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پارٹ II

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Last Video Update

- Why Study programming languages?
- What are the benefits of computer programming?
- Why is programming important for students?
- What is a Computer language?
- Generations of programming languages.

What would we learn today?

- What are the language translators?
- Program development steps.
- How program executes?

Language Translators

These are three types of translators.

- a) Assemblers.
- b) Compilers.
- c) Interpreters

Assemblers

- An assembler is a program used to convert or translate programs written in assembly code by humans to machine code (binary) that can be understood by the computer.

Compilers

- A compiler is a software that converts the source code to the object code. In other words, we can say that it converts the high-level language to machine/binary language. Moreover, it is necessary to perform this step to make the program executable. This is because the computer understands only binary language.

Interpreters

- An interpreter **translates code into machine code, instruction by instruction** - the CPU executes each instruction before the interpreter moves on to translate the next instruction. Interpreted code will show an error as soon as it hits a problem, so it is easier to debug than compiled code.

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PROGRAM DEVELOPMENT STEPS

1. Coding/Programming

- The process of writing instructions or code for computers is known as coding/programming. Hence without coding there will be no software to help us perform useful tasks on computers.
- In this phase, a programmer uses a tool to write the code/program. which then generates output.

2. Testing and debugging

- Before any software/program is released to the market or given to the users, it must undergo testing and debugging process.
- Program testing is done right after coding/programming. The purpose of program runs correctly without any syntax or logical errors and to ensure smooth execution.

Program Execution Steps

1. Writing code/program
   - in this step a programmer writes a program to solve a specific problem.
2. Process
   - In this step program will be translated to machine understandable instructions.
3. Output
   - In this step machine code or machine understandable instructions produces the solution to the problem.

Thank You