mail through *cyberspace*.

Tim Berners-Lee invented the World Wide Web (WWW) when he discovered a way to jump to different files on his computer using the *random* or unplanned links between them. He then wrote a simple coding system, called HTML (Hyper Text Markup Language) to *create* links to files on any computer connected to the network. This was possible because each file had an individual address, or URL (Uniform Resource Locator). He then used a set of *transfer* rules, called HTTP (Hyper Text Transfer Protocol) to link Web files together across the Internet. Berners-Lee also invented the world's first browser. This lets you locate and view Web pages and also *navigate* from one link to another.

The WWW became available to everyone in 1991 and the number of Internet users grew from 600,000 to 40 million in five years. Today, that number is miles larger and there are now many browsers that provide Web pages, information and other services. You can also do research, download music files, play *interactive* games, shop, talk in chat rooms and send and receive e-mail on the WWW.

2. Найдите в тексте слова или сокращения, соответствующие следующим выражениям:

a) an address for Web pages;

б) a coding system that creates links;

в) this finds and shows Web pages;

г) rules for transferring files;

д) a group of computers joined together.

3. Соотнесите каждую группу глаголов (1—5) с одним из следующих глаголов с общим значением: **move, make, start, join, look at, find**

1. browse, surf, view;

2. download, navigate, transfer;

3. connect, link;
4. discover, locate;
5. originate, create, invent.

4. *Закончите предложения одним из слов, выделенных в тексте курсивом.*

1. Some people spend too much time playing ... games on the Internet.

2. You can sometimes have a computer ... that is not connected to the Internet.

3. It is easy to ... around a screen with a mouse.

4. Bernes-Lee discovered how to ... links between computers in new ways.

5. Some people surf the net at ... just to see what they can find.

6. People use the Internet to ... information from one place to another.

7. When you surf the Internet, you are traveling in

ПОИСК В ИНТЕРНЕТЕ (RESEARCH ON THE INTERNET).

Прочитайте текст и выберите правильный вариант из следующих предложений:

1. Google is a *keyword/search* engine.

2. This **WORD** is in *upper/lower* case.

3. **AND/WHEN** is a logical operator.

Finding information on the World Wide Web needs an Internet search engine such as Google, Alta Vista or Excite. Search engines have a text box where you type in a keyword or words. A search engine is a software program that reads the keywords in the text box and searches the Internet for Web pages, websites and other Internet files that use them. These documents are shown on the computer screen in a result listing.

When carrying our searches, you should usually be specific and brief in your choice of words. If the keyword is too general or includes too many general meanings, the results listing may not be useful. Different search engines categorize information in different ways, which changes the way they store and retrieve it.

Using upper case letters in a keyword search will only retrieve documents that use upper case. Typing in lower case is usually better because search engines will retrieve documents that use both upper case and lower case letters.

You can narrow a search using logical operators, such as AND, OR and NOT. AND retrieves all the words typed in the text box, OR retrieves either of the words and NOT excludes words. Spelling is important when typing in keywords, but a search engine will not usually read punctuation, prepositions and articles.

2. *Каким из указаний необходимо следовать чтобы найти информацию в Интернете?*

1. Choose keywords that are different to the item you want.
2. Give the best keyword to describe what you want.
3. Use as many general keywords as possible.
4. Try to use a keyword that can have only one meaning.
5. Type your keyword in lower case only
6. Use logical operators to narrow your search.
7. Use full stops and commas.
8. Do not use words like *at, in, through, an* and *the*.

3. *Найдите в тексте слова или выражения, соответствующие следующим:*

- a) clear and exact;
- б) to put into small groups;
- в) to bring back;
- г) to make smaller;
- д) mathematical words;
- e) does not use.

ОФОРМЛЕНИЕ ВЕБ-СТРАНИЦ (DESIGNING WEB PAGES)

1. *Что вы знаете об оформлении веб-страниц? Определите, истинны (T) или ложны (F) следующие утверждения, и проверьте ваши ответы после того, как прочитаете текст.*

1. You don't need to learn HTML to make a Web page.
2. Making a Web page is like designing a printed page.

3. You shouldn't use a lot of different colors in your texts.
4. Having a lot of pictures and animations on Web page is great.
5. Surfers like reading on the Net.

