

Conditionals & Class Constants

By: Megan Avery
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Before We Begin

- Make sure you have Java & Java JDK downloaded on your computer
 - can run **java -version** in terminal to check
- Make sure you have IntelliJ downloaded on your computer
- *Suggested:* Watch previous Java tutorials

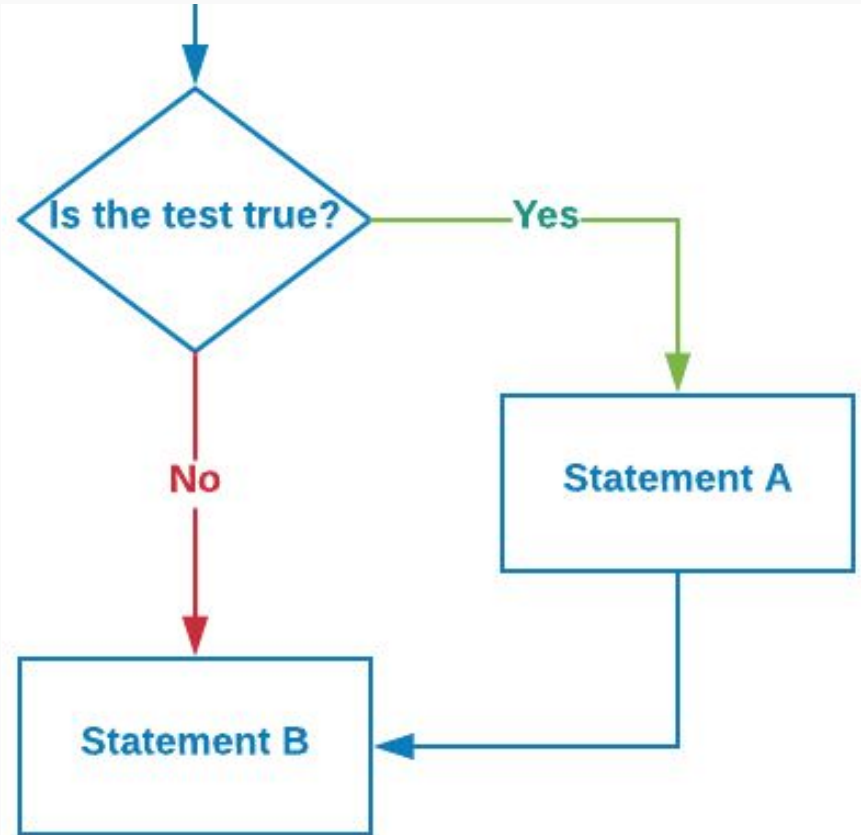
if

What is an if Statement?

An if statement is a chunk of code that executes a block of statements only if a given test (boolean logic statement) evaluates to true.

Code and Diagram of if Statement

```
if (test) {  
    // Statement A  
}  
  
// Statement B
```



if Example

A method that defaults answer to “no” and sets answer to “yes” if given whole number is greater than 30 and then returns the answer.

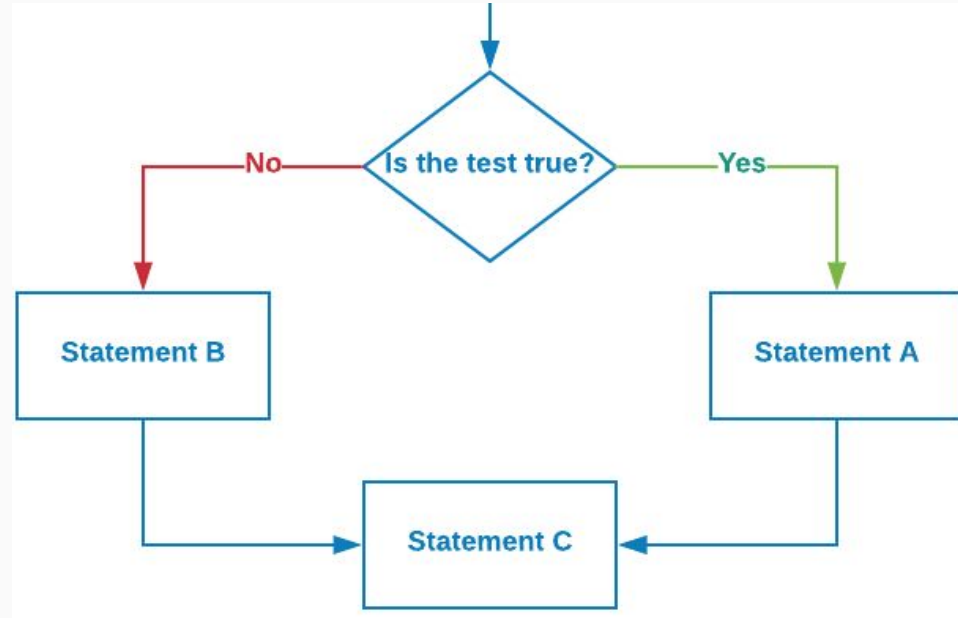
if/else

What is an if/else Statement?

An if/else statement is a chunk of code that executes one block if a test is true, another if false.

Code Diagram of if/else Statement

```
if (test) {  
    // Statement A  
} else {  
    // Statement B  
}  
  
// Statement C
```



if/else Example

A method that prints “would round up” if a given non whole number would round up and prints “would round down” otherwise.

Cool Trick: Tertiary if Statements

Tertiary if statements are a way to set a value as if you were using an if else statement but they only take up one line.

