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LAB SLOT: L5+L6

CSE1007:JAVA fundamentals (LAB)
DIGITAL ASSIGNMENT 5: JAVA core questions

QUESTION 1: The rainfall dataset was collected from various states of India over a period of time. Give the details of 10 states whose average are stored in a Map. Sort the states with respect to average rainfall using any sorting algorithm. Also search the state whose rainfall is the second most getting much rain.

CODE:

```
import java.util.*;
import java.io.*;
class q1
{
      public static void main(String args[])
      {
            Scanner inn=new Scanner(System.in);
            Map<String, Integer> data=new HashMap <String, Integer>();
            int i=0,j=0;
            System.out.println("Enter data for 10 states: ");
            Integer a;
            String s;
            for(i=0;i<10;i++)
            {
                  System.out.println("State name: ");
                  s=inn.nextLine();
                  if(i!=0)s=inn.nextLine();//this is to ignore the enter key
pressing
                  System.out.println("Average rainfall (in cm): ");
                  a=inn.nextInt();

                  data.put(s,a);
            }

            System.out.println("Displaying HashMap...");
            Set <String>keys=data.keySet();
            Iterator <String> itr=keys.iterator();
            while(itr.hasNext())
            {
            s=itr.next();
            System.out.println("Key: "+s+" and value:        "+data.get(s));
```

```
            }


            //Sorting algorithm : - Sorting technique implemented in java 8 for
linkedhashmaps.
            System.out.println("Sorting data with respect to avg rainfall...");
             LinkedHashMap<String, Integer> reverseSortedMap = new
LinkedHashMap<>();

data.entrySet().stream().sorted(Map.Entry.comparingByValue(Comparator.reverseOr
der()))
                      .forEachOrdered(x -> reverseSortedMap.put(x.getKey(),
x.getValue()));

                  System.out.println("Displaying  Sorted Map...");
                  Set <String>keyss=reverseSortedMap.keySet();
                  Iterator <String> itrr=keyss.iterator();
                  int counter=0;//The counter is a variable that counts the
position, when counter is 1, it means that the
                              //state with second most rainfall is being
printed, and this data can be saved and printed later.
                  String rec="";
                  while(itrr.hasNext())
                  {

                  s=itrr.next();
                  if(counter==1)rec=s;
                  System.out.println("Key: "+s+" and value:
"+reverseSortedMap.get(s));
                  counter++;
                  }
                  System.out.println("\nThe state with second most average
rainfall is "+rec+" with avg rainfall of "+data.get(rec)+"cm");



      }
}
```

OUTPUT:

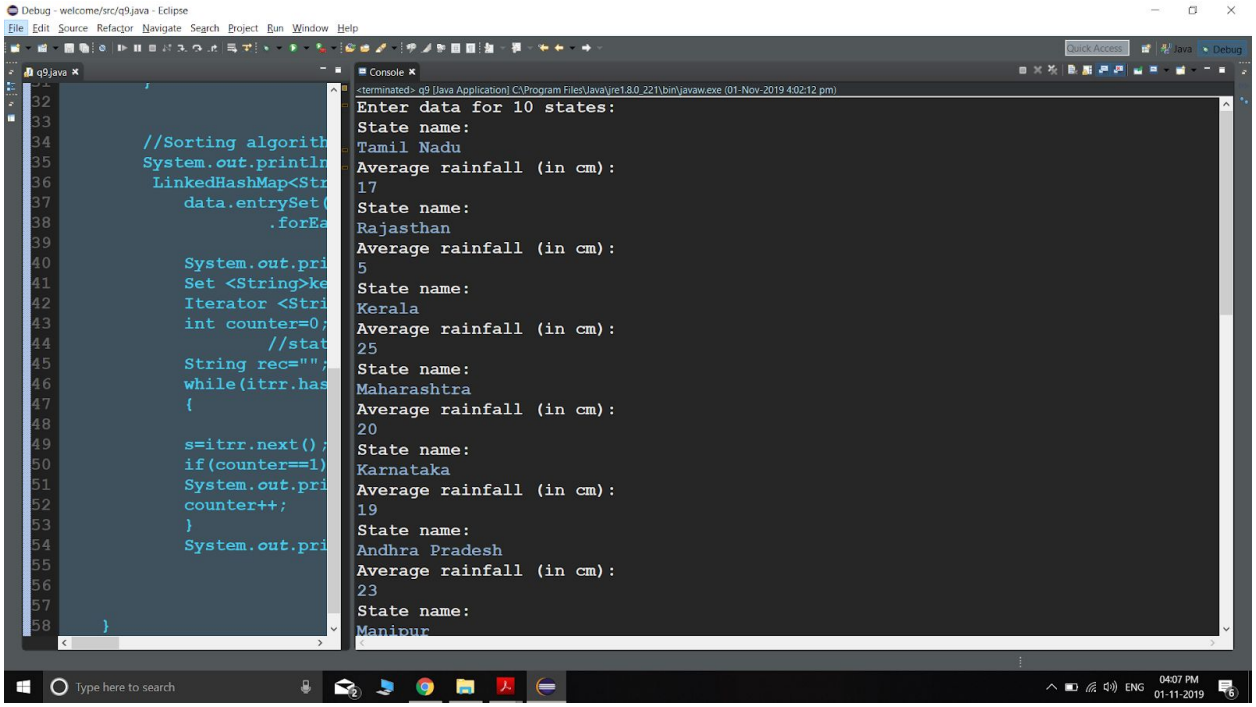
```
Enter data for 10 states:
State name:
Tamil Nadu
Average rainfall (in cm):
17
State name:
Rajasthan
```

