Programming

Programming is the process of taking an algorithm and encoding it into a notation, a programming language, so that it can be executed by a computer.

- Although many programming languages and many different types of computers exist, the important first step is the need to have the solution. Without an algorithm there can be no program.
- **Computer programming** is the **art of telling a computer what to do** through a set of instructions.
- The process of instructing or learning by means of an instructional program
- **Computer programming (often shortened to programming)** is a process that leads from an original formulation of a computing problem to executable computer programs
- It is the process of giving instructions (commands) to the computer to do a meaningful task.
- It is an act of teaching the computer on how to do task.
- The art and science of creating instructions for a computer to follow.
- Creating a sequence of instructions to enable the computer to do something

Why Programming

- Computer is just a dumb machine made up of different electronic components. It is like a box which cannot do anything by itself.
- It is the user who tells the computer "what it has to do?"
- If we need our computer to perform some task, we first have to teach the computer in detail "how it will accomplish that task?"
- Once the computer is taught about a particular task, it will completely obey it but cannot do anything that it is not taught to.
- Programming is more about problem solving skills than writing the code itself.
- Programming teaches you how to understand, analyze and solve the problems. It enhances your analytical reasoning abilities and helps you cope with daily real life problems as well.
- Hence learning to program is important because it develops analytical and problem solving abilities.

Programmer

- The person who gives the instructions (commands) to the computer is known as the programmer.

- A person who designs and writes computer programs.

Instruction

- Instruction is any command given to the computer.

  For example:

  Add two variables A and B

  Display result

  Read file

- Each of these is the individual instruction to the computer.

Program

- Program is a set (collection) of instruction to do a meaningful task.
- A sequence of instructions that are interpreted and executed by a computer. It can be made of a single or hundreds of instructions.

  For example:

  In order to teach the computer on how to calculate average of three numbers? We need to give multiple instructions to the computer to do the task.

  1. Get first number from the user and store it in A variable
  2. Get second number from the user and store it in B variable
  3. Get third number from the user and store it in C variable
  4. Add A, B, C and store the result in SUM variable
  5. Divide SUM by 3 and store result in AVG variable
  6. Display AVG variable

*Instructions 1–6 are used to solve a single task. This collection of instruction is known as a program (Algorithm–based approach)