

Assignment - 3

Title : Write a program to simulate inter process communication mechanism using pipes and redirection.

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Simulation of command : `sort < file1 | uniq > file2`

```
#include <stdio.h>
#include <stdlib.h>
#include <unistd.h>
#include <sys/types.h>
#include <sys/wait.h>
#include <fcntl.h>

int main() {
    int pipefd[2];
    pid_t pid;

    if (pipe(pipefd) == -1) {
        perror("pipe failed");
        exit(EXIT_FAILURE);
    }

    pid = fork();

    if (pid < 0) {
        perror("fork failed");
        exit(EXIT_FAILURE);
    }

    if (pid > 0) {
        close(pipefd[0]);
```

```

int file_fd = open("file_272.txt", O_RDONLY);
if (file_fd < 0) {
    perror("open failed");
    exit(EXIT_FAILURE);
}
dup2(file_fd, STDIN_FILENO);
close(file_fd);

dup2(pipefd[1], STDOUT_FILENO);
close(pipefd[1]);

execlp("sort", "sort", NULL);
perror("execlp failed");
exit(EXIT_FAILURE);
} else {
    close(pipefd[1]);

    int file_out = open("out_272.txt", O_WRONLY | O_CREAT);
    if (file_out < 0) {
        exit(EXIT_FAILURE);
    }

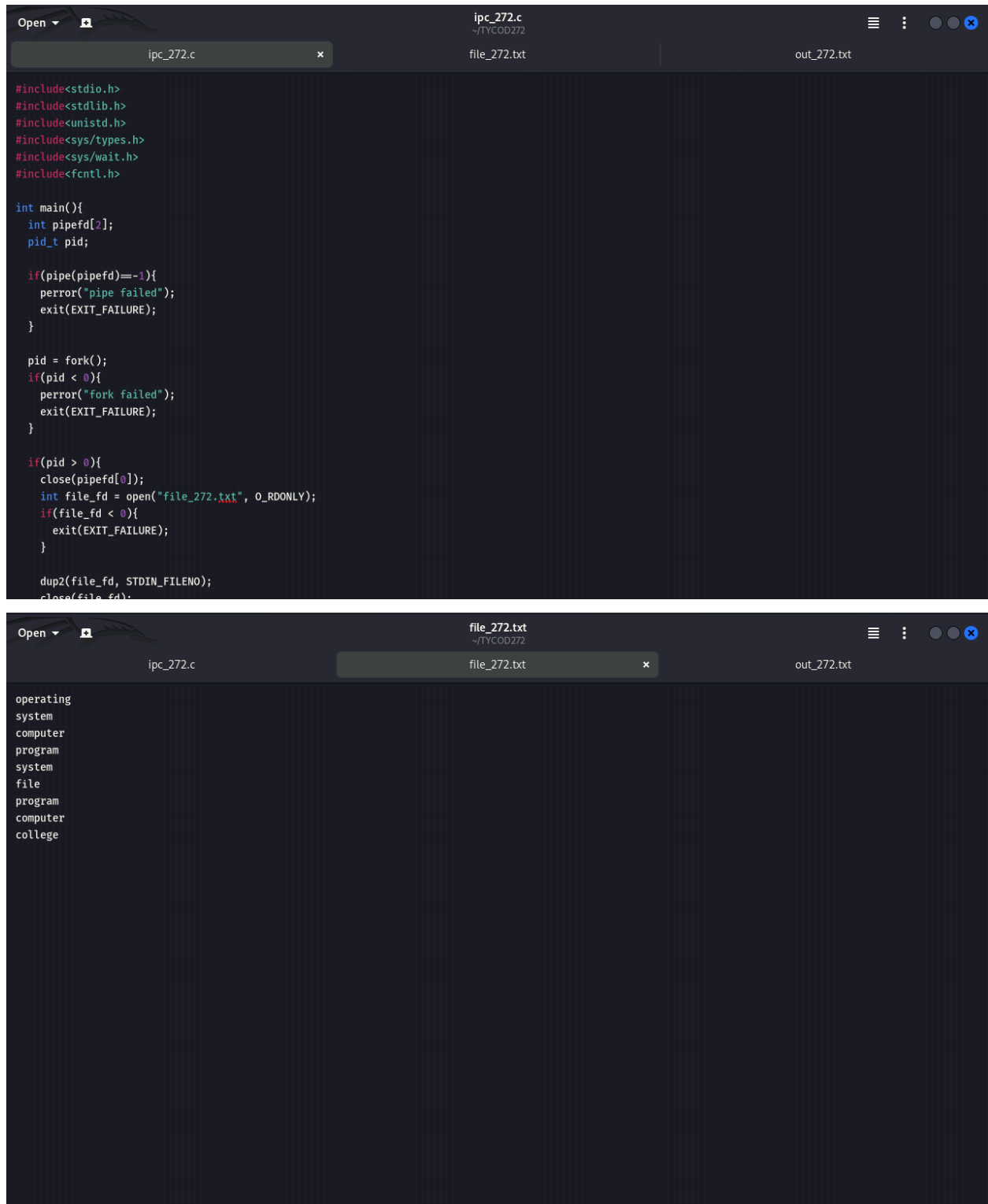
    dup2(pipefd[0], STDIN_FILENO);
    close(pipefd[0]);
    dup2(file_out, STDOUT_FILENO);
    close(file_out);

    execlp("uniq", "uniq", NULL);
    perror("execlp failed");
    exit(EXIT_FAILURE);
}

return 0;
}

```

OUTPUT :



The image displays two screenshots of a code editor window, likely Visual Studio Code, showing the execution of a C program.

The top screenshot shows the source code of `ipc_272.c`. The code is as follows:

```
#include<stdio.h>
#include<stdlib.h>
#include<unistd.h>
#include<sys/types.h>
#include<sys/wait.h>
#include<fcntl.h>

int main(){
    int pipefd[2];
    pid_t pid;

    if(pipe(pipefd)==-1){
        perror("pipe failed");
        exit(EXIT_FAILURE);
    }

    pid = fork();
    if(pid < 0){
        perror("fork failed");
        exit(EXIT_FAILURE);
    }

    if(pid > 0){
        close(pipefd[0]);
        int file_fd = open("file_272.txt", O_RDONLY);
        if(file_fd < 0){
            exit(EXIT_FAILURE);
        }

        dup2(file_fd, STDIN_FILENO);
        close(file_fd);
    }
}
```

The bottom screenshot shows the output of the program, which is the content of `file_272.txt` as read by the child process. The output is:

```
operating
system
computer
program
system
file
program
computer
college
```