Beginning HTML

Web designers use Hyper Text Markup Language (HTML) to create and format Web pages. HTML uses a set of codes, called tags, to *structure* a Web document that will run in a browser. There are hundreds of tags you can use to format text, insert graphics, animations, sound and video. But you do not need to understand HTML to make your own personal home page. Many word- processing, desktop publishing and *Web-authoring* programs will *generate* HTML tags for you. To upload, or copy, your Web page to a Web server, use the server's File Transfer Protocol (FTP).

Home Page Hints

It's your cyberhome, but remember that websites are different from books or magazines. Think about these suggestions to make people want to stay.

1. Use a *navigation bar* to organize your hyperlinks to other pages.
2. *Hyperlinks* also let visitors to navigate up and down long pages.
3. Keep your use of color and buttons *consistent*. If a Next Page button is a pink circle, all Next Page buttons should be the same, and on the same place on the screen.
4. If you use a lot of animations your Web page will take a long time to download.
5. If you use a lot of graphics, animations and text, your Web page will be too busy.
6. It's difficult to read the text that's next to animation.
7. Keep texts short and simple! Surfers don't like reading on a computer screen too much.
8. It's not easy to read multi-colored text.
9. Lots of bright colors look nice at first, but often give people headaches!
10. Make sure you use a spell check and use good grammar.
11. Try not to use too much slang. People who visit your site may not understand.

12. Don't be afraid to be *original*. Good websites have something that is different about them and that comes from you!

2. *Соотнесите слова, выделенные в тексте курсивом с их определениями, данными ниже:*

- a) connection to a Web page or part of a Web page;
- б) to make or produce;
- в) plan or build a Web page;
- г) a group of organized Web links, usually in a line;
- д) does not change, always the same;
- е) the type of software that helps create Web pages;
- ж) new, not done before.

3. *Закончите предложения следующими словами:*

busy, consistent, generate, home pages, structure, surfers, upload,
Web-authoring

- 1. That Web page is much too ... I don't know what to look at.
- 2. An FTP server is a computer that lets you files in the Net.
- 3. The buttons on this page are not ... with the buttons on the last page.
- 4. Net .never like reading a lot of text on the screen.
- 5. ... software means you don't have to learn HTML to make a Web page.
- 6. Many students have their own on the World Wide Web.
- 7. HTML creates the ... for Web pages to run on a browser.
- 8. Web-authoring programs ... HTML tags for you.

МУЛЬТИМЕДИЙНЫЕ СРЕДСТВА (MULTIMEDIA)

1. *Соотнесите заголовки (а—г) с соответствующими абзацами в тексте.*

- 1. The Pistory of Multimedia
- 2. Education and Entertainment
- 3. What is Multimedia?
- 4. Business and Industry

1. Multimedia is any computer application that integrates texts, graphics, animation, video, audio and other methods of communication. Multimedia is different from television, books or cassettes because it

lets you interact with the application. You can click on a word to make a picture appear, or click on a picture to start a video.

2. Multimedia became more popular after the mid-1990s when the price of hardware began to fall. Then people started using it in industry, business, education, entertainment and for other purposes. Today, we can find multimedia at home, in school, at work, in public places, such as libraries, and on the Internet.

3. In business, advertisers use virtual reality in multimedia applications to advertise their products in three dimensions (3-D). Using multimedia for graphs and tables is now the best way for managers to present company results. In industry, pilots learn

to fly using multimedia simulations of real situations, and scientists simulate experiments with dangerous chemicals in safety. Publishers are also producing interactive magazines, called e-zines, and e-books online.

4. In education, students study interactive CD-ROMs at their own speed and explore topics creatively by clicking on related links. Teenagers have played computer games for years, but many multimedia applications combine education and entertainment and they let them visit virtual worlds or change the ending of films.

