**Computer Science 111**

Computer Science with Java I Fall, 2016

Lab Report – Week 3 - Branching programing assignment

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**Assignment Analysis and Design**

The problem that this program addresses is of sorting students in to different categories based upon their GPA score. The input required by the user was the students name and their GPA. The output should be one of 6 responses that will display on the screen. One of the following messages will display depending on GPA input received: the student is Suma Cum Laude, the student is Magna Cum Lude, the student is Cum Laude, the student is eligible for graduation, the student is not eligible for graduation, value entered is invalid. I declare all the variables at the start of my main method. GPA\_max and GPA\_min are declared as Finals to ensure that the number entered by the user falls within the correct range. Included is also the JOptionPane class of objects to enhance user interface. Each window is labeled with the corresponding information being asked for or displayed.

**Below is a copy of my pseudocode that I used originally as my guidelines.**

//Declare Variables

//student string name

//student double gpa

//final double maxgpa = 4

//final double mingpa = 0

//Say hello to student and ask for name

//ask for students gpa

//calculate what students graduation status is, Boolean

//if gpa >= 3.8 then statement for Summa cum laude

// else

//if gpa >= 3.6 then statement for Magna cum laude

//else

//if gpa >=3.2 then statement for cum laude

//else

//if gpa >= 2.0then statement for between 2.0 and 3.2 students

//else

//if gpa < 2 then statement for not eligible to graduate students

//else

// if gpa > 4 or gpa < 0 then statement for invalid gpa

//end main



**Assignment Code**

/\*Gpa calculator

\*Console I/O dialog for sorting Student GPA's

\*for CSCI 111

\*last edited september 26th 6:39pm

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\*/

package gpacalculator;

import javax.swing.JOptionPane;

public class GpaCalculator {

/\*\*

\* Method determines the name and Graduation Status of Student

\* @param args the command line arguments

\*/

public static void main(String[] args) {

//Declare Variables

String studentName;//student string name

double Gpa ;//student double gpa

String GpaString;// Gpa as string data type

final double MAX\_GPA = 4;//final double maxgpa = 4

final double MIN\_GPA = 0;//final double mingpa = 0

//Say hello to student and ask for name

studentName = JOptionPane.showInputDialog(null,"Hello welcome to the "

+ "student GPA calculator, please enter your name "

+ ": ","Name",JOptionPane.QUESTION\_MESSAGE);

//ask for students gpa

GpaString = JOptionPane.showInputDialog(null,"What is the GPA for "

+ studentName + " : ","GPA",JOptionPane.QUESTION\_MESSAGE);

Gpa = Double.parseDouble(GpaString);// this changes the String in to a double data type

//calculate what students graduation status is, boolean

if (Gpa > MAX\_GPA || Gpa < MIN\_GPA) {

JOptionPane.showMessageDialog(null,"The number you entered is not "

+ "a valid GPA "

,"Graduation Status",

JOptionPane.ERROR\_MESSAGE);// if gpa > 4 or gpa < 0 then statement for invalid gpa

} else if (Gpa >= 3.8) {

JOptionPane.showMessageDialog(null,"The GPA for " + studentName +

" is " + Gpa + ". " + studentName + " will graduate Summa Cum Laude "

,"Graduation Status",

JOptionPane.PLAIN\_MESSAGE);

}//if gpa >= 3.8 then statement for Summa cum laude

else if (Gpa >= 3.6) {

JOptionPane.showMessageDialog(null,"The GPA for " + studentName +

" is " + Gpa + ". " + studentName + " will graduate Magna Cum Laude "

,"Graduation Status",

JOptionPane.PLAIN\_MESSAGE);

}//if gpa >= 3.6 then statement for Magna cum laude

else if (Gpa >= 3.2) {

JOptionPane.showMessageDialog(null,"The GPA for " + studentName +

" is " + Gpa + ". " + studentName + " will graduate Cum Laude "

,"Graduation Status",

JOptionPane.PLAIN\_MESSAGE);

} //if gpa >=3.2 then statement for cum laude

else if (Gpa >= 2.0) {

JOptionPane.showMessageDialog(null,"The GPA for " + studentName +

" is " + Gpa + ". " + studentName + " will be elligible to graduate "

,"Graduation Status",

JOptionPane.PLAIN\_MESSAGE);

}//if gpa >= 2.0then statement for between 2.0 and 3.2 students

else if (Gpa < 2.0) {

JOptionPane.showMessageDialog(null,"The GPA for " + studentName +

" is " + Gpa + ". " + studentName + " will not be elligible to graduate "

,"Graduation Status",

JOptionPane.WARNING\_MESSAGE);

}//if gpa < 2 then statement for not elligible to graduate students

}// end main

}



**Assignment Testing**

Running this program and entering values that fell between 0 and 4 gives us the desired results. That is that the students are sorted in to the correct category and the message is displayed to the user. After entering numbers that were more or less than 0 or 4 we also get the correct response, that the user has entered an invalid value. In testing I found that entering in a value that is non numerical for the GPA will crash the program.

**Assignment Evaluation**

I learned about how to create different output based on different inputs. Using if else statements seemed like the best way to accomplish the goal of the program. The logic seemed pretty straight forward and my project did not change to much from the initial pseudocode that I used as a guide. Although I did allow my friend to use the program and they immediately broke it by entering letters instead of numbers in the GPA input box. I was not able to resolve that issue using the information in the first three chapters, I realize that this probably falls beyond the scope of this assignment. If it was supposed to be included in the code, then I recommend including in the initial assignment a bit about handling unexpected input.