CIS 162 Lab 1 - ASCII Art

Objectives

After completing this lab, you should be able to:

- *start* BlueJ
- *create* a project and class
- *compile* and *invoke* a main method
- *describe* how pair programming works

Overview

In lecture tonight we talked about how we are going to use Java to communicate with the computer. We noted that Java is an Object Oriented Programming Language.

We also talked about how languages take ideas humans are used to and convert them into instructions the computer can understand. We call this an abstraction. A simple example of an abstraction is a loop; we may want to tell the computer to repeat some task multiple times. A loop is an abstract idea to a computer so the language has to convert it into simpler instructions that the computer can understand. Object Oriented languages use another abstraction, called an object. An object is a representation of some entity that has **state** and **behavior**.

Let's consider a real-world example. Suppose we want to write a program that keeps track of information about students. There are things we know that each student has – a name for instance, a G number, a GPA etc. We call this information state. We may have multiple different student objects, but each will have the ability to keep track of its own state.

An object can also perform actions – we call this behavior. Behavior an object can perform might be "print the student's name", "change the GPA to this new value", etc.

We create a blueprint for an object which we call a **class**. In Java, a blueprint – or class – for the objects I just described might look like this:

```
public class Student {

        private String name;
        private int gNumber;
        private float gpa;

        public void printName(){
                System.out.println(name);
        }
}
```

Note that this is a VERY simple example. A complete class would include more code, but this give us a general idea.

In tonight's lab we will be creating incredibly simple classes that don't even keep track of state. They merely exhibit some behavior – in tonight's case that behavior is printing text to the screen.

Lab Activity #1 – Do Individually (Professor will demonstrate 1-5)

1. Login to your GVSU account
2. Create a new Folder called CIS 162 Labs
3. Open the Applications--> CIS Folder.
4. Start BlueJ
5. Create a new Project called "Lab 1" and save it in the folder created above
6. Create a new Class called "Test" and **delete** all of the provided code.
7. Copy and paste the following code into the class and run it:

```
public class Test {
     public static void main(String args[]){
             System.out.println("Go Lakers!");
     }
}
```

Partner Name #1 _____

Partner Name #2 _____

Lab Activity #2 – Do With a Partner

Introduce the following errors, one at a time, to the program from Activity #1. Record any errors messages that the compiler produces. Fix the previous error each time before introducing the next error. If no error messages are produced, explain why. Try to predict what will happen before you make each change.

1 - Change Test to test

2 - Change Lakers to lakers

3 - Remove the first quotation mark in the string

4 - Remove the second quotation mark in the string

5 - Change main to man

6 - Change println to bogus

7 - Remove the semicolon at the end of the println statement

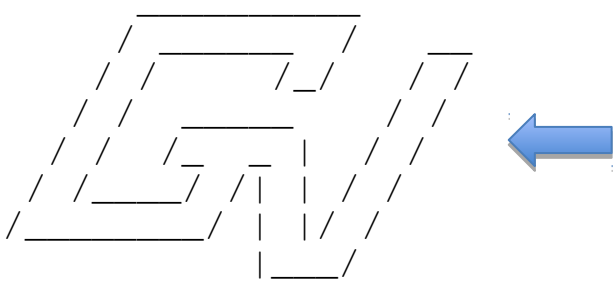
8 - Remove the last brace in the program

Lab Activity #3 – Continue with Partners

1. Create a new Class called "Art". Refer to Section 1.4 and http://www.asciiworld.com for ideas about your artistic masterpiece.
2. Edit the top comment section to describe the class and add both of your names as authors.
3. Remove the two automatically generated methods.
4. Copy and paste the following method into the class

```
public static void main(String [] args){
    System.out.println("your art goes here");
 }
```

5. Check, compile the class and invoke the main method by right clicking on the class icon
6. Use several print statements to create your own art piece.
7. Compile the class and invoke the main method by right clicking on the class icon



This is an example of ASCII art

<u>Important note:</u> To print a backslash (\) or a double quote in java you have to use an escape character.

Escape characters (also called escape sequences or escape codes) in general are used to signal an alternative interpretation of a series of characters.
In Java, a character preceded by a backslash (\) is an escape sequence and has special meaning to the java compiler.

Important Note:

To print a backslash (\) you need to use two backslashes:

```
System.out.println("\\");
```

To print a double quote (") you need to use a backslash before the double quote -

```
System.out.println("\"");
```

Lab Activity #4 – Continue with Partner but Switch to Other Partners Account

Quit BlueJ and log out of your account. Repeat Activity #3, creating a new art piece, with the second partner's account.

Grading Criteria

This lab is worth a possible 10 points.

- Show your instructor or lab assistant the program that displays your art piece.
- Turn in page 2 with Activity #2 and your names.