

CS518

Operating System

[A2 Report]

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Objective:

To implement a write-once file system

Super Block Structure:

This structure consists of

- The size variable stores the size of the filesystem
- free_blocks shows the number of unused blocks
- Used_blocks shows the used blocks
- Last_used_block keeps a track of the last Accessed Block Index in the data region
- Structured is used to validate if the disk is in the right format or not

typedef struct

```
{  
    int size;  
    int free_blocks;  
    int used_blocks;  
    int last_used_block;  
    char format[9];  
} superblock_t;
```

Inode Structure:

The inode_t structure consists of

- Name variable which holds the name of the file.
- Blocks store the number of blocks used by the file.
- Fd represents the file descriptor.
- Last_updated_node indicates the index of the last updated node.
- File_block array to represent the file data blocks in the data region.
- *next points to next inode.

```

typedef struct
{
    char name[256];
    int blocks;
    int fd;
    int last_updated_node;
    short int file_block[4096];
    struct inode_t *next;
} inode_t;

```

Open File Structure:

File access mode, Pointer to the inode, Current file cursor

```

typedef struct open_file
{
    int mode;
    inode_t *inode;
    int cursor;
} open_file;

```

Additional Data Structure:

char *disk_Name; variable to hold disk name

Pointers to the file system in memory

- **char *file_system;** Pointer to the file system in memory
- **char *data_region;** Pointer to the data region in memory
- **inode_t *inode_region;** Pointer to the inode region in memory
- **superblock_t *superblock_region;** Pointer to the superblock in memory
- **open_file open_file_table[MAX_FILES];** Open file table

Build instructions:

Make all: for creating the library file.

Make clean: to clean after execution.