NAME	**:**	**NITHISH G**
REG NO	**:**	**19BCS0012**
COURSE	**:**	**DATA MINING**
CODE	**:**	**CSC3006**
DATE	**:**	**25/9/2021**

Write a code for Binning methods and execute it.

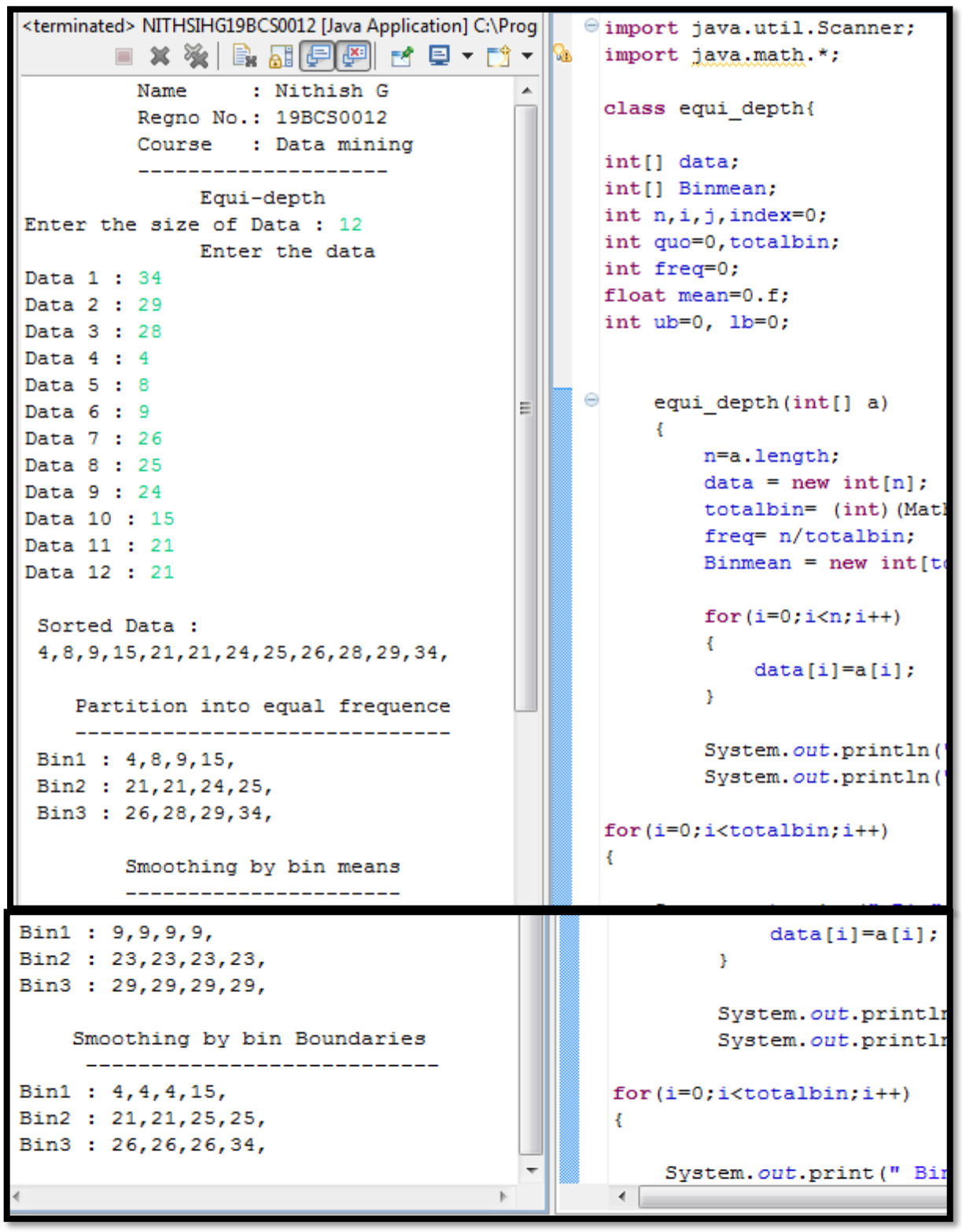
1.) Equi-depth

Source code:

```
import java.util.Scanner;
import java.math.*;

class equi_depth{

     int[] data;
     int[] Binmean;
     int n,i,j,index=0;
     int quo=0,totalbin;
     int freq=0;
     float mean=0.f;
     int ub=0, lb=0;


     equi_depth(int[] a)
     {
          n=a.length;
          data = new int[n];
          totalbin= (int)(Math.round(Math.sqrt(n)));
          freq= n/totalbin;
          Binmean = new int[totalbin];

          for(i=0;i<n;i++)
          {
               data[i]=a[i];
          }

          System.out.println("\n    Partition into equal frequence ");

          for(i=0;i<totalbin;i++)
          {

          System.out.print(" Bin"+(i+1)+" : ");
          for(j=0;j<freq;j++)
          {
               System.out.print(data[index]+",");
               mean+=(float)data[index];
               index++;

          }
          Binmean[i]=(int)Math.round(( mean /(float)freq));
          mean=0.f;
          System.out.println();
     }


     System.out.println("\n      Smoothing by bin means");
     for(i=0;i<totalbin;i++)
     {
          System.out.print(" Bin"+(i+1)+" : ");
          for(j=0;j<freq;j++)
          {
          System.out.print(Binmean[i]+",");
```

```
                }
                System.out.println();
            }

            ub=(1-freq);
            index=0;

            System.out.println("\n   Smoothing by bin Boundaries");
            for(i=0;i<totalbin;i++)
            {
                System.out.print(" Bin"+(i+1)+" : ");
                for(j=0;j<freq;j++)
                {
                 System.out.print( (( Math.abs(data[i*freq]-data[index]) <
Math.abs(data[((i+1)*freq)-1]-data[index]) )? data[i*freq]:data[(i+1)*freq -1]) + ",");
                 index++;
                }
                System.out.println();
            }

      }
}

      public class NITHSIHG19BCS0012  {

            public static void main(String[] args) {

                System.out.print("\t Name      : Nithish G \n\t Regno No.: 19BCS0012\n");
                System.out.println("\t Course    : Data mining");
                System.out.print("\t --------------------\n");
                System.out.println("\t      Equi-depth");

                Scanner read = new Scanner(System.in);
                System.out.print("Enter the size of Data : ");
                int n= read.nextInt();
                int[] data = new int[n];
                System.out.println("Enter the data");

                for(int i=0; i<n; i++)
                {
                    System.out.print("Data "+(i+1)+" : ");
                    data[i]=read.nextInt();
                }
                int temp=0;
                 for (int i = 0; i < data.length; i++) {
                        for (int j = i+1; j < data.length; j++) {
                           if(data[i] > data[j]) {
                               temp = data[i];
                               data[i] = data[j];
                               data[j] = temp;
                           }
                        }
                    }
                 System.out.print("\n Sorted Data : ");
                 for(int i=0; i<n; i++)
                     {
                          System.out.print(data[i]+",");

                     }
                equi_depth obj = new equi_depth(data);

      }

}
```

