CSE 11
Accelerated Intro to Programming
Lecture 9

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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 ⟶ ~2 hours
    - 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?

length method?   No

→ length → field

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….

```java
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>
}
```