OPERATING SYSTEMS (LAB3)

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Fibonacci.c

```
siddharth@SIDS-LAPTOP:/mnt/d/sem5/operatingsysytem/lab/lab3$ gcc fibonacci.c
siddharth@SIDS-LAPTOP:/mnt/d/sem5/operatingsysytem/lab/lab3$ ./a.out
Enter number of terms
8
Waiting for child process
0 1 1 2 3 5 8 13
Child process completed
siddharth@SIDS-LAPTOP:/mnt/d/sem5/operatingsysytem/lab/lab3$
```

Partial.c

```
siddharth@SIDS-LAPTOP:/mnt/d/sem5/operatingsysytem/lab/lab3$ gcc partial.c
siddharth@SIDS-LAPTOP:/mnt/d/sem5/operatingsysytem/lab/lab3$ ./a.out
Waiting for child process to finish
Total is equal to 168
Total product is equal to 1852782592
```

Exec_call.c

```
child process is DONE
siddharth@SIDS-LAPTOP:/mnt/d/sem5/operatingsysytem/lab/lab3$ gcc exec_call.c
siddharth@SIDS-LAPTOP:/mnt/d/sem5/operatingsysytem/lab/lab3$ ./a.out ls -l
Child process is running
total 720
-rwxrwxrwx 1 siddharth siddharth 707269 Sep 20 12:12 'Student Copy- WEEK 3 - OS LAB manual for Process Creation and Termination.pdf'
-rwxrwxrwx 1 siddharth siddharth  16872 Sep 22 10:05  a.out
-rwxrwxrwx 1 siddharth siddharth    468 Sep 22 09:54  exec_call.c
-rwxrwxrwx 1 siddharth siddharth    923 Sep 22 09:44  fibonacci.c
-rwxrwxrwx 1 siddharth siddharth    766 Sep 22 09:51  partial.c
Child process is DONE
siddharth@SIDS-LAPTOP:/mnt/d/sem5/operatingsysytem/lab/lab3$
```

Q/A

1. What is the role of the init process on UNIX and Linux systems in regard to process termination?

1)   When a process is terminated, it briefly moves to the zombie state and remains in that state until the parent invokes a call to wait(). When this occurs, the process id as well as entry in the process table are both released. However, if a parent does not invoke wait(), the child process remains a zombie as long as the parent remains alive. Once the parent process terminates, the init process becomes the new parent of the zombie. Periodically, the init process calls wait() which ultimately releases the pid and entry in the process table of the zombie process.

2. What is a subreaper process?

2)   A subreaper fulfills the role of init(1) for its descendant processes. When a process becomes orphaned then that process will be reparented to the nearest still living ancestor subreaper.

3. What causes a defunct process on the Linux system and how can you avoid it?

3)   When a parent process runs without invoking wait() call, a child process is summoned, and this child process is called a defunct process. These processes have terminated normally but are still visible to the system until the parent process reads its status and the process entries are removed.

4. How can you identify zombie processes on the Linux system?

4)   Zombie processes can be found using the 'ps' command. It can be identified through a 'Z' next to a process in the stat column.

5. What does child process inherit from its parent?

5)   A child process will inherit all the variables and functions present before fork() is called.