S.No: 22	Exp. Name: ***A program to illustrate threads***	Date:2023-12-21

Aim:

Write Java program(s) on creating multiple threads, assigning priority to threads, synchronizing threads, suspend and resume threads

Source Code:

TestThread.java

```
class RunnableDemo implements Runnable {
       public Thread t;
       private String threadName;
       boolean suspended = false;
       RunnableDemo(String name) {
                  threadName = name;
                  System.out.println("Creating " + threadName);
      }
       public void run() {
                  System.out.println("Running " + threadName);
                  try {
                              for (int i = 10; i > 0; i--) {
                                          System.out.println("Thread: " + threadN
ame + ", " + i);
                                          // Let the thread sleep for a while.
                                          Thread.sleep(200);
                                          synchronized(this) {
                                                      while (suspended) {

wait();
                                                      }
                                          }
                              }
                  } catch (InterruptedException e) {
                              System.out.println("Thread " + threadName + " interrupt
ed.");
                  }
                    System.out.println("Thread " + threadName + " exiting.");
      }
       public void start() {
                  System.out.println("Starting " + threadName);
                  if (t == null) {
                              t = new Thread(this, threadName);
                              t.start();
                  }
      }
       void suspend() {
                  suspended = true;
      }
       synchronized void resume() {
                  suspended = false;
                  notify();
      }
}
public class TestThread {
```


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```
        public static void main(String args[]) {
                  RunnableDemo R1 = new RunnableDemo("Thread-1");
                  R1.start();

                  RunnableDemo R2 = new RunnableDemo("Thread-2");
                  R2.start();
                  try {
                              Thread.sleep(300);
                              R1.suspend();
                              System.out.println("Suspending First Thread");
                              Thread.sleep(300);
                              R1.resume();
                              System.out.println("Resuming First Thread");
                              R2.suspend();
                              System.out.println("Suspending thread Two");
                              Thread.sleep(300);
                              R2.resume();
                              System.out.println("Resuming thread Two");
                  } catch (InterruptedException e) {
                              System.out.println("Main thread Interrupted");
                  }
                    try {
                              System.out.println("Waiting for threads to finish.");
                              R1.t.join();
                              R2.t.join();
                  } catch (InterruptedException e) {
                              System.out.println("Main thread Interrupted");
                  }
                    System.out.println("Main thread exiting.");
        }
}
```

Execution Results - All test cases have succeeded!

Test Case - 1
User Output
Creating Thread-1
Starting Thread-1
Creating Thread-2
Starting Thread-2
Running Thread-1
Running Thread-2
Thread: Thread-2, 10
Thread: Thread-1, 10
Suspending First Thread
Thread: Thread-2, 9
Thread: Thread-2, 8
Resuming First Thread
Suspending thread Two
Thread: Thread-1, 9
Thread: Thread-1, 8
Resuming thread Two
Waiting for threads to finish.

Thread: Thread-2, 7
Thread: Thread-1, 7
Thread: Thread-2, 6
Thread: Thread-1, 6
Thread: Thread-2, 5
Thread: Thread-1, 5
Thread: Thread-2, 4
Thread: Thread-1, 4
Thread: Thread-2, 3
Thread: Thread-1, 3
Thread: Thread-2, 2
Thread: Thread-1, 2
Thread: Thread-2, 1
Thread: Thread-1, 1
Thread Thread-2 exiting.
Thread Thread-1 exiting.
Main thread exiting.