Output



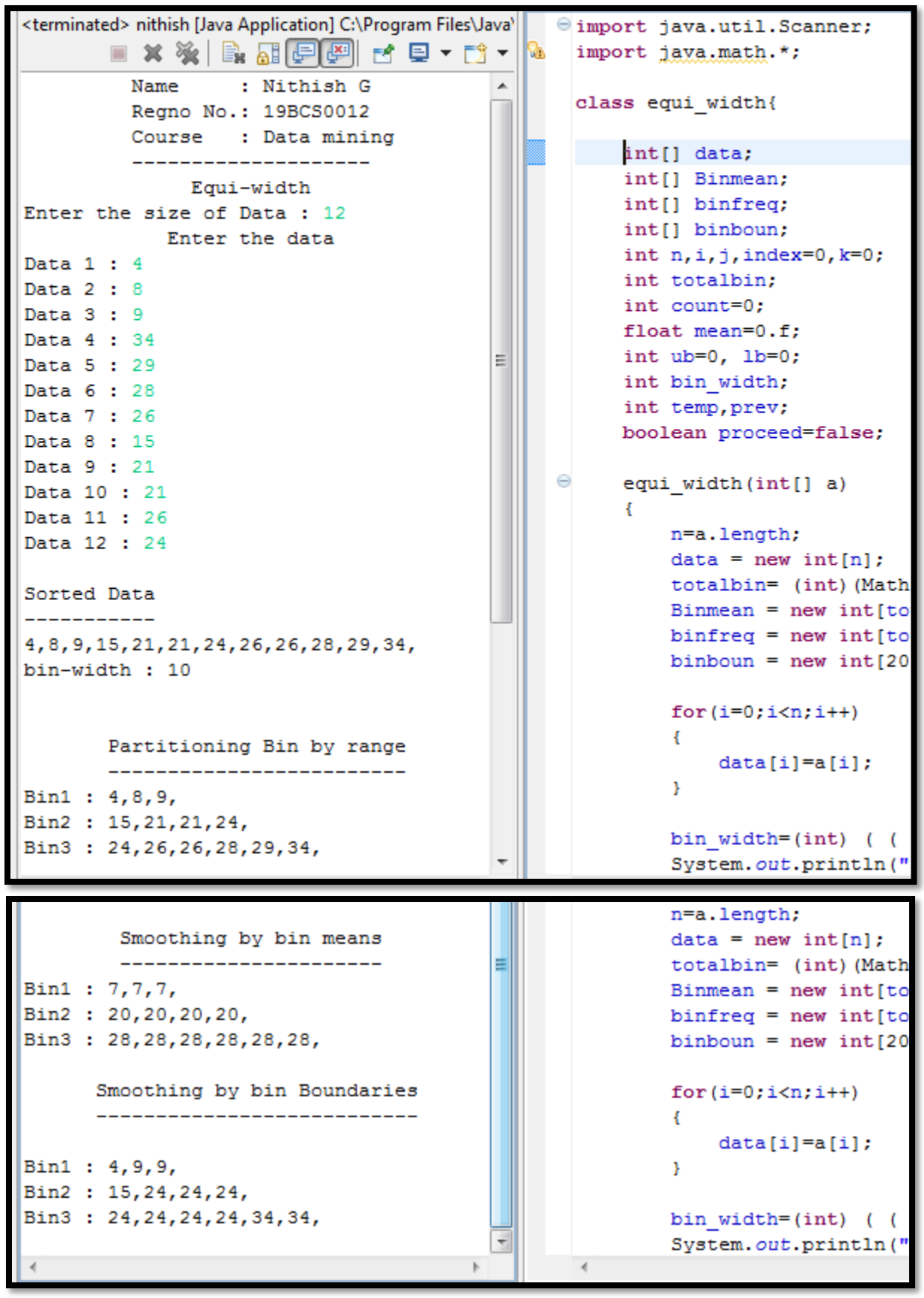
2.) Equi-width

```
import java.util.Scanner;
import java.math.*;

class equi_width{

      int[] data;
      int[] Binmean;
      int[] binfreq;
      int[] binboun;
      int n,i,j,index=0,k=0;
      int totalbin;
      int count=0;
      float mean=0.f;
      int ub=0, lb=0;
      int bin_width;
      int temp,prev;
      boolean proceed=false;

      equi_width(int[] a)
      {
            n=a.length;
            data = new int[n];
            totalbin= (int)(Math.round(Math.sqrt(n)));
            Binmean = new int[totalbin];
```

```
binfreq = new int[totalbin];
binboun = new int[20];

for(i=0;i<n;i++)
{
     data[i]=a[i];
}

bin_width=(int) ( ( (float)a[n-1] - (float)a[0] )/(float)totalbin) ;
System.out.println("\nbin-width : "+bin_width);

lb=a[0];
ub=lb+bin_width;
index=k=0;

System.out.println("\nPartition frequence ");


for(i=0;i<totalbin;i++)
{
     System.out.print("Bin"+(i+1)+" : ");
     for(j=0;j<n;j++)
     {

          if(data[index]<= ub )
          {
          System.out.print(data[index]+",");

          binboun[k] = data[index];
          k++;

          mean+=(float)data[index];
          count++;
          prev=index;
          index++;
          if(index==n)
          {
               break;
          }
          }

}
  temp=lb;
  lb=ub;
  ub=lb+bin_width;
  if(data[prev]==lb){
  index=prev; }
  Binmean[i]=(int)Math.round(( mean /(float)count));
  binfreq[i]=count;
  mean=0.f;
  count=0;
  System.out.println();
  proceed=false;
}


System.out.println("\nSmoothing by bin means");
for(i=0;i<totalbin;i++)
{
     System.out.print("Bin"+(i+1)+" : ");
     for(j=0;j<binfreq[i];j++)
     {
     System.out.print(Binmean[i]+",");
     }
     System.out.println();
}



System.out.println("\nSmoothing by bin Boundaries");
```

```
        System.out.println();

        ub=lb=index=0;
          for(i=0;i<totalbin;i++)
           {
               ub=lb+binfreq[i]-1;
