Basic Computer Programming Concepts

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Why Programming?

- To Automate
- Interaction between people and machines
- Computers and machines are able to do things so efficiently and accurately
- Computer programming to make use of that computing power

What is computer Programming?

- Valid Input (X,Y)
- Set of instructions (Z=X+Y)
- Desired output (Z)

How computer program works?

- Input: *(Provided by the user)*
  keyboards, mouse, scanner, camera ...
- Storage: *(To store this information)*
  Primary & Secondary Memory
- Processing: CPU
  - Memory unit
  - Control unit
  - Arithmetic Logic unit
- Output: *(Human-readable form)*
  Monitor, Printer ...

Basic Concepts

- Algorithm
  - Procedure for solving a problem
- Source code
  - Text listing of commands
- Compiler, Interpreter
  - Convert source code into machine code
- Data Type
- Variable
- Data Structures
- Keywords
- Logical and Arithmetic Operators
- Conditionals
- Loop
- Function

Types

- Low-level Language
- High-level Language

Low-level

- Hardware dependent
- Difficult to understand
- Machine Language
  - Instructions that processors use
  - Can only be represented by 0s and 1s
- Assembly Language
  - Intermediary language
  - Use numbers, symbols, and abbreviations instead of 0s and 1s

High-level

- Procedural: Matlab, GO ...
- Functional: Lisp, Haskel ...
- Object-Oriented: Java, Scala ...
- Scripting: PHP, VBScript ...
- Markup: HTML, XML ...
- Query: SQL, PQL ...
- ...

Skills Required For Programming

- Thinking
- Attention to Detail
- Problem-solving
- Logic
- Language
- Related Knowledge
- ...

Thank You … Questions?