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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:

     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**
   - 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:

objectivec

Copy code
IT CAN BE EXECUTED TWICE

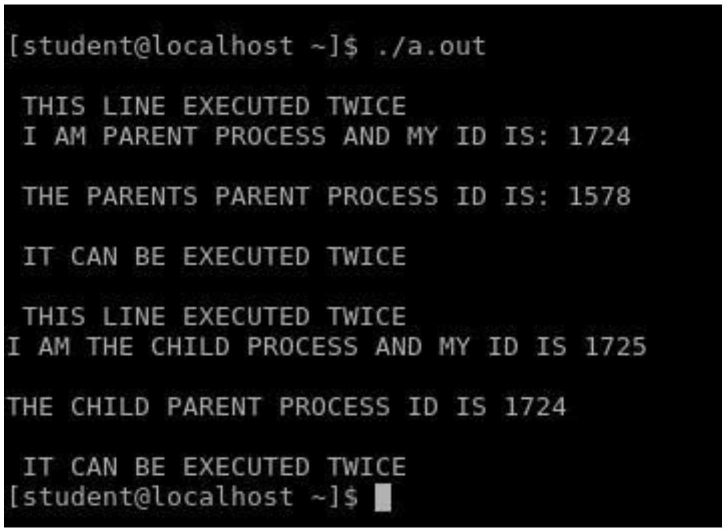
(This line is executed by both parent and child processes).

9. **En**

d 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 EXECUTED TWICE
 I AM PARENT PROCESS AND MY ID IS: 1724

 THE PARENTS PARENT PROCESS ID IS: 1578

 IT CAN BE EXECUTED TWICE

 THIS LINE EXECUTED TWICE
I AM THE CHILD PROCESS AND MY ID IS 1725

THE CHILD PARENT PROCESS ID IS 1724

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

Result:

The program was executed and the output has been verified.