             System.out.print("Bin"+(i+1)+" : ");

             for(j=0;j<binfreq[i];j++)
             {

int n=Math.abs((binboun[lb])-(binboun[index]));
int m =Math.abs((binboun[ub]) - (binboun[index]));

if(n<m)
{
     System.out.print(binboun[lb]+",");
}
else
     System.out.print(binboun[ub] +",");

index++;
     }

             lb=ub+1;
             System.out.println();
          }

        }

}

     public class nithish  {

          public static void main(String[] args) {

               System.out.print("\t Name     : Nithish G \n\t Regno No.: 19BCS0012\n");
               System.out.println("\t Course   : Data mining");
               System.out.print("\t --------------------\n");
               System.out.println("\t      Equi-width");
               int n;
               int[] data ;
               Scanner read = new Scanner(System.in);

               System.out.print("Enter the size of Data : ");
               n= read.nextInt();
               data = new int[n];
               System.out.println("Enter the data");

               for(int i=0; i<n; i++)
               {
                    System.out.print("Data "+(i+1)+" : ");
                    data[i]=read.nextInt();
               }
               int temp=0;
                for (int i = 0; i < data.length; i++) {
                      for (int j = i+1; j < data.length; j++) {
                         if(data[i] > data[j]) {
                             temp = data[i];
                             data[i] = data[j];
                             data[j] = temp;
                         }
                      }
                  }
                System.out.println("\nSorted Data ");
                System.out.println("-----------");
                for(int i=0; i<n; i++)
                    {
                         System.out.print(data[i]+",");

                    }

               equi_width object = new equi_width(data);     }

}
```

