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Laboratory 3

Title of the Laboratory Exercise: Programs using file management system calls

1. Introduction and Purpose of Experiment

   A system call is a programmatic way in which a computer program requests a service from the kernel of the operating system it is executed on. There are different types of system calls developed for various purposes. They are mainly classified as process management, file management, directory management. By solving the problems students will be able to apply file management system calls

   Aim and Objectives

   Aim

   - To develop programs involving file management system calls

   Objectives

   At the end of this lab, the student will be able to

   - Use different file management system calls
   - Apply different system calls wherever required
   - Create C programs using file management system calls

2. Experimental Procedure

   i. Analyse the problem statement
   ii. Design an algorithm for the given problem statement and develop a flowchart/pseudo-code
   iii. Implement the algorithm in C language
   iv. Compile the C program
   v. Test the implemented program
   vi. Document the Results
   vii. Analyse and discuss the outcomes of your experiment

3. Questions

   Implement the following command in C

Implement copy command (cp) to copy a file content to other file using file management system calls

4. Calculations/Computations/Algorithms:-

```
STEP 1: Start
STEP 2: buff ← string of size 100
STEP 3: inFile ← in_file.txt file descriptor
STEP 4: outFile ← out_file.txt file descriptor
STEP 5: bytesRead ← 0, bytesWritten ← 0
STEP 6: while bytesRead = read(inFile) and not EOF do
        6.1: bytesWritten ← write to outFile
STEP 7: if bytesWritten is greater than 0, then
        7.1: display success message
        STEP 8: Stop
```

5. Presentation of Results:-

Program:-

```c
#include <stdio.h>
#include <unistd.h>
#include <fcntl.h>

void main()
{
    char buff[100];

    int inFile = open("file1.txt", O_RDONLY);
    int outFile = open("file2.txt", O_WRONLY);

    int bytesRead, bytesWritten;

    while ((bytesRead = read(inFile, buff, 100)) != 0)
        bytesWritten = write(outFile, buff, bytesRead);

    if (bytesWritten >= 0)
        printf("Contents copied successfully.\n");
}
```

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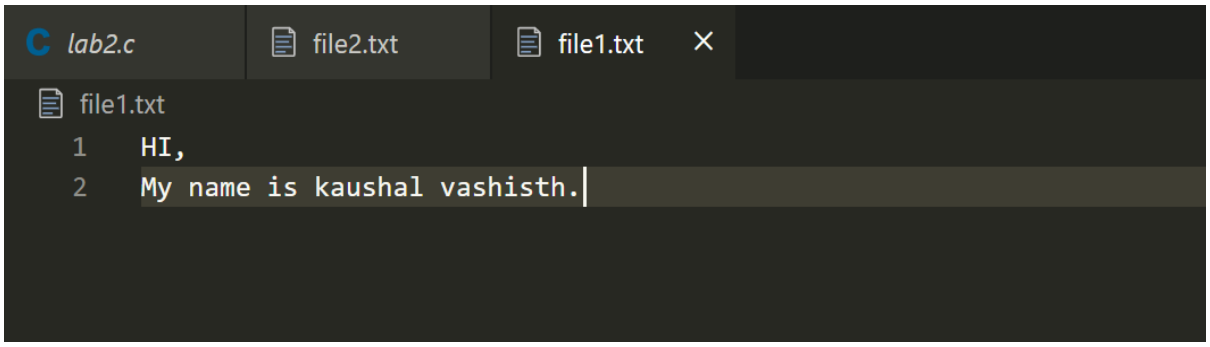
Output:-

Before Executing the Program:-

1)

