Lecture 2

Calling and Defining Methods in Java

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- Slides are **always** uploaded to the website before lectures!
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  - print out the “Printable PDF” version of the slides before lecture and take notes while I’m speaking!
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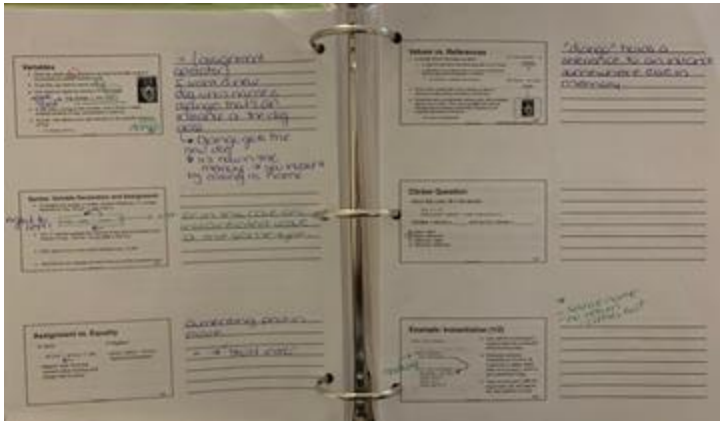
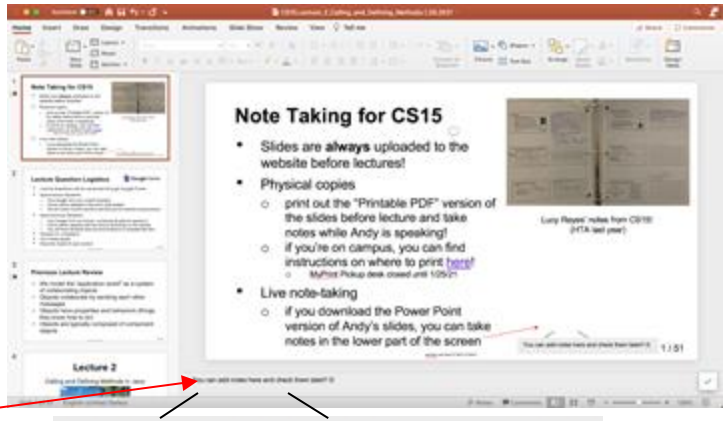
- If you download the PowerPoint version of slides, you can take notes in the lower part of the screen



Lucy Reyes’ notes from CS15!
(HTA in 2019)

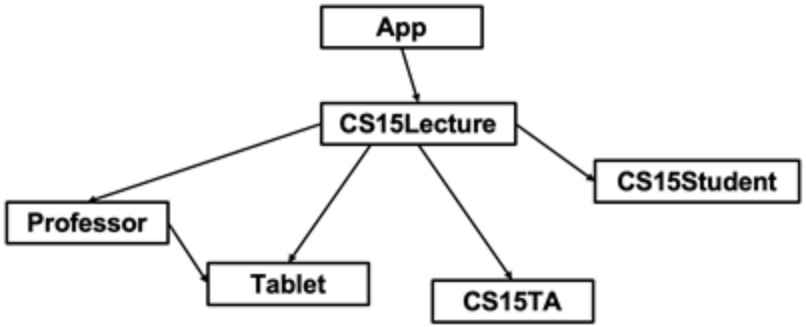


Outline

- Calling methods
- Declaring and defining a class
- Instances of a class
- Defining methods
- The `this` keyword

What's a Program? (1/4)

- Model of complex system
  - model: simplified representation of important features of something, either tangible or abstract
  - system: collection of collaborating components



What’s a Program? (2/4)

- Sequences of instructions expressed in a specific programming language
  - **syntax**: grammatical rules for writing instructions
  - **semantics**: meaning/interpretation of instruction

What's a Program? (3/4)

- Instructions written (programmed/coded) by programmer (or GAI)
  - coded in a specific programming language
  - *programming languages* allow you to express yourself precisely unlike *natural (human) language* that thrives on "shading", nuance, ambiguity, implicit context…
  - algorithms are 100% literal, cannot have ambiguities
- Real world examples
  - Banner, email, video games, smartphone and its apps; embedded computers in appliances and vehicles, ATMs…A Tesla is a display-driven computer on wheels
- Executed by computer by carrying out individual instructions

What’s a Program? (4/4)

