

# OS LAB 8

## K226007

## BSR-4C

### **TASK#1:**

```
#include<pthread.h>
#include<stdio.h>
#include<stdlib.h>

int sum=0;
void *runner(void*parameter){
int i,upper=((int*)parameter);
    if(upper>0){
        for(i=1;i<=upper;i++)
            sum=sum+i;
    }
    pthread_exit(0);
}

int main(int argc,char*argv[])
{
    pthread_t threadID;
    pthread_attr_t attributes;
    int num=1000;

    pthread_attr_init(&attributes);
    pthread_create(&threadID, &attributes, runner, (void *)&num);
    pthread_join(threadID,NULL);
    printf("sum=%d\n",sum);
    exit(0);
}
```

```
student@student-OptiPlex-7090: ~/Desktop/lab8
student@student-OptiPlex-7090:~$ cd Desktop/lab8
student@student-OptiPlex-7090:~/Desktop/lab8$ gcc -o obj example.c
/usr/bin/ld: /tmp/ccF4RQhD.o: in function `main':
example.c:(.text+0x9e): undefined reference to `pthread_create'
/usr/bin/ld: example.c:(.text+0xaf): undefined reference to `pthread_join'
collect2: error: ld returned 1 exit status
student@student-OptiPlex-7090:~/Desktop/lab8$ ./obj
bash: ./obj: No such file or directory
student@student-OptiPlex-7090:~/Desktop/lab8$ gcc -o obj example.c -pthread
student@student-OptiPlex-7090:~/Desktop/lab8$ ./obj
sum=500500
student@student-OptiPlex-7090:~/Desktop/lab8$
```

### **TASK#:**

```
#include<stdio.h>
#include<stdlib.h>
#include<pthread.h>
```

```
void *thread_function(void *arg) {
printf("Thread executing...\n");
pthread_exit((void *)42);
}
```

```
int main() {
    // Wait for the thread to finish and get its exit status
    pthread_t thread;
    void* exit_status;
    pthread_create(&thread,NULL,thread_function,NULL);
    pthread_join(thread, &exit_status);
    printf("Thread exited with status: %ld\n", (long)exit_status);
    return 0;
}
```

```
student@student-OptiPlex-7090: ~/Desktop/lab8
student@student-OptiPlex-7090:~/Desktop/lab8$ gcc -o obj example.c -pthread
student@student-OptiPlex-7090:~/Desktop/lab8$ ./obj
Thread executing...
Thread exited with status: 42
student@student-OptiPlex-7090:~/Desktop/lab8$
```

## **TASK#2:**

```
#include<stdio.h>
#include<pthread.h>

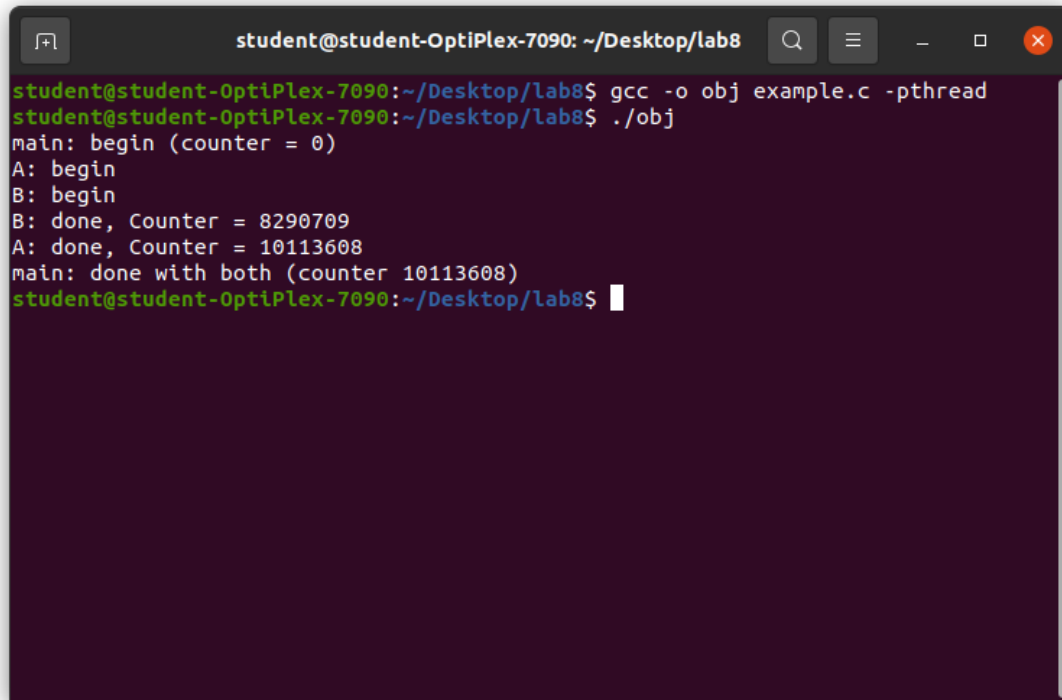
static volatile int counter = 0;

void *mythread(void *arg){
    printf("%s: begin\n", (char *) arg);
    int i;
    //int counter = 0;
    for(i=0;i<1e7;i++){
        counter = counter + 1;}
    printf("%s: done, Counter = %d\n", (char*)arg,counter);
    return NULL;
}

int main (int argc, char *argv[]){
    pthread_t p1, p2;

    printf("main: begin (counter = %d)\n", counter);
    pthread_create(&p1, NULL, mythread, "A");
    pthread_create(&p2, NULL, mythread, "B");
```

```
pthread_join(p1,NULL);  
pthread_join(p2,NULL);  
  
printf("main: done with both (counter %d)\n", counter);  
return 0;  
}
```



A terminal window titled "student@student-OptiPlex-7090: ~/Desktop/lab8" showing the compilation and execution of a C program. The user runs "gcc -o obj example.c -pthread" and then "./obj". The output shows the program's execution flow: main starts with counter 0, thread A begins, thread B begins, B finishes with counter 8290709, A finishes with counter 10113608, and finally main prints "main: done with both (counter 10113608)".

```
student@student-OptiPlex-7090:~/Desktop/lab8$ gcc -o obj example.c -pthread  
student@student-OptiPlex-7090:~/Desktop/lab8$ ./obj  
main: begin (counter = 0)  
A: begin  
B: begin  
B: done, Counter = 8290709  
A: done, Counter = 10113608  
main: done with both (counter 10113608)  
student@student-OptiPlex-7090:~/Desktop/lab8$
```