LAB NO 05

UNIX I/O

Fall 2024

CSE-302L Systems Programming Lab

Submitted by:

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Submitted to:

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December 29, 2024

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LAB NO 05 UNIX I/O

Task 1

Implement the *cp* command.

NAME

- cp - copy files and directories

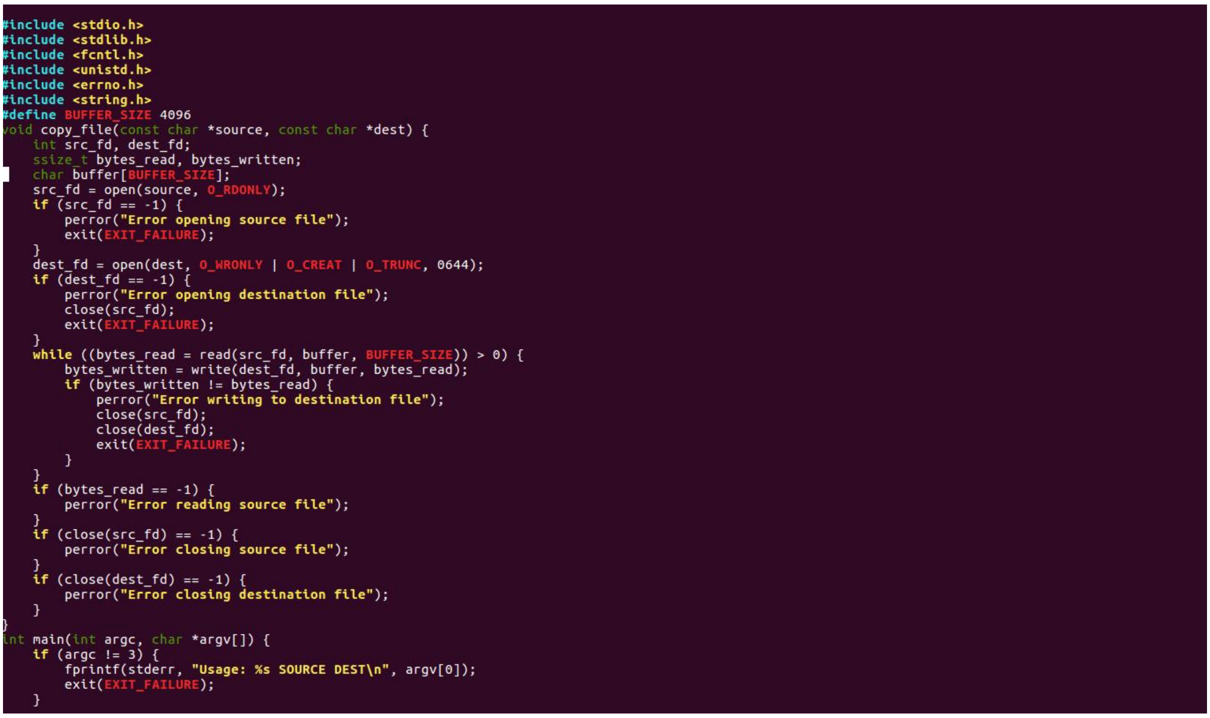
SYNOPSIS

- cp [OPTION]... SOURCE DEST
- cp [OPTION]... SOURCE... DIRECTORY
- cp [OPTION]... --target-directory=DIRECTORY SOURCE...

DESCRIPTION

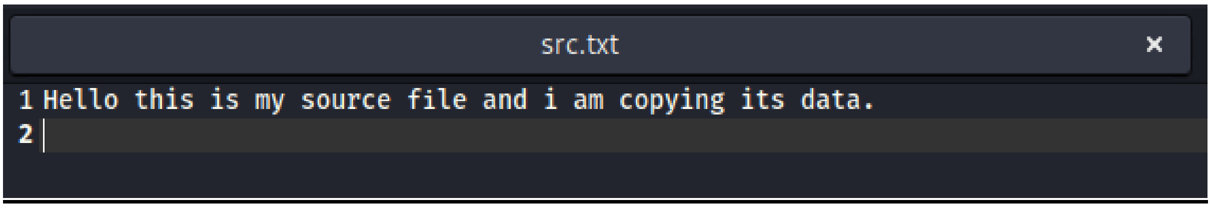
Copy SOURCE to DEST, or multiple SOURCE(s) to DIRECTORY. Mandatory arguments to long options are mandatory for short options too.

