|  |  |
| --- | --- |
| **Name** | **Virinchi Sadashiv Shettigar** |
| **UID no.** | **2021300118** |
| **Experiment No.** | 4 |

|  |  |
| --- | --- |
| **AIM:** | **Program on 1D Arrays,2D Arrays and Object Arrays in Java.** |
| **Program 1** | |
| **PROBLEM STATEMENT:** | **Write a program called GradesStatistics, which reads in n grades (of int between 0 and 100, inclusive) and displays the average, minimum, maximum, median and standard deviation. Display the floating-point values upto 2 decimal places.  Your output shall look like:**  **Enter the number of students : 4**  **Enter the grade for students 1 : 50**  **Enter the grade for students 2 : 51**  **Enter the grade for students 3 : 56**  **Enter the grade for students 4 : 53**  **{50,51,56,53}**  **The average is 52.50**  **The Minimum is 50**  **The Maximum is 56**  **The Median is : 52.00**  **Note: 1) The std. deviation is 2.29(formula can be referred from net)** |
| **PROGRAM:** | import java.util.\*;  import java.lang.Math;  class gradesStatistics{  double med,std=0;  double avg,min,max;  int temp;  void input(){  Scanner scan= new Scanner(System.in);  System.out.print("No. of students: ");  int n=scan.nextInt();  int sum=0;  double grade[]= new double[n];  for(int i=0;i<n;i++){  System.out.printf("Enter the grades of student %d: ",i+1);  grade[i]=scan.nextDouble();  }  display(n,grade);  }  void display(int n, double [] grade){  Arrays.sort(grade);  for(int i=0;i<n;i++){  avg+= grade[i];  }  avg=avg/n;  for(int i=0;i<n;i++){  std+=(grade[i]-avg)\*(grade[i]-avg);  }  std=std/n;  std=Math.sqrt(std);  min=grade[0];  max=grade[n-1];  if(med%2!=0){  med=grade[(n+1)/2];  }  else{  med=(grade[n/2]+grade[(n/2)+1])/2;  }  System.out.printf("Average = %.2f\n", avg);  System.out.printf("The Minimum no.= %.0f\n",grade[0]);  System.out.printf("The Maximum no. = %.0f\n",grade[n-1]);  System.out.printf("The Median = %.2f\n" ,med);  System.out.printf("Standard Deviation = %.2f\n",std);  }  public static void main(String[] args){  Scanner scan= new Scanner(System.in);  gradesStatistics ob= new gradesStatistics();  ob.input();  }  } |
| **RESULT:** | |
| **Program 2** | |
| **PROBLEM STATEMENT:** | **Book Ratings : Write a program to find the most popular book.**  **Create a 2D array named bookRating which should hold ratings( 1 to 5) of a few books. You may consider the first constant reader's rating ( or Scan  and next time as - how many readers have given the rating ?) Collect ratings of four such books. a)Find the average rating of each book. b) Display the most popular book. ie a Book with highest average rating.** |
| **PROGRAM:** | import java.util.\*;  class rating {  Scanner sc = new Scanner(System.in);  void input() {  System.out.print("Enter the number of readers: ");  int n = sc.nextInt();  double[][] books = new double[4][n];  for (int i = 0; i < 4; i++) {  System.out.printf("Enter %d ratings for book %d: ", n, i + 1);  for (int j = 0; j < n; j++) {  books[i][j] = sc.nextDouble();  }  }  average(n, books);  }  void average(int n, double[][] book) {  double[] avg = new double[4];  double popular = 0;  int c = 0;  for (int i = 0; i < 4; i++) {  for (int j = 0; j < n; j++) {  avg[i] += book[i][j];  }  avg[i] = avg[i] / n;  if (avg[i] > popular) {  popular = avg[i];  c = i+1;  }  System.out.printf("Book %d Rating: %.2f \n", i + 1, avg[i]);  }  System.out.printf("\nThe Most popular Book:\nBook %d with Rating: %.2f ", c, popular);  }  public static void main(String[] args) {  Scanner sc = new Scanner(System.in);  rating book = new rating();  book.input();  }  } |
| **RESULT:** | |
| **Program 3** | |
| **PROBLEM STATEMENT:** | **Write a program in Java to maintain the information of Movies which includes the information of name of movie , type of movie( action , thriller , comedy ,drama ) , Hero name , Heroine , budget in Rs. .**  **a) To accept the information of movies from user and sort them according to the budget of the film.**  **b) To print all movies whose name start with S/A**  **c) Print all movie with name largest in all movies** |
| **PROGRAM:** | import java.util.\*;  public class movie {  public static void main(String[] args) {  Scanner sc = new Scanner(System.in);  System.out.print("Enter the number of movies: ");  int n = sc.nextInt();  sc.nextLine();  String[] movie = new String[n];  String[] type = new String[n];  String[] hero = new String[n];  String[] heroine = new String[n];  int[] budget = new int[n];  int[] copy = new int[n];  int[] len = new int[n];  int i = 0, j = 0;  for (i = 0; i < n; i++) {  System.out.print("Enter the name of the movie: ");  movie[i] = sc.nextLine();  System.out.print("Enter the type of the movie: ");  type[i] = sc.nextLine();  System.out.print("Enter the hero of the movie: ");  hero[i] = sc.nextLine();  System.out.print("Enter the heroine of the movie: ");  heroine[i] = sc.nextLine();  System.out.print("Enter the budget of the movie: ");  budget[i] = sc.nextInt();  sc.nextLine();  copy[i] = budget[i];  len[i] = movie[i].length();  System.out.println(" ");  }  Arrays.sort(copy);  Arrays.sort(len);  for (i = 0; i < n; i++) {  for (j = 0; j < n; j++) {  if (copy[i] == budget[j])  System.out.printf("Name: %s\nType: %s\nHero: %s\nHeroine: %s\nBudget: %d\n\n", movie[j], type[j],  hero[j], heroine[j], budget[j]);  }  }  System.out.println("Movies which start with A or S:");  for (i = 0; i < n; i++) {  if (movie[i].startsWith("S") || movie[i].startsWith("A"))  System.out.printf("Name: %s\nType: %s\nHero: %s\nHeroine: %s\nBudget: %d\n\n", movie[i], type[i],  hero[i], heroine[i], budget[i]);  }  System.out.println("Movie whose name is the longest:");  for (i = 0; i < n; i++) {  if (len[n - 1] == movie[i].length())  System.out.printf("Name: %s\nType: %s\nHero: %s\nHeroine: %s\nBudget: %d\n\n", movie[i], type[i],  hero[i], heroine[i], budget[i]);  }  }  } |
| **RESULT:** | |
| **CONCLUSION:** | In this experiment, we learned how to declare a 1D array in java and also how to declare an object of an array. |