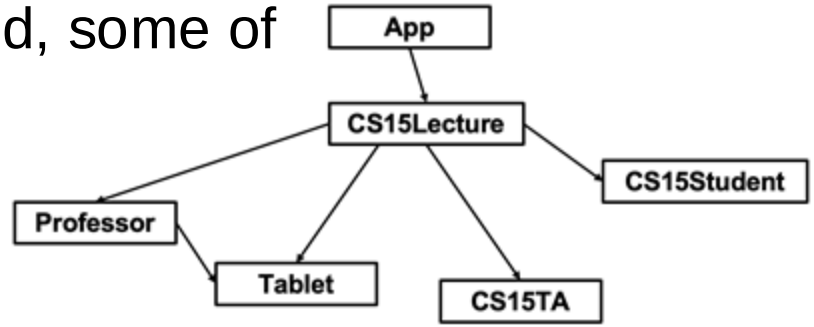
- We write in Java, a “high-level” language
- Our program is compiled by the Java compiler into ”low-level” instruction the computer can actually understand
- The computer then executes this compiled code and responds

Object Oriented Programming

- Models the “application world” as system of collaborating objects
- In OOP, objects are ”smart” in their specialty
  - have properties and behaviors (things they know how to do)
- Objects collaborate by sending each other messages
- Objects typically composed of other component objects

OOP as Modeling

- Write programs by modeling the problem as system of *collaborating components*
  - you determine what the building blocks are
  - put them together so they cooperate properly
  - like building with smart Legos, some of which are pre-defined, some of which you design!
  - class diagrams, like the one shown here, are a great way to help model your program!



Java Programs

- CS15 uses *Java*
  - Java was developed by Sun Microsystems (absorbed by Oracle)
    - the Sunlab was named for the desktop computers that it held for over a decade
  - it is meant to run on many “platforms” without change, from desktop to cell phones
  - platform independence
  - but Java isn’t sufficient by itself: many layers of software in a modern computer

Outline

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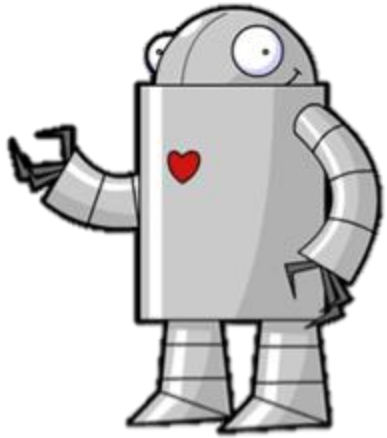
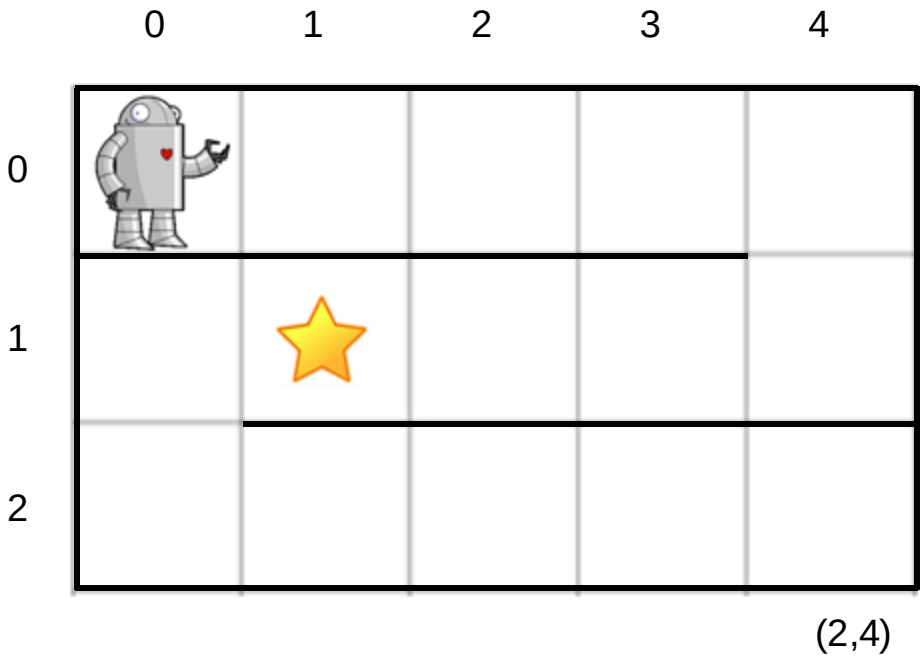
Meet samBot (kudos to former HTA Sam Squires)

- `samBot` is a robot who lives in a 2D grid world
- She knows how to do two things:
  - move forward any number of steps
  - turn right 90º
- We will learn how to communicate with `samBot` using Java



Blue text = Java code!

