Ex. No.: 5
Date:

System Calls Programming

Aim: To experiment system calls using fork(), execlp() and pid() functions.

Algorithm:

1. **Start**
    - o Include the required header files (stdio.h and stdlib.h).
2. **Variable Declaration**
    - o Declare an integer variable pid to hold the process ID.
3. **Create a Process**
    - o Call the fork() function to create a new process. Store the return value in the pid variable:
        - ▪ If fork() returns:
            - ▪ -1: Forking failed (child process not created).
            - ▪ 0: Process is the child process.
            - ▪ Positive integer: Process is the parent process.
4. **Print Statement Executed Twice**
    - o Print the statement:

      scss
      Copy code
      THIS LINE EXECUTED TWICE

      (This line is executed by both parent and child processes after fork()).

5. **Check for Process Creation Failure**
    - o If pid == -1:
        - ▪ Print:

          Copy code
          CHILD PROCESS NOT CREATED

        - ▪ Exit the program using exit(0).
6. **Child Process Execution**
    - o If pid == 0 (child process):
        - ▪ Print:
            - ▪ Process ID of the child process using getpid().
            - ▪ Parent process ID of the child process using getppid().
7. **Parent Process Execution**
    - o If pid > 0 (parent process):
        - ▪ Print:
            - ▪ Process ID of the parent process using getpid().
            - ▪ Parent's parent process ID using getppid().
8. **Final Print Statement**
    - o Print the statement:

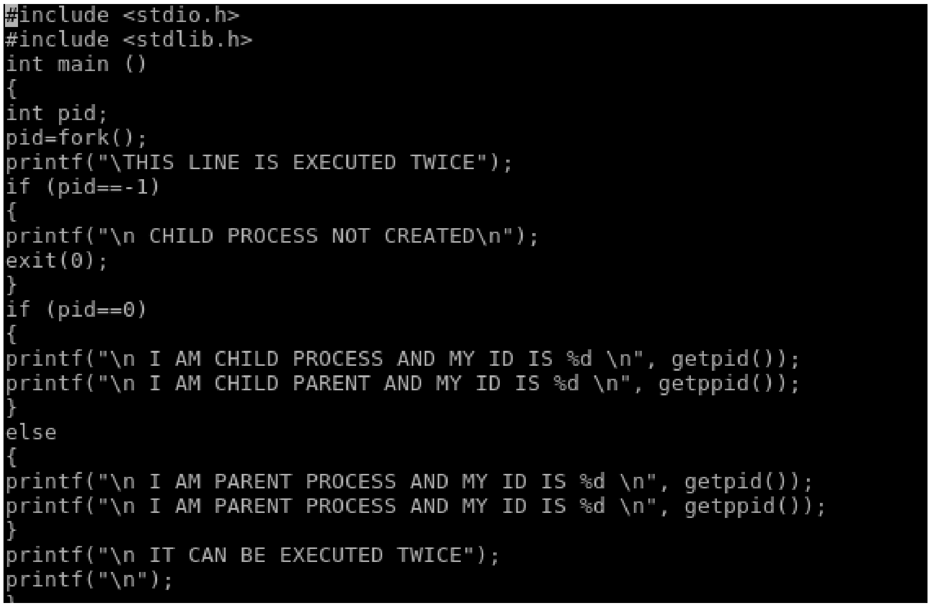
      objective

Copy code
IT CAN BE EXECUTED TWICE

(This line is executed by both parent and child processes).

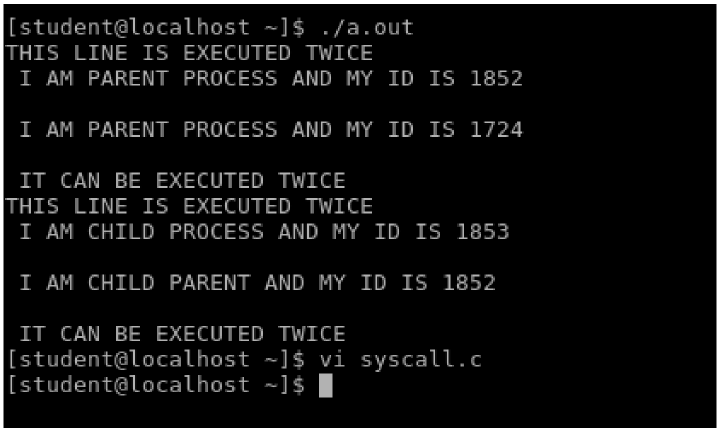
9. **End**

Program:



```
#include <stdio.h>
#include <stdlib.h>
int main ()
{
int pid;
pid=fork();
printf("\THIS LINE IS EXECUTED TWICE");
if (pid==-1)
{
printf("\n CHILD PROCESS NOT CREATED\n");
exit(0);
}
if (pid==0)
{
printf("\n I AM CHILD PROCESS AND MY ID IS %d \n", getpid());
printf("\n I AM CHILD PARENT AND MY ID IS %d \n", getppid());
}
else
{
printf("\n I AM PARENT PROCESS AND MY ID IS %d \n", getpid());
printf("\n I AM PARENT PROCESS AND MY ID IS %d \n", getppid());
}
printf("\n IT CAN BE EXECUTED TWICE");
printf("\n");
}
```

Output:



```
[student@localhost ~]$ ./a.out
THIS LINE IS EXECUTED TWICE
 I AM PARENT PROCESS AND MY ID IS 1852

 I AM PARENT PROCESS AND MY ID IS 1724

 IT CAN BE EXECUTED TWICE
THIS LINE IS EXECUTED TWICE
 I AM CHILD PROCESS AND MY ID IS 1853

 I AM CHILD PARENT AND MY ID IS 1852

 IT CAN BE EXECUTED TWICE
[student@localhost ~]$ vi syscall.c
[student@localhost ~]$ 
```

Result:
Program is executed successfully and output is verified.