Lab 3 – Selection / Conditions

(and input validation)

**New Concept -- Input Validation:**

An important rule when programming --> **“Never trust the user!”**

You want to ensure that the data you are receiving is a valid type before attempting to use it.

How can we do this? You may have seen that the Scanner objects have methods like next(), nextInt(), nextDouble(), etc. But you still get an error if the user enters the wrong type. Scanner ALSO has methods like .hasNext(), .hasNextInt() , and .hasNextDouble() that will return true if the value entered into the scanner IS of that type. Using the hastNext methods does not use the word in the scanner so first check to see if the scanner hasNext, then assign the value to your variable.

For this program, and all future programs, ensure that you do input validation (all entries by a user are the correct). Here is one page (but feel free to find one you like better) that lists the scanner methods and has some examples of their use: <https://www.javatpoint.com/Scanner-class>

If your programs get wrong input from the user, print an error message to the user and end the program. To end the program prematurely, you can use the line:

System.exit(0);

Example:

if ( console.hasNextInt() == false ){

System.out.println("That is not an INT! bad user, bad!");

System.exit(0);

}

#### Lab instructions

Write a program that has the user input the number of credits a student takes each semester, and how many semesters they have taken courses. The user should also enter the GPA of the student. The program will then print out whether the student is a freshman, sophomore, junior, or senior, and if they are going to school full-time, three quarter time, half-time, or less than half time, and if they are in good standing.

**As an additional constraint on this lab, even though it is not optimal, you MUST use a switch statement to determine the full-time to less than half-time status.**

To encourage you to be resourceful, I ask that you look up the number of credits needed to be a sophomore, junior, or senior. You will be graded on these being correct as well.

Here are the numbers for full-time through less than half-time.

|  |  |
| --- | --- |
| Full-time | 12 or more credits |
| Three-quarter time | 9 to 11 credit |
| Half-time | 6 to 8 credits |
| Less than half-time | 1 to 5 credits |

Here are the GPAs required for being in good standing based on the number of credits the student has. If the student has less than the GPA required for the number of units they have, they are not in good standing, otherwise they are considered in good standing.

|  |  |
| --- | --- |
| GPA 1.50+ | 1-29.5 credits |
| GPA 1.75+ | 30-59.5 credits |
| GPA 2.0+ | 60+ credits |