



# National Textile University

## Department of Computer Science

Subject:

Operating System

---

Submitted to:

Sir Nasir Mehmood

---

Submitted by:

Akasha Fatima

---

Reg. number:

23-NTU-CS-FL-1132

---

Semester:

5<sup>th</sup> - A

---

## LAB\_04

### Task-01:

### CODE:

**// Creating a simple thread using pthreads in C**

```
#include <stdio.h>
#include <pthread.h>  // Include pthreads library
#include <unistd.h>

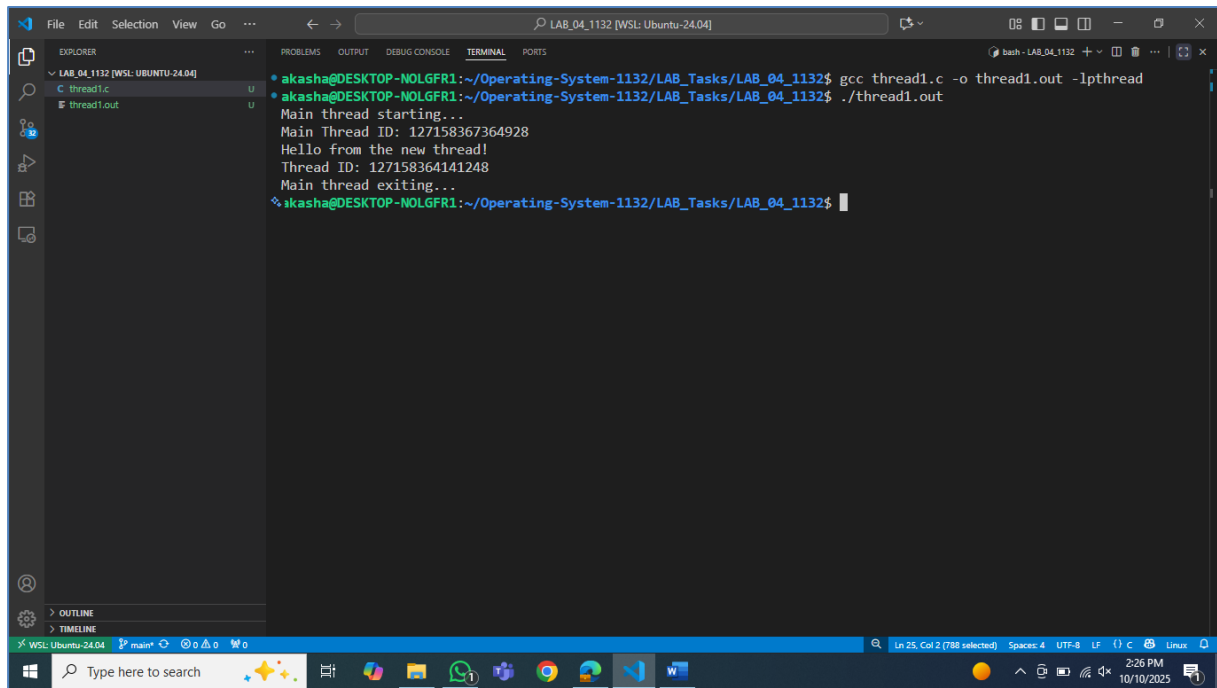
// Thread function - this will run in the new thread
void* thread_function(void* arg) {
    printf("Hello from the new thread!\n");
    printf("Thread ID: %lu\n", pthread_self());
    return NULL;
}

int main() {
    pthread_t thread_id;    // Declare a thread object
    printf("Main thread starting...\n");
    printf("Main Thread ID: %lu\n", pthread_self());

    pthread_create(&thread_id, NULL, thread_function, NULL); // Create a new thread (object, attributes, function, args)

    pthread_join(thread_id, NULL); // Wait for the thread to finish (object, return value)
    printf("Main thread exiting...\n");
    return 0;
}
```

### Output:



```
akasha@DESKTOP-NOLGFR1:~/Operating-System-1132/LAB_Tasks/LAB_04_1132$ gcc thread1.c -o thread1.out -lpthread
akasha@DESKTOP-NOLGFR1:~/Operating-System-1132/LAB_Tasks/LAB_04_1132$ ./thread1.out
Main thread starting...
Main Thread ID: 127158367364928
Hello from the new thread!
Thread ID: 127158364141248
Main thread exiting...
```

