TRINITY COLLEGE FOR WOMEN NAMAKKAL

Department of Mathematics

PROGRAMMING WITH C++

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Software Evolution

- Since the invention of the computer, many programming approaches have been used.

- The Primary motivation in all programming styles is the concern to handle the increasing

- complexity of programs that are reliable and maintainable.

- These Programming techniques include

- 1. Machine Level Programming

- 2. Assembly Language Programming

- 3. High Level Programming

Machine level Language

- Machine code or machine language is a set of instructions executed directly by a computer's central processing unit (CPU).

- Each instruction performs a very specific task, such as a load, a jump, or an ALU operation on a unit of data in a CPU register or memory.

- Every program directly executed by a CPU is made up of a series of such instructions.

Assembly level Language

- An assembly language (or assembler language) is a low-level programming language for a computer, or other programmable device, in which there is a very strong (generally one-to-one) correspondence between the language and the architecture's machine code instructions.

- Assembly language is converted into executable machine code by a utility program referred to as an assembler; the conversion process is referred to as assembly, or assembling the code.
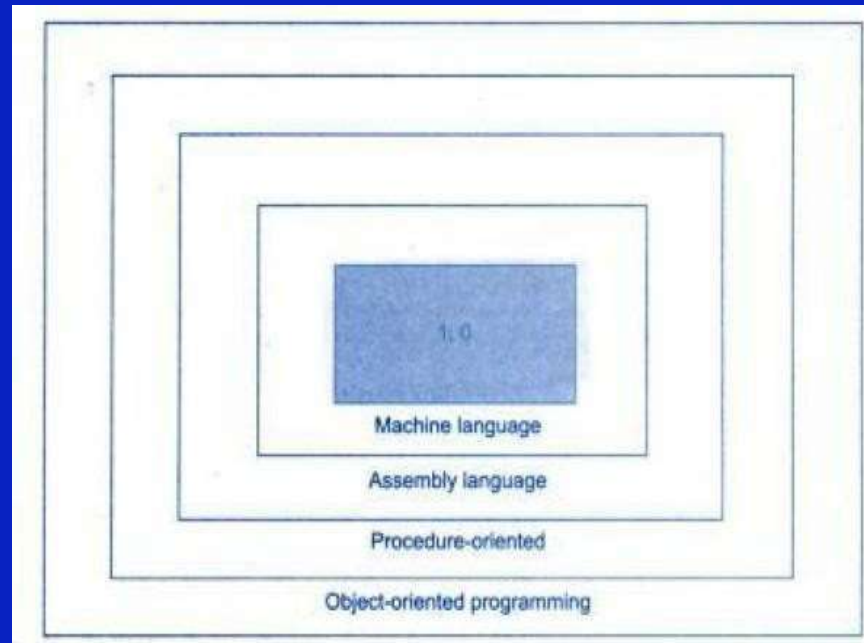
High level Language

- High-level language is any programming language that enables development of a program in much simpler programming context and is generally independent of the computer's hardware architecture.

- High-level language has a higher level of abstraction from the computer, and focuses more on the programming logic rather than the underlying hardware components such as memory addressing and register utilization.

- The first high-level programming languages were designed in the 1950s. Now there are dozens of different languages, including Ada , Algol, BASIC, COBOL, C, C++, JAVA, FORTRAN, LISP, Pascal, and Prolog.

- Such languages are considered high-level because they are closer to human languages and farther from machine languages.

- In contrast, assembly languages are considered low- level because they are very close to machine languages.

High-Level programming approaches are broadly classified as:

Procedure-Oriented Programming (POP) & Object-Oriented Programming (OOP).

- **Procedure-Oriented Programming (POP)**

- Conventional programming, using high level languages such as COBOL, FORTRAN and C, are commonly known as pro*cedure- ori*e*nted pr*o*gram*mi*ng* (POP). In the procedure-oriented approach, the problem is viewed as a sequence of things to be done such as reading, calculating and printing.

- A number of functions are written to accomplish these tasks. The primary focus is on functions.

Object-Oriented Programming Paradigm

- The major motivating factor in the invention of object-oriented approach is to remove some of the flaws encountered in the procedural approach mainly providing data hiding feature.

- OOP treats data as a critical element in the program development and does not allow it to flow freely around the system.

- It ties data more closely to the functions that operate on it, and protects it from accidental modification from outside functions.

THANK YOU

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