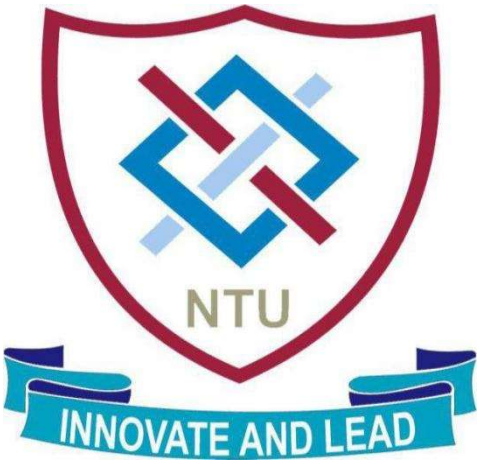

NATIONAL TEXTILE

UNIVERSITY

DEPARTMENT OF COMPUTER SCIENCE

SUBMITTED BY:

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SECTION SE: 5th(A)

LAB MANUAL

SUBMITTED TO:

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SUBMISSION DATE:

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Question 1:

Program 1: Creating a Simple Thread

Objective: Create a thread and print messages from both main thread and new thread.

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

    printf("Main thread starting...\n");
    printf("Main Thread ID: %lu\n", pthread_self());

    // Create a new thread
    pthread_create(&thread_id, NULL, thread_function, NULL);
```

```c
    // Wait for the thread to finish
    pthread_join(thread_id, NULL);

    printf("Main thread exiting...\n");
    return 0;
}
```

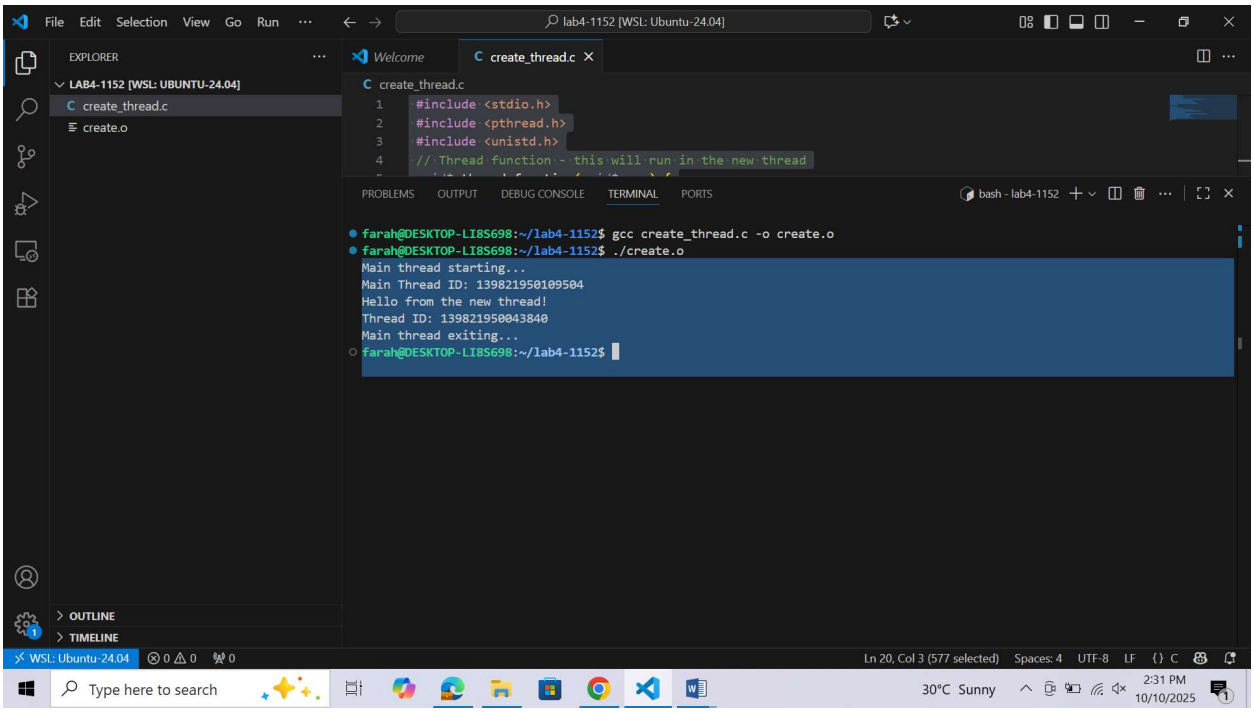
Create Thread:

Code:

```c
#include <stdio.h>
#include <pthread.h>
#include <unistd.h>
// Thread function - this will run in the new thread
```

```c
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;
printf("Main thread starting...\n");
printf("Main Thread ID: %lu\n", pthread_self());
// Create a new thread
pthread_create(&thread_id, NULL, thread_function, NULL);
// Wait for the thread to finish
pthread_join(thread_id, NULL);
printf("Main thread exiting...\n");
return 0;
}
```

Output:



Question 2:

Program 2: Passing Arguments to Threads

Objective: Pass data to a thread function.

```c
#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;
    int number = 42;

    printf("Creating thread with argument: %d\n", number);

    // Pass address of 'number' to thread
    pthread_create(&thread_id, NULL, print_number, &number);

    pthread_join(thread_id, NULL);

    printf("Main thread done.\n");
    return 0;
}
```

Pass Arguments to the thread:

Code:

```c
#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;
```

```c
}
int main() {
    pthread_t thread_id;
    int number = 42;
    printf("Creating thread with argument: %d\n", number);
    // Pass address of 'number' to thread
    pthread_create(&thread_id, NULL, print_number, &number);
    ;pthread join will block main process until the created one completes and
then resume the main thread
    pthread_join(thread_id, NULL);
    printf("Main thread done.\n");
    return 0;
}
```

Output: