Topics: Java fundamentals, CodeWarrior demo

Reading (JV): Sec 1.4, 2.1-2.4

Java Program Structure

In the Java programming language:
• A program is made up of one or more classes
• A class contains one or more methods
• A method contains program statements

A Java application always contains a method called main

// Hello World: a first program
// Authors: millions of programmers
public class Hello {
    public static void main(String[] args) {
        System.out.println("Hello, world!");
        System.out.println("Hey ");
        System.out.println("you!");
    }
}

Comments

// this comment runs to the end of the line

/* this comment runs to the terminating
   symbol, even across line breaks */

/* Here is a nicer looking (?) comment format
   * that many programmers use.
   */

Variable, Declaration, Assignment

• Variable must be declared: specify variable's name and type of information that will be held in it
• Multiple variables can be created in one declaration statement
• Can give variable an initial value in the declaration

int total;       // declaration
int count, tmp, result;
int sum = 0;     // combine declaration, assignment
int base=32, max=149;

final int MIN_HEIGHT = 149;  // declare a constant and assign value
**Primitive Data: 8 types**

Four types of integers: `byte, short, int, long`
Two types of floating point numbers: `float, double`
One character type: `char`
One logical type: `boolean` (only two valid values: `true, false`)

We will use only four primitive types in CS100M: `int, double, char, boolean`

**Integer Division and Remainder Operator**

If both operands to the division operator `/` are integers, the result is an integer.

The remainder operator `%` is an arithmetic operator that returns the remainder after dividing the second operand into the first.

**Data Conversion** (not covered in lecture—read section 2.4)

*Widening conversions* are safest: go from small data type to larger one (e.g., a `short` to an `int`).
*Narrowing conversions* can lose information: go from large data type to smaller one (e.g., an `int` to a `short`).

*Assignment conversion*: a value of one type is assigned to a variable of another type

*Arithmetic promotion*: operators in expressions convert their operands

*Casting*: explicit conversion by specifying the type desired