Sri Lanka Institute of Information Technology

Secure Operating System IE2032

Assignment

Question 01

1. You need to change the permission for the file 'myApp.c' as follows,

User	: Read, Write, Execute
Group	: Read, Execute
Others	: Read

(i). What is the command you will use to do the changes (You may use Normal method or Octal values)

(ii). What is the command to check the permissions allocated files in current folder?

2. Consider the following program

(i). How many processes (including parent process) will be created in the system upon the execution.

(ii). How many printf statements will be executed on terminal according to the give order.

(iii). How many processes will execute the date command

```
main(){
     printf(“Here comes the date. \n”);
     printf(“Here it is. \n”)
     fork();
     fork();
     fork();
     execl(“/bin/date”, “date”, 0);
     printf(“That was the date. \n”);
     printf(“Program will exit now. \n”);
}
```

Question 02

1. Consider the following program.

```
#include <pthread.h>
#define NUM_THREADS 3

int myFunction(int x)
{
      printf("I got number %2d. My TID is %u\n", x, pthread_self());
      pthread_exit(0);
}

int main () {

      pthread_attr_t thread_attr;
      pthread_t tids[NUM_THREADS];

      int x = 5;

      pthread_attr_init (&thread_attr);

      pthread_create (&tids[0], &thread_attr, myFunction, x);
      pthread_create (&tids[1], &thread_attr, myFunction, x);

      printf ("Waiting for threads to finish\n");

      for (x = 0; x < NUM_THREADS-1; x++){
            pthread_join (tids[x], NULL);
      }

      printf ("All treads are now finished\n");
}
```

i)How many threads are being created in this program?

ii)What is the output of pthread_self()?

iii)What is the need of having pthread_join() function?

iv) Write the complete command you will need to compile the above program using 'cc' compiler.

Consider followng details:

file name = myThreadApp.c
executable name = MTApp

Question 03

1.Go through the following incomplete source code and complete the blanks in LINE A to F to meet the following requirements.

- Program should create a child process
- Print an error if process creation is failed
- Parent and Child will execute different code segments
- They will focus on printing process IDs
- Make both processes sleep for 15 seconds.

```
#include <stdio.h>

int main(){
    int ret;
    ret = *****; //LINE A

    if(*****){ //LINE B
        printf("Error occured")
        exit(0);
    }

    if(ret == 0){
        printf("Child PID:  %d\n", *********); //LINE C
        execl("/bin/date", "date", 0);
        printf("Child process is terminating")
    }

    if(ret > 0){
        printf("Parent PID: %d\n",********); //LINE D
        printf("Child PID: %d\n",******); //LINE E
    }

    *******; //LINE F

    return 0;
}
```