

9/23/22

Hi - My name is Chris



- I'm a software professional with over 25 years experience in consumer, enterprise, mobile, and cloud technologies
- I started my career as an engineer (worked with Gary at Macromedia, Adobe, and Zendesk) but have been in engineering leadership roles for more than half my career
- I grew up in Omaha, Nebraska, and my work has taken me to Dallas, San Francisco, Seattle, Chicago, London, Tokyo, and New York
- Most recently I was the Head of Revenue Engineering at Asana (currently taking a break)

Relativity



AST
COMPUTER



Unit 2 Test

Review: Overloaded constructors

```
1 ▼ public class RightTriangle {
2     private double base1, base2, hypotenuse;
3
4 ▼ public RightTriangle() {
5     base1 = 3.0;
6     base2 = 4.0;
7     hypotenuse = 5.0;
8 }
9
10 ▼ public RightTriangle(double base1, double base2) {
11     this.base1 = base1;
12     this.base2 = base2;
13     hypotenuse = Math.sqrt(base1 * base1 + base2 * base2);
14 }
15
16 ▼ public RightTriangle(double base1, double base2, double hypotenuse) {
17     this.base1 = base1;
18     this.base2 = base2;
19     this.hypotenuse = hypotenuse;
20 }
21
22 ▼ public double getPerimeter() {
23     return base1 + base2 + hypotenuse;
24 }
25 }
```

```
class Main {
    public static void main(String[] args) {
        RightTriangle t1 = new RightTriangle();
        RightTriangle t2 = new RightTriangle(10.0, 20.0);
        RightTriangle t3 = new RightTriangle(4.0, 3.0, 5.0);

        System.out.println("t1.perimeter = " + t1.getPerimeter());
        System.out.println("t2.perimeter = " + t2.getPerimeter());
        System.out.println("t3.perimeter = " + t3.getPerimeter());
    }
}
```

3.3

if-else statements

if syntax

```
if (boolean expression)  
    then-statement
```

Example:

```
if (age >= 18) {  
    System.out.println("You are eligible to vote!");  
}
```

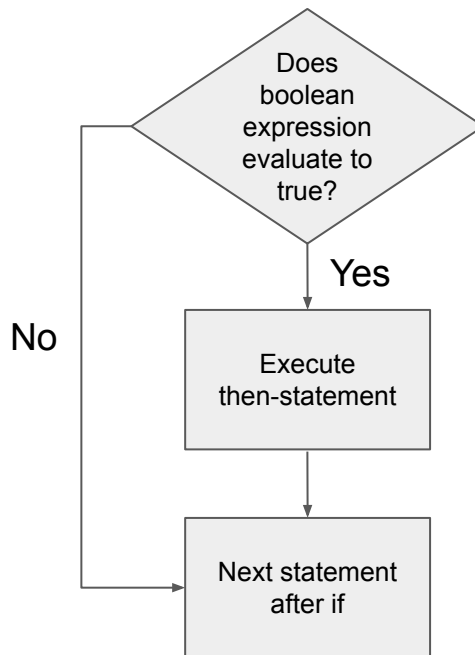
Legal, but not recommended:

```
if (age >= 18)  
    System.out.println("You are eligible to vote!");
```

then-statement can be any statement, and a { block } is a statement.

It's recommended to always use blocks with if.

Flowchart of if



If-Statement Review

Write a program that asks the user for an integer and prints “This number is even” if the number is even.

Example:

```
Please give me a number.
```

```
> 4
```

```
This number is even.
```

