JAVA ASSIGNMENT - 4

SESSION 2021-2022

LAB REPORT SUBMITTED

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Q-1 : You are required to store a table that contains substance name along with its parameterssuch as freezing point and boiling point using 2-D matrix where each row is correspondingto substance and columns correspond to parameters. Design a class that takes tempera-ture input

using scanner class and check whether temperature match with freezing pointor boiling point of respective substance and display the result.

Code:-

```
import java.util.*;
 public class Assignment3{


public static void main(String[] args){

Temprature ab=new Temprature(50.0);

System.out.println("Material Boiling Temp Freezing Temp");

String[][] material={{"water"," 100"," 0"}, {"musturd oil"," 90"," -
5"},{"petrol","
 70"," -10"},{"milk"," 100"," 0"}};


for(int i=0;i<4;i++){
 for(int j=0;j<3;j++){ System.out.print(material[i][j]+" ");

}

System.out.println(""); }

System.out.print(" Enter the temprature :-"); double temp;
 Scanner s=new Scanner(System.in); temp=s.nextDouble();


Temprature abc= new Temprature(temp);

if(abc.waterfreez()==true){ System.out.println("water will freez");

}

if(abc.waterboil()==true){ System.out.println("water will boil");


} if(abc.musturdfreez()==true){

System.out.println("mustured oil will freez"); }
```

```
if(abc.musturdboil()==true){ System.out.println("mustured oil will boil");
} if(abc.petrolfreez()==true){
System.out.println("petrol oil will freez"); }
if(abc.petrolboil()==true){ System.out.println("petrol will boil");
} if(abc.milkfreez()==true){
System.out.println("milk will freez"); }
if(abc.milkboil()==true){

System.out.println("milk will boil"); }
}
 }
 class Temprature{
double temprature; Temprature(double a){
temprature=a; }
double getTemperature() { return temprature;
}
 public boolean waterfreez(){
if(temprature<=0){ return true;

}
 else {
 return false; }
}
 boolean waterboil(){
if(temprature>=100){ return true;
}
 else {
 return false; }
}
 boolean musturdfreez(){
```

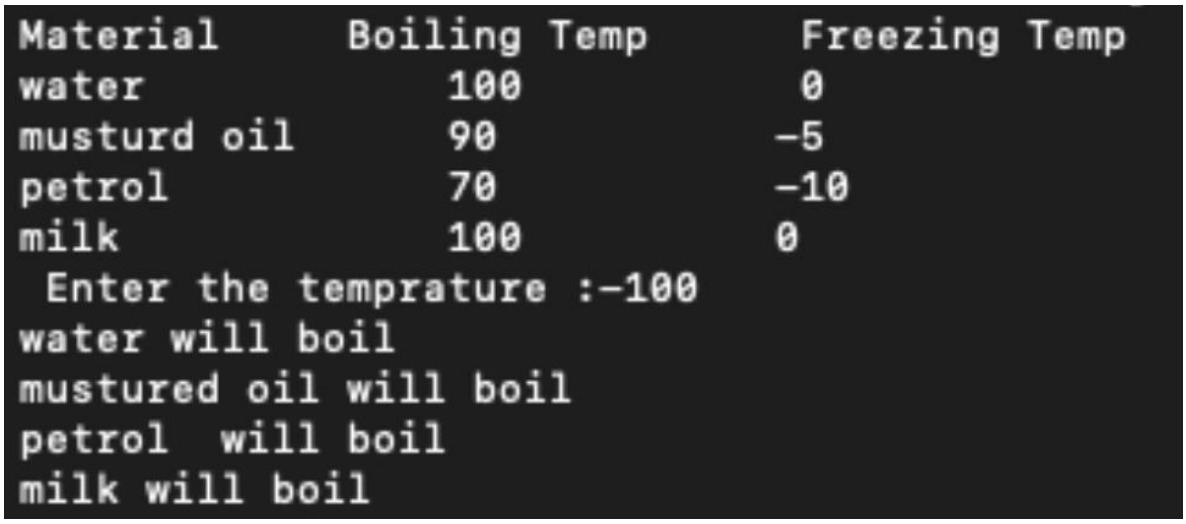
```
if(temprature<=-5){ return true;
}
 else {
 return false; }
}
 boolean musturdboil(){

if(temprature>=90){
return true; }

else {
 return false; }
}
 boolean petrolfreez(){
if(temprature<=-10){ return true;
}
 else {
 return false; }
}
 boolean petrolboil(){
if(temprature>=70){ return true;
}
 else {
return false; }
}
 boolean milkfreez(){
if(temprature<=0){ return true;
}
 else {
return false; }
```

```
}
 boolean milkboil(){
if(temprature>=100){ return true;}
else {
 return false;
} } }
```

Output:-



Q-2 : Take a JaggedArray representing 2-D matrix as an input from the user. Write a programthat transpose the Jagged matrix. Merge the original and transpose Ragged matrix.Display all the matrices.

