

Operating System Lab CS342

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Lab:4

1901CS63

Q1 Write a program in C, which takes n, as user input, and create n number of zombie processes. Show that the created processes are zombie processes (ADD SCREENSHOT).

Compilation:

```
gcc -o q1 -q1.c
```

Syntax:

```
./q1
```

```
{n: user input}
```

Note:

Press enter after typing ./q1, as we are not taking command line argument, rather input during execution as required in the question

Sample Input and Output:

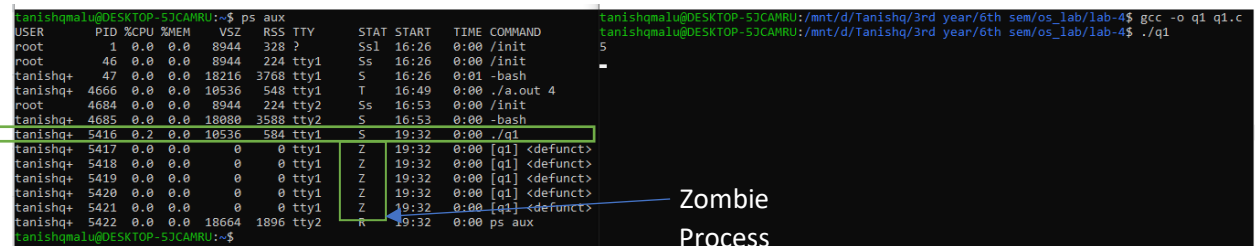
Input:

```
gcc -o q1 q1.c
```

```
./q1
```

```
5
```

Output:



```
tanishqmalu@DESKTOP-5JCAMRU:~$ ps aux
USER      PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root         1  0.0  0.0  8944   328 ?        Ss1  16:26   0:00 /init
root        46  0.0  0.0  8944   224 tty1     Ss   16:26   0:00 /init
tanishq+  47  0.0  0.0  18216  3768 tty1     S    16:26   0:01 -bash
tanishq+  466  0.0  0.0  10536   548 tty1     T    16:49   0:00 ./a.out 4
root       4684  0.0  0.0  8944   224 tty2     Ss   16:53   0:00 /init
tanishq+  4685  0.0  0.0  18080  3588 tty2     S    16:53   0:00 -bash
tanishq+  5416  0.2  0.0  10536   584 tty1     S    19:32   0:00 ./q1
tanishq+  5417  0.0  0.0      0      0 tty1     Z    19:32   0:00 [q1] <defunct>
tanishq+  5418  0.0  0.0      0      0 tty1     Z    19:32   0:00 [q1] <defunct>
tanishq+  5419  0.0  0.0      0      0 tty1     Z    19:32   0:00 [q1] <defunct>
tanishq+  5420  0.0  0.0      0      0 tty1     Z    19:32   0:00 [q1] <defunct>
tanishq+  5421  0.0  0.0      0      0 tty1     Z    19:32   0:00 [q1] <defunct>
tanishq+  5422  0.0  0.0  18664  1896 tty2     R    19:32   0:00 ps aux
tanishqmalu@DESKTOP-5JCAMRU:~$
```

After 20 seconds:

```
tanishqmalu@DESKTOP-5JCAMRU:/mnt/d/Tanishq/3rd year/6th sem/os_lab/lab-4$ gcc -o q1 q1.c
tanishqmalu@DESKTOP-5JCAMRU:/mnt/d/Tanishq/3rd year/6th sem/os_lab/lab-4$ ./q1
5
Parent pid = 5416
tanishqmalu@DESKTOP-5JCAMRU:/mnt/d/Tanishq/3rd year/6th sem/os_lab/lab-4$ _
```

Q 2. Write a program in C, which takes n, as an user input, and create n number of orphan processes.

Compilation:

gcc -o q2 -q2.c

Syntax:

./q2

{n: user input}

Note:

Press enter after typing ./q2, as we are not taking command line argument, rather input during execution as required in the question

Sample Input and Output:

Input:

gcc -o q2 q2.c

./q2

6

Output:

```
tanishqmalu@DESKTOP-5JCAMRU:~$ ps aux
USER      PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root         1  0.0  0.0   8944    328 ?        Ss1  16:26   0:00 /init
root        46  0.0  0.0   8944    224 tty1     Ss   16:26   0:00 /init
tanishq+  47  0.0  0.0  18216   3768 tty1     S    16:26   0:01 -bash
tanishq+ 4666  0.0  0.0  10536    548 tty1     T    16:49   0:00 ./a.out 4
root     4684  0.0  0.0   8944    224 tty2     Ss   16:53   0:00 /init
tanishq+ 4685  0.0  0.0  18000   3508 tty2     S    16:53   0:00 -bash
tanishq+ 5465  0.0  0.0  10536    100 tty1     S    19:55   0:00 ./q2
tanishq+ 5466  0.0  0.0  10536    100 tty1     S    19:55   0:00 ./q2
tanishq+ 5467  0.0  0.0  10536    100 tty1     S    19:55   0:00 ./q2
tanishq+ 5468  0.0  0.0  10536    100 tty1     S    19:55   0:00 ./q2
tanishq+ 5469  0.0  0.0  10536    100 tty1     S    19:55   0:00 ./q2
tanishq+ 5470  0.0  0.0  10536    100 tty1     S    19:55   0:00 ./q2
tanishq+ 5471  0.0  0.0  18664   1892 tty2     R    19:55   0:00 ps aux
tanishqmalu@DESKTOP-5JCAMRU:~$
```

