**Introduction to Java Programming**

Reference: Gaddis 1.5, 2.1-2.4

Topics: Terminology for Java, Understanding output, comments, variables & constants

What we learned in lab:

* A Java program embodies an algorithm designed to accomplish a task.
* All Java programs consist of at least one class.
* The Java source code file (.java) must have same name as class

public class OlsenLab0



{

public static void main(String[ ] args)



{



System.out.println(“Today is Friday”);



System.out.println(“Friday is a fun day”);



System.out.println(“Friday is a great day for programming!”);



}

}

What does the above code do?



*Keywords* have special meaning. Let’s circle the keywords above.



What is a *statement*?



What should be at the end of most statements?



What happens if we replace each *System.out.println* with *System.out.print*?



What is a *block* of code?



What is the “Today is Friday” part of our first println statement above called?



There are also other literals:



A literal is just



**Java Variables**

What if we want to store information to use later? We can use:



OR



*Variables hold 1 value at a time of a set type; the* value *can change but not the* type



Java has 8 “primitive data types”



|  |  |  |  |
| --- | --- | --- | --- |
| Type | Size in Bytes | Minimum Value | Maximum Value |
| byte | 1 |  |  |
| short | 2 |  |  |
| int | 4 |  |  |
| long | 8 |  |  |
| float | 4 |  |  |
| double | 8 |  |  |
| char | 2 |  |  |
| boolean | 1 |  |  |



Variables have a name and a value

Identifiers are used to name classes, variables, and methods

* Must start with a "Java letter"
* Any number of Java letters & digits ONLY
* Case sensitive!!
  1. *Number1* and *number1* are different!
* Cannot be keywords or reserved words
  1. See Table 1-3 on page 10

Which names are OK?

Naming conventions

* variables are all lowercase with \_ between words
* classes start with uppercase, as do each new word in the class
* name describes what it is
* Mary
* mary\_smith
* myCost
* $bigCount



* my Value



* 2big
* \_minimum
* N-a-m-e

To create: assign a name (identifier) and a data type

* names of variables should be meaningful and reflect the data they will store
* this is called declaring the variable

To use: modify the variable by having it store a new value

* This is called assignment

How do we *declare* a variable to hold our age in years and then *assign* our age to it?

How do we *declare* a variable to hold the values true/false, and then *assign* it to true?

How do we *declare* a variable to hold our hourly pay rate and then *assign* 9.25 to it?

We can do each of these in 1 line:

How do I output one of my variables so the user can see the value?

**How do I output 2 or more things together in 1 println statement?**

**Constants**

* Use when you want to store a *literal* for use later in your program, and
* Name using all CAPS

***final*** *double PI = 3.1415;*

***final*** *double E = PI;*

Can I write the following?

***final*** *double PI = 3.1415;*

PI = 3.14159;

**Compatible Types**

Any type in right column can be assigned to type in left column. Why?

**Data Type** **Compatible Data Types (can be assigned to type on left)**

* *byte byte*
* *short byte, short*
* *int byte, short, int, char*
* *long byte, short, int, long, char*
* *float float, byte, short, int, long, char*
* *double float, double, byte, short, int, long, char*
* *boolean boolean*
* *char char*

Which option is valid?

* Option 1 
  1. *float salesTax = .05f;*
  2. *double taxRate = salesTax;*
* Option 2
  1. *double taxRate = .05;*
  2. *float salesTax = taxRate;*