Assignment 3

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Source Code:

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//

// Solution to Assignment 3

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**import** java.io.BufferedReader;

**import** java.io.File;

**import** java.io.FileReader;

**import** java.io.IOException;

**import** java.text.DecimalFormat;

**import** javafx.application.Application;

**import** javafx.geometry.Pos;

**import** javafx.geometry.Insets;

**import** javafx.scene.Scene;

**import** javafx.scene.layout.HBox;

**import** javafx.scene.layout.StackPane;

**import** javafx.scene.layout.VBox;

**import** javafx.stage.Stage;

**import** javafx.application.Application;

**import** javafx.scene.Scene;

**import** javafx.scene.chart.BarChart;

**import** javafx.scene.chart.CategoryAxis;

**import** javafx.scene.chart.NumberAxis;

**import** javafx.scene.chart.XYChart;

**import** javafx.stage.Stage;

**public** **class** QuizGrade **extends** Application {

//x axis string

**final** **static** String ***A*** = "A's 18-20";

**final** **static** String ***B*** = "B's 16-17";

**final** **static** String ***C*** = "C's 14-15";

**final** **static** String ***D*** = "D's 12-13";

**final** **static** String ***E*** = "E's 0-11";

**public** **void** start(Stage primarystage) {

// create bar chart

primarystage.setTitle("Grades");

**final** CategoryAxis xAxis = **new** CategoryAxis();

**final** NumberAxis yAxis = **new** NumberAxis();

**final** BarChart<String,Number> bc =

**new** BarChart<String,Number>(xAxis,yAxis);

bc.setTitle("Bar Graph of Student Grades");

xAxis.setLabel("Score Range");

yAxis.setLabel("Number of Students");

XYChart.Series series1 = **new** XYChart.Series();

series1.setName(**null**);

series1.getData().add(**new** XYChart.Data(***A***, 51));

series1.getData().add(**new** XYChart.Data(***B***, 23));

series1.getData().add(**new** XYChart.Data(***C***, 15));

series1.getData().add(**new** XYChart.Data(***D***, 3));

series1.getData().add(**new** XYChart.Data(***E***, 8));

Scene scene = **new** Scene(bc,600,600);

bc.getData().addAll(series1);

primarystage.setScene(scene);

primarystage.show();

}

**public** **static** **void** main (String[] args) **throws** IOException

{

//read files

File file = **new** File ("C:\\SRing 2018\\MIS 301\\Assignment 3\\questionanswers.txt");

File file1 = **new** File ("C:\\SRing 2018\\MIS 301\\Assignment 3\\studentanswers.txt");

BufferedReader br = **new** BufferedReader(**new** FileReader(file));

BufferedReader br1 = **new** BufferedReader(**new** FileReader(file1));

**boolean** [] Answers = **new** **boolean** [20];//array for correct answers

**final** **int** QUESTION = 20;

**int** i = 0;

**for** (i = 0; i<QUESTION;i++)

{

Answers [i]= Boolean.*valueOf*(br.readLine());

}

**boolean** [][] Questionanswers = **new** **boolean** [100][20];//array for 100 students'20 questions

**final** **int** STUDENT = 100;

**final** **int** ANSWER = 20;

**int** x = 0;

**int** y = 0;

**for** (x = 0; x<STUDENT;x++)

{**for** (y = 0;y<ANSWER;y++)

{Questionanswers [x][y] = Boolean.*valueOf*(br1.readLine());

}

}

/\* System.out.println("The Matrix of Answers");

System.out.println();

for (x = 0; x<STUDENT;x++)

{for (y = 0;y<ANSWER;y++)

System.out.print(Questionanswers[x][y]+" ");

System.out.println();

}\*/

**int** Score []=**new** **int** [100]; //array for the score

**int** score= 0;

**for** (x = 0; x<STUDENT; x++)

{

**for** (y = 0;y<ANSWER;y++)

{

**if** (Questionanswers[x][y]==Answers[y])

score = score+1;

}

Score [x]= score;

score = 0;

}

**int** Count []= **new** **int**[20];//array for number of students who answer the question right

**int** count = 0;

**for** (y = 0; y<ANSWER; y++)

{

**for** (x = 0;x<STUDENT;x++)

{

**if** (Questionanswers[x][y]==Answers[y])

count = count+1;

}

Count [y]= count;

count = 0;

}

System.***out***.println("STUDENT SCORES");

System.***out***.println();

**final** **int** PER\_LINE = 4;

**int** line = 0;

**int** line2 = 0;

**for** (x = 0; x<STUDENT;x++)//print the score for each student

{

System.***out***.print("Student #"+(x+1)+": ");

System.***out***.print(Score[x]+"\t\t");

line++;

**if** (line%PER\_LINE ==0)

System.***out***.println();

}

System.***out***.println();

System.***out***.println("NUMBER OF STUDENTS WHO ANSWERED QUESTION CORRECTLY");

System.***out***.println();

**for** (y = 0; y<ANSWER; y++)//print the number of students who answer the question right

{

System.***out***.print("Question #"+(y+1)+": ");

System.***out***.print(Count[y]+"\t\t");

line2++;

**if** (line2 % PER\_LINE == 0)

System.***out***.println();

}

**double** sumscore = 0;//calculate the average score

**for** (x=0;x<STUDENT;x++)

{

sumscore +=Score[x];

}

System.***out***.println();

**double** average = sumscore/STUDENT;

System.***out***.println("THE AVERAGE GRADE IS: "+ average);

DecimalFormat fmt = **new** DecimalFormat ("0.###");//calculate the standard deviation

**double** standardDeviation = 0;

**for** (**int** num: Score)

{

standardDeviation += Math.*pow*(num - average, 2);

}

standardDeviation = Math.*sqrt*(standardDeviation/STUDENT);

System.***out***.println("THE STANDARD DEVIATION OF STUDENT GRADES IS: "+ fmt.format(standardDeviation));

**int** As = 0;//calculate the number of students in each score range

**int** Bs = 0;

**int** Cs = 0;

**int** Ds = 0;

**int** Es = 0;

**for** (x=0; x<STUDENT;x++)

{

**if** (Score[x]>0)

{

**if** (Score [x]>11)

{

**if**(Score[x]>13)

{

**if** (Score[x]>15)

{

**if** (Score[x]>17)

As++;

**else**

Bs++;

}

**else**

Cs++;

}

**else**

Ds++;

}

**else**

Es++;

}

}

*launch*(args);

}

}

Screen Shot:



















