



GLOBAL **EDGE**
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Virtual File System

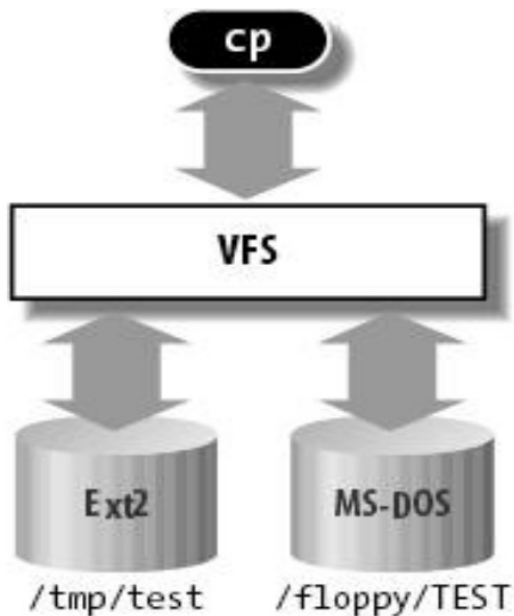
presented by Jyothi

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Introduction

- A VFS is a kernel software layer that handles all system calls related to a standard UNIX filesystem
- VFS was first designed by Sun microsystems in 1986, then UNIX included VFS
- Later Linux also used the same and now it supports various filesystem
- Main strength - to provide common interface to several kinds of filesystems
- `$cp /floppy/test /temp/test`



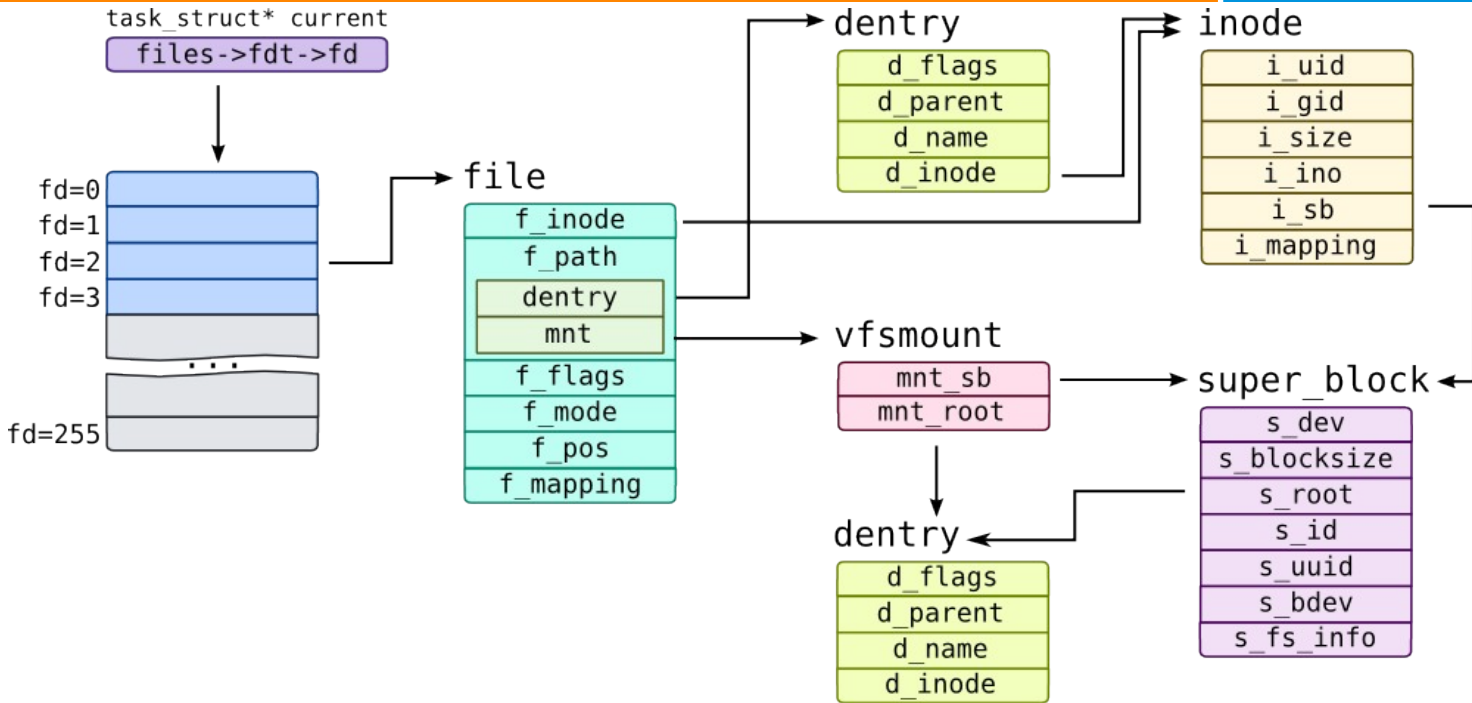
(a)

```
inf = open("/floppy/TEST", O_RDONLY, 0);
outf = open("/tmp/test",
            O_WRONLY|O_CREAT|O_TRUNC, 0600);
do {
    i = read(inf, buf, 4096);
    write(outf, buf, i);
} while (i);
close(outf);
close(inf);
```

(b)

VFS Data Structures

- Superblock object
- Inode object
- Dentry object
- File object



Superblock Object

- Implemented by each filesystem, and is used to store information describing that specific filesystem
- The superblock object is represented by `struct super_block`
- The superblock operations table is represented by `struct super_operations`

Inode Object

- The inode object represents all the information needed by the kernel to manipulate a file or directory
- The inode object is represented by `struct inode`
- The inode operations table is represented by `struct inode_operations`

Dentry Object

- VFS employs the concept of a directory entry (dentry)
- A dentry is a specific component in a path
- Dentry objects are represented by `struct dentry`
- The `dentry_operations` structure specifies the methods that the VFS invokes on directory entries on a given filesystem

File Object

- The file object is used to represent a file opened by a process
- The file object is represented by `struct file`
- The file object methods are specified in `file_operations`

References

- GLMS videos
- Linux Kernel Development by Robert Love
- Understanding the Linux Kernel by Bovet

Any Queries ?

Feedback

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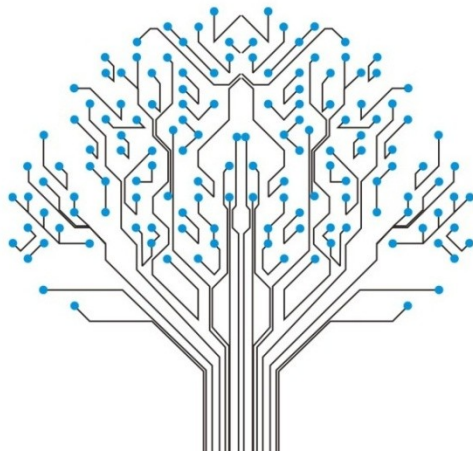
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