Ex. No.: 5
Date: 15- 2 - 25-

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. **End**

Program:

```
# include < stdio. h>
#include< stdlib. h>
#include <unistd.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 my id is %d\n ",getpid());
   printf (" \n The child parent process id is %d\n",
                                                   getpid());
   }
  else
  {
   printf(" \n I am the parent process and my id is
                                           %d \n", getpid());
   printf(" \n the parent's parent process id is %d \n",
                                           getpid());
   }
   printf(" \n it can be executed twice");
  printf ("\n");
```

Output:

```
This line executed twice
I am the parent process and my id is 1829
The parent's parent process my id is 1829
it can be executed twice
this line executed twice
I am child process my id is 1830
The child's parent process id is 1830
it can be executed twice
```

Result:

The above experiment to implement system calls using fork (), pid () functions has been executed successfully.