

## Tutorial - 02

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- B-1 List out the difference between system software and application software

### System software

### Application software

- act as interface b/w application software and system      software that acts interface b/w user and specific task for which that is made, as it runs as per user request.
- written in low level languages      written in high level languages.
- This maintains resources and gives path for application software to run. It is basically general purpose software      This are made according to specific purpose software
- System depends of system software.      This software does not affect the system, i.e., system can run without application software.
- e.g. OS, drivers, etc.      e.g. VLC media player etc.

- C-2 System software is machine dependent. Justify the statement.

- System softwares are type of programs that are designed to run on hardware of computer. They

manage the machine itself i.e. it connects directly to the hardware that enables the computer to run. Different hardware perform tasks differently and has a unique set of operations associated with it. System software must communicate with both the specialized hardware it runs on and the higher-level application software. So to properly communicate system software depends on the architecture of machine instruction format and addressing modes. This is different for different machines and has to be taken care by system software accordingly. So it is justifiable to say system softwares are machine dependent.

Qs-3

Write notes on language processors.

Ans

Computer understands instructions in machine code, i.e., in 0s and 1s. It is difficult for human to directly write code or program in machine code as human's natural language is not machine code. So humans write instructions which are more of human's natural language, this is called high level programming language, e.g. C/C++, Java, Python etc. This code is called source program or source code. This source is then converted step by step into machine code, so that instructions are in binary format, which machine can understand and execute. The program/software that converts the source code into machine code after some intermediate steps to machine code are called language translators/processors.

There are basically 3 types of language processor

1. Assembler → this software translates the program written in assembly language to machine code
2. Compiler → this software translates the source code into assembly code, but as a whole document. It also detects errors (grammar errors in source code)
3. Interpreter → it translates the source code into machine code, but it does it line by line. When it detects error, it stops reading / scanning / analysing next instruction. And before moving to next instruction, it executes the instruction which it read already.

Q-4 What makes difference b/w executing a high level program from programmer's view and a system software view?

Ans Higher level language programs are not directly understood by machine, and before execution it has to undergo multiple transformation, which at least is taken care by OS and then executed. This all is deeply connected to logical view and actual translation and functioning of machine. Code written by programmer is converted in assembly code by compiler, then this converted to machine code by assembler. Sometimes it is done by interpreter.

System software view also takes care of errors in handling included programs, execution etc. In net shell it takes care of actual execution with logical process irrespective of syntactic meaning.

On the other hand programmes's view is only of grammar on which high level language runs, output extracted from system software's ~~pro~~ - results and syntaxes irrespective of logical view discussed above.

CB-5

Explain various components of System Software

→ System softwares are designed to operate the hardware of the machine. It provides a platform for running application software and basic functioning for the computers. It has following components:-

1. Device Drivers → These are the programs with the help of which higher level computer programs can interact with the computer hardware. It simplifies programming as it acts as a translator between hardware and applications.

2. Operating Systems → It manages computer's hardware and software resources. It acts as a link b/w hardware & software. It controls and keeps record of execution of all other programs that are present in the computer, including application programs and other system software.

It does following thing.

- a. memory management
- b. processor management
- c. file management
- d. security (prevents unauthorized access).
- e. error detection
- f. scheduling

3. Server → It is a program that act as a socket listening in a computer network. A computer or series of computers that provides services across a network.

4. Utility Software → manages hardware and application software and performs small tasks  
e.g. virus scanner.

5. Root → user program/process → it is a program that can be run only by a user with root authority.  
They can:-  
a). read / write objects  
b) call system functions  
c). Perform certain subsystem-control operations

6. Windowing system → supports implementation of window manager and provide base support for graphics hardware and pointing device

7. Application program → programs that perform specific tasks. They are at the top layer.