```
 1 package Exercise;
 2 import java.util.*;
 3
 4 class
   InvalidInitialTemperatureException
   extends Exception{
 5     private int temp;
 6
   InvalidInitialTemperatureException(
   int temp) {
 7         this.temp = temp;
 8     }
 9     public String toString() {
10         return "
   InvalidInitialTemperatureException
    : "+this.temp;
11     }
12 }
13
14 class HighTemperatureException
   extends Exception{
15     HighTemperatureException() {}
16     public String toString() {
17         return "\nHigh Temperature
   Exception : Cooling down\n";
18     }
19 }
20
21 class LowTemperatureException
```

```
21 extends Exception{
22     LowTemperatureException() {}
23     public String toString() {
24         return "\nLow Temperature
   Exception : Heating\n";
25     }
26 }
27
28 class Thermostat{
29     private int temperature;
30     static final int LOWER_LIM = 50;
31     static final int UPPER_LIM = 100
   ;
32     Thermostat(int initTemp) throws
   InvalidInitialTemperatureException{
33         if((initTemp>=LOWER_LIM)&&(
   initTemp<=UPPER_LIM)){
34             this.temperature=
   initTemp;
35             System.out.println("
   Thermostat     Starting.     With
        Initial     Temprature :"+
   temperature);
36         }else{
37             throw new
   InvalidInitialTemperatureException(
   initTemp);
38         }
39     }
```

```
40
41      public void startThermostat()
    throws HighTemperatureException{
42          System.out.println(
    "******************Thermostat Started
    ************************");
43          this.temperature++;
44
45          if (this.temperature>=
    UPPER_LIM){
46              throw new
    HighTemperatureException();
47          }
48      }
49      public void stopThermostat()
    throws LowTemperatureException{
50          System.out.println(
    "******************Thermostat
    Stopping************************");
51          this.temperature--;
52          if (this.temperature <=
    LOWER_LIM){
53              throw new
    LowTemperatureException();
54          }
55      }
56 }
57 public class Exercise1 {
58      public static void main(String
```

```
58 [] args) throws
   InvalidInitialTemperatureException{
59         Thermostat t=new Thermostat(
   55); //Setting the initial
   temperature of the thermostat as 55.
60          while(true){
61              try{
62                  t.startThermostat
   ();
63              }catch(
   HighTemperatureException e) {
64                  System.out.println(
   e);
65              }try{
66                  t.stopThermostat();
67              }catch(
   LowTemperatureException ex) {
68                  System.out.println(
   ex);
69              }
70          }
71     }
72 }
73
74
```