

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.print("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