CHAPTER-01

COMPUTER LANGUAGE

LECTURE-1

PROGRAMS AND COMPUTER LANGUAGES

- A **program** is a set of instruction that tells the computer what to do.
- The process of writing specific instructions in a computer languages called Programming language.
- Computer Languages are classified in to 4 categories.

➢ Machine Language
➢ Assembly Language
➢ High level Language
➢ Fourth-generation Language

MACHINE LANGUAGE(FIRST GENERATION)

- It is the only Language that computer can directly understand.
- It is expressed in binary form as 0 and 1 where 0 means OFF state and 1 menas ON state.

Advantages

➢ It is high speed and low memory utilisation

Disadvantages

➢ Understanding and learning Machine Language is tough and time consuming process.
➢ It is very difficult to write and debug programs written in machine Languge.
➢ The program written in Machine language is machine- dependent. Thats why Machine language is regarded as Low-level Language(LLL).

ASSEMBLY LANGUAGE(SECOND GENERATION)

- This language uses mnemonic codes or symbols in place of 0 and 1. for example operation code for add is 0010 in binary language but in assembly language it can be directly written as ADD for addition.
- Since a computer only understand machine language so assembly language needs to be converted into machine language.

- The translator program known as ***Assembler*** were developed to covert assembly language to Machine language.
- A program written in Assembly language is known as ***Source Program***.
- When it is converted to Machine language is known as **Object Program.**

HIGH LEVEL LANGUAGE(THIRD GENERATION)

- *Advantages*
- Simple and User friendly language.
- Language that is machine-independent.

A large number of people started writing using these language, it is known as High-level Language(HL). It is quite similar to English language.

Examples are *C , C++, Basic, Java, Python etc*

- High level language needs to be translated by using the translator program, there are two translator program widely used. That *are Interpreter and Compiler*

INTERPRETER

- An interpreter translate a program written in high level language to low level language program line by line.
- It execute the instruction and then repeat the procedure for remaining instruction.
- If any error is there interpreter stop there and show the error.
- The converted program is not stored any where it has to be generated at the time of execution of a program.
- It is preferred for beginners and slow in their execution speed.

Compiler

- It is a translator program which is used to convert high level language to machine language.
- After compilation , if there is no error, it creates Object file.
- The execution speed is faster as compared to Interpreter.

FOURTH GENERATION LANGUAGE(4GL)

It is more similar to human languages than their previous version.

Advantages

1. Highly User friendly and independent.

2. Very high speed of Execution, designed to deduce the level of programming efforts.

3. Minimum efforts from the user to obtain any information.

Q.1. What do you mean by Machine Language?

Answer> Machine language that can be directly understood and obeyed by a machine (Computer) Without conversion (Translation).

Q.2. How is Assembly language different from Machine language?

Answer:-

Machine Language	Assembly Language
The language provides a way of entering instruction in to computer	An assembly language progra assembler .

Q.3. What are the feature of High Laver Language.

Answer

- Uses English words and mathematical operators.
- Machine- Independent.
- Has to be converted into Machine language by Translator programs (Interpreters and Compilers)

Q.4. Differentiate between an interpreter and a compiler.

Answer:-

Interpreter	Compiler
An interpreter translates line by line, executes the instruction and then repeats the procedure for remaining instructions.	Compiler is a translator used to convert a hig in to machine language.

Q.5. List any three characteristics of the Fourth Generation language.

Answer:-

- Highly user friendly and independent of any operating system.
- Very high speed of execution. Designed to recue level of programming efforts.
- Minimum efforts from the user to obtain any information.