2. Закончите предложения в соответствии с текстом:

1..... Advertisers

2..... Managers

3.....Pilots

4..... Scientists

5..... Publishers

6..... Students

7..... Teenagers

3. Закончите предложения следующими словами: *application, integrated, related, simulation, 3-D, virtual*

1. The image is in ... so you can look at it from all sides.

2. All the links in this e-zine are ... to football.

3. This ... makes you think you really are flying to the moon.

4. Some shopping websites use ... reality to advertise their products online.

5. The application is ... because it combines many features.

6. Any program that carries out a specific task for a user is an ...

КОМПЬЮТЕРНОЕ ПРОГРАММИРОВАНИЕ

Ознакомьтесь с терминами текста

equation — уравнение; приравнивание
list of instructions — перечень команд
guard — защищать, предохранять, завершать, заканчивать
appropriate sequence — необходимая (требуемая)
последовательность
rogram logic — логическая последовательность выполнения про
граммы
flowchart — блок-схема; составлять блок-схему
flowcharting — построение блок-схемы
pictorial representation — наглядное представление
predefined symbols — заранее заданные сим волы
specifics — специальные черты, характерные особенности
emplate — шаблон, маска, образец, эталон
pseudocode| — псевдокод, псевдопрограмма
burden — нагрузка
programming rules — правила программирования
consume — потреблять, расходовать
emphasize — выделять, подчеркивать
top-down approach — принцип нисходящей разработки
looping logic — логическая схема выполнения (операций) в цикле

Прочитайте текст и объясните, как вы понимаете термин «компьютерное программирование».

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 problem 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 I lie 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.

Просмотрите текст еще раз и ответьте на вопросы, используя информацию текста.

1. What is programming? 2. What is the essence of programming? 3. What should be done with the problem before processing by the computer? 4. What is a program? 5. What are instructions? 6. What are the main techniques for planning the program logic? 7. What is a flowchart? 8. What is a template and what is it used for? 9. What do you understand by "pseudocode"? 10. What are the basic structures of pseudocode?

Найдите в тексте английские эквиваленты следующих слов и словосочетаний.

Совокупность закодированных команд; суть компьютерного программирования; кодирование посредством алгоритма; формулы, уран>'нения, вычисления; обработать особым образом; перечень команд, необходимая последовательность; защищать от ошибок; **составлять** план логической последовательности; общепринятая методика; **логическая** последовательность выполнения программы; построение **блок-**схемы; наглядное представление; заранее заданные символы; **шаблон**; псевдопрограмма; без издержек; выделять принцип нисходящей **обработки**; расходовать меньше времени; логическая схема выполнения операций в цикле; необходимая последовательность операций.

ЯЗЫКИ ПРОГРАММИРОВАНИЯ

Ознакомьтесь с терминами текста

programming language — язык программирования
coded form — закодированный вид, закодированное представление
to convey — передавать, сообщать
to improve — улучшать, совершенствовать
machine oriented language — машинно-ориентированный язык
business-oriented language — язык для (программирования)
экономических задач
problem-oriented language — проблемно-ориентированный язык
string of binary — строка двоичного представления
data handling — обработка данных, работа с данными
field-name
length — длина имени поля
incorporate features — включать свойства (особенности) versatile —
многофункциональный, разносторонний, универсальный
generous — большой, значительный (о количестве) mathematical
relationship — математическая связь (соотношение)

Прочитайте текст и объясните, что представляют собой языки программирования.

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 Os 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 Business-Oriented Language, 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 sentence-like structure and the very generous maximum symbolic field-name length of 30 characters. With 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.

Просмотрите текст еще раз и ответьте на вопросы, используя информацию текста.

1. What is the process of writing instructions called? 2. What is a code? 3. How must instructions be written? 4. What is the foundation of any programming language? 5. How was the development of programming languages progressing throughout the years? 6. What are the most common problem-oriented languages? 7. What is COBOL? 8. What functions was COBOL designed for? 9. What does FORTRAN serve for? 10. What capabilities has PL/I?

Найдите в тексте английские эквиваленты следующих слов и словосочетаний.

Языки программирования; блок-схема; кодированная форма; вид, удобочитаемый для компьютера; в соответствии с набором правил; представить логические шаги программы; таким образом; совершенствовать языки программирования; машинно-ориентированные языки; проблемно-ориентированные языки; обычный термин; язык для программирования экономических задач; обработка информации; операции по вводу-выводу данных; гибкость; идентифицировать поле и его цели; решение проблем математического характера; сферы научного применения; универсальный язык; включать свойства; уникальные возможности; многофункциональный и самый мощный из языков программирования.

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