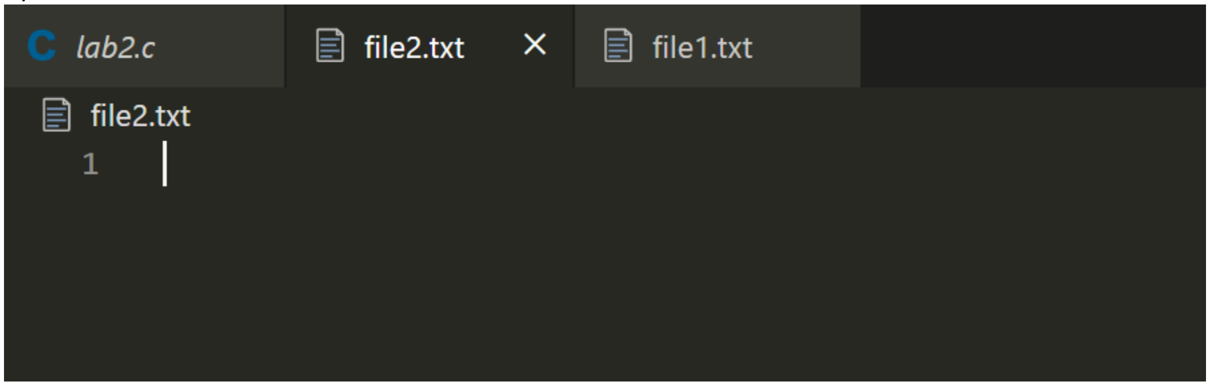


lab2.c | file2.txt | file1.txt ×

file1.txt

```
HI,
My name is kaushal vashisth.
```

2)

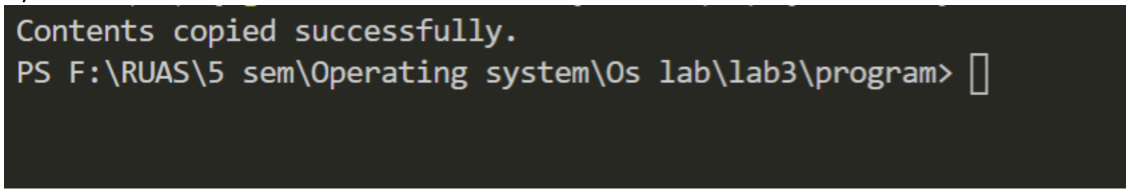


lab2.c | file2.txt × | file1.txt

file2.txt

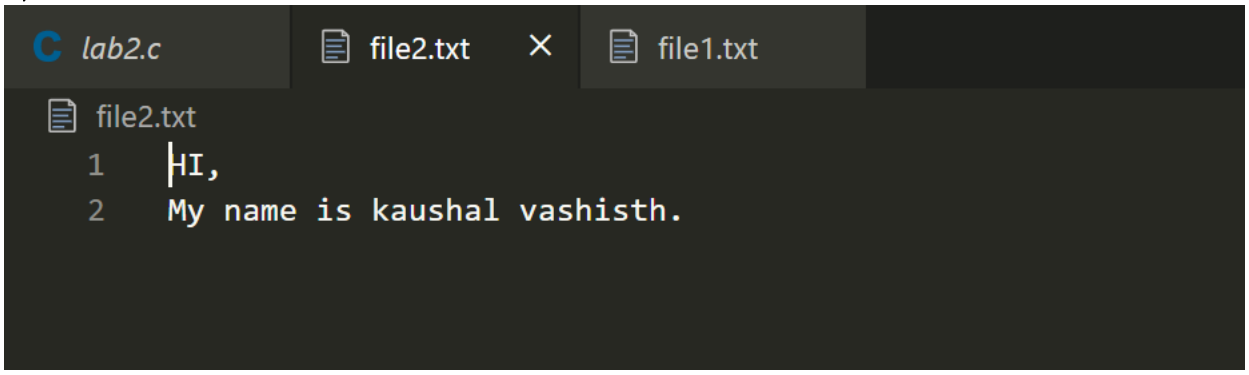
After executing the program:-

1)



```
Contents copied successfully.
PS F:\RUAS\5 sem\Operating system\Os lab\lab3\program>
```

2)



lab2.c | file2.txt × | file1.txt

file2.txt

```
HI,
My name is kaushal vashisth.
```

6. Analysis and Discussions:-

The cp command can be used to copy files or it's contents into another file anywhere in the directory.

7. Conclusions

Different test cases show how the program reacts when subjected to copy their contents.

8. Comments

   1. Limitations of Experiments

      Even when the file is not created and if command is not used, still the build is successful due to creation of binary file which the user can't see. This may prove to be a confusion

   2. Recommendations :-Can use exception handling.