Code:



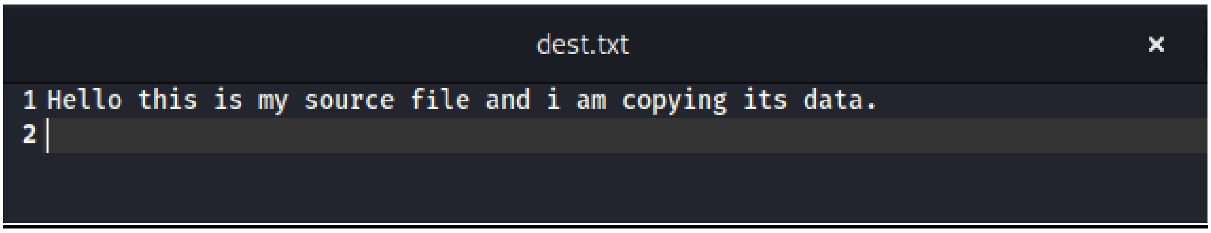
```
#include <stdio.h>
#include <stdlib.h>
#include <fcntl.h>
#include <unistd.h>
#include <errno.h>
#include <string.h>
#define BUFFER_SIZE 4096
void copy_file(const char *source, const char *dest) {
    int src_fd, dest_fd;
    ssize_t bytes_read, bytes_written;
    char buffer[BUFFER_SIZE];
    src_fd = open(source, O_RDONLY);
    if (src_fd == -1) {
        perror("Error opening source file");
        exit(EXIT_FAILURE);
    }
    dest_fd = open(dest, O_WRONLY | O_CREAT | O_TRUNC, 0644);
    if (dest_fd == -1) {
        perror("Error opening destination file");
        close(src_fd);
        exit(EXIT_FAILURE);
    }
    while ((bytes_read = read(src_fd, buffer, BUFFER_SIZE)) > 0) {
        bytes_written = write(dest_fd, buffer, bytes_read);
        if (bytes_written != bytes_read) {
            perror("Error writing to destination file");
            close(src_fd);
            close(dest_fd);
            exit(EXIT_FAILURE);
        }
    }
    if (bytes_read == -1) {
        perror("Error reading source file");
    }
    if (close(src_fd) == -1) {
        perror("Error closing source file");
    }
    if (close(dest_fd) == -1) {
        perror("Error closing destination file");
    }
}
int main(int argc, char *argv[]) {
    if (argc != 3) {
        fprintf(stderr, "Usage: %s SOURCE DEST\n", argv[0]);
        exit(EXIT_FAILURE);
    }
```

Output:



```
Hello this is my source file and i am copying its data.

```



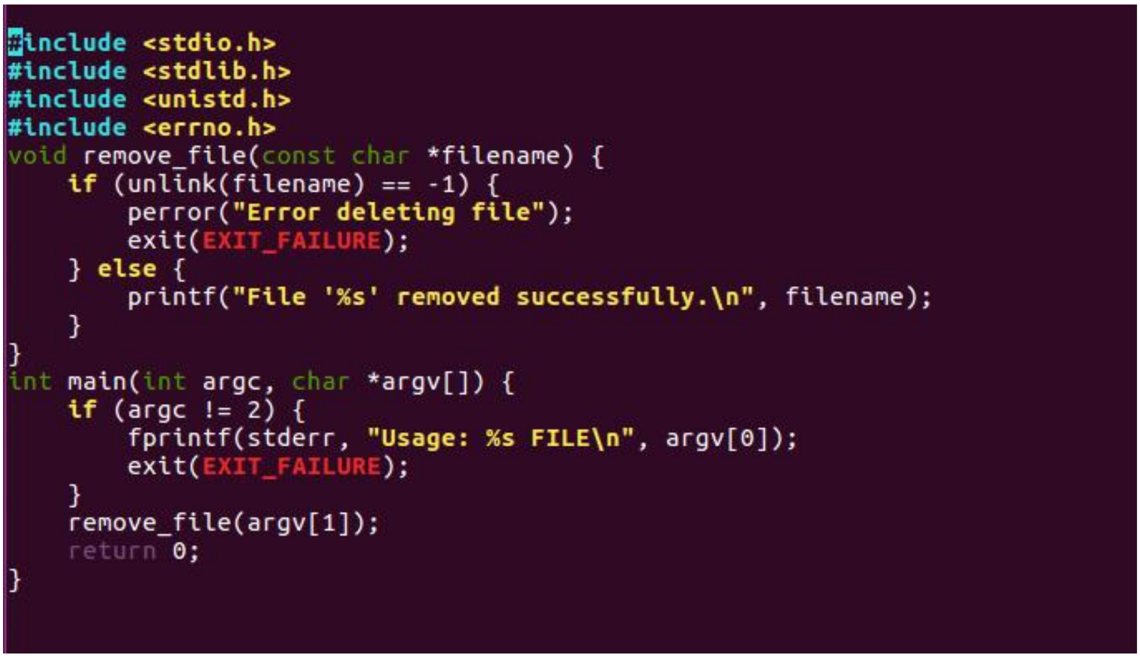
```
Hello this is my source file and i am copying its data.