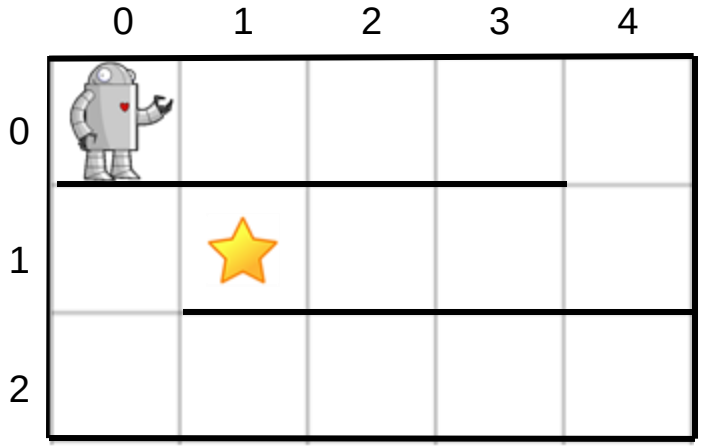
samBot's World



- This is `samBot`'s world
- `samBot` starts in the square at (0,0)
- She wants to get to the square at (1,1)
- Thick black lines are walls `samBot` can't pass through

Giving Instructions (1/3)

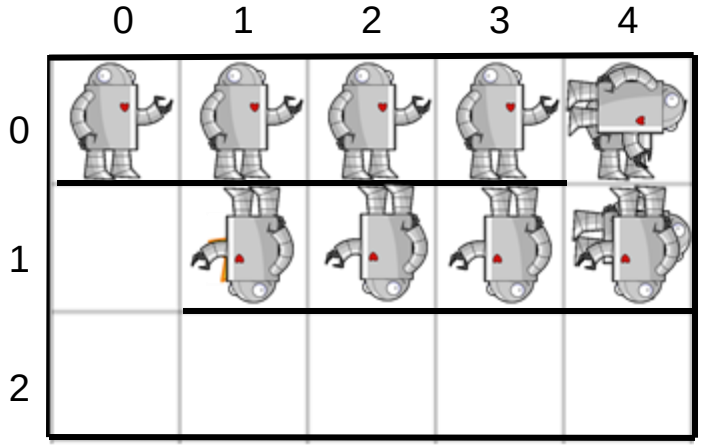
- **Goal**: move `samBot` from starting position to destination by giving her a list of instructions
- `samBot` only knows how to “move forward *n* steps” and “turn right”
- What instructions should be given?



Giving Instructions (2/3)

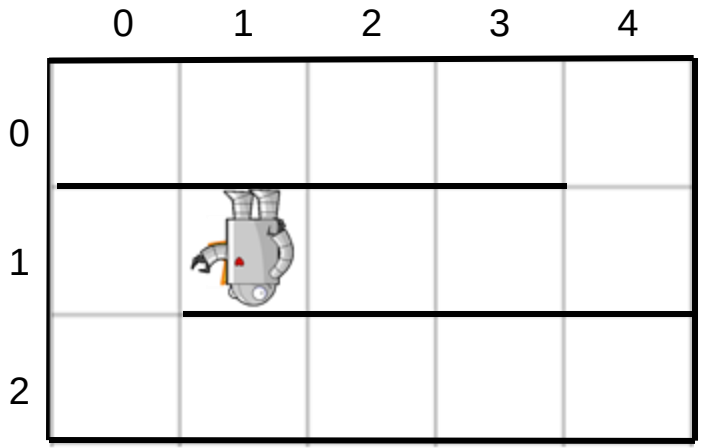
Note: samBot moves in the direction her outstretched arm is pointing.
Yes, she can move sideways and upside down in this 2D world!

- “Move forward 4 steps”
- “Turn right”
- “Move forward 1 step”
- “Turn right”
- “Move forward 3 steps”



Giving Instructions (3/3)

- Instructions must be given in a language `samBot` knows
- That's where Java comes in!
- In Java, give instructions to an object by **giving it commands**
  - we use "sending a message" and "giving a command" as synonyms!



