BSc (Hons) in Information Technology
IT- Year 2

Lab Exercise 2

SE2042 – Operating Systems

Semester 1, 2025

Learning Objectives: Students will be able to learn UNIX process management system calls and library functions.

Exercise 1

Write a C program to print the process ID of the process and it's parent process ID.

<u>fork ( ) System call</u>

Exercise 2

```
#include <stdio.h>
main()
{
        printf("I am Parent\n");
        fork();
        printf("Hello World...!\n");
}
```

Exercise 3

```
#include <stdio.h>
main()
{
        int ret;
        printf("I am Parent\n");
        ret = fork();
        printf("Return Value: %d\n", ret);
}
```

Lab Exercise 2

Exercise 4

```
#include <stdio.h>
main()
{
        int ret;
        printf("Hello World\n");
        ret = fork();

        if(ret == 0)
        printf("I am Child and Return Value=%d\n", ret);

        else
        printf("I am Parent and Return Value=%d\n", ret);
 }
```

getpid ( ) and getppid ( ) system calls

Exercise 5

```
#include <stdio.h>
main()
{
        int ret;
        printf("Hello World\n");
        ret = fork();

        if(ret == 0){
               printf("I am Child and Return Value=%d\n", ret); printf("Child PID: %d\n",
                                                                          getpid());
              printf("Child's Parent PID: %d\n", getppid());
        }
        else{
              printf("I am Parent and Return Value=%d\n", ret);
              printf("Parent PID: %d\n", getpid());
        }
sleep(20);
}
```

execl ( ) system call

Exercise 6

```
#include <stdio.h>
main()
{
        printf(“Here comes the date. \n”);
        execl(“/bin/date”, “date”, 0); /*0 means end-of-arguments */
        printf(“That was the date. \n”);
}
```

Exercise 7

```
 #include <stdio.h>
 main()
  {
     printf(“Here comes the date. \n”);
     fork();
     execl(“/bin/date”, “date”, 0);
     printf(“That was the date. \n”);
  }
```

Why did you get date two times? and Why didn’t you get first print statement two times?

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Exercise 8

system ( ) library function

```
#include <stdio.h>
main()
{
        printf(“Here comes the date. \n”);
        system(“date”);
        printf(“That was the date”);
}
```

CPU Time Slicing

Exercise 9

```
#include <stdio.h>
main()
{
  int i=0, j=0, pid;
  pid=fork();
  if (pid == 0)
  {
          for (i=0; i<500000; i++)
          printf(“Child: %d\n”,i++);
  }
          else
          {
            for (j=0; j<500000; j++)
            printf(“Parent: %d\n”, j++);
          }

}
```

Zombi Process

Exercise 10

```
#include <stdio.h>
main()
{
        int id;
        if ((id = fork())== 0)
        {
                printf(“I am child process \n”);
        }
        else
        {
                while(1)
                sleep(100);
        }
}
```

Orphan Process

Exercise 11

```
#include <stdio.h>
main()
{
        int id;
        if ((id = fork())== 0)
        {
                printf(“I am child process \n”);
                sleep(10);
        }
        else
        {
                printf(“I am parent process \n”);
        }
}
```