```

Task 2

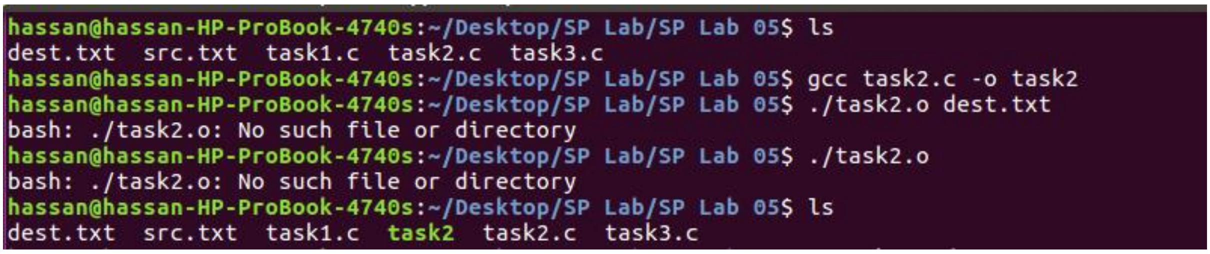
Implement *rm* command.

Code:



```c
#include <stdio.h>
#include <stdlib.h>
#include <unistd.h>
#include <errno.h>
void remove_file(const char *filename) {
    if (unlink(filename) == -1) {
        perror("Error deleting file");
        exit(EXIT_FAILURE);
    } else {
        printf("File '%s' removed successfully.\n", filename);
    }
}
int main(int argc, char *argv[]) {
    if (argc != 2) {
        fprintf(stderr, "Usage: %s FILE\n", argv[0]);
        exit(EXIT_FAILURE);
    }
    remove_file(argv[1]);
    return 0;
}
```

Output:



```
hassan@hassan-HP-ProBook-4740s:~/Desktop/SP Lab/SP Lab 05$ ls
dest.txt  src.txt  task1.c  task2.c  task3.c
hassan@hassan-HP-ProBook-4740s:~/Desktop/SP Lab/SP Lab 05$ gcc task2.c -o task2
hassan@hassan-HP-ProBook-4740s:~/Desktop/SP Lab/SP Lab 05$ ./task2.o dest.txt
bash: ./task2.o: No such file or directory
hassan@hassan-HP-ProBook-4740s:~/Desktop/SP Lab/SP Lab 05$ ./task2.o
bash: ./task2.o: No such file or directory
hassan@hassan-HP-ProBook-4740s:~/Desktop/SP Lab/SP Lab 05$ ls
dest.txt  src.txt  task1.c  task2  task2.c  task3.c
```

