Chaper 2:

Variables are used to store data such a s numbers and letters.

Variable declaration;

In java , you must declare a variable before it can be used.

Two main kinds of data types: class ttypes and primitive types.

A class type is a data type for objects of a class.

Float, Int = 4 bytes

Char is used for single characters, such as letters ,digits or punctuation;

Lowercase and uppercase letters are different; A convention in which class type names that is the name of classes—begin with an uppercase letter;

The name of a variable is an identifier ; The identifier can only contain letters, digits 0-9 and the underscore character(\_). And also the first character in an identifier cannot be a digit. There is no limit to the length of an identifier. And also Java is case sentitive.

Primitive type

Some words are key words that can not be used as the name of variables, classes or methods; all java key words are lowercase

To start the names of classes with uppercase letters and to start the names of variables and methods with lowercase letters.

Assignment operator : =

count = count +10;

Variable = Expression;

The expression on the right side of the equal sign is evaluated, then the variable on the left side of the equal sign is set to this value;

Simple input:

We use the class Scanner, to accept keyboard input; But we must import java.util.

Import java.util.Scanner;

Scanner keyboard = new Scanner(System.in);

eggsPerBasket = keyboard.nextInt();

System.out.println: System is a class that is part of the java language, and out is a special object within that class; The object out has prinln as one of its methods.

In java : 8.65 \* 10^8 is written as 8.65e8;

4.83e-4

Named Constants;

Java provides a mechanism that allows you to define a variable , initialize it and moreover fix the variable’s value so that it can not be changed.

Public static final Type Varialbe = Constant; ( final means that 3.14159 is the final value assigned to PI )

Eg. Public static final double PI = 3.14159;

The convention for naming constants is to use all uppercase letters ,with an underscore symbol \_ between words.

Public static final int DAYS\_PER\_WEEK = 7;

Assignment Compatibilities

You can not put the double value 3.0 in a variable of type int;

Perform the conversion automatically ;

Double doublevalue = 7;

Byte – short – int – long – float - double;

You can not assign a value of type long to a variable of type byte ; You can not go from the opposite side;

A type cast changes the data type of a value from its normal type to some other type. Changing the type of the value 2.0 from double to int involves a type cast.

E.g: double distance = 9.0;

int points = distance; is illegal;

Because you can not assign a value of type double to a variable of type int, even if the value of type double happens to have all zeros after the decimal point;

In order to assign a value of type double to a value of type int, you must place (int) in front of the value or the variable holding the value .

Int points = ( int) distance ; is legal; (type cast)

A type cast does not change the value of the source variable;

E.g:

double dinnerBill = 25.36;

int dinnerBillPlusTip = (int) dinnerBill +5;

System.out.println(“ The value of dinnerBillPlusTip is “ + dinnerBillPlusTip);

Note: when you type cast from a double to an int – or from any floating-point type to any integer type- the amount is not rounded. The part after the decimal point is simply discarded. (truncating, not rounded) ;

e.g

double dinnerBill = 26.99;

int numberOfDollars = (int) dinnerBill;

26

Type casting a character to an integer

char symbol = ‘7’;

System.out.println((int)symbol);

The result is not to display 7 but 55; Java uses an arbitrary numbering of characters to encode them; The numbering system is called the Unicode system, the Unicode system is the same as the ASCII system

Arithmetic Operators:

The type of the value produced depends on the types of the operands being combined;

If one of the operands is of a floating-point type, and the other is of an integer type ,the result is of the floating-point type.

When you divide two integers, the result is not rounded; the part after the decimal point is discarded( truncated)

Remainder operator (modulus operator) %;

With the aid of parentheses, you can tell the computer which operations to perform first;

Amount += 5;

Amount \*=5;

Increment and decrement operators:

Difference between count++ and ++count;

Increment operator & decrement operator;

Prefix form:

int n = 3;

int m =4;

int result = n \* (++m) ;

postfix form:

int n = 3;

int m = 4;

int result = n \* ( m++);

The increment and decrement operators can be applied only to variables;

Both m++ and ++m have the same effect on the final value of m, but when you use them as part of an arithmetic expression, they give a different value to the expression;

2.2 The class string:

Java supplies a class called String that can be used to create and process strings of characters.

String Constants and Variables:

The quoted string:

“ Enter a whole number from 1 to 99”

A value of type String is a sequence of characters treated as a single item. A variable of type String can name one of these string values;

String greeting = “ Hello !”;

You can use + to join or concatenate strings together.

You can also use + to connect a String object to any other type of object. The result is always a String object;

String solution = “ The answer is “ +42 ;

String methods:

A string variable is a variable of a class type that names a String object. An object has methods as well as data.

Most of the String methods return some value.

String greeting = “Hello”;

int n = greeting.length();

All objects of a class have the same methods, but each object can have different data.

Int count = command.length();

Positions in a string begin with 0,not with 1.

A substring is simply a portion of a string.

None of the methods changes the value of a String object.

charAt(index)

compareTo(A\_String)

concat(A\_String)

equals(other\_String)

equalsIgnoreCase(other\_string)

indexOf(A\_string)

lastIndexOf(A\_String)

length()

toLowerCase()

toUpperCase()

replace(OldChar, NewChar)

substring(start)

substring(start, end)

trim()

\ bachslash

\” double quote

\’ single quote

[\\backslash](file:///\\backslash)

\n new line go to the beginning of the next line

\r carriage return go to the beginning of the current line

\t tab add a whitespace up to the next tab stop

Print vs println:

A new line is not started until you use a println instead of a print

Import java.util.Scanner;

Scanner Scanner\_Object\_Name = new Scanner(System.in);

Scanner\_Object\_Name is any java variable;

Scanner keyboard = new Scanner(System.in);

Int n1 = keyboard.nextInt();

Reads one int value typed at the keyboard and returns that int value.

nextDouble

String s1 = keyboard.next();

String s2 = keyboard.next();

If the input line is :

Plastic spoons

Plastic is assigned to s1 and spoons is assigned to s2

Two inputs have to be separated by whitespace characters

If you want to read an entire line, you would use the method nextLine.

String sentence = keyboard.nextLine();

The method nextLine reads and returns the remainder of the current input line as a string.

The method next and nextLine of the class Scanner read text starting wherever the last keyboard reading left off.

int n = keyboard.nextInt();

String s1 = keyboard.nextLine();

String s2 = keyboard.nextLine();

Assume the input is

42 is the answer

And don’t you

Forget it .

And

42

And don’t you

Forget it .