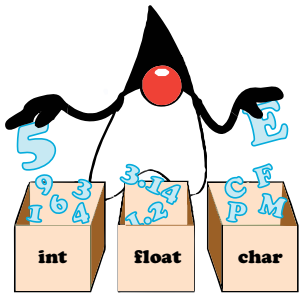
Recognizing data types



The most frequently-used data types in Java variable declarations are listed in this table, along with a brief description:

Data type:	Description:	Example:
char	A single Unicode character	'a'
String	Any number of Unicode characters	"my String"
int	An integer number, from -2.14 billion to +2.14 billion	1000
float	A floating-point number, with a decimal point	3.14159265f
boolean	A logical value of either true or false	true

Due to the irregularities of floating-point arithmetic, the **float** data type should never be used for precise values such as currency – see page 130 for details.

Notice that **char** data values must always be surrounded by single quotes, and **String** data values must always be surrounded by double quotes. Also, remember that **float** data values must always have an "f" suffix to ensure they are treated as a **float** value.

In addition to the more common data types above, Java provides these specialized data types for use in exacting circumstances:

Data type:	Description:
byte	Integer number from -128 to +127
short	Integer number from -32,768 to +32,767
long	Positive or negative integer exceeding 2.14 billion
double	Extremely long floating-point number

All data type keywords begin with a lowercase letter except **String** – which is a special class.

Specialized data types are useful in advanced Java programs – the examples in this book mostly use the common data types described in the top table.

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Follow these steps to create a Java program that creates, initializes, and outputs variables of all five common data types:

1 Start a new program named "DataTypes" containing the standard main method

```
class DataTypes
{
        public static void main ( String[] args ) {          }
}
```

DataTypes.java

2 Between the curly brackets of the main method, insert these declarations to create and initialize five variables

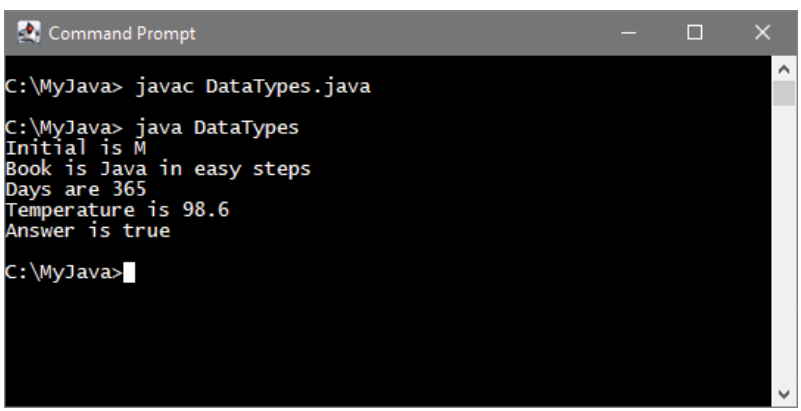
```
char letter = 'M' ;
String title = "Java in easy steps" ;
int number = 365 ;
float decimal = 98.6f ;
boolean result = true ;
```

Notice how the + character is used here to join (concatenate) text strings and stored variable values.

3 Add these lines to output an appropriate text **String** concatenated to the value of each variable

```
System.out.println( "Initial is " + letter ) ;
System.out.println( "Book is " + title ) ;
System.out.println( "Days are " + number ) ;
System.out.println( "Temperature is " + decimal ) ;
System.out.println( "Answer is " + result ) ;
```

4 Save the program as **DataTypes.java**, then compile and run the program



The Java compiler will report an error if the program attempts to assign a value of the wrong data type to a variable – try changing the values in this example, then attempt to recompile the program to see the effect.