

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;
    public 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: "+threadName+", "+i);
                Thread.sleep(100);
                synchronized(this){
                    while(suspended){
                        wait();
                    }
                }
            }
        }
        catch(InterruptedException e){
            System.out.println("Thread "+threadName+" interrupted.");
        }
        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{
    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(100);
    R1.suspend();
    System.out.println("Suspending First Thread");
    Thread.sleep(100);
    R1.resume();
    System.out.println("Resuming First Thread");
    System.out.println("Suspending thread Two");
    System.out.println("Resuming thread Two");
    R2.resume();
}
catch(InterruptedException e){
    System.out.println("Caught: "+e);
}
try{
    System.out.println("Waiting for threads to finish.");
    R1.t.join();
    R2.t.join();
}
catch(InterruptedException e){
    System.out.println(e);
}
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.