

CSE1007 – JAVA Programming

Lab Exercise on Arrays

Question 1

One of the leading newspapers wants to display the Olympic medals tally on its online edition with few additional features:

- i) To print the countrywise total
- ii) To print medalwise total
- iii) Display India's current position

For each of the above, design a method and the method signature is given below:

```
int countryTotal (String countryName, int[][] medalTally);  
int medalTotal (String medalType, int[][] medalTally);  
int position (int[][] medalTally);
```

Devise a JAVA application to test the above methods.

CODE:

```
import java.util.Scanner;
```

```
public class q1 {
```

```
    public static int countryTotal (String countryName, int[][] medalTally, String[] countries)  
    {  
        int i=0, total=0;  
        for (String s : countries )  
        {  
            if(s.equals(countryName))  
                total=medalTally[i][0]+medalTally[i][1]+medalTally[i][2];  
            i++;  
        }  
        return total;  
    }  
}
```

```
    public static int medalTotal (String medalType, int[][] medalTally, String[] countries, int i)  
    {  
        int type=0;  
        if (medalType.equals("Gold"))  
            type=0;  
        else if (medalType.equals("Silver"))  
            type=1;  
        else if (medalType.equals("Bronze"))  
            type=2;  
    }  
}
```

```
    return medalTally[i][type];  
}
```

```
public static int position (int[][] medalTally, String[] countries, String countryName)  
{  
    int i=0, pos=0;  
    for (String s : countries )  
    {  
        if(s.equals(countryName))  
            pos=i+1;  
        i++;  
    }  
    return pos;  
}
```

```
public static void swap(int a, int b, int x, int[][] A)  
{  
    int temp;  
    temp=A[a][x];  
    A[a][x]=A[b][x];  
    A[b][x]=temp;  
}
```

```
public static void swap(int a, int b, String[] S)  
{  
    String temp;  
    temp=S[a];  
    S[a]=S[b];  
    S[b]=temp;  
}
```

```
public static void sortPosition(String[] S, int[][] A, int n)  
{  
    int i,j;  
    for(i=0;i<n-1;i++)  
    {  
        for(j=i+1;j<n;j++)  
        {  
            if(A[i][0]<A[j][0])  
            {  
                swap(i,j,0,A);  
                swap(i,j,1,A);  
                swap(i,j,2,A);  
                swap(i,j,S);  
            }  
            else if(A[i][0]==A[j][0] && A[i][1]<A[j][1])  
            {  
                swap(i,j,0,A);  
                swap(i,j,1,A);  
                swap(i,j,2,A);  
                swap(i,j,S);  
            }  
        }  
    }  
}
```

```
        swap(i,j,0,A);
        swap(i,j,1,A);
        swap(i,j,2,A);
        swap(i,j,S);
    }
    else if(A[i][0]==A[j][0] && A[i][1]==A[j][1] && A[i][2]<A[j][2])
    {
        swap(i,j,0,A);
        swap(i,j,1,A);
        swap(i,j,2,A);
        swap(i,j,S);
    }
}
}
}

public static void print(String[] names,int medals[][],int[] total, int n)
{
    int i;
    System.out.println(String.format("\n%s %s %s %s %s %s","Position"," Country "," Gold
"," Silver "," Bronze "," Total"));
    for(i=0;i<n;i++)
    {
        System.out.print(String.format("%4d",(i+1)));
        System.out.print(String.format("    %-5s",names[i]));
        System.out.println(String.format("%7d %7d %7d
%10d",medals[i][0],medals[i][1],medals[i][2],total[i]));
    }
}
```

```
public static void main(String args[]) {
    Scanner in = new Scanner(System.in);
    int n, i;
    System.out.print("Enter no: of countries: ");
    n=in.nextInt();

    String[] names = new String[n];
    int[][] medals = new int[n][3];
    for(i=0;i<n;i++)
    {
        System.out.print("\nEnter name of country-"+(i+1)+" : ");
        names[i]=in.next();
        System.out.print("Enter no:of gold medals : ");
        medals[i][0]=in.nextInt();
```

```
        System.out.print("Enter no:of silver medals : ");
        medals[i][1]=in.nextInt();
        System.out.print("Enter no:of bronze medals : ");
        medals[i][2]=in.nextInt();
    }
    sortPosition(names,medals,n);

    int[]total=new int[n];
    for(i=0;i<n;i++)
    total[i]=countryTotal(names[i], medals, names);
    print(names,medals,total,n);

    int ch, c;
    String s, type="";
    while(true)
    {
        System.out.println("\n1.Countrywise total  2.Medalwise total  3.Country position
4.Exit");
        System.out.print("Enter your choice: ");
        ch=in.nextInt();
        if(ch==1)
        {
            System.out.print("Enter country name: ");
            s=in.next();
            System.out.println("Total medals for "+s+" : "+countryTotal(s, medals, names));
        }
        else if(ch==2)
        {
            System.out.println("1.Gold  2.Silver  3.Bronze");
            System.out.print("Enter Medal Type name: ");
            c=in.nextInt();
            if(c==1)
                type="Gold";
            else if(c==2)
                type="Silver";
            else if(c==3)
                type="Bronze";
            System.out.println(String.format("\n%s %s"," Country   ",type));
            for(i=0;i<n;i++)
            {
                System.out.print(String.format(" %5s",names[i]));
                System.out.println(String.format(" %7d",medalTotal (type, medals, names,i)));
            }
        }
        if(ch==3)
        {
            System.out.print("Enter country name: ");
```

```
s=in.next();  
System.out.println("Position of "+s+" : "+position (medals, names, s));  
}  
else if(ch==4)  
break;  
}  
}  
}
```

