Sidharth

2K18/MC/114

Experiment 9

Aim: Implement the reader writer problem and record your observations. Simulate two children process that try to read/write the file simultaneously.

Code:

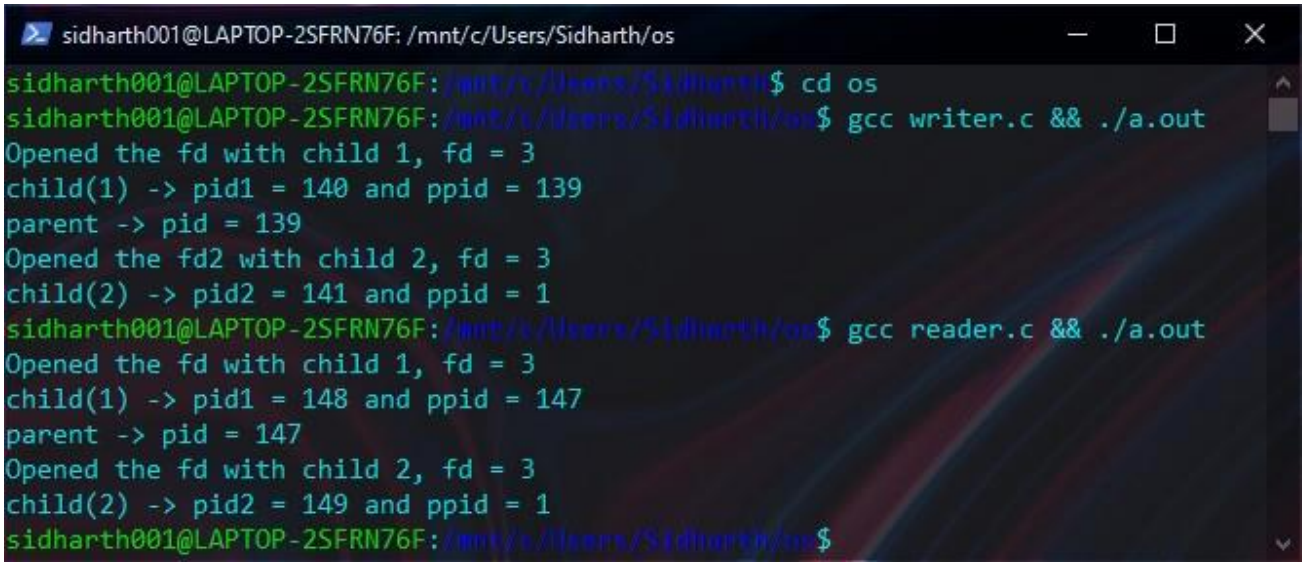
writer.c

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

int main(){
    int pid1, pid2;
    pid1 = fork();
    if(pid1 == 0){
        int fd = open("sample.txt", O_WRONLY | O_CREAT| O_TRUNC, 0644);
        printf("Opened the fd with child 1, fd = %d\n", fd);
        if(fd == -1){
            perror("Error: unable to open!");
        }
        printf("child(1) -
> pid1 = %d and ppid = %d\n", getpid(), getppid());
        return 0;
    }else{
        pid2 = fork();
        if(pid2 == 0){
            int fd2 = open("dummy.txt", O_WRONLY | O_CREAT| O_TRUNC, 0644);
            if(fd2 == -1){
                perror("Error: unable to open!");
            }
            printf("Opened the fd2 with child 2, fd = %d\n", fd2);
            printf("child(2) -
> pid2 = %d and ppid = %d\n", getpid(), getppid());
        }else{
            printf("parent -> pid = %d\n", getpid());
        }
    }
    return 0;
}
```

reader.c

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

int main(){
    int pid1, pid2;
    pid1 = fork();
    if(pid1 == 0){
        int fd = open("sample.txt", O_RDONLY);
        printf("Opened the fd with child 1, fd = %d\n", fd);
        if(fd == -1){
            perror("Error: unable to open!");
        }
        printf("child(1) -
> pid1 = %d and ppid = %d\n", getpid(), getppid());
        return 0;
    }else{
        pid2 = fork();
        if(pid2 == 0){
            int fd = open("dummy.txt", O_RDONLY);
            if(fd == -1){
                perror("Error: unable to open!");
            }
            printf("Opened the fd with child 2, fd = %d\n", fd);
            printf("child(2) -
> pid2 = %d and ppid = %d\n", getpid(), getppid());
        }else{
            printf("parent -> pid = %d\n", getpid());
        }
    }
    return 0;
}
```

Output:



sidharth001@LAPTOP-2SFRN76F: /mnt/c/Users/Sidharth/os

```
sidharth001@LAPTOP-2SFRN76F:/mnt/c/Users/Sidharth$ cd os
sidharth001@LAPTOP-2SFRN76F:/mnt/c/Users/Sidharth/os$ gcc writer.c && ./a.out
Opened the fd with child 1, fd = 3
child(1) -> pid1 = 140 and ppid = 139
parent -> pid = 139
Opened the fd2 with child 2, fd = 3
child(2) -> pid2 = 141 and ppid = 1
sidharth001@LAPTOP-2SFRN76F:/mnt/c/Users/Sidharth/os$ gcc reader.c && ./a.out
Opened the fd with child 1, fd = 3
child(1) -> pid1 = 148 and ppid = 147
parent -> pid = 147
Opened the fd with child 2, fd = 3
child(2) -> pid2 = 149 and ppid = 1
sidharth001@LAPTOP-2SFRN76F:/mnt/c/Users/Sidharth/os$
```