if-else syntax

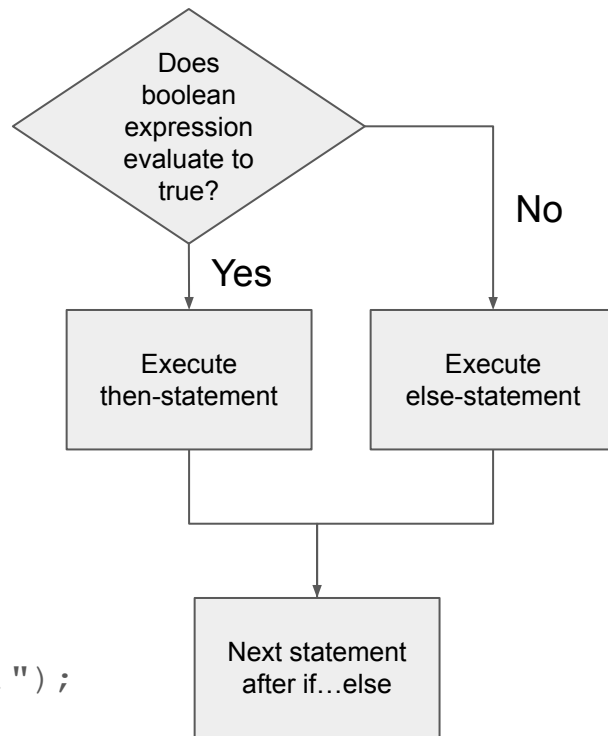
```
if (boolean expression)  
    then-statement  
else  
    else-statement
```

The if statement has an optional else clause.

Example:

```
if (age >= 18) {  
    System.out.println("You are eligible to vote!");  
} else {  
    System.out.println("You are too young to vote!");  
}
```

Flowchart of if...else



Update your program!

Write a program that asks the user for an integer and prints “This number is even” if the number is even, and prints “This number is odd” if the number is odd.

Example:

```
Please give me a number.
```

```
> 5
```

```
This number is odd.
```

Solution

Java (main)

Share

Save

```
1 import java.util.Scanner;
2
3 public class MyProgram
4 {
5     public static void main(String[] args)
6     {
7         Scanner scan = new Scanner(System.in);
8
9         System.out.println("Please give me a number.");
10        int x = scan.nextInt();
11
12        if (x % 2 == 0) {
13            System.out.println("This number is even.");
14        } else {
15            System.out.println("This number is odd.");
16        }
17    }
18 }
19
```

Nested If-Statements

```
if (boolean expression) {  
    if (boolean expression) {  
        if (boolean expression) {  
            <statement>;  
            <statement>;  
            ...  
        } else {  
            <statement>;  
            <statement>;  
            ...  
        }  
    }  
} else {  
    <statement>;  
    <statement>;  
    ...  
}
```

```
private void doRoomSpecificActions() {  
    if (player.getLocation() == missionRoad) {  
        if (Math.random() < 0.1) {  
            // 10% probability of a car almost hitting you  
            System.out.println();  
            System.out.println("Careful! A speeding car almost hit you!");  
            System.out.println("Maybe it's best to get out of the middle of the street!");  
        }  
    }  
}
```

Dangling Else

```
int x = 0;  
if (x >= 0)  
    if (x > 0)  
        System.out.println("x is positive");  
else  
    System.out.println("x is negative");
```

Prints "x is negative"!

Dangling Else

```
int x = 0;
if (x >= 0)
    if (x > 0) ← is paired with this if
        System.out.println("x is positive");
else ← this else
    System.out.println("x is negative");
```

Prints "x is negative"!

Dangling Else

```
int x = 0;
if (x >= 0)
    if (x > 0) ← is paired with this if
        System.out.println("x is positive");
    else ← this else
        System.out.println("x is negative");
```

Prints "x is negative"!

Dangling Else - {} makes it obvious something is up

```
int x = 0;
if (x >= 0) {
    if (x > 0) {
        System.out.println("x is positive");
    } else {
        System.out.println("x is negative");
    }
}
```

Dangling Else Rule

The else clause will always be a part of the closest if statement if in the same block of code regardless of indentation...

Unless you use {}!

