

* System Programming and Operating System (SPOS) - Assignment Number - 1

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- * List different components of system software. Compare machine language and assembly language.

→ System Software Components:-

System has three basic types of software: application programs, device drivers, and operating systems. Each type of software performs a completely different job, but all three work closely together to perform useful work. While some special purpose programs do not fit neatly into any of these classes, most software does. Programs run in the memory portion of the system. While running, programs are known as processes or jobs. The following illustration shows the relationship between the different software programs and the hardware.

Application Programs-

Application programs are the top software layer. You can perform specific tasks with these programs, such as using a word processor for writing, a spreadsheet for accounting, or a computer-aided design program for drawing. The other two

layers, device drivers and the operating system, play important support roles. Your system might run one application program at a time, or it might run many simultaneously.

Device Drivers -

Device drivers are a set of highly specialized programs. Device drivers help application programs and the operating system do their tasks. Device drivers (in particular, adapters), do not interact with you. They interact directly with computer hardware elements and shield the application programs from the hardware specifics of computers.

Operating System -

An operating system is a collection of programs that control the running of programs and organizes the resources of a computer system. These resources are the hardware components of the system, such as keyboard, printers, monitors, and disk drives. Your AIX operating system comes with programs, called commands or utilities, that maintain your files, send and receive messages, provide miscellaneous information about your system, and so on.

Comparison between Machine Learning and Assembly Language:-

Machine Learning	Assembly Language
① Machine language is only understood by computers.	Assembly language is only understood by human beings not by the computers.

Machine Learning

- ② In machine learning data only represented with the help of binary format, hexadecimal and octadecimal.
- ③ Machine Language is very difficult to understand by the human beings.
- ④ Modification and errors fixing cannot be done in machine language.
- ⑤ Machine language is very difficult to memorize so it is not possible to learn the machine language.
- ⑥ Execution is fast in machine language.
- ⑦ There is no need of translator.
- ⑧ Machine language is hardware dependent.

Assembly Language

- In assembly language data can be represented with the help of mnemonics such as Mov, Add, Sub, End etc.
- Assembly language is easy to understand by the human being as compare to machine language.
- Modification and errors fixing can be done in assembly language.
- Easy to memorize the assembly language because some alphabets and mnemonics are used.
- Execution is slow as compared to machine language.
- Assembler is used as translator to convert mnemonics into machine understandable form.
- Assembly language is the machine dependent and it is not portable.