

LAB18_ANP_C6339_THREADSYNCHRONIZATION

Due date: Friday, 8 December 2023, 5:30 AM

Maximum number of files: 1

Type of work: Individual work

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Assignment-1.

Write a java program to implement synchronized block in a threadprocess. create 2 threads to achieve thread synchronization.

use join(), notify()

Solution:-

```
public class SynchronizedBlockExample {

    public static void main(String[] args) throws InterruptedException {

        SharedResource resource = new SharedResource();

        Thread thread1 = new Thread(() -> {
            for (int i = 1; i <= 5; i++) {
                resource.incrementCounter();
            }
        });

        Thread thread2 = new Thread(() -> {
            for (int i = 1; i <= 5; i++) {
                resource.decrementCounter();
            }
        });

        thread1.start();
        thread2.start();

        thread1.join();
        thread2.join();

        System.out.println("Final counter value: " + resource.getCounter());
    }
}
```

```
}
```

```
static class SharedResource {  
    private int counter = 0;  
  
    public synchronized void incrementCounter() {  
        while (counter >= 5) {  
            try {  
                wait();  
            } catch (InterruptedException e) {  
                e.printStackTrace();  
            }  
        }  
        counter++;  
        System.out.println("Thread " + Thread.currentThread().getName() + " incremented counter: " + counter);  
        notify();  
    }  
  
    public synchronized void decrementCounter() {  
        while (counter <= 0) {  
            try {  
                wait();  
            } catch (InterruptedException e) {  
                e.printStackTrace();  
            }  
        }  
        counter--;  
        System.out.println("Thread " + Thread.currentThread().getName() + " decremented counter: " + counter);  
        notify();  
    }  
  
    public int getCounter() {  
        return counter;  
    }  
}
```

```
}  
  
}
```

Output:

```
C:\Users\thila\OneDrive\Desktop\Anudip_Labs>javac SynchronizedBlockExample.java
```

```
C:\Users\thila\OneDrive\Desktop\Anudip_Labs>java SynchronizedBlockExample
```

```
Thread Thread-0 incremented counter: 1  
Thread Thread-0 incremented counter: 2  
Thread Thread-1 decremented counter: 1  
Thread Thread-1 decremented counter: 0  
Thread Thread-0 incremented counter: 1  
Thread Thread-0 incremented counter: 2  
Thread Thread-0 incremented counter: 3  
Thread Thread-1 decremented counter: 2  
Thread Thread-1 decremented counter: 1  
Thread Thread-1 decremented counter: 0  
Final counter value: 0
```
