

Essentiality of UNIX

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Abstract - An Operating system is nothing but software meant for managing hardware and software resources. UNIX is said to be the most popular Operating system. Many undergraduate and postgraduate computer science programs of various universities have given the platform to study Unix Operating systems. In this paper I have tried to give brief information about the need to study this subject, developers of this OS and the features which have made the platform very reliable to be used in software development industries.

areas where UNIX culture is adopted, goes on without an end. Banking, Military, industrial automation fields, ecommerce, security, DNS servers are few examples.

1. UNIX DEVELOPERS

In mid-1960's Massachusetts Institute of Technology, AT&T Bell Labs, and General Electric founded an OS which had time sharing feature known as MULTICS (multiplexed information and computing service). Ken Thompson, Dennis Ritchie, Brian Kernighan, Douglas McIlroy, and Joe Ossanna at Bell Labs were known to have developed UNIX, the term UNICS (unified information and computing service) was coined by Peter G. Neumann. Dennis Ritchie reworked a lot to reduce the size and complexity of OS and run the game space travel. UNIX and its variants were released every now and then till date.

2. NEED FOR STUDYING UNIX

There is a need for every software developer to have knowledge on UNIX environment and the way to go with UNIX platform. Information technology based industries are likely to work on this beautiful platform due to the excellent features provided. Though the working requires knowledge of UNIX commands, once the user gets used to it, he will continue the work more flexibly without any trouble. All most all kind of software development happening today is in this platform. The toolkits provided by UNIX are believed to solve real problems in deed.

UNIX has got several variants which are used everywhere, examples include Linux, MAC OS X server, Red Hat, Solaris etc. Network management, telecom industries, internet world is running undoubtedly on this platform. Naming the

3. THE FEATURES OF UNIX

- A. **System architecture:** The UNIX architecture is divided into two main parts called Kernel and shell. The kernel is the core part of the operating system. It interacts with hardware and performs the tasks like memory management, task scheduling and file management. The shell works on user requests. Shell interprets the command given by user and calls the program that is needed.
- B. **Portability:** It is written in high-level language, 'C' making it easy to port to different configurations. OS works fine with any system configuration Software developed on this system comply with any hardware platforms
- C. **Multi user capability:** UNIX provides multi user capability, which allows multiple users to work simultaneously through the terminals, multiple users can run their processes together or a single user can work on different jobs at a time, which is done by time splicing concept carried out by kernel.
- D. **Multi-tasking capability:** the kernel in OS has the ability to handle multiple jobs at a time which are initiated by a single user. Switching between jobs and handling jobs simultaneously at the background and foreground is done by the kernel.
- E. **Utilities:** All the works can be achieved by commands which are also called as utilities ex: grep for searching, cp for copying, ls for listing etc.
- F. **Manual help:** If the user has confusions with the syntax or with the way the command has to be used, he can get the help manual help online by the OS using 'man' command.
- G. **File system:** UNIX treats everything as file. Hence the files grow .UNIX maintains files in systematic way so accessing the files and keeping the files become easier. Related files are grouped under same directory. Parent and child relationship is

there between files to provide the way for accessing. UNIX is said to have hierarchical file structure. File accessing is also restricted to provide security to all the files. Each file is given permission in three categories that is 'owner', 'group' and the world so that file access can be limited to only concerned people.

- H. **Editor:** UNIX offers a powerful editor for writing or editing the programs in UNIX, for all the functions which have to be generated, internal commands are there. one must have knowledge on commands used in vi editor which uses the keyboard keys to the maximum.
- I. **Pattern matching:** Instead of retrieving the words or files one by one it would be fast and efficient if all the entities having some similarity can be retrieved together once for all. UNIX provides such facility by pattern matching techniques using regular expressions to match the similar pattern in a file or wild cards to retrieve files having the similar filenames. Grep and sed are two important utilities used for matching patterns.
- J. **UNIX Processes:** process is a program under execution. UNIX has the ability to work on multiple processes at a time; kernel has ability to manage all the processes well by sharing the resources. The process has ability to create new process that is child process creation to get the jobs done.
- K. **Security:** security is provided by restricting the access to the user. Read, write, and execute permissions are imposed on each file to provide security. Only the admin or super user of the system is provided with all the privileges. Each user is given with username and password to provide access to only to authenticated user so that system privacy is maintained. Antivirus is not that essential in UNIX based system unlike other OSs, except in few conditions like condition of running mail servers or file servers.

4. UNIX VERSUS WINDOWS

Though windows is user friendly and widely used OS, we need to know few important reasons why UNIX is preferred over windows. The preferred mode of user interaction with the system is GUI in windows, whereas command line interface in UNIX based systems. Developers are often said to be more comfortable with command line interface.

UNIX OS is believed to be more secure compared to Windows OS. The very important factor to be known is, UNIX is open source software which gives the researchers and developers the provision to change the OS code according to their need and use and update it, while the Windows is licensed one, and no one is given privilege to change the code. UNIX is known for providing multiuser, multitasking capability whereas many Windows versions lack in that feature. In windows the software or other programs can be installed by running .exe files, where as in UNIX only with the permissions any program can be run or installed which helps in keeping the system safe.

5. CONCLUSIONS

UNIX is more preferred, than other operating system due to its unique features and characteristics provided for the development. In this paper I have focused on few features of UNIX which has to be known for software developers and the essentiality of the UNIX learning and also few differences quoted against everyday OS called windows.

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