

## Final Exam

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### Task1:

```
1 // Final Exam Task1
2 // Mohammed Alhilali/444008260
3 package lab7apt1;
4
5
6 class MyThread extends Thread {
7     public void run() {
8         System.out.println("Thread is running. Name: " + getName());
9     }
10 }
11
12 public class Main {
13     public static void main(String[] args) {
14         MyThread t1 = new MyThread();
15         t1.setName(name: "MyFirstThread");
16         t1.start();
17     }
18 }
19
```

Output - Lab7APT1 (run) ×

run:  
Thread is running. Name: MyFirstThread  
BUILD SUCCESSFUL (total time: 1 second)

### Task2:

```
1 // Final Exam Task2
2 // Mohammed Alhilali/444008260
3 package lab7apt2;
4
5 class MyTask implements Runnable {
6     public void run() {
7         System.out.println("Task is running. Thread: " + Thread.currentThread().getName());
8     }
9 }
10
11 public class Main {
12     public static void main(String[] args) {
13         MyTask task = new MyTask();
14         Thread t1 = new Thread(task, name: "RunnableThread");
15         t1.start();
16     }
17 }

```

Output - Lab7APT2 (run) ×

run:  
Task is running. Thread: RunnableThread  
BUILD SUCCESSFUL (total time: 0 seconds)

### Task3:

```
1 // Final Exam Task3
2 // Mohammed Alhilali/444008260
3 package lab7apt3;
4 class MyThread extends Thread {
5     public void run() {
6         for (int i = 0; i < 3; i++) {
7             System.out.println("Thread running: " + i);
8             try {
9                 Thread.sleep(1000);
10            } catch (InterruptedException e) {
11                System.out.println("Thread interrupted: " + e.getMessage());
12            }
13        }
14    }
15 }
16 public class Main {
17     public static void main(String[] args) {
18         MyThread thread = new MyThread();
19         thread.start();
20     }
21 }
```

Output - Lab7APT3 (run) ×

```
run:
Thread running: 0
Thread running: 1
Thread running: 2
BUILD SUCCESSFUL (total time: 3 seconds)
```

### Task4:

```
1 // Final Exam Task4
2 // Mohammed Alhilali/444008260
3 package lab7apt4;
4 class SharedResource {
5     private int count = 0;
6
7     public synchronized void increment() {
8         count++;
9     }
10    public synchronized int getCount() {
11        return count;
12    }
13 }
14 class MyThread extends Thread {
15     SharedResource resource;
16
17     MyThread(SharedResource res) {
18         this.resource = res;
19     }
20
21     public void run() {
22         for (int i = 0; i < 1000; i++) {
23             resource.increment();
24         }
25     }
26 }
```

```
26 public class Main {
27     public static void main(String[] args) throws InterruptedException {
28         SharedResource resource = new SharedResource();
29         Thread t1 = new MyThread(res:resource);
30         Thread t2 = new MyThread(res:resource);
31
32         t1.start();
33         t2.start();
34         t1.join();
35         t2.join();
36
37         System.out.println("Final Count: " + resource.getCount());
38     }
39 }
40
```

Output - Lab7APT4 (run) ×



```
run:
Final Count: 2000
BUILD SUCCESSFUL (total time: 0 seconds)
```