Strings
Announcements

Homework 1 posted on website due next Friday (Sept. 23) at 6pm
A **String** is a sequence of characters

“Hello” is a string with a sequence of 5 characters

In fact, anything in quotes “ ” is a String (just as 5 is an int, 2.5 is a double), single quotes are used for char, like 'a'

Everything in Java has a type...
Strings index

String greeting = “Hello”;

The position of a character is called its index.

Note that the index starts from zero, not one (more on this in Ch 7)
Methods

Methods allow you to reuse pieces of code (either your own or someone else's)

Every method has a return type, specifically a type of object returned

Math.sqrt(2) returns a double, as the number will probably have a fractional part

The “2” is an argument to the sqrt function
Methods

Methods can return `void`, to imply they return nothing (you should not use this in an assignment operation).

The return type is found right before the functions name/identifier.

```c
void main() { ...  means main returns an void type, which means we cannot say: int x = main(); }
```
Methods

A wide range of math functions are inside Math (you get it by default)

This has a wide range of functions:
Trigonometric (sin, cos, ...)
Exponential (pow, exp, sqrt)
Logarithmic (log, log10)
Others... (abs, floor, ...)

(See: MathStuff.java)
A class is a more complex type (such as int).

Classes store both other variables and methods.

In fact, everything in Java must live in some class (this is why we have an identifier after class at the top the same as the file name).

(See: ClassBasics.java)
Strings methods

String greeting = "Hello";

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hello</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

greeting.length();
returns value 5 (int)
Strings methods

“Hello”.equals(“hello”);

will return false
(the argument has a space)

== can also check equality, but should only be used for primitive types, equals() should be used for all other types (non-blue)

See: StringEquals.java
Can also...

indexOf = find letters or words in a string
substring() = pull out a chunk of letters from the string
trim() = remove white space at the end
toUpper() = CHANGE WORD TO CAPS
...and more!

See: StringSearch.java
Strings concatenation

Hello01234 + World01234 = HelloWorld0123456789

String concatenation does not automatically add a space
(see: StringsConcatenation.java)
Strings formatting

How do you put a quote (‘“’) inside a string?

Special escape sequences allow you to put characters in a string that the compiler normally has a different meaning for.

White space:
\n = newline
\t = tab

Characters:
" = quote, \" = back slash
\' = apostrophe
Strings immutable

String cannot change value and thus are called immutable

String hail = “Hlelo”;

Only way to fix spelling is reassign:

hail = “Hello”;

No method: hail.putCharacter(1,'e');