

Lab - If Statement

Tutorial Lab 1: If Statements

The if statement allows for your program to make a decision about what it should do. It asks a simple question, is this condition true? If yes, then the computer will execute certain commands.

```
int x = 5;

if (x < 10) {
    System.out.println("Less than 10");
}
```

Code Visualizer

An if statement is comprised of the keyword `if`, followed by a boolean expression surrounded by parentheses. Any code that should run if the boolean expression is true is surrounded by curly braces `{}`. It is best practice to indent this code, but it does not effect how the code runs.

If the boolean expression is false, the code in curly braces is skipped, and the program continues as normal.

```
int x = 20;

if (x < 10) {
    System.out.println("Less than 10");
}

System.out.println("And the program continues...");
```

Code Visualizer

Lab - If Else Statement

Tutorial Lab 2: If Else Statements

The if else statement gives your program the ability to ask a question, perform actions if the answer is true, and perform another set of actions if the answer is false.

```
int x = 10;

if(x > 50) {
    System.out.println(String.valueOf(x) + " is greater than 50"); }

else {
    System.out.println(String.valueOf(x) + " is less than 50");
}
```

Code Visualizer

The if part of the if else statement is written as before. The else keyword is **not** indented; it should be aligned with the if keyword. else is followed by a {. You do not use a boolean expression with else. All code that should run when the boolean expression is false should be before the closing curly brace }.

Be careful when expressing your boolean expression in terms of “less than or greater than”. This does not take into account when the values being compared are equal. Consider the code from above, but with x having the value of 50.

```
int x = 50;

if(x > 50) {
    System.out.println(String.valueOf(x) + " is greater than 50"); }

else {
    System.out.println(String.valueOf(x) + " is less than 50");
}
```

Code Visualizer

The output of the program does not make sense. 50 is not less than 50. Sometimes using <= and >= need to be used. Be sure to think through all of the possible outcomes, and make sure your code can function properly in

all of those scenarios.

Lab - Switch Statement

Tutorial Lab 3: Switch Statement

The switch statement gives your program the ability to perform different actions based on the value of a given variable.

```
int size = 3;

switch(size) {
    case 1: System.out.print("Short"); break;
    case 2: System.out.print("Tall"); break;
    case 3: System.out.print("Grande"); break;
    case 4: System.out.print("Venti"); break;
    case 5: System.out.print("Trenta"); break;
    default: System.out.print("Grande");
}
```

Code Visualizer

The variable used to make the decision is in parentheses following the switch keyword. Inside curly braces, the cases listing the different values to check are followed by a : and then the code that should run if the variable is equal to that case's value. The last case, default runs if none of the other cases are true. Each code segment except the last one ends with break; to signal the program to jump to the end curly brace.

Be careful to remember break; statements at the end of each case. Check out what happens when you remove them.

```
int size = 3;

switch(size) {
    case 1: System.out.print("Short");
    case 2: System.out.print("Tall");
    case 3: System.out.print("Grande");
    case 4: System.out.print("Venti");
    case 5: System.out.print("Trenta");
    default: System.out.print("Grande");
}
```

Code Visualizer

The output of the program does not make sense as it continues through the test of the code segments.

Lab Challenge - Month of the Year

Conditionals Challenge

Write a program that determines the month of the year based on the value of a variable called `month`. The variable will be a number from 1 to 12 (1 is January, 2 is February, etc.). Use a `println` statement to write the month to the screen.

Compile code after you make changes

Test your code with a few different values