Output



```
<terminated> nithish [Java Application] C:\Program Files\Java\
          Name      : Nithish G
          Regno No.: 19BCS0012
          Course    : Data mining
          --------------------
               Equi-width
Enter the size of Data : 12
             Enter the data
Data 1 : 4
Data 2 : 8
Data 3 : 9
Data 4 : 34
Data 5 : 29
Data 6 : 28
Data 7 : 26
Data 8 : 15
Data 9 : 21
Data 10 : 21
Data 11 : 26
Data 12 : 24

Sorted Data
-----------
4,8,9,15,21,21,24,26,26,28,29,34,
bin-width : 10


       Partitioning Bin by range
       -------------------------
Bin1 : 4,8,9,
Bin2 : 15,21,21,24,
Bin3 : 24,26,26,28,29,34,


        Smoothing by bin means
        ----------------------
Bin1 : 7,7,7,
Bin2 : 20,20,20,20,
Bin3 : 28,28,28,28,28,28,

      Smoothing by bin Boundaries
      ---------------------------

Bin1 : 4,9,9,
Bin2 : 15,24,24,24,
Bin3 : 24,24,24,24,34,34,
```

```
import java.util.Scanner;
import java.math.*;

class equi_width{

    int[] data;
    int[] Binmean;
    int[] binfreq;
    int[] binboun;
    int n,i,j,index=0,k=0;
    int totalbin;
    int count=0;
    float mean=0.f;
    int ub=0, lb=0;
    int bin_width;
    int temp,prev;
    boolean proceed=false;

    equi_width(int[] a)
    {
        n=a.length;
        data = new int[n];
        totalbin= (int)(Math
        Binmean = new int[to
        binfreq = new int[to
        binboun = new int[20

        for(i=0;i<n;i++)
        {
            data[i]=a[i];
        }

        bin_width=(int) ( (
        System.out.println("
        n=a.length;
        data = new int[n];
        totalbin= (int)(Math
        Binmean = new int[to
        binfreq = new int[to
        binboun = new int[20

        for(i=0;i<n;i++)
        {
            data[i]=a[i];
        }

        bin_width=(int) ( (
        System.out.println("
```

(no internet source used)

THANK YOU MAM!