

CSE 11

Accelerated Intro to Programming

Lecture 9

Greg Miranda, Summer 2 2021

This lecture is being recorded

Announcements

- PA5 due Thursday @ 11:59pm
- PA2 & PA3 resubmissions due Friday @ 11:59pm
 - No tutoring hours on Friday
- Exam 1
 - Next Friday/Saturday
 - Details on Piazza
 - Coding exam, untimed

Arrays

- Arrays
 - Storing sequences of values
 - Something computers are really good at
 - Built-in way of storing data in a number of programming languages
- Things we need to know:
 - Creating arrays
 - Accessing elements in arrays
 - How Java uses arrays

Creating Arrays

- So far, we've seen a number of different data types in Java
 - int
 - double
 - boolean
 - String
 - ClassName
 - Point
 - RectRegion
 - TextTweet
 - and many more

- Arrays are a new kind of data type
- To create an array, we need to use a new kind of syntax

Access Elements in Arrays

- How to access the first number in the array?
- What about the second number?

More Arrays

- Can we make an array of Strings?
 - If so, how?

Another Array Feature

- What if we wanted to know how many elements were in an array?
 - How could we do that?

Method that Works with Arrays

- Write a method that is going to take an int array as a parameter and return a boolean
 - Return true if the array has no elements in it and false otherwise

Memory Models (Diagrams)

- Whenever we introduce a new Java feature:
 - We write some Java code
 - We also draw pictures – memory models (memory diagrams)
 - To understand what happened

Main

- Something new....

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

Printing

- Java statement to print to the console/terminal:

```
System.out.println("Hello!");
```

Static

- static
 - A modifier on methods
 - A class method

Running a Java Program

- To run a Java program:
 - `javac ClassName.java`
 - To compile it
 - `java ClassName`
 - To run it
- What java does when we run a program
 - It looks for a method with exactly this signature for `main()`
 - It expects there to be a string array of arguments
 - And that method has to be defined on the class we give the java command

Command Line Arguments

- `public static void main(String[] args) {`
 - `args` is a reference to an array of `Strings`
 - We can use array access to get to the contents

Local Variables

- We've seen before that we can create variables by writing what looks like a field definition
 - It's the same syntax
- Variable definitions inside a method (like main):
 - `int x = 10;`
 - `int y = x + 5;`
 - `String s = "abc" + "def";`
- Variable declaration
 - `<type> <name> = <expression>`
- Variable update (or variable assignment):
 - `<name> = <expression>`

Loops

- Loops
 - One of the really powerful tools we have as programmers
 - Can do more useful work with arrays
 - Going to end up using variable update in a particular way

For-each Loop

```
for (<type> <name> : <array>) {  
    <body>  
}
```