# Building Java Programs

## Lab 4: Ch. 4: If/Else, Scanner, Cumulative Algorithms



*lab document created by Marty Stepp and Stuart Reges*

# Today's lab

Goals for today:

- use `if/else` statements to select between alternate code paths
- use `Scanner` to read user input
- use `Strings` to represent and manipulate text data
- practice **cumulative algorithms** for complex computations
- Where you see this icon, you can click it to check the problem in Practice-It!

# Exercise 8: seeMovie

You're thinking about going with your friends to a movie. **Write** a Java method `seeMovie` that accepts two parameters: the **cost** of a ticket in dollars, and the **rating** number of stars the movie received out of 5. The method should print how interested you are (very, sort-of, or not). Use the following criteria:

- You like bargains. Any movie that costs less than $5.00 is one that you want to see very much.
- You dislike expensive movies. You are not interested in seeing any movie that costs $12.00 or more, unless it got 5 stars (and even then, you are only sort-of interested).
- You like quality. You are very interested in seeing 5-star movies that cost under $12.00.
- You are sort-of interested in seeing movies costing between $5.00 - $11.99 that also got between 2-4 stars inclusive.
- You are not interested in seeing any other movies not described previously.

# User input and Scanner

| Method name | Description |
|---|---|
| `nextInt()` | reads and returns the next token as an `int`, if possible |
| `nextDouble()` | reads and returns the next token as `double`, if possible |
| `next()` | reads and returns a single word as a `String` |
| `nextLine()` | reads and returns an entire line as a `String` |

Example:

```
import java.util.*;   // so you can use Scanner
...
Scanner console = new Scanner(System.in);
System.out.print("How old are you? ");   // prompt
int age = console.nextInt();
System.out.println("You typed " + age);
```

# Exercise 9: DevryAdmit

Write a complete program `DevryAdmit` with the behavior shown below. Use the `Scanner` to read user input for a student's grade point average and SAT exam score. A GPA below 1.8 will cause the student to be rejected; an SAT score below 900 will also cause a rejection. Otherwise the student is accepted.

```
Devry University admission program
What is your GPA? 3.2
What is your SAT score? 1280
You were accepted!
```

Check your answer using Practice-It from the check-mark icon above.

# Exercise 10: ProcessName

**Copy/paste** and save ProcessName.java in jGRASP, then go to the next slide.

```
import java.util.*;  // for Scanner

public class ProcessName {
    public static void main(String[] args) {
        Scanner console = new Scanner(System.in);
        System.out.print("Type your name: ");

        // your code goes here

        System.out.println("Your name is: " + name);
    }
}
```

*continued on the next slide ...*

# Exercise 10 - code to add

- Add code to the program so that it reads the user's first and last name (read an entire line as a single string), then prints the last name followed by a comma and the first initial. (Assume that the user types a valid name.) Example:

```
Type your name: Jessica Miller
Your name is: Miller, J.
```

- Notice that the program reads an entire line of user input, not just one word.
- Try solving this problem in Practice-It! using the link above.

# Exercise 11: Syntax errors

- The following Java program has 11 errors. Can you find them all?

```
1  public class StringOops {
2      public static void main(String[] args) {
3          Scanner console = new Scanner(System.in);
4          System.out.print("Type your name: ");
5          String name = console.nextString();
6          process(name);
7      }
8
9      public static void process(string "name") {
10         if (name == Whitaker) {
11             System.out.println("You must be really awesome.");
12         }
13         replace("a", "e");
14         toUppercase(name);
15         name.substring(0, 3);
16         System.out.println(name + " has " + name.length + " letters");
17     }
18 }
```

- **Copy and paste** the code into jGrasp and see if you can fix the errors.

# Exercise 11 - answer

1. line 5: `nextString` should be `next`
2. line 9: `string` should be `String`
3. line 9: `name` should not be in quotes
4. line 10: `Whitaker` should be in quotes
5. line 10: cannot compare strings with `==`; must use `.equals`
6. line 13: cannot call `replace` without specifying a string object (`name`)
7. line 14: `toUppercase` should be `toUpperCase`
8. line 14: `name.` should come before `toUpperCase`, not passed as a parameter to it
9. line 14: must say `name =` to store the result of `toUpperCase`
10. line 15: must say `name =` to store the result of `substring`
11. line 16: must use parentheses `()` when calling `length`

# Exercise 11 - Corrected version

```
public class StringOops {
    public static void main(String[] args) {
        Scanner console = new Scanner(System.in);
        System.out.print("Type your name: ");
        String name = console.next();
        process(name);
    }

    public static void process(String "name") {
        if (name.equals("Whitaker")) {
            System.out.println("You must be really awesome.");
        }
        name = name.replace("a", "e");
        name = name.toUpperCase();
        name = name.substring(0, 3);
        System.out.println(name + " has " + name.length() + " letters");
    }
}
```