Lesson 2…..Variable Types (*String*, *int*, *double*)

Three variable types:

(A good way to learn the following points is to modify the code of the "Hello World" program according to the suggestions below.)

1. ***String***….used to store things in quotes….like "Hello world"

   Sample code:

```
public static void main(String args[])
{
        String s = "Hello cruel world";
        System.out.println(s);
}
```

2. ***int*** ….used to store integers (positive or negative)

   Sample code:

```
public static void main(String args[])
{
        int age = 59;
        System.out.println(age);
}
```

3. ***double*** ….used to store "floating point" numbers (decimal fractions). *double* means "double precision".

   Sample code:

```
public static void main(String args[])
{
        double d = -137.8036;
        System.out.println(d);

        d = 1.45667E23;  //Scientific notation…means 1.45667 X 10^23
}
```

Declaring and initializing:

When we say something like

```
double x = 1.6;
```

we are really doing **two** things at once. We are **declaring** *x* to be of type *double* **and** we are **initializing** *x* to the value of 1.6. All this can also be done in **two** lines of code (as shown below) instead of one if desired:

```
double x;  //this declares x to be of type double
x = 1.6;  //this initializes x to a value of 1.6
```

What's legal and what's not:

```
int arws = 47.4;   //illegal, won't compile since a decimal number cannot "fit" into an
                   //integer variable.
double d = 103; //legal…same as saying the decimal number 103.0
```

Rules for variable names:

Variable names must begin with a letter (or an underscore character) and cannot contain spaces. The only "punctuation" character permissible inside the name is the underscore ("_"). Variable names cannot be one of the reserved words (key words…see Appendix A) that are part of the Java language.

Legal names	**Illegal names**
Agro	139
D	139Abc
d31	fast One
hoppergee	class
hopper_gee	slow.Sally
largeArea	double
goldNugget	gold;Nugget
	hopper-gee

Variable naming conventions:

It is traditional (although not a hard and fast rule) for variable names to start with a lower case letter. If a variable name consists of multiple words, combine them in one of two ways:

bigValue… jam everything together. First word begins with a small letter and subsequent words begin with a capital.

big_value… separate words with an underscore.

Exercise on Lesson 2

1. What are the three main types of variables used in Java and what are they used to store?

2. What type of variable would you use to store your name?

3. What type of variable would you use to store the square root of 2?

4. What type of variable would you use to store your age?

5. Write a single line of code that will create a double precision variable called *p* and store $1.921 \text{ X } 10^{-16}$ in it.

6. Write a single line of code that will create an integer variable called *i* and store 407 in it.

7. Write a single line of code that will create a *String* variable called *my_name* and store your name in it.

8. Write a line of code that will **declare** the variable *count* to be of type *int*. Don't initialize.

9. Write a line of code that **initializes** the double precision variable *bankBalance* to 136.05. Assume this variable has already been declared.

10. Which of the following are legal variable names?
    scooter13 139_scooter homer-5 ;mary public doubled double ab c

11. Which of the following is the most acceptable way of naming a variable. Multiple answers are possible.
    a. GroovyDude
    b. GROOVYDUDE
    c. groovyDude
    d. Groovydude
    e. groovy_dude
    f. groovydude

12. Comment on the legality of the following two lines of code.
    ```
    double dist = 1003;
    int alt = 1493.86;
    ```