tanishqmalu@DESKTOP-5JCAMRU:/mnt/d/Tanishq/3rd year/6th sem/os_lab/lab-4\$./q2
6
tanishqmalu@DESKTOP-5JCAMRU:/mnt/d/Tanishq/3rd year/6th sem/os_lab/lab-4\$

Orphan Processes

After 20 seconds:

```
tanishqmalu@DESKTOP-5JCAMRU:/mnt/d/Tanishq/3rd year/6th sem/os_lab/lab-4$ gcc -o q2 q2.c
tanishqmalu@DESKTOP-5JCAMRU:/mnt/d/Tanishq/3rd year/6th sem/os_lab/lab-4$ ./q2
6
tanishqmalu@DESKTOP-5JCAMRU:/mnt/d/Tanishq/3rd year/6th sem/os_lab/lab-4$ pid = 5465
pid = 5466
pid = 5467
pid = 5468
pid = 5469
pid = 5470

tanishqmalu@DESKTOP-5JCAMRU:/mnt/d/Tanishq/3rd year/6th sem/os_lab/lab-4$
```

Q3. Write a program, which will

- Take a user input N
- Make 2 child processes.
- one child process should generate first N LUCAS sequence (https://en.wikipedia.org/wiki/Lucas_number).
- The 2nd child process should only print the LUCAS sequence (NOT GENERATE) (USE FILE OR SOME OTHER METHOD TO SHARE)

Compilation:

gcc -o q3 -q3.c

Syntax:

./q3

{n: user input}

Note:

Press enter after typing ./q3, as we are not taking command line argument, rather input during execution as required in the question

Sample Input and Output:

Case Number	1	2	3	4
Input	gcc -o q3 q3.c ./q3 8	gcc -o q3 q3.c ./q3 15	gcc -o q3 q3.c ./q3 0	gcc -o q3 q3.c ./q3 1

Output:

```
tanishqmalu@DESKTOP-5JCAMRU:/mnt/d/Tanishq/3rd year/6th sem/os_lab/lab-4$ gcc -o q3 q3.c
tanishqmalu@DESKTOP-5JCAMRU:/mnt/d/Tanishq/3rd year/6th sem/os_lab/lab-4$ ./q3
8
Generating lucas number, pid = 5484
printing lucas number, pid = 5483
2 1 3 4 7 11 18 29
tanishqmalu@DESKTOP-5JCAMRU:/mnt/d/Tanishq/3rd year/6th sem/os_lab/lab-4$ ./q3
15
Generating lucas number, pid = 5487
printing lucas number, pid = 5486
2 1 3 4 7 11 18 29 47 76 123 199 322 521 843
tanishqmalu@DESKTOP-5JCAMRU:/mnt/d/Tanishq/3rd year/6th sem/os_lab/lab-4$ ./q3
0
Generating lucas number, pid = 5490
printing lucas number, pid = 5489
tanishqmalu@DESKTOP-5JCAMRU:/mnt/d/Tanishq/3rd year/6th sem/os_lab/lab-4$ ./q3
1
Generating lucas number, pid = 5493
printing lucas number, pid = 5492
2
tanishqmalu@DESKTOP-5JCAMRU:/mnt/d/Tanishq/3rd year/6th sem/os_lab/lab-4$
```

Q4. Write a program which will

- - Make 3 threads:
- One will copy the source program to another file f2.
- second will print contents of f2.
- Third will delete the file f2.

Compilation:

gcc -o q4 -q4.c

Syntax:

./q4 file1.txt file2.txt

Sample Input and Output:

Input:

gcc -o q4 q4.c

./q4 file1.txt file2.txt

Output:

```
tanishqmalu@DESKTOP-5JCAMRU:/mnt/d/tanishq/3rd year/6th sem/OS_Lab/lab-4/1901CS63$ ./q4 file1.txt file2.txt
Task1: I will copy file f1 to another file f2. My PID: 31
Task2: I will print the new content of file f2. My PID: 32
--FILE 2--
Hello !
I am the content of file 1. But you copied me into file 2.
Now, I belong to file 2 as well
Anyway Happy coding !!
Task3: I will delete file 2. My PID: 33
Parent PID:: 30
tanishqmalu@DESKTOP-5JCAMRU:/mnt/d/tanishq/3rd year/6th sem/OS_Lab/lab-4/1901CS63$
```

----- The End -----