Task 3

NAME

- mv - move (rename) files

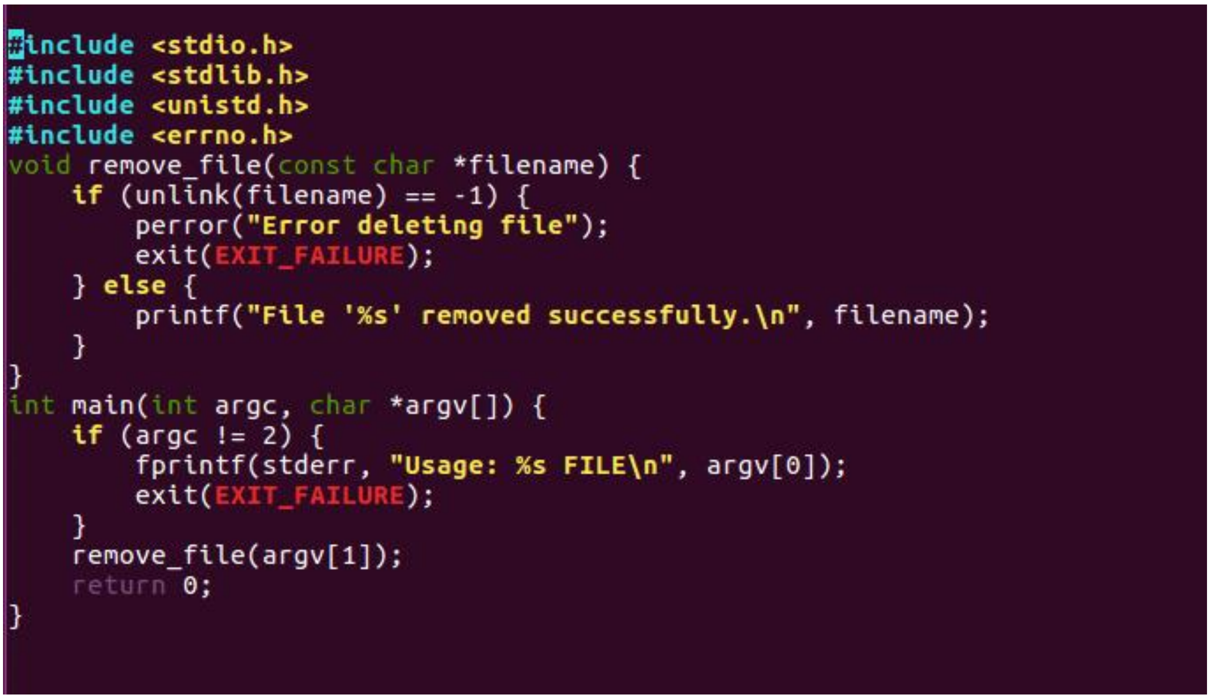
SYNOPSIS

- mv [OPTION]... SOURCE DEST
- mv [OPTION]... SOURCE... DIRECTORY
- mv [OPTION]... --target-directory=DIRECTORY SOURCE...

DESCRIPTION

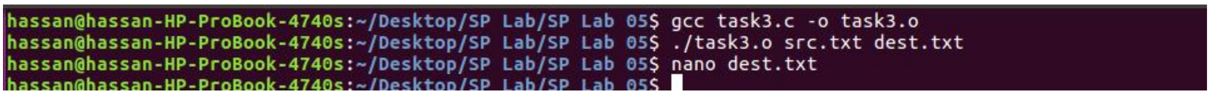
Rename SOURCE to DEST, or move SOURCE(s) to DIRECTORY. Mandatory arguments to long options are mandatory for short options too.

Code:

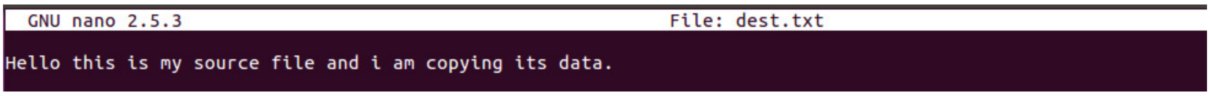


```
#include <stdio.h>
#include <stdlib.h>
#include <unistd.h>
#include <errno.h>
void remove_file(const char *filename) {
    if (unlink(filename) == -1) {
        perror("Error deleting file");
        exit(EXIT_FAILURE);
    } else {
        printf("File '%s' removed successfully.\n", filename);
    }
}
int main(int argc, char *argv[]) {
    if (argc != 2) {
        fprintf(stderr, "Usage: %s FILE\n", argv[0]);
        exit(EXIT_FAILURE);
    }
    remove_file(argv[1]);
    return 0;
}
```

Output:



```
hassan@hassan-HP-ProBook-4740s:~/Desktop/SP Lab/SP Lab 05$ gcc task3.c -o task3.o
hassan@hassan-HP-ProBook-4740s:~/Desktop/SP Lab/SP Lab 05$ ./task3.o src.txt dest.txt
hassan@hassan-HP-ProBook-4740s:~/Desktop/SP Lab/SP Lab 05$ nano dest.txt
hassan@hassan-HP-ProBook-4740s:~/Desktop/SP Lab/SP Lab 05$
```



```
  GNU nano 2.5.3                                   File: dest.txt

Hello this is my source file and i am copying its data.
```

CSE 302L: SYSTEMS PROGRAMMING LAB

LAB ASSESSMENT RUBRICS

Criteria & Point Assigned	Outstanding 2	Acceptable 1.5	Considerable 1	Below Expectations 0.5	Score
Attendance and Attentiveness in Lab PLO08	Attended in proper Time and attentive in Lab	Attended in proper Time but not attentive in Lab	Attended late but attentive in Lab	Attended late not attentive in Lab	
Capability of writing Program/ Algorithm/Drawing Flow Chart PLO1, PLO2, PLO3, PLO5,	Right attempt/ no errors and well formatted	Right attempt/ no errors but not well formatted	Right attempt/ minor errors and not well formatted	Wrong attempt	
Result or Output/ Completion of target in Lab PLO9,	100% target has been completed and well formatted.	75% target has been completed and well formatted.	50% target has been completed but not well formatted.	None of the outputs are correct	
Overall, Knowledge PLO10,	Demonstrates excellent knowledge of lab	Demonstrates good knowledge of lab	Has partial idea about the Lab and procedure followed	Has poor idea about the Lab and procedure followed	
Attention to Lab Report PLO4,	Submission of Lab Report in Proper Time i.e., in next day of lab., with proper documentation.	Submission of Lab Report in proper time but not with proper documentation.	Late Submission with proper documentation.	Late Submission Very poor documentation	

Instructor:

Name: ______________________________ Signature: __________________________