

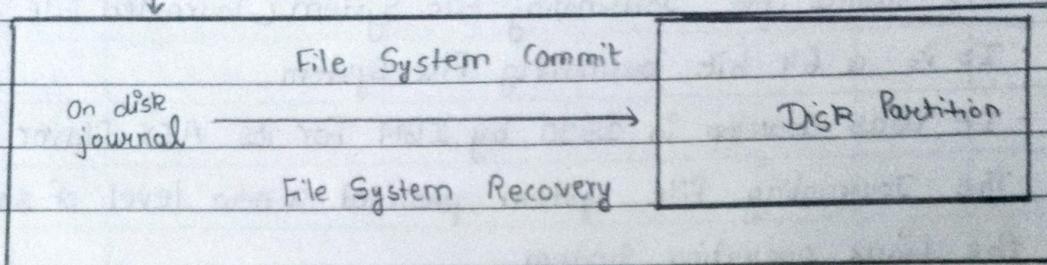
Assignment No. 01

Q1) Explain JFS file System in detail with working and diagram.

- JFS stands for Journaling File System (Journaled File System)
- It is a 64 bit journaling File System.
- It was developed in 1990 by IBM for its AIX flavor of Linux.
- The Journaling file system provided a new level of safety for the Linux operating System.
 - Instead of writing data directly to the storage device and then updating the inode table, journaling file systems write file changes into a temporary file first. (called journal).
 - After data is successfully written to the storage devices and the inode table, the journal entry is deleted.
 - If the system crashes or there is a power outage before the data can be written to storage device, the journaling file system just reads through the journal file and processes any uncommitted data which was left over.
- There are a total of three methods of Journaled File Systems:
 - 1) Data mode
 - 2) Ordered mode
 - 3) Writeback mode

• The data mode journaling method is the safest method but it is also the slowest method of the three.

File System Writes



JFS working

- The JFS supports the following features:

- Journal
- B+ tree
- Dynamic inode allocation
- Extents
- Compression
- Concurrent input/output (CIO)
- Allocation groups
- JFS superblocks

Q.2) Explain ext file system of Linux OS in detail.

- - Ext stands for 'Extended' file system.
 - The ext file system uses a system called inodes to track information about the files stored in the virtual directory.
 - The inode system creates a separate table on each physical device called the inode table, to store file information.
 - Each stored file in the virtual directory has an entry in the inode table.
 - The extended part of the name comes from the additional data that it tracks on each file, such as:
 - filename
 - file size
 - owner of the file
 - group to which filename belongs
 - access permissions to the file
 - pointers to each disk block that contains data from the file.
 - The file system uses the inode number to identify the file rather than having to use the full path and filepath.
- As of now there have been four versions of extended file system:
 - ext - extended file system
 - ext2 - extended file system Version 2
 - ext3 - extended file system version 3
 - ext4 - extended file system version 4

Q.3) Write a shell script to find largest amongst three numbers.

→

```
#!/bin/sh
```

```
echo -n "Enter first number: "
```

```
read a
```

```
echo -n "Enter Second number: "
```

```
read b
```

```
echo -n "Enter third number: "
```

```
read c
```

```
largest=0
```

```
if [ $a -gt $b ]
```

```
then
```

```
    if [ $a -gt $c ]
```

```
        then
```

```
            largest=$a
```

```
        else
```

```
            largest=$c
```

```
    fi
```

```
elif [ $a -lt $b ]
```

```
then
```

```
    if [ $b -gt $c ]
```

```
        then
```

largest = \$b

else

largest = \$c

fi

else

if [\$a -gt \$c]

then

largest = \$a

elif [\$a -eq \$c]

then

largest = -1

else

largest = \$c

fi

fi

if [\$largest -eq -1]

then

echo "All values are equal"

else

echo "Largest among the three is: \$largest"

fi

Q.4) What is UFS? Explain in detail.

- UFS stands for Unix File System.
- Unix File System is a logical method of organising and storing large amounts of information in a way that makes it easy to manage.
- All data in Unix is organised into files.
- All files are organised into directories. All directories are organised into a tree-like structure called the file system.
- Files in Unix System are organised into multi-level hierarchy structure known as a directory tree.
- At the very top of the file system is a directory called "root" which is represented by a "/".
- All the other files are descendants of the root.
- Types of Unix's files:
 1. Ordinary files
 2. Directories
 3. Special files
 4. Pipes
 5. Sockets
 6. Symbolic links.

- Reiser FS or Reiser File System was created by Hans Reiser in the year 2001.

- It was the fourth first journaling system for the Linux operating System.

- It supports only writeback journaling mode, writing only the inode table data to the journal file.

- This makes it one of the faster journaling system of the Linux Journaling File System.

- Few interesting features of ReiserFS are:

- 1) It is possible to resize an existing file system while its still active.

- 2) It uses a technique called tailpicking, which stuffs data from one file into empty space in a data block from another file.

- The active file resizing feature is great if you have to expand an already created file system to accomodate more data.