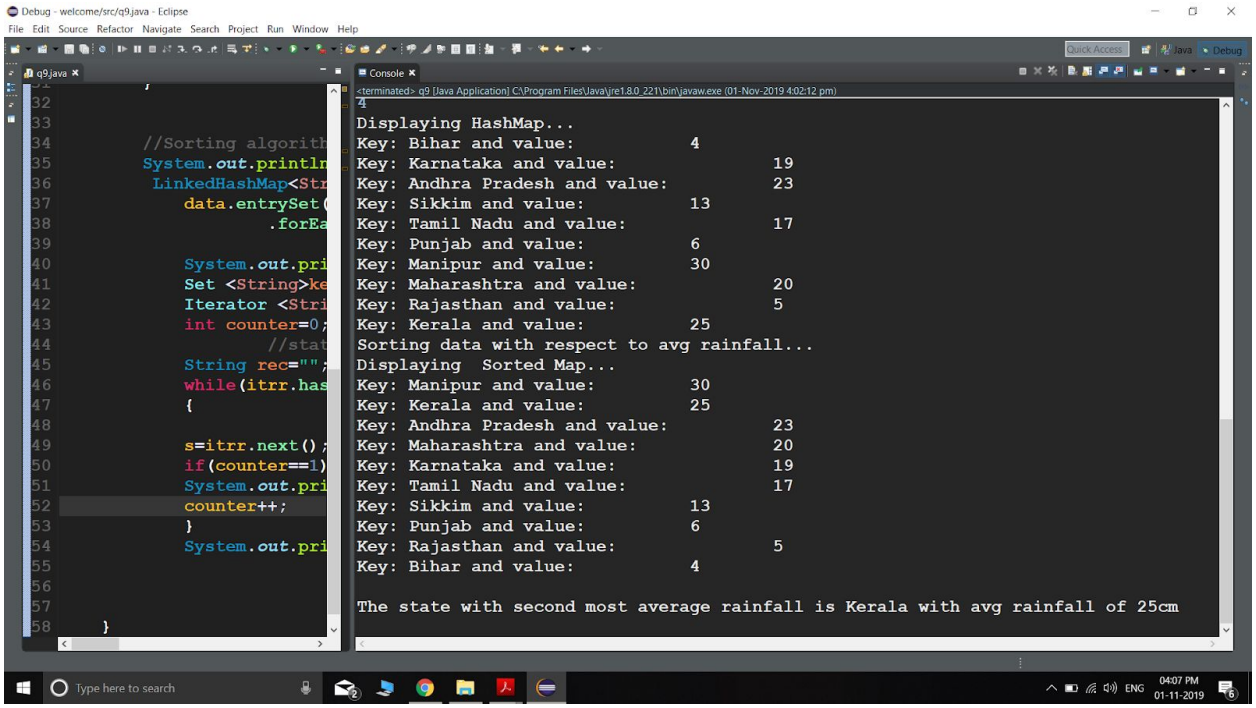
```
Average rainfall (in cm):
5
State name:
Kerala
Average rainfall (in cm):
25
State name:
Maharashtra
Average rainfall (in cm):
20
State name:
Karnataka
Average rainfall (in cm):
19
State name:
Andhra Pradesh
Average rainfall (in cm):
23
State name:
Manipur
Average rainfall (in cm):
30
State name:
Sikkim
Average rainfall (in cm):
13
State name:
Punjab
Average rainfall (in cm):
6
State name:
Bihar
Average rainfall (in cm):
4
Displaying HashMap...
Key: Bihar and value:          4
Key: Karnataka and value:            19
Key: Andhra Pradesh and value:       23
Key: Sikkim and value:         13
Key: Tamil Nadu and value:           17
Key: Punjab and value:         6
Key: Manipur and value:        30
Key: Maharashtra and value:          20
Key: Rajasthan and value:            5
Key: Kerala and value:         25
Sorting data with respect to avg rainfall...
Displaying  Sorted Map...
Key: Manipur and value:        30
```

```
Key: Kerala and value:          25
Key: Andhra Pradesh and value:        23
Key: Maharashtra and value:           20
Key: Karnataka and value:             19
Key: Tamil Nadu and value:            17
Key: Sikkim and value:          13
Key: Punjab and value:          6
Key: Rajasthan and value:             5
Key: Bihar and value:           4

The state with second most average rainfall is Kerala with avg rainfall of 25cm
```

