Chapter 1 Computer Languages

Definitions

1. **Programs**:- A computer needs specific instructions to perform a specific task or function. These sets of instructions are called programs.

2. **Programming**:- The process of developing a set of instructions to enable a computer to do a particular task is called programming.

3. **Translator**:- Translator or language processor converts the instructions into a machine language to make it a computer understandable language.

4. **Assembler**:- Assembler translate the assembly language programs into to machine language programs.

5. **Compiler**:- compiler is a language translator program which converts a high level language program into machine language.

Note: write down and learn these definitions.

5. In which year were the compilers introduced?
   a. 1992   b. 2002   c. ✓1952

B. Fill in the blanks.

1. <u>Machine</u> language is the only language that a computer understands.
2. Assembly language is regarded as the <u>second</u> generation language.
3. A program converted into machine language by a translator is called <u>object code</u>
4. An <u>interpreter</u> converts a high-level language program into machine language line-by-line.
5. <u>Mercury</u> is an example of fifth generation language.

C. Write T for True and F for False.

1. A program is a set of instructions.   T
2. The development of computer languages is classified into two categories.   F
3. Assembly language consists of binary numbers, i.e. 0 and 1.   F
4. Machine language uses simple English words and phrases.   F
5. The ultimate aim of 5GLs is to make computers think and react as human beings.   T

D. Answer the following questions.

1. What do you understand by a programming language? Define machine language.

   The language which is used to develop set of instructions in a computer. Machine language is the fundamental language of computers. It is the only language that computers directly understand.

2. List the advantages of assembly language. are:→

   1. It uses English words which make it readable by human beings.
   2. It is easy to locate and fix the errors.

3. What is the difference between source code and object code?

   The program written in assembly language or HLL is called source code, and the program converted into machine language using a translator is known as object code.

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Disadvantages of Assembly Language

❖ Like machine language, it is also a machine dependent language. It means different assembly language programs need to be written for different types of computers.

❖ It is quite time consuming.

THIRD GENERATION LANGUAGES (3GLs)

The limitations of machine language and assembly language led programmers to develop a language which is machine independent, resembles English or any other spoken language and includes familiar mathematical symbols. These languages are known as Third Generation Languages (3GLs) or High-Level Languages (HLL).

The instructions written in high-level languages are easy to understand and write. Some examples of high-level languages are FORTRAN, COBOL, Basic, Pascal, C, C++, Java, and so on.

A computer does not understand any language other than machine language, so it needs a translator which converts assembly language and high-level language programs into machine language. You will study about different types of translators later in the chapter.

Features of High-Level Language

❖ It is user-friendly.

❖ It uses English words and mathematical operators which make it easy to understand.

❖ It is not dependent on machine.

INFO BOX

A translator is also known as language processor.

4. ~~Define the term translator.~~ How is an interpreter different from a compiler?

Interpreter	Compiler
1. It translates a program line by line.	It translates entire program at once.
2. It takes more time to interpret.	It takes less time to compile.

5. What are the characteristics of the fifth generation language? are:

1. The computer can solve a given problem on its own. without any interference of the programmer.

2. Its ultimate aim is to make computer behave, think and react as a human beings.

AVA'S ACTIVITY ZONE

Identify different types of computer languages, and write them under the appropriate category.

COBOL   C++   WAVE   Mercury   SQL   Pascal   OPS5

3GLs	4GLs	5GLs

Group Discussion

Divide the class into small groups and conduct a group discussion on the following topic:

❖ Translator plays a significant role in the development of computer languages.

Teacher's Notes

❖ Discuss the importance of using a common language to exchange the information.
❖ Explain the need for different generations of computer language.

If there are any syntax errors in the source program, they are brought to attention of programmer as soon as a program statement is interpreted. Thus, it makes finding and correcting errors easier and quicker.

| High-Level Language Program | → INPUT → | Interpreter | → OUTPUT → | Machine Language Program |
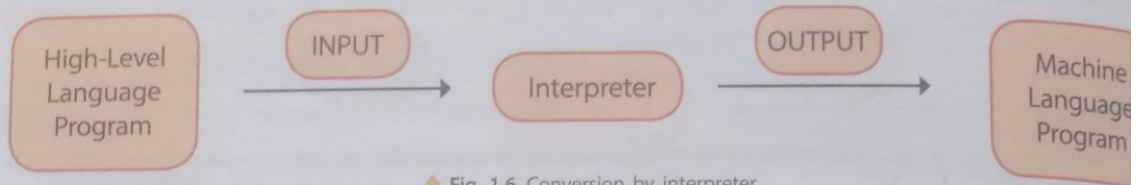
Fig. 1.6 Conversion by interpreter

◀◀ FLASHBACK ▶▶

- ❖ The process of developing sets of instructions in a computer language is called programming.
- ❖ Machine language is the fundamental language of computers. It is the only language that computers directly understand.
- ❖ In an assembly language, mnemonic codes or symbols are used instead of 0 and 1.
- ❖ High-Level languages are considered as third generation languages.
- ❖ Fourth generation languages are more programmer-friendly and versatile.
- ❖ Fifth generation languages are a grouping of programming languages based on the fact that problems can be solved by providing constrains to the program, rather than algorithmically specifying how the problem needs to be solved.
- ❖ An assembler translates the assembly language programs into machine language programs.
- ❖ A compiler translates the entire program into machine language at once.
- ❖ An interpreter translates a program line-by-line.

EXERCISES

A. Tick (✓) the correct answers.

1. How many generations can computer languages be classified into?
   a. Two
   b. Four
   c. ✓ Five

2. This generation of language uses mnemonic codes.
   a. ✓ Second
   b. Third
   c. Fourth

3. Which of the following is not an example of high-level language?
   a. ✓ ADD
   b. COBOL
   c. JAVA

4. Which of the following does not translate the entire program at once?
   a. Compiler
   b. ✓ Interpreter
   c. Both a and b

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