Introduction to Computer Programming

Computer Programming. Programming Languages.

Computer Programming is a part of informatics (computer science) which studies methods and techniques for developing, analyzing and applying algorithms and programs that can be used for solving different problems by means of computers.

A Programming Language is a set of rules for writing computer programs. There were developed different kinds and numerous number of the computer programming languages, such as: FORTRAN, ALGOL, PASCAL, C, C++, JAVA and many others.

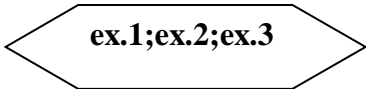## Algorithms. Forms of algorithm representation.

An Algorithm is a set of operations (actions) and order of there execution (step by step procedure) for solving a given problem.

There are different **forms of algorithm representation** (description), such as: natural form- by using human and other languages, graphical form – by using flowchart (a diagram consists of special symbols of operations linked between them), a pseudo-code – by using special rules for operations description and a computer program – by using programming languages.

Graphical symbols of operations. Flowchart of algorithm.

Graphical symbols of operations are used for a graphical form of algorithm representation which is also named a **flowchart of algorithm**.

Graphical symbol	Operation	Description in programming language C
Start	Starting operation	{ - **opening brace**
Stop	Ending operation	**return statement;** } - **closing brace**
(parallelogram)	Input operation	scanf( );

	Output operation	**printf( );**
	Calculation operation or **Assignment operation**	**assignment statement:** **variable = expression;**
No ◁ condition ▷ Yes branch · · · · branch	**Decision (conditional) operation**	**if(condition){statements Yes;} else {statements No;}**
⬡ ex.1;ex.2;ex.3 ⬡	**Precondition loop operation**	**for(ex.1; ex.2; ex.3) {statements of loop body;}**
subprogram call	**Subprogram call operation**	**subprogram call statement;**

   For drawing a flowchart are also used **connection symbols** (small circles with a number) and **arrows** for showing direction and way of a process.

Structure of a program in C language .
 Any program written in language C consists of the same parts. They are: **a)preprocessor directives; b) one or more texts of functions (subprograms); c) declarations situated out of the function bodies**.

Text of any function in C language has the same structure and consists of : **a) header line of the function; b) body of the function which is situated between opening and closing braces.**

Home task: Write and run 2 programs in C language: one program for introducing yourself and another program for solving quadratic equation.

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