OUTPUT SCREENSHOT:





QUESTION 2: Implement a simple counter in Java which increments its value each second. Use sleep (1000) to delay each print. The counter stops whenever the user inserts the value 0 from console. Note that the program cannot make any assumption on when the user will press the key.

JAVA CODE:

```
import java.io.*;

class globally
{
	public static boolean flag;
	public static int count;
}
class counter
{
	boolean flag;
	int count;
	counter(int i)
	{
		count=i;
		globally.count=i;
		flag=false;

		globally.flag=false;
	}
```

```
      void timer()
      {
            while(!globally.flag)
            {
                  try
                  {
                  java.lang.Thread.sleep(1000);
                  count++;
                  globally.count++;
                  if(!globally.flag)
                  System.out.println("time: "+this.count);

                  }
                  catch(InterruptedException e){}
            }
      }
      void checker()
      {
              while(true)
              {
                  System.out.println("Press zero to stop...");
              try
              {char ch = (char)System.in.read();

              System.out.println("You pushed : " + ch );
              if(ch=='0')
              {
              globally.flag=true;
              System.out.println("Counter time: "+globally.count+"seconds");
              break;
              }
              }


              catch(IOException e){}
              }

      }
}
class MyThread implements Runnable
{
   Thread t;
   counter obj;
   MyThread(String s)
   {
        obj=new counter(0);
      t = new Thread(this, s);
      t.start();
```

```
   }
   public void run()
   {
        if(t.getName()=="counter")
              obj.timer();
        else if(t.getName()=="checker")
              obj.checker();

   /*
THERE ARE 2 THREADS: ONE FOR TIME-CLOCK, ONE FOR KEYBOARD HIT DETECTION. Once a
keyboard hit is detected and verified that the pressed key is zero, then a
"notify" is sent to the time-clock thread using inter thread communication
which hence stops the clock and time is displayed.
*/

   }
}

class q2
{
public static void main(String args[])
{
MyThread clock=new MyThread("counter");

MyThread keypresser=new MyThread("checker");
try
{clock.t.join();
keypresser.t.join();
}
catch (InterruptedException e){}
}
}
```

OUTPUT:

```
Press zero to stop...
time: 1
time: 2
time: 3
time: 4
time: 5
time: 6
time: 7
time: 8
time: 9
0
You pushed : 0
Counter time: 9seconds
```

OUTPUT SCREENSHOT: