#### Lecture 5

#### **POSIX Thread:**

In Linux platforms, the C language contains **pthread** standard API for all kinds of thread related functions. It is also known as a POSIX thread that allows users to create many threads for simultaneous processes to flow. It is best used in multi-core systems or processors to implement threads on the kernel to achieve the system.

### Implementation:

# (Library: #include <pthread.h>)

It is necessary to include this pthread.h header file in the script initially. This will help in using the functions of the pthread library. To compile and execute the c file consisting of pthread library following commands should be used. (Assume the name of the c file is th.c)

```
gcc -o th th.c -lpthread
./th
```

## **Functions of pthread:**

int pthread\_create(pthread\_t \* thread\_id, const pthread\_attributes\_t \* attr, void \* (\*thread\_function), void \*argument);

**Purpose:** It is used to create a new thread.

## Parameters:

- **thread\_id:** This acts as a pointer to an unsigned integer value. It returns the thread id of the thread that is formed.
- **attributes:** This parameter acts as a pointer to a structure. It is used to define attributes of a thread that can be the policy of scheduling, and stack address, etc.
- thread\_function: This parameter is a pointer to the thread function of a thread.
- **argument:** This parameter is a pointer to void with different arguments to the function predefined at the start of the argument.
- void pthread\_exit(void \*return\_value);

**Purpose:** It is used to terminate or end a thread.

# **Parameters:**

- **return\_value:** It stores the status of the thread such that the thread terminates. It must be a global variable. This will allow the next thread in line to join the thread if it is available.
- int pthread\_join(pthread\_t thread\_id, void \*thread\_return);

Purpose: This is a function used at the time of wait for the termination of the thread.

#### Parameters:

- thread\_id: It is the ID of the thread for which the thread in line waits.
- thread\_return: It is the parameter that acts as a pointer to the particular location where we
  have defined the exit status.