In chapter 3.3 of CSAwesome

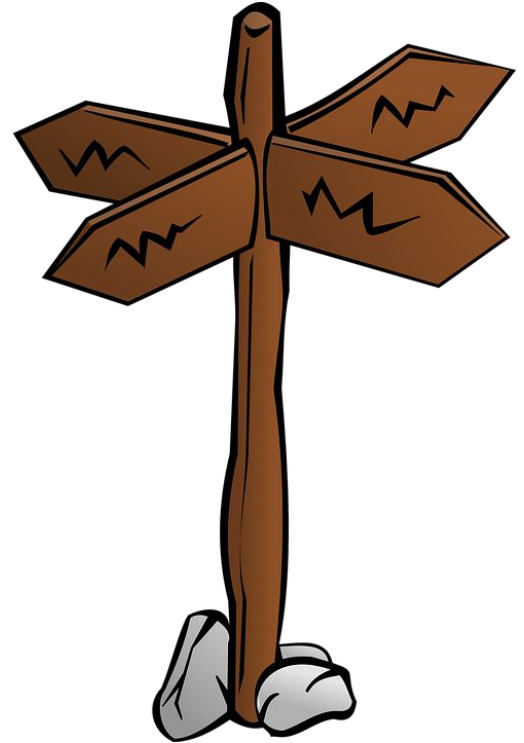
Complete the “Check your Understanding” and “Coding Exercise” problems.

3.4

Multi-Selection : else-if

What if we have more than 2 possibilities?

- Write a program that prints a number is positive or negative. What about zero?
- Write a program to print letter grade for the given score. How can we have conditionals for all these options - A+, A, A-, B+, B, B-, C+, C, C-, D+, D, D-, F?



else-if syntax

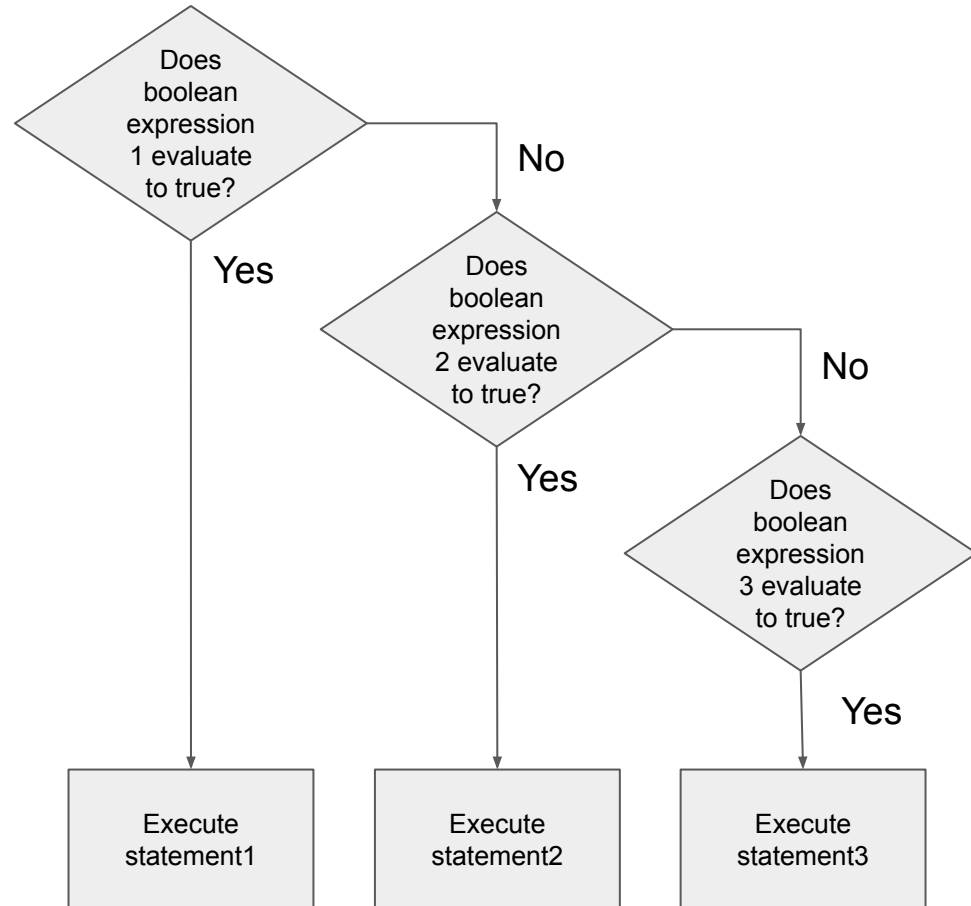
```
if (boolean expression 1)  
    statement1  
else if (boolean expression 2)  
    statement2  
else if (boolean expression 3)  
    statement3
```

```
public static String weekdayName(int weekDay) {  
    if (weekDay == 0) {  
        return "Sunday";  
    } else if (weekDay == 1) {  
        return "Monday";  
    } else if (weekDay == 2) {  
        return "Tuesday";  
    } else if (weekDay == 3) {  
        return "Wednesday";  
    } else if (weekDay == 4) {  
        return "Thursday";  
    } else if (weekDay == 5) {  
        return "Friday";  
    } else if (weekDay == 6) {  
        return "Saturday";  
    } else {  
        return "INVALID";  
    }  
}
```

