

A Brief History of Operating Systems

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History of Operating Systems:

The first digital system designed was by Charles Babbage. For this, he hired Ada Lovelace (the first programmer) as software designer after which the Programming language "Ada" named. The first Generation computers does not involve any operating systems and was able to calculate only straight-forward numerical calculations. These machines used thousands of vacuum tubes for performing tasks. It has been a difficult task to take care that none of the vacuum tube burns.

The Second Generation computers were designed by the introduction of transistors, cards. This was the first generation involving a clear separation between designers, programmers, operators..etc. These are also called as main frames. They are mostly programmed in FORTRAN and Assembly language. A combination of two 1401, one 7094 are used in making these computers, where 1401 reads batches of jobs into the tape and 7094 does computing and then again 1401 prints the output (offline). The Operating systems FMS (the Fortran Monitor System) and IBSYS, IBM's operating system are used for the 7094. This is the first for the introduction of Operating System.

In 1960s the manufacturers have two distinct, incompatible product lines. The product lines are word oriented Scientific computers(which were used for the numerical calculations) and character oriented Commercial Computers(which were used for tapesorting and printing). IBM tried to solve both problems by proposing the first Third Generation computer- System 360 with the operating System named OS/360. It was the first computer to use small scale Integrated circuits(ICs) which has increased both the performance and price as well. But there was nobody who could write a code that can meet all the conflicting requirements. OS/360 contains millions of lines written in Assembly language by thousands of programmers which contained thousands and thousands of bugs. For Each new release thousands of bugs has been rectified but at the same time other thousands of new bugs has been identified, for which the number of bugs remained constant. This was the first Operating system which introduced the concept of multiprogramming where the memory is partitioned into several pieces with different jobs in each partition, so that, while one job is waiting for the I/O to complete other job can utilize CPU. By this the CPU can be used very efficiently and the total time is decreased. The other main feature that the third generation OS consist of is spooling(Simultaneous Peripheral Operation On Line). The process of reading of cards onto disks and loading a new job from disk to empty partition is called spooling. Because of this process the use of 1401s is no longer required and the carrying of tapes is disappeared.

The way of timesharing (a variant of multiprogramming) way has been used for the quick response where each user has an online terminal by which a computer can provide fast and interactive service to a large number of users. The first Time sharing Operating System was CTSS(Compatible Time Sharing System) which was developed by MIT. Later MULTI CS(MULTiplexed Information and Computing Service) was designed to support hundreds of time sharing users.

A software called Middleware is used as a bridge between local users and databases, files and programs on remote servers. It appears to be na OS for distributed System but it is not at all an Operating System.

The Scientist Ken Thompson of Bell Labs, who worked on MULTICS project has built a mini PDP-7 computer(one-user version of MULTICS) which was later developed into UNIX Operating System, which is much more popular. As the source code was widely available, many other companies had made their own version which led to chaos. BSD(Berkeley Software Distribution) from University of California and System V from AT&T are the two major versions. For writing programs that could run on any UNIX systems, IEEE developed a standard for UNIX called POSIX.

The development of chips which would contain thousands of transistors on a small area of silicon and the large scale Integrated circuits has laid a base for the microprocessors which has decreased the cost in slump and led to the Fourth Generation Computers. The combination of Intel 8080 (the first-general purpose 8-bit multiprocessor) and Digital Research's CP/M(Control program Micro computers) Operating System was widely used and dominated personal computing over 5 years. After that Motorola launched a 8-bit microprocessor - 6800. But to non agreement of some of the improvements in 6800, a group of engineers resigned Motorola and manufactured 6502 CPU. One of these was the Apple II which has become a major competitor for CP/M systems.

Intel came out with next generation 16-bit microprocessor Intel 8086 and designed the IBM PC around 8088. Microsoft after buying the DOS(Disk Operating System), which was later converted to MS-DOS(Microsoft Disk Operating System), quickly dominated IBM PC Market.

After that, Doug Engelbart at Stanford Research Institute had invented the GUI (Graphical User Interface) windows, icons, menus, and mouse. Later Steve Jobs has announced Apple Macintosh which used Motorola's 16-bit 68000 CPU and 64KB of ROM(read-only memory) to support GUI. later Apple moved to IBM PowerPC CPUs, with RISC 32-bit (and later, 64-bit) architecture. In 2001 Apple released Mac OS X, with a new version of the Macintosh GUI on top of Berkeley UNIX. Later to compete with the Macintosh, Microsoft invented Windows which was just a graphical environment on top of 16-bit MS-DOS.

Although many UNIX users, prefer a command-based interface to a GUI, nearly all UNIX systems supports a GUI called the X Window system developed at MIT. This system allows users to create, move, resize and delete windows using a mouse. Motif(a complete GUI) is able to run on X Windows System providing a feel of Macintosh or Windows.

References:

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