OUTPUT:

```
C:\Gokul\VIT\SEM-4\CSE1007 - Java\Lab\Lab5>javac q1.java
```

```
C:\Gokul\VIT\SEM-4\CSE1007 - Java\Lab\Lab5>java q1
```

```
Enter no: of countries: 5
```

```
Enter name of country-1 : India
```

```
Enter no:of gold medals : 5
```

```
Enter no:of silver medals : 8
```

```
Enter no:of bronze medals : 4
```

```
Enter name of country-2 : USA
```

```
Enter no:of gold medals : 8
```

```
Enter no:of silver medals : 4
```

```
Enter no:of bronze medals : 5
```

```
Enter name of country-3 : UAE
```

```
Enter no:of gold medals : 5
```

```
Enter no:of silver medals : 7
```

```
Enter no:of bronze medals : 3
```

```
Enter name of country-4 : Italy
```

```
Enter no:of gold medals : 5
```

```
Enter no:of silver medals : 7
```

```
Enter no:of bronze medals : 4
```

```
Enter name of country-5 : UK
```

```
Enter no:of gold medals : 2
```

```
Enter no:of silver medals : 4
```

```
Enter no:of bronze medals : 3
```

Position	Country	Gold	Silver	Bronze	Total
1	USA	8	4	5	17
2	India	5	8	4	17
3	Italy	5	7	4	16
4	UAE	5	7	3	15
5	UK	2	4	3	9

```
1.Countrywise total  2.Medalwise total  3.Country position  4.Exit
Enter your choice: 1
Enter country name: India
Total medals for India : 17
```

```
1.Countrywise total  2.Medalwise total  3.Country position  4.Exit
Enter your choice: 2
1.Gold  2.Silver  3.Bronze
Enter Medal Type name: 2
```

Country	Silver
USA	4
India	8
Italy	7
UAE	7
UK	4

```
1.Countrywise total  2.Medalwise total  3.Country position  4.Exit
Enter your choice: 3
Enter country name: India
Position of India : 2
```

Question 2

The daily maximum temperatures recorded in 10 cities during the month of January. Write a Java application to read the table elements into a 2-dimensional array temperature and to find the city and day corresponding to highest temperature and lowest temperature.

CODE:

```
import java.util.Scanner;

public class q2 {

    public static int high (int[] temp, int n)
    {
        int i, max=temp[0];
        for(i=1;i<n;i++)
        {
            if(temp[i]>max)
                max=temp[i];
        }
        return max;
    }

    public static int low (int[] temp, int n)
    {
        int i, min=temp[0];
        for(i=1;i<n;i++)
        {
            if(temp[i]<min)
                min=temp[i];
        }
        return min;
    }

    public static void main(String args[]) {
        Scanner in = new Scanner(System.in);
        int n, i, j, d;

        System.out.print("Enter no: of cities: ");
        n=in.nextInt();

        System.out.print("Enter no: of testable days: ");
        d=in.nextInt();
        System.out.println();

        int[][] A = new int[n][d];
        for(i=0;i<n;i++)
        {
            System.out.print("Enter "+d+" days' temp of city-"+(i+1)+" ": );
```

```
        for(j=0;j<d;j++)
            A[i][j]=in.nextInt();
    }
    System.out.println();
    for(i=0;i<n;i++)

        System.out.println("City-"+(i+1)+" : High: "+high(A[i],d)+" Low: "+low(A[i],d));
    }
}
```

OUTPUT:

```
C:\Gokul\VIT\SEM-4\CSE1007 - Java\Lab\Lab5>javac q2.java
C:\Gokul\VIT\SEM-4\CSE1007 - Java\Lab\Lab5>java q2
Enter no: of cities: 5
Enter no: of testable days: 6

Enter 6 days' temp of city-1: 8 7 0 1 3 2
Enter 6 days' temp of city-2: 0 1 0 5 6 5
Enter 6 days' temp of city-3: 5 1 4 5 8 7
Enter 6 days' temp of city-4: 7 8 8 9 0 5
Enter 6 days' temp of city-5: 4 1 1 2 0 2

City-1: High: 8 Low: 0
City-2: High: 6 Low: 0
City-3: High: 8 Low: 1
City-4: High: 9 Low: 0
City-5: High: 4 Low: 0
```



```
        spoilt++;
    }
    else if(ch==2)
        showCount(count,n,spoilt);
    else if(ch==3)
        break;
    }
}
}
```

OUTPUT:

```
C:\Gokul\VIT\SEM-4\CSE1007 - Java\Lab\Lab5>javac q3.java
C:\Gokul\VIT\SEM-4\CSE1007 - Java\Lab\Lab5>java q3
Enter no: of candidates: 5

1.Cast Vote  2.Show Count  3.Exit
Enter your choice: 1
Enter your choice from (1 to 5): 6

1.Cast Vote  2.Show Count  3.Exit
Enter your choice: 1
Enter your choice from (1 to 5): 1

1.Cast Vote  2.Show Count  3.Exit
Enter your choice: 1
Enter your choice from (1 to 5): 4

1.Cast Vote  2.Show Count  3.Exit
Enter your choice: 1
Enter your choice from (1 to 5): 4

1.Cast Vote  2.Show Count  3.Exit
Enter your choice: 1
Enter your choice from (1 to 5): 8

1.Cast Vote  2.Show Count  3.Exit
Enter your choice: 1
Enter your choice from (1 to 5): 2

1.Cast Vote  2.Show Count  3.Exit
Enter your choice: 2
Candidate      Votes
Candidate-1      1
Candidate-2      1
Candidate-3      0
Candidate-4      2
Candidate-5      0
Spoilt           2
```