else-if syntax

```
if (boolean expression 1)  
    statement1  
else if (boolean expression 2)  
    statement2  
else if (boolean expression 3)  
    statement3
```

Flowchart of else-if



"else if" in Java is just chained if...else statements

```
public static String weekdayName(int weekDay) {  
    if (weekDay == 0) {  
        return "Sunday";  
    } else if (weekDay == 1) {  
        return "Monday";  
    } else if (weekDay == 2) {  
        return "Tuesday";  
    } else if (weekDay == 3) {  
        return "Wednesday";  
    } else if (weekDay == 4) {  
        return "Thursday";  
    } else if (weekDay == 5) {  
        return "Friday";  
    } else if (weekDay == 6) {  
        return "Saturday";  
    } else {  
        return "INVALID";  
    }  
}
```



```
public static String weekdayName2(int weekDay) {  
    if (weekDay == 0) {  
        return "Sunday";  
    } else {  
        if (weekDay == 1) {  
            return "Monday";  
        } else {  
            if (weekDay == 2) {  
                return "Tuesday";  
            } else {  
                if (weekDay == 3) {  
                    return "Wednesday";  
                } else {  
                    if (weekDay == 4) {  
                        return "Thursday";  
                    } else {  
                        if (weekDay == 5) {  
                            return "Friday";  
                        } else {  
                            if (weekDay == 6) {  
                                return "Saturday";  
                            } else {  
                                return "INVALID";  
                            }  
                        }  
                    }  
                }  
            }  
        }  
    }  
}
```

(Different from Python which has "elif" keyword)

Example

Let's see a program that asks the user for the weekday and responds to it.

Example:

```
What day of the week is it?
```

```
> Friday
```

```
Woo! It's almost weekend!
```

Solution w/ If Statement

```
import java.util.Scanner;

public class Weekday {
    public static void main(String[] args) {
        Scanner scan = new Scanner (System.in);

        System.out.println("What day of the week is it?");
        String day = scan.nextLine();

        if(day.equals("Monday"))
            System.out.println("Excited for the new week!");
    }
}
```


Solution w/ If-Else Statement

```
import java.util.Scanner;

public class Weekday {
    public static void main(String[] args) {
        Scanner scan = new Scanner (System.in);

        System.out.println("What day of the week is it?");
        String day = scan.nextLine();

        if(day.equals("Monday")) {
            System.out.println("Excited for the new week!");
        } else {
            System.out.println("Why was I excited for all this work?");
        }
    }
}
```

Solution w/ Else-If Statement

```
import java.util.Scanner;

public class Weekday {
    public static void main(String[] args) {
        Scanner scan = new Scanner (System.in);

        System.out.println("What day of the week is it?");
        String day = scan.nextLine();

        if(day.equals("Monday")) {
            System.out.println("Excited for the new week!");
        } else if(day.equals("Tuesday")) {
            System.out.println("Excited for the new week!");
        } else if(day.equals("Wednesday")) {
            System.out.println("Idk how I feel about this 5-day school thing");
        } else if(day.equals("Thursday")) {
            System.out.println("Woo! Its almost weekend!");
        } else if(day.equals("Friday")) {
            System.out.println("Woo! Its almost weekend!");
        } else {
            System.out.println("I don't print on weekends");
        }
    }
}
```

Practice: Replit

ifElseExercise

elseifExercise1

elseifExercise2

trogdor

