

Enamadi Sanath Yashwin

18CS01057

Assignment - 5 Solution

The follow are the sample runs of the programs :

```
yashwin@YASHWIN-ENAMADI:/mnt/c/ubuntu/OS_lab/20.10.2020$ gcc -o Q1 Q1.c -lpthread
yashwin@YASHWIN-ENAMADI:/mnt/c/ubuntu/OS_lab/20.10.2020$ ./Q1
5
1 2 3 4 5
The average value is 3
The minimum value is 1
The maximum value is 5
yashwin@YASHWIN-ENAMADI:/mnt/c/ubuntu/OS_lab/20.10.2020$ ./Q1
5
4 4 4 4 4
The average value is 4
The minimum value is 4
The maximum value is 4
```

```
yashwin@YASHWIN-ENAMADI:/mnt/c/ubuntu/OS_lab/20.10.2020$ gcc -o Q2 Q2.c -lpthread
yashwin@YASHWIN-ENAMADI:/mnt/c/ubuntu/OS_lab/20.10.2020$ ./Q2
10
2 3 5 7
yashwin@YASHWIN-ENAMADI:/mnt/c/ubuntu/OS_lab/20.10.2020$ ./Q2
22
2 3 5 7 11 13 17 19
yashwin@YASHWIN-ENAMADI:/mnt/c/ubuntu/OS_lab/20.10.2020$
```

These are the following concepts used :

1. pthread_create : int pthread_create(pthread_t *thread, const pthread_attr_t *attr, void *(*start_routine)(void *), void *arg) : thread is the pointer to an unsigned integer value that returns the thread id of the thread created. attr is the pointer to a structure that is used to define thread attributes like detached state, scheduling policy, stack address, etc. Set to NULL for default thread attributes. start_routine is the pointer to a subroutine that is executed by the thread. The return type and parameter type of the subroutine must be of type void *. The function has a single attribute but if multiple values need to be passed to the function, a struct must be used. arg is the pointer to void that contains the arguments to the function defined in the earlier argument. So, this function is used to create a kernel-level thread
2. pthread_join : int pthread_join(pthread_t *thread, void **thread_return) : thread is the thread_id of the thread for which the current thread waits. This id can be found through the int pointer passed to the pthread_create function earlier. Thread_return is the pointer to the location where the exit status of the thread

specified by the first argument is stored. So, this function is used to wait for the termination of a thread.