

EXPERIMENT-30

Write C programs to demonstrate the following thread related concepts.

(i)create (ii) join (iii) equal (iv) exit

AIM:-

To demonstrate thread creation, joining, equality check, and exit in C using pthread library functions.

ALGORITHM:-

1. **Thread Creation:** Use pthread_create to create threads.
2. **Thread Joining:** Use pthread_join to wait for the completion of threads.
3. **Thread Equality:** Use pthread_equal to compare whether two threads are equal.
4. **Thread Exit:** Use pthread_exit to make threads exit gracefully.

PROCEDURE:-

1. Create a thread and assign a task to it.
2. Create another thread and assign a different task.
3. Use pthread_join to make the main thread wait for the other threads to finish.
4. Check if two threads are equal using pthread_equal.
5. Use pthread_exit to allow threads to exit properly.

CODE:-

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

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

```
#include <unistd.h>
```

```
// Function to be executed by thread1
```

```
void* thread1_func(void* arg) {  
    printf("Thread 1 is executing.\n");  
    return NULL;  
}
```

```
// Function to be executed by thread2
```

```
void* thread2_func(void* arg) {  
    printf("Thread 2 is executing.\n");  
    return NULL;  
}
```

```
int main() {
```

```
    pthread_t thread1, thread2;
```

```
    // Thread creation
```

```
    pthread_create(&thread1, NULL, thread1_func, NULL);
```

```
    pthread_create(&thread2, NULL, thread2_func, NULL);
```

```
    // Checking if thread1 and thread2 are equal (they are not)
```

```
    if (pthread_equal(thread1, thread2)) {
```

```
        printf("Thread1 and Thread2 are the same.\n");
```

```
    } else {
```

```

        printf("Thread1 and Thread2 are different.\n");
    }

    // Waiting for threads to finish (joining)

    pthread_join(thread1, NULL);

    pthread_join(thread2, NULL);

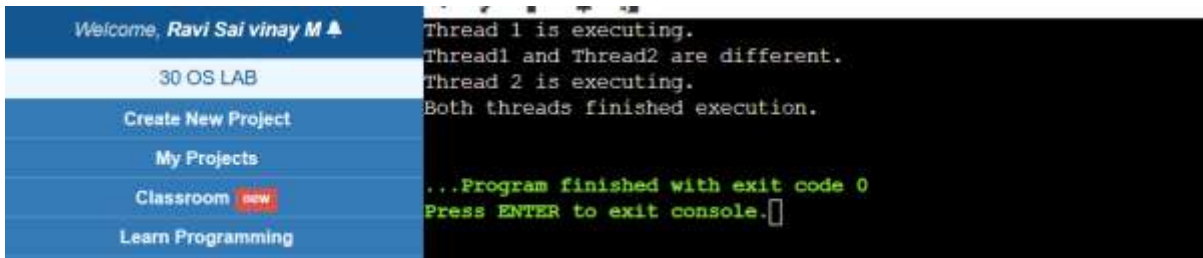
    // Threads exit

    printf("Both threads finished execution.\n");

    return 0;
}

```

OUTPUT:-



```

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Thread 1 is executing.
Thread1 and Thread2 are different.
Thread 2 is executing.
Both threads finished execution.

...Program finished with exit code 0
Press ENTER to exit console.

```

RESULT:-

- **Thread Creation:** The threads thread1 and thread2 are successfully created.
- **Thread Joining:** The main thread waits for both threads to finish using pthread_join.
- **Thread Equality:** The threads are correctly identified as different using pthread_equal.
- **Thread Exit:** Threads exit after completing their tasks, and the main program continues after all threads finish.