Code:-

```
import java.util.*; class Main {
public static void main(String[] args) {
```

```
System.out.print("Enter the number of rows :- ");

Scanner s=new Scanner(System.in);

int n=s.nextInt();
 int arr[][] = new int[n][]; int maxlen=0;


System.out.printf("insert number of elements in each row :- ");

for(int i=0;i<n;i++){
 int x=s.nextInt(); if(x>maxlen){maxlen=x;}

arr[i] = new int[x]; }
 int arr1[][]=new int [n][maxlen];

int e=0;
 int count = 1;
 for (int i = 0; i < arr.length; i++)

for (int j = 0; j < arr[i].length; j++) arr[i][j] = count++;

for (int i = 0; i < arr.length; i++){
 for (int j = 0; j < maxlen; j++){


if(j<arr[i].length){ arr1[i][j]=arr[i][j];

}

}else{ arr1[i][j]=0;}}

System.out.println("Contents of 2D Jagged Array");

for (int i = 0; i < arr.length; i++) {
 for (int j = 0; j < arr[i].length; j++)

System.out.print(arr[i][j] + " "); System.out.println();

}
 //transpose of the arrey

System.out.println("Transpose of 2D Jagged Array");

for (int j = 0; j < maxlen; j++){
 for (int i = 0; i < n; i++)

{
 if(arr1[i][j]!=0)
```

```
{
 System.out.print(arr1[i][j] + " ");
} }
System.out.println(); }
System.out.println("Merged both the arraies");
for (int i = 0; i < maxlen; i++) { if(i<n){
for (int j = 0; j < arr[i].length; j++){ System.out.print(arr[i][j] + " ");}
}
 for (int k = 0; k < n; k++)
{
 if(arr1[k][i]!=0)
{

System.out.print(arr1[k][i] + " "); }}
System.out.println();}}}
```

Output:-

```
Enter the number of rows :-  3
insert number of elements in each row :- 3 2 4
Contents of 2D Jagged Array
1 2 3
4 5
6 7 8 9
Transpose of 2D Jagged Array
1 4 6
2 5 7
3 8
9
Merged both the arraies
1 2 3 1 4 6
4 5 2 5 7
6 7 8 9 3 8
9
```

Q-3: You are required to compute correlation factor between two one dimensional integer array.While computing the correlation factor, one has to find out trend of each step in botharrays. Arrays are scanned from index value 0 and compare successive value in array todecide increasing or decreasing or equal one by one while scanning. When we are movingfrom one element to another element if both have increasing or decreasing order. Thisresults a binary array with its values 0 or 1. The value will be 1 if both matched otherwise0 The correlation factor is number of 1's divided by total

Code:-

```
import java.util.*; class Main {
public static void main(String[] args) {
System.out.print("Enter the number elements in the arrey :- ");

Scanner s=new Scanner(System.in);
int n=s.nextInt();
 int arr[] = new int[n]; int arr1[]=new int[n];
System.out.printf("insert elements of 1st arrey :- ");
for(int i=0;i<n;i++){ //int x=s.nextInt();
arr[i] = s.nextInt(); }
System.out.printf("insert elements of 2nd arrey :- ");
for(int i=0;i<n;i++){ //int x=s.nextInt();
arr1[i] = s.nextInt(); }
```

```
int count=0;
 for(int i=0;i<n-1;i++){
if(arr[i]<arr[i+1] && arr1[i]<arr1[i+1]){ count++;
}
 else if(arr[i]>arr[i+1] && arr1[i]>arr1[i+1]){
count++; }
}
 float ans=(float)count/n;
System.out.print("correlation factor between two one dimensional integer array is :- "+ans);
} }
```

Output:-

```
Enter the number elements in the arrey :-  10
insert  elements of 1st arrey :- 2 1 4 6 7 3 4 9 23 34
insert  elements of 2nd arrey :- 1 4 78 5 34 56 3 2 3 677
correlation factor between two one dimensional integer array is :-  0.4%
```

Q-4: You are given 2D matrix of 5x5 and require to compute correlation factor for each com-bination of two rows and represent these correlation factor in two dimensional matrixknown as correlation matrix.

Code:-

```
import java.util.*;
class Main {
 public static void main(String[] args) {
System.out.println("Enter the elements of the 5X5 matrix :- ");
Scanner s=new Scanner(System.in);
int arr[][] = new int[5][5]; float arr1[][]=new float[5][4];
for(int i=0;i<5;i++){ for(int j=0;j<5;j++){
arr[i][j] = s.nextInt();
```

```
[k+1]){
if(arr[i][k]<arr[i][k+1] &&arr[j][k]<arr[j]
count++; }
} }

int e=0,f=0;
 int count=0;
for(int i=0;i<5;i++){ for(int j=0;j<5;j++){
if(i!=j){
 for(int k=0;k<4;k++){
else if(arr[i][k]>arr[i][k+1] &&arr[j] [k]>arr[j][k+1]){
count++; }
}
 float ans=(float)count/5; arr1[e][f]=ans;
count=0;f++; }
}
e++;f=0; }
System.out.println("correlation matrix is :- ");
for(int i=0;i<5;i++){ for(int j=0;j<4;j++){
System.out.print(arr1[i][j]+" "); }
System.out.println(""); }
} }
```

Output:-

```
Enter the  elements of the 5X5 matrix :-
3 4 5 6 7
4 6 7 3 2
3 1 0 9 8
4 5 6 7 2
1 9 6 5 4
correlation matrix is :-
0.4 0.2 0.6 0.2
0.4 0.2 0.6 0.6
0.2 0.2 0.4 0.4
0.6 0.6 0.4 0.4
0.2 0.6 0.4 0.4
```