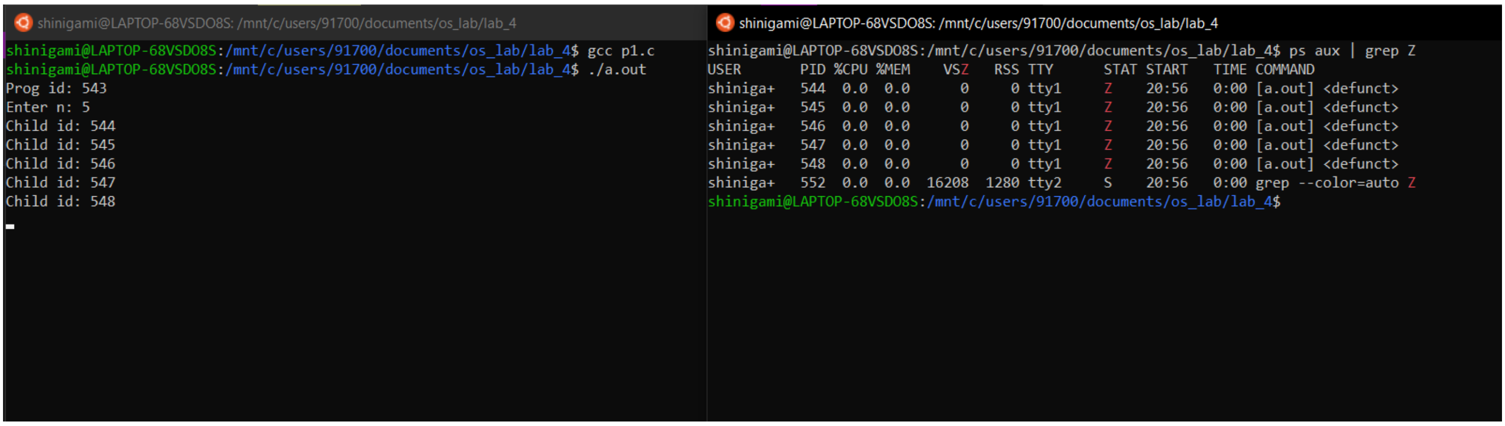
CS432
OS Lab
Lab 4

Pushpendra Nagle
1901CS44

>>Q1
Run:
gcc p1.c
./a.out

Output:
Prog id: 543
Enter n: 5
Child id: 544
Child id: 545
Child id: 546
Child id: 547
Child id: 548



shinigami@LAPTOP-68VSDO8S: /mnt/c/users/91700/documents/os_lab/lab_4

```
shinigami@LAPTOP-68VSDO8S:/mnt/c/users/91700/documents/os_lab/lab_4$ gcc p1.c
shinigami@LAPTOP-68VSDO8S:/mnt/c/users/91700/documents/os_lab/lab_4$ ./a.out
Prog id: 543
Enter n: 5
Child id: 544
Child id: 545
Child id: 546
Child id: 547
Child id: 548
```

shinigami@LAPTOP-68VSDO8S: /mnt/c/users/91700/documents/os_lab/lab_4

```
shinigami@LAPTOP-68VSDO8S:/mnt/c/users/91700/documents/os_lab/lab_4$ ps aux | grep Z
USER       PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
shiniga+   544  0.0  0.0      0     0 tty1     Z    20:56   0:00 [a.out] <defunct>
shiniga+   545  0.0  0.0      0     0 tty1     Z    20:56   0:00 [a.out] <defunct>
shiniga+   546  0.0  0.0      0     0 tty1     Z    20:56   0:00 [a.out] <defunct>
shiniga+   547  0.0  0.0      0     0 tty1     Z    20:56   0:00 [a.out] <defunct>
shiniga+   548  0.0  0.0      0     0 tty1     Z    20:56   0:00 [a.out] <defunct>
shiniga+   552  0.0  0.0  16208  1280 tty2     S    20:56   0:00 grep --color=auto Z
shinigami@LAPTOP-68VSDO8S:/mnt/c/users/91700/documents/os_lab/lab_4$
```

>>Q2
Run:
gcc p2.c
./a.out

Output:
Prog id: 558
Enter n: 3
I am Child/orphan with id: 559 and my parent id is 1
I am Child/orphan with id: 560 and my parent id is 1
I am Child/orphan with id: 561 and my parent id is 1

Comments:- Orphan process is created when the parent process of a child process dies.
In this case, when we call getppid() for child then it returns 1, which means the process is an orphan.

>>Q3
Run:

```
gcc p3.c
./a.out
```

Output:

```
Enter n: 10
Generated Lucas Sequence.

First 10 numbers of Lucas sequence: 2 1 3 4 7 11 18 29 47 76
```

>>Q4
Run:

```
gcc p4.c
./a.out
```

Output:

```
Copied source code to f2.txt file.
```

```
//Lab 4
//Q4
//1901CS44
#include <stdio.h>
#include <stdlib.h>
#include <unistd.h>
#include <sys/types.h>

void source_copy() {
    FILE *fp1, *fp2;
    char c;
    fp1 = fopen(__FILE__, "r");
    if(fp1 == NULL) {
        printf("Cannot read file.");
        exit(1);
    }
    fp2 = fopen("f2.txt", "w");
    if(fp2 == NULL) {
        printf("Cannot open f2.txt");
        exit(1);
    }
    c = fgetc(fp1);
    while(c != EOF) {
        fputc(c, fp2);
        c = fgetc(fp1);
    }
    fclose(fp1);
    fclose(fp2);
    printf("Copied source code to f2.txt file.\n\n");
}

void print_content() {
    FILE *fp1, *fp2;
    char c;
    fp1 = fopen("f2.txt", "r");
    if(fp1 == NULL) {
        printf("Cannot read file.");
        exit(1);
    }
    c = fgetc(fp1);
    while(c != EOF) {
        printf("%c", c);
        c = fgetc(fp1);
    }
    fclose(fp1);
    fclose(fp2);
}

void delete_file() {
    if(remove("f2.txt")==0) {
        printf("File deleted successfully.\n");
    }else{
        printf("Error: Cannot delete file.\n");
    }
}

int main() {
    pid_t PID = fork();

    if(PID > 0) { //parent
        source_copy();
    }else if(PID == 0) { //child
```

```
        pid_t PID2 = fork();

        if(PID2 > 0) { //parent
            sleep(1);
            print_content();
        }else if(PID2 == 0) { //child
            sleep(2);
            delete_file();
        }
    }
}
File deleted successfully.

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
```