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2. Identify the system calls to copy the content of one file to another and illustrate the same using a C program.

Aim

To understand file handling using system calls in C by copying the content of one file to another.

Algorithm

1. Open the source file in read-only mode using the `open()` system call.
2. Open (or create) the destination file in write mode using `open()`.
3. Use a loop to read the content of the source file in chunks using the `read()` system call.
4. Write the read content into the destination file using the `write()` system call.
5. Continue until the end of the source file is reached.
6. Close both files using the `close()` system call.

Procedure

1. Use `open()` to handle file descriptors for the source and destination files.
2. Check for errors (e.g., if the files cannot be opened).
3. Use a buffer to read data from the source file and write it to the destination file.
4. Handle edge cases like empty files or read/write errors.
5. Ensure both files are properly closed at the end of the operation.

Code:

```
#include <fcntl.h>

#include <unistd.h>

#include <stdio.h>

#include <stdlib.h>

#define BUFFER_SIZE 1024

int main(int argc, char *argv[]) {
```

```
    int source, destination;
    char buffer[BUFFER_SIZE];
    ssize_t bytesRead, bytesWritten;
  if (argc != 3) {
        write(STDERR_FILENO, "Usage: ./copyfile <source> <destination>\n", 41);
        exit(1);
    }
 source = open(argv[1], O_RDONLY);
    if (source < 0) {
        perror("Error opening source file");
        exit(1);
    }
destination = open(argv[2], O_WRONLY | O_CREAT | O_TRUNC, 0644);
    if (destination < 0) {
        perror("Error opening destination file");
        close(source);
        exit(1);
    }
 while ((bytesRead = read(source, buffer, BUFFER_SIZE)) > 0) {
        bytesWritten = write(destination, buffer, bytesRead);
        if (bytesWritten != bytesRead) {
            perror("Error writing to destination file");
            close(source);
```

```
close(destination);
            exit(1);
        }
    }
    if (bytesRead < 0)
        perror("Error reading source file");
    close(source);
    close(destination);
    return 0;
}
```

Result

The program successfully copies the content of the source file into the destination file using system calls, demonstrating efficient file handling in C.

Output: