Experiment No. 10
Implement program on Multithreading
Date of Performance:
Date of Submission:

Aim: Implement program on Multithreading

Objective:

Theory:

Multithreading in Java is a process of executing multiple threads simultaneously.

A thread is a lightweight sub-process, the smallest unit of processing. Multiprocessing and multithreading, both are used to achieve multitasking.

However, we use multithreading than multiprocessing because threads use a shared memory area. They don't allocate separate memory area so saves memory, and context-switching between the threads takes less time than process.

Java Multithreading is mostly used in games, animation, etc.

Java provides **Thread class** to achieve thread programming. Thread class provides constructors and methods to create and perform operations on a thread. Thread class extends Object class and implements Runnable interface.

There are two ways to create a thread:

1. By extending Thread class
2. By implementing Runnable interface.

Thread class:
Thread class provide constructors and methods to create and perform operations on a thread.Thread class extends Object class and implements Runnable interface.

1) Java Thread Example by extending Thread class
FileName: Multi.java

```
class Multi extends Thread{
public void run(){
System.out.println("thread is running...");
}
public static void main(String args[]){
Multi t1=new Multi();
t1.start();
 }
}
```

Output:

```
thread is running...
```

2) Java Thread Example by implementing Runnable interface

FileName: Multi3.java

```
class Multi3 implements Runnable{
public void run(){
System.out.println("thread is running...");
}

public static void main(String args[]){
Multi3 m1=new Multi3();
Thread t1 =new Thread(m1);   // Using the constructor Thread(Runnable r)
t1.start();
 }
}
```

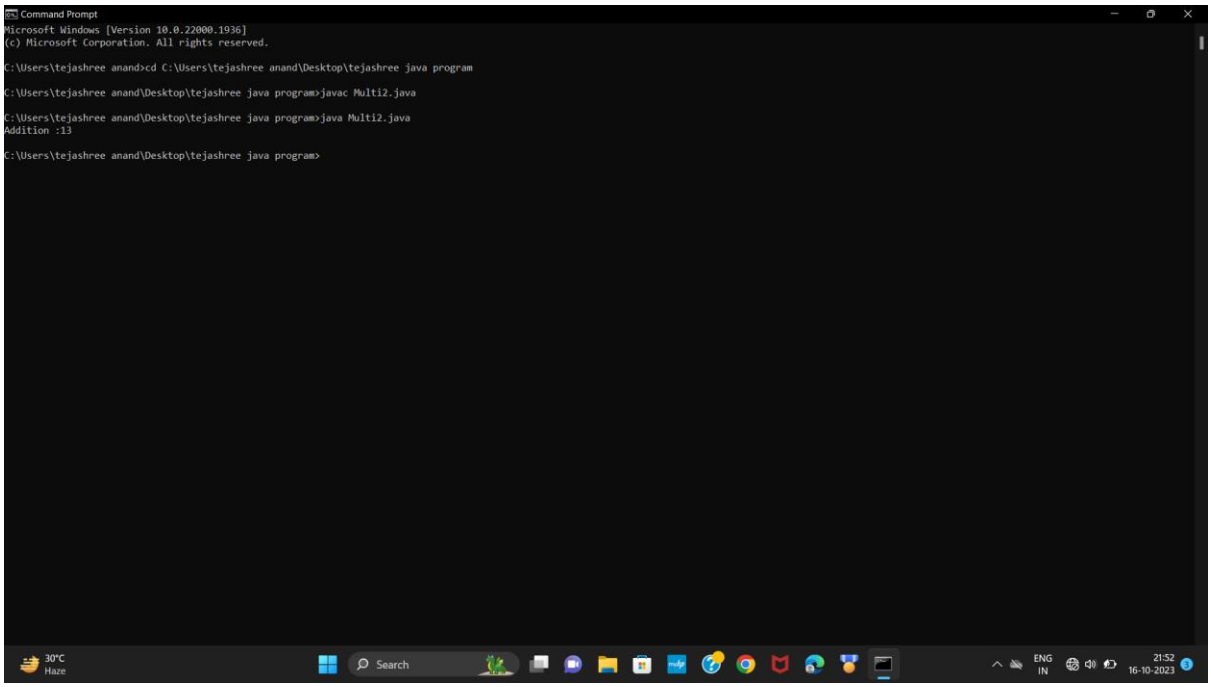
Output:

```
thread is running...
```

Code:

```
class Multi2 implements Runnable{
public void run()
{
    int a=5;
    int b=7;
    int c=a+b;
    System.out.println("Addition :"+c);
}

public static void main(String args[]){
Multi2 m1=new Multi2();
Thread t1=new Thread(m1);
t1.start();
}
}
```



Conclusion:

Comment on how multithreading is supported in JAVA.

Multithreading is a programming concept in which the application can create a small unit of tasks to execute in parallel. If you are working on a computer, it runs multiple applications and allocates processing power to them. A simple program runs in sequence and the code statements execute one by one. It's a fundamental feature for efficient resource utilization, improved application responsiveness, and better performance in multi-tasking environments.