Programming Variables

- Programming variables are different from algebraic variables.

- They are “containers” to hold different values such as, numbers, names, strings, etc.

- This “container” is given a name. The name *is* the variable.

- Then we can use the programming variable (the “container”) to get stuff done. Its value can be used or replaced.

- Our computers have something called main memory. Our variables are sections of main memory set aside to hold values.

- We can access or alter variables using the name we’ve assigned.

- Variables allow us to keep track of pieces of data needed by our program.

- The data may be different from one run of the program to another.

- The data may be changed during a run of the program.

- Programs without variables are boring because they always run the same way.

Variable Declaration and Assignment

- The computer must know what kind of data we have. For example, 90 and ‘Z’ have the same binary representation. The computer determines how to interpret data but it must pe provided with the correct instructions.

- In Java we must declare a variable before we use it. This means we have to say: the type of variable (what kind of data it holds) the name of variable. We can also provide a starting value for the variable (optional).

- Basic syntax of a variable declaration:

*type (what kind of data) name;*

- We can declare multiple variables of the same type at the same time.

*type name1, name2, name3;*

- To specify an initial value:

*type name = value;*

- Examples of variable declarations:

*char middleInitial;*

*int numStudents;*

*float gpa;*

*int numLives = 3;*

*char grade = ‘B’;*

*boolean string;*

(Declares a variable named string of type boolean.)

-Putting data into variables: the assignment operator ‘=’ which is used to assign values into variables.

- ‘=’ should be referred to as “is assigned” or “gets”.

*numPizzas = numPizzas +1;*

-This line of code above could be read as, “The variable named Pizzas of the type num is assigned numPizzas + 1.”

- Direction matters: We compute the value on the right and assign the location on the left.

- Given the following SEQUENTIAL code segment, which of the statements below is true: int num1 = 3; int num2 = 2; num2 = num1;

B.

The value of num1 is 3 and the value of num2 is also 3.

\* REMEMBER TO TYPE A SEMI-COLON AFTER EVERY LINE OF CODE.

- Make sure when copying and pasting to double check if an omission needs to be made.