

CS120: Java Strings

W. Michael Petullo

University of Wisconsin–La Crosse

As of October 6, 2021





Java Strings: char

```
char c1 = 'X';  
char c2 = '\\t';
```

A char stores a single character values. Java treats char s similarly to numbers:

```
for (char c = 'A'; c < 'Z'; c++) {  
    System.out.print(c);  
}
```

This should not be a surprise, since numbers underlie the char type, and the operations make sense because characters have an ordering. We can also compare characters:

```
char c1 = 'a', c2 = 'A';  
if (c1 == c2) {  
    System.out.println("Match.");  
}
```



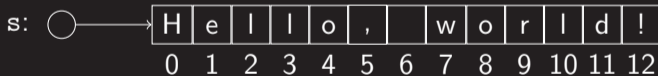
Java Strings: Declaration & Assignment

Declare a variable
of type String

```
String s = "Hello, world!";
```

Create a new String object
containing the given text

A string stores a sequence of character values (char). String objects are immutable; they cannot be changed. However, a String variable can be updated to reference a different string using assignment.



A variable of type String holds a reference to a String.



Java Strings: length, charAt, and Traversal

String traversal

```
1 String fruit = "Apple";
2 for (int i = 0; i < fruit.length(); i++) {
3     char letter = fruit.charAt(i);
4     System.out.println(letter);
5 }
```

Think Java

length A method that returns the length of the string

charAt A method that returns the `char` from the string at the given index

Warning: String indices start at zero.

What would `System.out.println (s.charAt(s.length ()))` do?



Java Strings: substring

`substring(n)` A method that returns a substring formed starting at index `n`

`substring(n, m)` A method that returns a substring formed starting at index `n` and ending at `m`

```
1  class Substring {
2      public static void main(String [] args) {
3          String s = "https://www.flyn.org/courses/cs120";
4          String s1 = s.substring(8);
5          String s2 = s.substring(8, 20);

7          System.out.println(s);
8          System.out.println(s1);
9          System.out.println(s2);
10     }
11 }
```



Java Strings: indexOf

`indexOf(s)` Return the index of the first occurrence of `s` in the string

`indexOf(s, n)` Return the index of the first occurrence of `s`, starting at index `n` in string

```
1  class IndexOf {
2      public static void main(String [] args) {
3          int i1 = 0, i2 = 0;

4
5          String s = "https://www.flyn.org/courses/cs120";
6          i1 = s.indexOf("courses");
7          i2 = s.indexOf("/", i1);

8
9          System.out.println(s);
10         System.out.printf("%d, %s\n", i1, s.substring(i1));
11         System.out.printf("%d, %s\n", i2, s.substring(i2 + 1));
12     }
13 }
```



Java Strings: Comparison

```
1 String s1 = new String("Hello , world!");
2 String s2 = s1;
3 String s3 = new String("Hello , world!");
4 if (s1 == s2) { ... }
5 if (s1.equals(s3)) { ... }
```

`equals(s)` Returns true is the string contains the same sequence of characters as s





Java Strings: Converting To and From

`Integer.parseInt(s)` Return the integer represented by string `s`

`Integer.toString(d)` Return the string form of the integer `d`

```
1  class Convert {
2      public static void main(String[] args) {
3          int d = Integer.parseInt(args[0]);
4          int dPlus = d + 1; // Can use integer in arithmetic.
5          System.out.printf("%d\n", dPlus);

7          // Can append string to string.
8          String s = "String form: " + Integer.toString(dPlus);
9          System.out.println(s);
10     }
11 }
```




Java Strings: format

`String.format(...)` Build a `String` in a manner similar to `printf`

```
1  class Format {
2      public static void main(String [] args) {
3          String s = String.format("Happy %f day!\n", Math.PI);
4      }
5  }
```



Strings: Assignments

Completed Ch. 9; completed Aquinas multiple, km, and ordinals in Java

Graded Homework A reprieve to study for test!

Ungraded Labs Aquinas: for and guess3

Reading Chapter 6

An exam is coming. Expect:

- ▶ Open written resources
- ▶ 55 minutes, proctored in class, individual effort
- ▶ Write programs or Java fragments on paper
- ▶ Answer questions about Java and computer science

To study: complete reading, labs, and homework. Note that I gave you lab solutions to study. Can you write simple programs quickly? Organize the examples you have.

<https://www.flyn.org/courses/cs120-2021-fall/schedule>