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**CLASS :- T.Y.BTECH CSE BATCH :- T2**

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**Title** : Develop a mathematical package for Statistical operations like Mean, Median, Average, Standard deviation. Create a sub package in the math package -convert. In “convert” package provide classes to convert decimal to octal, binary, hex and vice-versa. Develop application program to use this package, and build executable jar file of it.

**// Program To Calculate Mean**

package Mathematical;

public class Mean {

    public double mean = 0;

    public void CalculateMean(int Arr[], int n) {

        int sum = 0;

        System.out.println("The Given Array is :");

        for (int i = 0; i < n; i++) {

            System.out.println("\t" + Arr[i]);

        }

        for (int i = 0; i < n; i++) {

            sum += Arr[i];

        }

        mean = (double) sum / (double) n;

        System.out.println("The mean of array is : " + mean);

    }

}

**// Program to calculate Variance**

package Mathematical;

public class Variance {

    double Variance = 0;

    double Mean = 0;

    public void CalculateVariance(int Arr[], int n) {

        double SqDiff = 0;

        for (int i = 0; i < n; i++) {

            SqDiff += (Arr[i] - Mean) \* (Arr[i] - Mean);

        }

        Variance = (double) SqDiff / n;

        System.out.println("The Variance of Array is : " + Variance);

    }

}

**// Binary To Decimal**

package Mathematical.convert;

public class BinaryToDecimal {

    public void CalBinaryToDecimal(int Binary) {

        int n = 0, Decimal = 0, m;

        m = Binary;

        while (true) {

            if (Binary == 0) {

                break;

            } else {

                int temp = Binary % 10;

                Decimal += temp \* Math.pow(2, n);

                Binary = Binary / 10;

                n++;

            }

        }

        System.out.println(" Binary To Decimal of " + m + " is " + Decimal);

    }

}

**// Decimal to Hexadecimal**

package Mathematical.convert;

public class DecimalToHex {

 public void CalDecimalToHex(int Decimal){

 int rem,m;

 String hex="";

 char hexchars[]={'0','1','2','3','4','5','6','7','8','A','B','C','D','E','F'};

 m=Decimal;

 while(Decimal>0)

 {

 rem=Decimal%16;

 hex=hexchars[rem]+hex;

 Decimal=Decimal/16;

 }

 System.out.println(" Decimal To Hexadecimal of "+m+" is "+hex);

 }

}

**// main program**

**//imported packages**

import Mathematical.Variance;

import java.util.Scanner;

import Mathematical.Mean;

import Mathematical.convert.BinaryToDecimal;

import Mathematical.convert.DecimalToHex;

**// Main Program**

public class TestPack {

    public static void main(String[] args) {

        int Arr[] = new int[50];

        int n;

        Scanner Sc = new Scanner(System.in);

        System.out.println("Enter the Size of Array :");

        n = Sc.nextInt();

        System.out.println("Enter " + n + "Array Elements :");

        for (int i = 0; i < n; i++) {

            Arr[i] = Sc.nextInt();

        }

        // int Arr[]={20,45,65,43,85,99};

        // int n=6;

        Mean M = new Mean();

        M.CalculateMean(Arr, n);   //mean function call

        Variance V = new Variance();

        V.CalculateVariance(Arr, n);    //variancefunction call

        BinaryToDecimal BTD = new BinaryToDecimal();

        BTD.CalBinaryToDecimal(10101010);   //binary to decimal function call

        DecimalToHex DTH = new DecimalToHex();

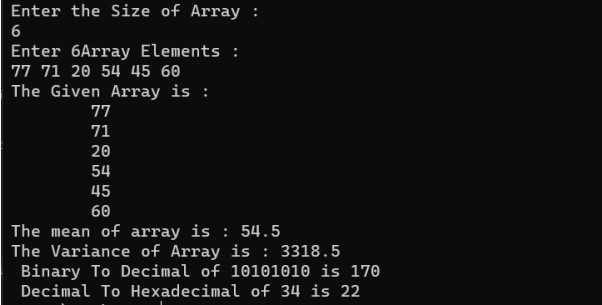
        DTH.CalDecimalToHex(34);    //decimal to hexadecimal function call

    }

}

**OUTPUT:-**

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