Ex. No. : 5 **Date : 15.02.2025**

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System Calls Programming

Aim:

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

Algorithm:

1. **Start**
   - ○ Include the required header files (stdio.h and stdlib.h).
2. **Variable Declaration**
   - ○ Declare an integer variable pid to hold the process ID.
3. **Create a Process**
   - ○ 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**
    - Print the statement:

      Copy code

      THIS LINE EXECUTED TWICE

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

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

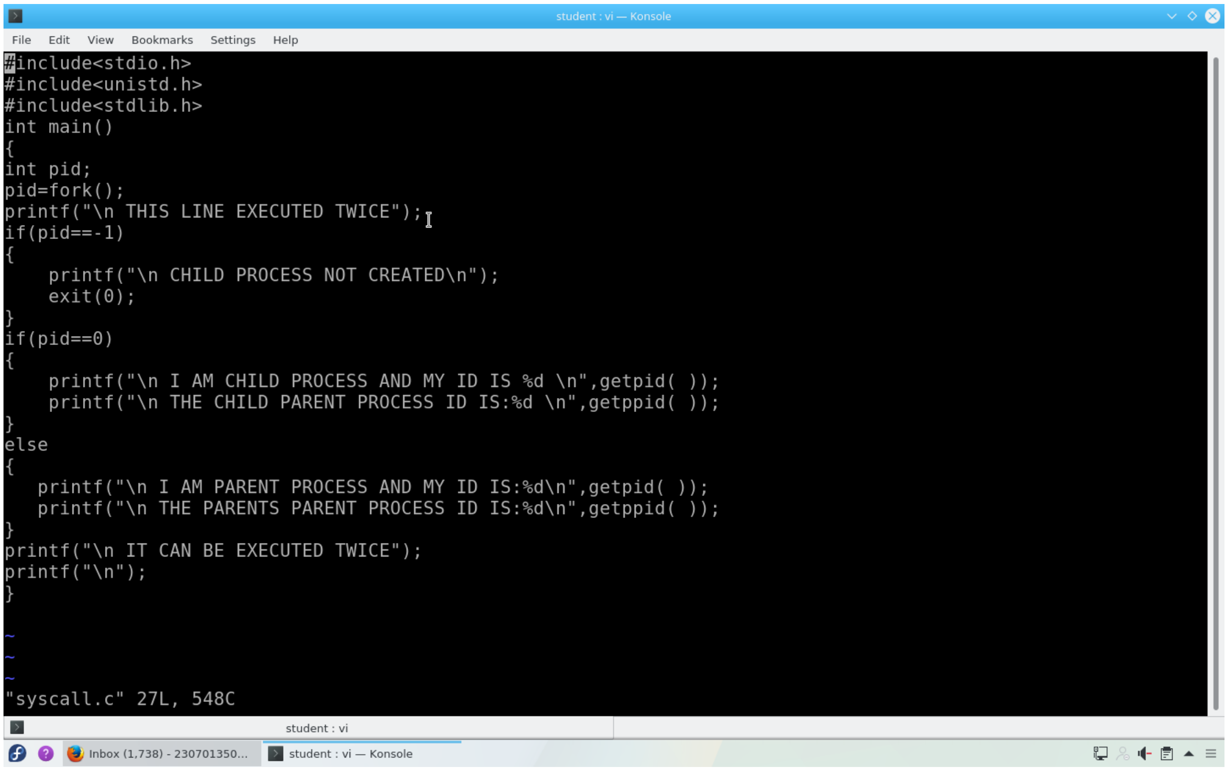
          Copy code

          CHILD PROCESS NOT CREATED
        - Exit the program using exit(0).
6. **Child Process Execution**
    - 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**
    - 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**
    - Print the statement: objective.
      Copy code
      IT CAN BE EXECUTED TWICE
      (This line is executed by both parent and child processes).

END.