Code Example:

```
int x = 4;  
int y = x > 3 ? 2 : 14;
```

Code Explanation:

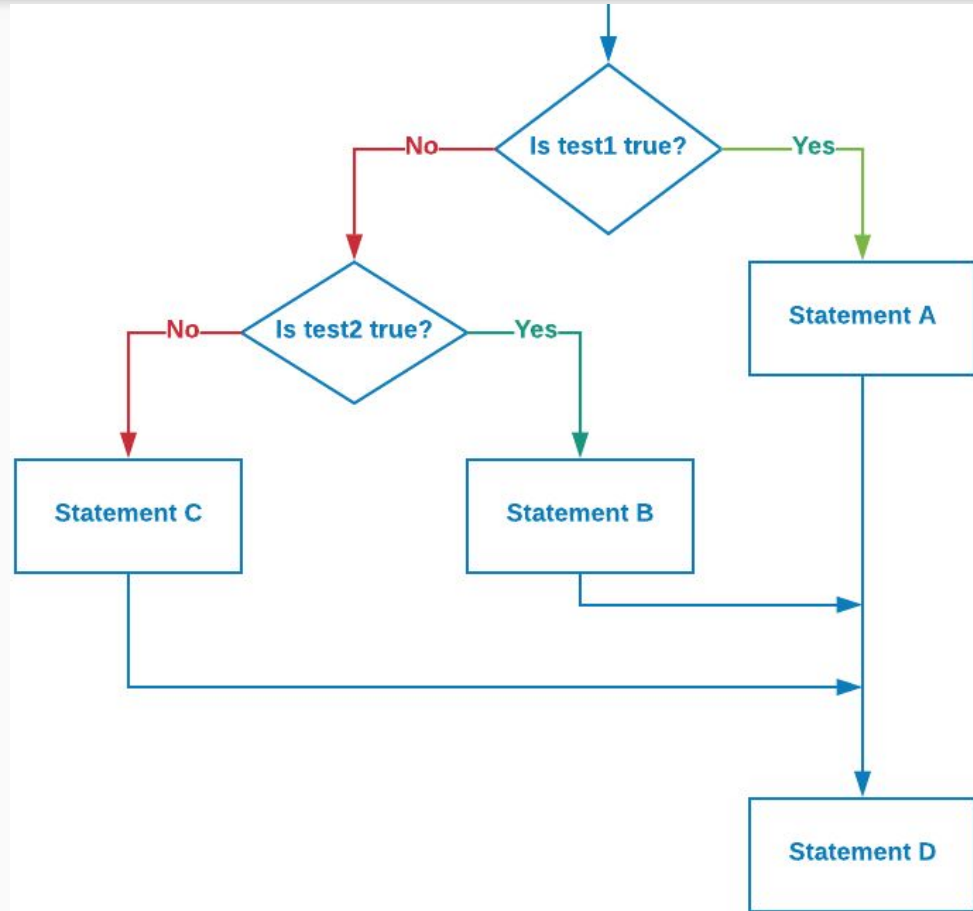
If x is greater than 3 then y is set to 2, otherwise it is set to 14.

What is a Nested if/else Statement?

A nested if/else statement is a chunk of code that chooses between outcomes using many tests.

Code and Diagram of Nested if/else Statement

```
if (test1) {  
    // Statement A  
} else if (test2) {  
    // Statement B  
} else {  
    // Statement C  
}  
  
// Statement D
```



Nested if/else Example

A method that takes in a whole number grade and returns the letter grade, as a single character, that goes with it. A negative grade would results in an 'I' for incomplete.

- ex: 87 would return an 'B'

Class Constants

What is a class constant?

A **class constant** is a variable that is declared at the top of your class that is used throughout the class to avoid “magic” values in your code. The constant’s name gives more context to what is going on in the code.

Naming convention: All caps with underscores where spaces would be if the constant’s name is more than one word

Class constant example

```
public class ConstantExample {  
    final private static int EXAMPLE = 4;  
  
    public static void main(String[] args) {  
        // other code goes here  
    }  
}
```

Practice for Later: Rock, Paper, Scissors

Write a method that takes in 2 players' moves and returns who is the winner of a game of rock, paper, scissors:

- Return options: "player 1 wins" or "player 2 wins" with an explanation of why they won, in the case of a tie return "tie game"
- Ways to win:
 - Rock beats scissors
 - Paper covers rock
 - Scissors cut paper
- Use constants for the paper, rock, and scissors String values

Call the method from the main with hard coded values and print the results enough times to convince yourself it works

Switch Statements

What is a Switch Statement?

A switch statement is a chunk of code that chooses between outcomes using a simplified kind of many tests. It is like another form of a nested if/else statement. They should be used whenever you would do a nested if/else with a bunch of equality checks.

Code for Switch Statement

```
switch (variable) {  
    case value1:  
        // Statement A  
        break;  
    case value2:  
        // Statement B  
        break;  
    default:  
        // Statement C  
}  
  
// Statement D
```

Missing Breaks

If your switch statements doesn't have a break for each case the case will "fall through" and multiple case statements' will be executed. This behavior is not normally what you would want to happen.

Switch Statement Example

A method that takes in a single letter grade and returns the grade range it covers as a String.

Assume grades can only be between 0 and 100

- ex: "A" would return "90 - 100"

Practice for Later: Decode Single Hex Digit

A method that takes in a single hex digit and returns the base ten version of it. Remember 'A' = 10, 'B' = 11, and so on. If the given number isn't a part of the hex range return a -1.

Call from main to convince yourself it works.

The End