# Indian Institute of Technology, Guwahati

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Department of Computer Science and Engineering Project report

On

# “Implementation of File System”

Course: CS-558 Systems Lab

**Submitted to Submitted By**

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CS558 Implementation of File System

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*M.Tech CSE*

Implement a simple file system which makes the following assumptions:  
•There is only a single level root directory.  
•The root directory can have any number of files of any size.  
•Each file has a unique name.  
•Each disk block which stores the file is of size 4 Bytes.  
•A file can be created, deleted, or renamed at any time.  
When the contents of a file are given as input in the command line, the file system should be  
capable of creating as many disk blocks as necessary with the contents of the file in the form  
of .txt files with disk numbers as their names. Every file should have an inode pointing to all  
the disk blocks that store the file. When a file is renamed, it should still have the same inode  
number. When a file is deleted, all the corresponding disk blocks should be deleted from the  
file system and its meta-data (name and inode number) should be deleted from the directory.  
When a file is read, all the contents of the input file are supposed to be retrieved correctly.  
Implement a file system that takes the following commands as inputs :  
1. mf file-name “filecontents”: Should create the file with the given file-name and file  
contents.  
Example : mf File1 “This is file 1”  
2. df file-name : Should delete the file from the directory.  
Example : df File1  
3. rf file-name1 file-name2 : Should rename the file from file1 to file2.

4. pf file-name : Should display all the contents of the file correctly.  
Example : “This is file 1”.  
5. ls : Should display all the file-names and their inode number correctly

# \*\*This folder contains the following files:

# ---->makefile

# ---->File\_System.cpp : cpp program file

# \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# \*\*To compile and run File\_System.cpp :

# ---->open this folder in ubuntu terminal

# ---->write the command "make" or "make run" in the terminal without quotes and press enter

# The program will now run.

# \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Commands:

# --> mf file-name filecontents : Should create the file with the given file-name and file

# contents.

# --> df file-name : delete the file from the directory.

# --> rf file-name1 file-name2 : rename the file from file1 to file2.

# --> pf file-name : display all the contents of the file.

# --> ls : Should display all the file-names and their inode number correctly.

# \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# \*\*Sample input/output :

# Enter command (To exit , enter "EXIT" without quotes): mf file1 this is file1

# File Created!

# Enter command (To exit , enter "EXIT" without quotes): mf file2 this is file2

# File Created!

# Enter command (To exit , enter "EXIT" without quotes): df file1

# File deleted!

# Enter command (To exit , enter "EXIT" without quotes): df file1

# This file doesnot exists

# Enter command (To exit , enter "EXIT" without quotes): rf file2 file3

# file2 has been renamed to file3

# Enter command (To exit , enter "EXIT" without quotes): pf file2

# This file doesnot exist

# Enter command (To exit , enter "EXIT" without quotes): pf file3

# this is file2

# Enter command (To exit , enter "EXIT" without quotes): mf file1 file1 returns

# File Created!

# Enter command (To exit , enter "EXIT" without quotes): mf file2 file2 returns

# File Created!

# Enter command (To exit , enter "EXIT" without quotes): ls

# FILENAME INODE NUMBER

# ========================================

# file1 334

# \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# file2 500

# \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# file3 467

# \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Enter command (To exit , enter "EXIT" without quotes): EXIT