## Point To Remember:

- Add the library
- Declare the object/identifier in the main
- Create the thread
- Join the thread
- Execute the thread

## Task\_02:

### CODE:

#### // Passing arguments to threads in C using pthreads

```
#include <stdio.h>
#include <pthread.h>
void* print_number(void* arg) {

    // We know that we've passed an integer pointer
    int num = *(int*)arg;    // Cast void* back to int*
    printf("Thread received number: %d\n", num);
    printf("Square: %d\n", num * num);
    return NULL;
}

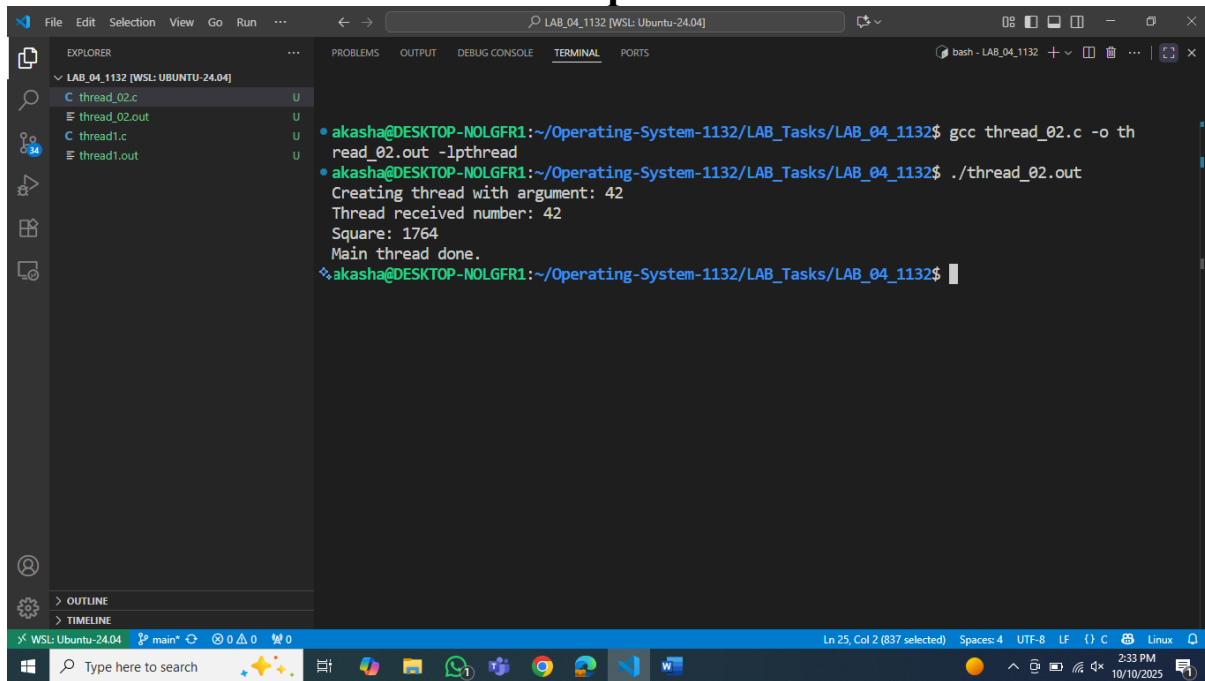
int main() {
    pthread_t thread_id;    // Declare a thread object
    int number = 42;        // Argument to pass to thread
    printf("Creating thread with argument: %d\n", number);
```

```

// Pass address of 'number' to thread
pthread_create(&thread_id, NULL, print_number, &number); // Create
thread (object, attributes, function, args)
pthread_join(thread_id, NULL); // Wait for thread to finish (object, return
value)
printf("Main thread done.\n");
return 0;
}

```

## Output:



```

akasha@DESKTOP-NOLGFR1:~/Operating-System-1132/LAB_Tasks/LAB_04_1132$ gcc thread_02.c -o th
read_02.out -lpthread
akasha@DESKTOP-NOLGFR1:~/Operating-System-1132/LAB_Tasks/LAB_04_1132$ ./thread_02.out
Creating thread with argument: 42
Thread received number: 42
Square: 1764
Main thread done.
akasha@DESKTOP-NOLGFR1:~/Operating-System-1132/LAB_Tasks/LAB_04_1132$

```