

CSSE 220 Day 2

Types, Loops, and Strings

Check out `LoopsAndStrings` from SVN

Strings

- ▶ `String myString = "hello";`
- ▶ `String otherString = new String("hello2");`
- ▶ Java's way of storing text data
- ▶ Has many handy functions like `substring`, `charAt`, etc. that you will slowly learn
- ▶ But how do you find out about these cool functions?

Java API Documentation

- ▶ What's an API?

- Application Programming Interface

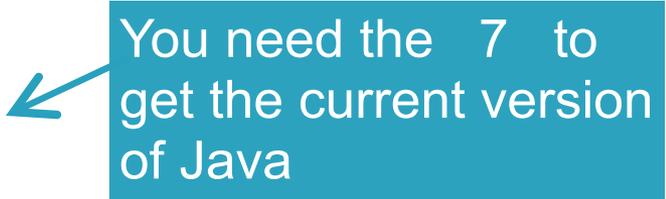
- ▶ The Java API on-line

- Google for: **java api documentation 7**

- Or go to: <http://download.oracle.com/javase/7/docs/api/>

- Also hopefully on your computer at

C:\Program Files\Java\jdk1.7.0_9\docs\api\index.html



You need the 7 to get the current version of Java

Java API Documentation

- ▶ What's an API?

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Note: Your version may be something other than 7.0_9. We recommend that you bookmark this page in your browser, so you can refer to it quickly, with or without an internet connection.

← You need the 7 to get the current version of Java

Java Documentation in Eclipse

- ▶ Setting up Java API documentation in Eclipse
 - Should be done already,
- ▶ Using the API documentation in Eclipse
 - Hover text
 - Open external documentation (Shift-F2)

```
main(String[] args) {
```

```
    is a java.lang.String
```

```
    JOpti
```

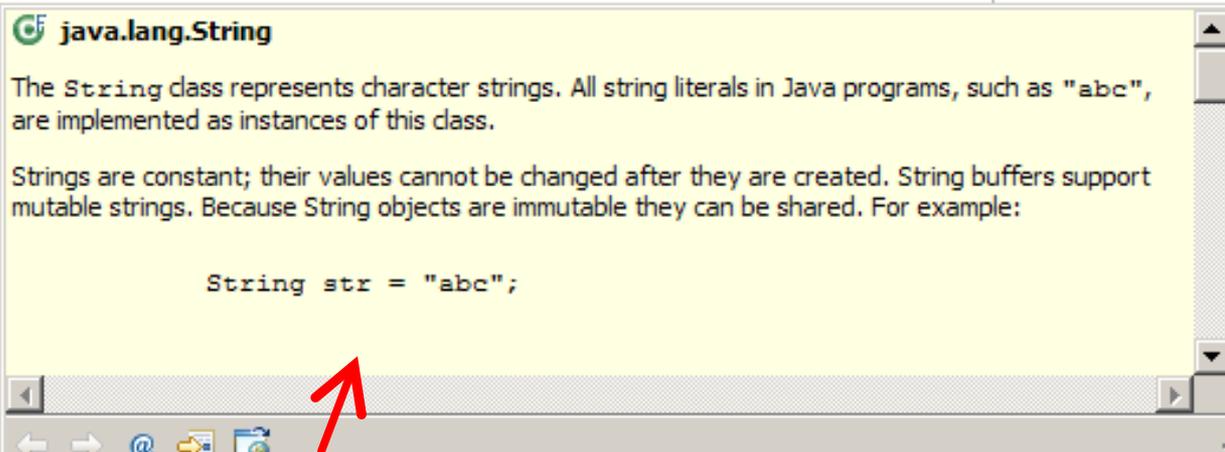
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java.lang.String

The `String` class represents character strings. All string literals in Java programs, such as `"abc"`, are implemented as instances of this class.

Strings are constant; their values cannot be changed after they are created. String buffers support mutable strings. Because String objects are immutable they can be shared. For example:

```
String str = "abc";
```

Exercise

»» Work on UsingStrings.java

Out of order!

Review Loops: while & for Loops

- ▶ While loop syntax: Similar as Python

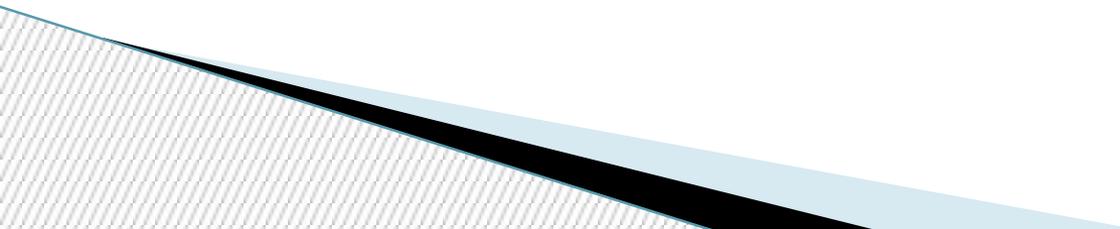
```
while (condition) {  
    statements  
}
```

- ▶ For loop syntax: Different from Python

```
for (initialization ; condition ; update) {  
    statements  
}
```

In both cases, curly braces optional if only one statement in body; but be careful!

Let's practice some loops

- ▶ Go to <http://codingbat.com/java/Warmup-2>
 - ▶ We'll do countXX together
 - ▶ Then you do doubleX, stringBits, and (if you have time) stringSplosion
- 

Primitive types

Primitive Type	What It Stores	Range
byte	8-bit integer	-128 to 127
short	16-bit integer	-32,768 to 32,767
int	32-bit integer	-2,147,483,648 to 2,147,483,647
long	64-bit integer	-2^{63} to $2^{63} - 1$
float	32-bit floating-point	6 significant digits (10^{-46} , 10^{38})
double	64-bit floating-point	15 significant digits (10^{-324} , 10^{308})
char	Unicode character	
boolean	Boolean variable	false and true

figure 1.2

The eight primitive types in Java

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figure 1.2

The eight primitive types in Java

Most common
number types in
Java code

Exercise

»» Work on SomeTypes.java

Java Loop Examples

- ▶ Look at `Investment.java`, `InvestmentTest.java` and `InvestmentRunner.java`
 - Practice using a single `while` loop
 - Study and run the code, then answer quiz questions

- ▶ Do the `Rates` exercise in the `Rates.java` file
 - You'll practice using a single `for` loop in that exercise
 - Hint: in `printf`'s format string, use `%%` to display a single `%`

Sentinel Values: A Loop and a Half

- ▶ **Sentinel value**—a special input value not part of the data, used to indicate end of data set
 - Enter a quiz score, or Q to quit:
- ▶ **A loop and a half**—a loop where the test for termination comes in the middle of the loop
- ▶ Examples... (on next slide)

Two Loop-and-a-half Patterns

// Pattern 1

```
boolean done = false;
while (!done) {
    // do some work

    if (condition) {
        done = true;
    } else {
        // do more work
    }
}
```

The variable *done*
here is called a *flag*

// Pattern 2

```
while (true) {
    // do some work

    if (condition) {
        break;
    }

    // do more work
}
```

Work Time

- » Wrap up Rates and UsingStrings if you haven't already, then continue working on TwelveProblems

Q7–Q9, turn in quiz now