**Making Decisions**

Reference: Gaddis 3.2-3.4

Topics: if-else statements, flow charts, nested if statements

**What if we want to have 2 different options?**

* Output “It’s too hot” if temperature is over 70
* Output “It’s OK” if temperature is less than 70

/\* code from last lecture notes goes here \*/

//calculate average

double average = (temp1+temp2+temp3)/3.0;

//output results

System.out.println(“The temperature in the room is on average “ + average + “ degrees”);

if(average

**A different problem**

Modify the below code to increase the variable “count\_by5” by one if the grade is divisible by 5. Otherwise increase variable “not\_by5”.

short count\_by5 = 0;

short not\_by5 = 0;

byte grade = myScan.nextByte();

if( )

**Testing values**

|  |  |  |
| --- | --- | --- |
| **Control Path** | **Input** | **Output** |
|  |  | Count\_by5 = ; not\_by5 = |
|  |  | Count\_by5 = ; not\_by5 = |
|  |  | Count\_by5 = ; not\_by5 = |
|  |  | Count\_by5 = ; not\_by5 = |

**More Complicated Problem**

Example: Driving fines are assessed on the basis of points already on your record. Tell the user what their fine is based on their number of points.



Algorithm:

Code - nested if-statements:

if(points == 0)

fine = 50;

else

if(points==1)

fine =

else

if(points==2)

fine =

else

Can we make this code better?

\mathrm{BMI} = \frac{\mbox{mass} \ \mathrm{(lb)} \times 703}{\left(\mbox{height} (\mathrm{in})\right)^2}Let’s Practice!

* BMI stands for Body Mass Index
* This is a numerical value of your weight in relation to your height. BMIs are good indicators of healthy or unhealthy weights for adult men and women, regardless of body frame size.
  + A BMI of 30 or higher indicates obesity.
  + A BMI greater than 25 but less than 30 is considered overweight.
  + A BMI of less than 25 but greater than 18.5 indicates a healthy weight.
  + A BMI of less than 18.5 is considered underweight.

1. Complete the **BMI** code that asks the user for their weight and height and computes the BMI, then prints a message telling the user his/her category (one of the 4 mentioned above). You need to complete the calculation and then the if-else statements.
2. If you finish #1, draw the corresponding flowchart (for the decision making part of your program) and number each control path. Then find values of weight and height that would “exercise” each control path.