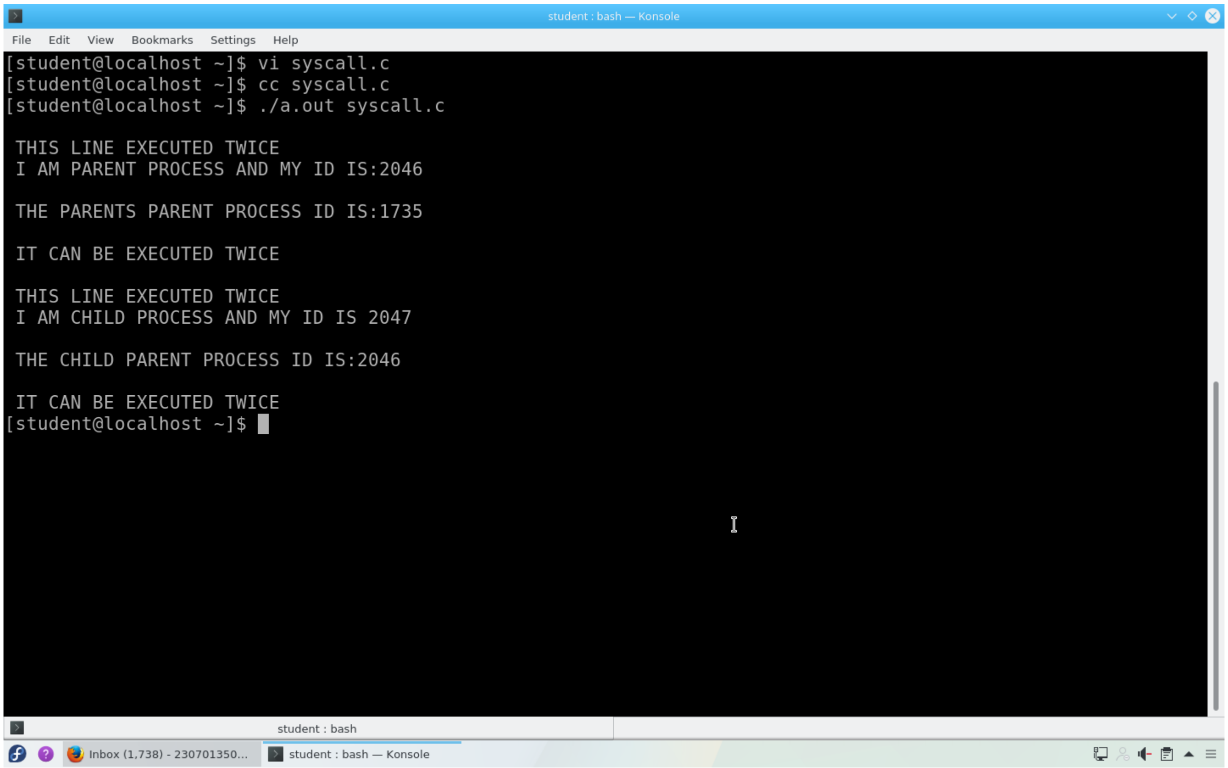
Program:



```
#include<stdio.h>
#include<unistd.h>
#include<stdlib.h>
int main()
{
int pid;
pid=fork();
printf("\n THIS LINE 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 THE CHILD PARENT PROCESS ID IS:%d \n",getppid( ));
}
else
{
   printf("\n I AM PARENT PROCESS AND MY ID IS:%d\n",getpid( ));
   printf("\n THE PARENTS PARENT PROCESS ID IS:%d\n",getppid( ));
}
printf("\n IT CAN BE EXECUTED TWICE");
printf("\n");
}

~
~
~
"syscall.c" 27L, 548C
```

Output:



```
[student@localhost ~]$ vi syscall.c
[student@localhost ~]$ cc syscall.c
[student@localhost ~]$ ./a.out syscall.c

 THIS LINE EXECUTED TWICE
 I AM PARENT PROCESS AND MY ID IS:2046

 THE PARENTS PARENT PROCESS ID IS:1735

 IT CAN BE EXECUTED TWICE

 THIS LINE EXECUTED TWICE
 I AM CHILD PROCESS AND MY ID IS 2047

 THE CHILD PARENT PROCESS ID IS:2046

 IT CAN BE EXECUTED TWICE
[student@localhost ~]$
```

Result:

Hence the experiment for system calls using fork(), execlp() and pid() functions has been executed successfully.