

Strings

A Sequence of Characters
Something to Print

The String Class

- This is an important predefined, special class that is part of the Java Language
- A String is a sequence of characters surrounded by double quotes, e.g. `"Hello"`.
- Strings can be concatenated (joined) using the `+` operator.
- Strings have some useful methods, e.g. `substring()` and `length()`.

Strings are Objects

- Because a String is an Object, you use the **new** keyword to create a String.

```
String name = new String("Harry");
```

- In fact, a String is a special Object and you can also create it without using the new keyword.

```
String name = "Harry";
```

Name versus Value

- What does the following code print

```
String lecturer = "Charlie";  
  
System.out.print(lecturer);  
System.out.print("lecturer");  
System.out.print(Charlie); <- error  
System.out.print("Charlie");
```

- `lecturer` refers to the String `"Charlie"` and that's what it means to the computer.

String Examples

- Strings can be concatenated using the `+` operator:

```
String t1 = "Two bee";  
String t2 = " R knot 2B.";  
System.out.print(t1 + t2);
```

prints out: `Two bee R knot 2B.`

Integers concatenated with Strings

```
// what's printed?  
System.out.print("4" + "5");  
System.out.print("4" + 5);  
System.out.print(4 + 5);  
System.out.print("4" + "005");  
System.out.print("4" + 005);  
System.out.print("4" * 5);
```

- An integer *concatenated* with a string is automatically converted to a string. Among other things, this means you can no longer do arithmetic with it.

Methods of the String Class

- Strings have a method called `length()`:

```
String t1 = "To be ";
```
- `t1.length()` is an expression that returns the integer 6, the number of characters in `t1`.

`substring()`

- The `substring` method returns a *substring* of a string. It has two forms:
 - `substring(start, pastEnd)`
 - `substring(begin)`
- The first returns the String that starts at `start` and goes up to (not including) `pastEnd`.
- The second returns a String starting at `begin`.

`substring()` Examples

```
String name = "Harry";  
String x = name.substring(0, 2);  
// x has value "Ha"
```

H	a	r	r	y
0	1	2	3	4

The new String starts at character 0 and goes up to, but not including, character 2

`substring()` Examples

```
String name = "Harry";  
String x = name.substring(1, 4);  
// x has value "arr"
```

H	a	r	r	y
0	1	2	3	4

The new String starts at character 1 and goes up to character 4, x is "arr"

`substring()` Examples

```
String name = "Harry";  
String tail = name.substring(2);  
// tail has value "rry"
```

H	a	r	r	y
0	1	2	3	4

The new String starts at character 2 and continues till the end => tail is "rry"

Exercise

- Write a program which when given a first name, second name and a class group, will print out a username. E.g. given *bob marley ms1*, the program will print *bmarle-ms1*
- Note: to make a username, take
 - the first letter of your first name
 - plus first five of your second name
 - plus a dash followed by your class group

Questions?