Assignment No 1

* Different file system structures

i) Unix file System

Unix file system is logical method of organizing and storing large amounts of information in a way that makes it easy to manage. A file is a smallest unit in which the information is stored. Unix file system has several important features. All data in unix is organized into files. All files are organized into directories. These directories are organized into a tree-like structure called the file system.

Files in unix system are organized into multilevel hirarchy structure known as a directory tree. At the very top of the file system is a directory call "root" which is represented by a "/". All other files are "descendants" of root.

ii) ReiserFS

The ReiserFS is a general-purpose computer file system and implemented by a team at Namesys led by Hans Reiser, who is referred to the projects Benovalent Director for life. It is currently supported for GNU/Linux and may be included in other operating systems in the future. Introduced with version 2.4.1 of the Linux kernel, it was the first journaling file system to be included in the standard kernel. ReiserFS is the defaut file system on slackware, SUSE, Xandros, Yopor, Linspire, Kurumin Linux, FTOSX and Libracnt Linux distributions.

iii) Journaling File System

A journaling file system is a fault-resilient file system in which data integrity is ensured because updates to directories and bitmaps are constantly written to a serial log on disk before the original disk log is updated. In the event of a system failure, a fault journaling file system ensures that the data on the disk has been restored to it's precash configuration. It also recovers unsaved data and stores in the location where it would have gone if the computer had not crashed, making it an important feature for mission-critical applications.

Not all operating systems provide the same journaling technology. Windows NT offers a less robust version of full system. If your windows NT system crashes, you may not lose the entire disk volume, but you will likely lose all the data that hadn't yet been written to the disk prior to the crash. By the same token, the default Linux system does not journal at all that means a system crash - although infrequent in a Linux environment can corrupt entire disk volume.

iv) EXT 4

The ext4 file system is scalable extension of the ext3 file system, which was the default file system of Red Hat Enterprise Linux 5. Ext4 is the default of Red Hat Enterprise Linux 6 and can support file and file systems up to 16 TB. It also support an unlimited number of sub directories, though once the link counds exceeds,

it resets to 1 and is no longer increased.

Ext4 uses extents as opposed to the traditional block mapping scheme used by ext2 and ext3, which improves performance when using large files and reduces metadata overhead for large files. In addition, ext4 also labels unallocated block groups and inode table sections accordingly, which allows them to be skipped during a file system check. This makes for quick file system check, which becomes more beneficial as the file system grows in size.

v) Virtual File System

A virtual file system is programming that forms an interface between an operating system's kernel and a more concrete file system. It manages the data storage and retrival between the operating system and the storage sub system. It gives applications access to different types of files and local and network storage devices. It separates file system generic operations from their implementation by defining a clean VFS interface. It is also label on file representation structure known as vnode, which contains a numeric designer needed to support network file system.