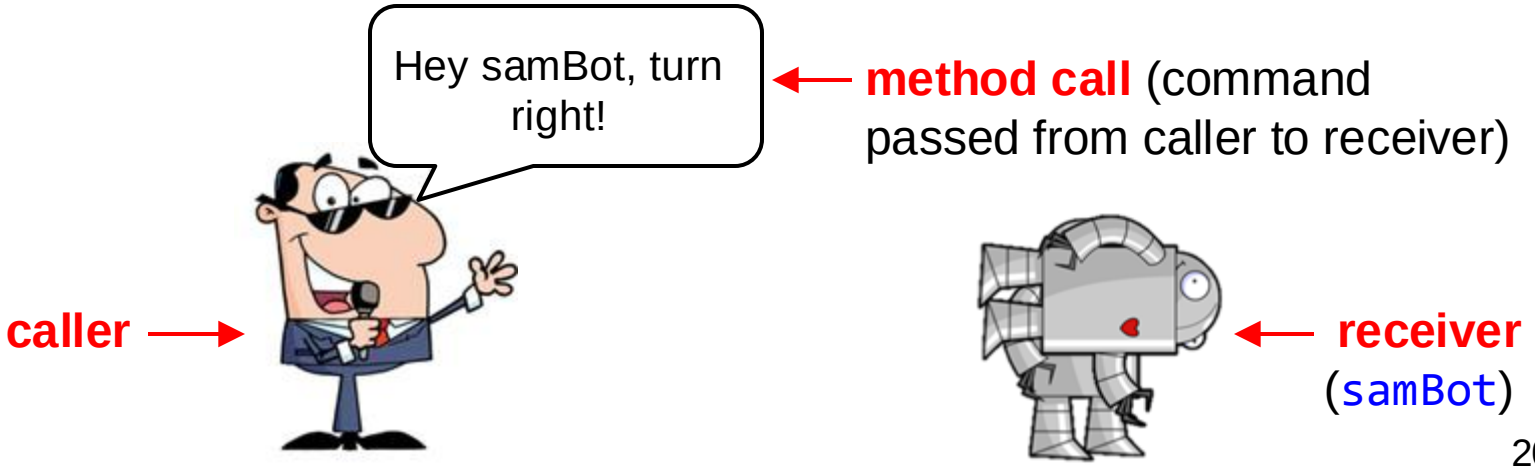
“Calling Methods”: Giving Commands in Java (1/2)

- `samBot` can only handle commands she knows how to respond to
- These responses are called **methods!**
  - “method” is short for “method for responding to a command.” Therefore, whenever `samBot` gets a command, she must respond by utilizing a predefined method
- Objects cooperate by giving each other commands
  - **caller** is the object giving the command
  - **receiver** is the object receiving the command

Red text = important vocabulary!

“Calling Methods”: Giving Commands in Java (2/2)

- `samBot` already has one method for “move forward *n* steps” and another method for “turn right”
- When we send a command to `samBot` to “move forward” or “turn right” in Java, we are **calling a method on `samBot`**



Turning samBot right

Method names don't have spaces! In CS15, we use a capitalization style called camelCase

- `samBot`'s "turn right" method is called `turnRight`
- To call methods on `samBot` in Java, you need to address her by name!
- To call `turnRight` method on `samBot`:

```
samBot.turnRight();
```

- Every command to `samBot` takes the form:

```
samBot.<method name(…)>;
```

You can substitute any method inside < >!

`;` ends Java statement

- What are those parentheses at the end of the method for?

Moving samBot forward

- Remember: when telling `samBot` to move forward, you need to tell her how many steps to move
- `samBot`'s "move forward" method is named `moveForward`
- To **call** this method in Java:

```
samBot.moveForward(<number of steps>);
```

- This means that if we want her to move forward 2 steps, we say:

```
samBot.moveForward(2);
```

Calling Methods: Important Points

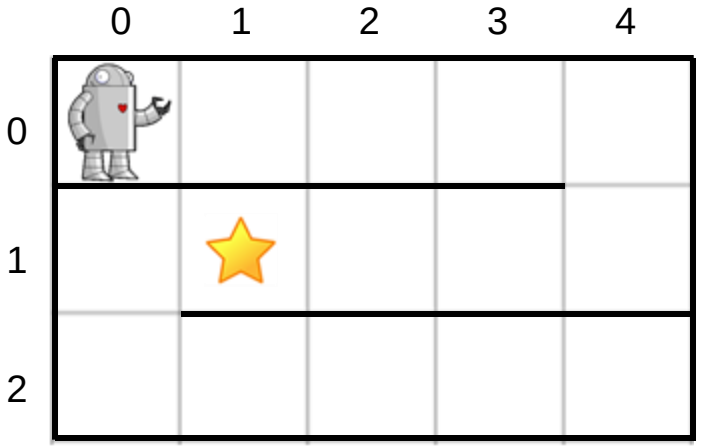
- Method calls in Java have parentheses after method's name
- In definition (body) of method, extra pieces of information to be taken in by the method are called **parameters;** in the call to the method, the actual values taken in are called **arguments**
  - e.g., in defining f(x), x is the parameter; in calling f(2), 2 is the argument
  - more on parameters and arguments next lecture!
- If method needs any information, include it between parentheses (e.g., `samBot.moveForward(2);`)
- If no extra information is needed, leave parentheses empty (e.g., `samBot.turnRight();`)

Guiding samBot in Java

- Tell `samBot` to move forward 4 steps → `samBot.moveForward(4);`
- Tell `samBot` to turn right → `samBot.turnRight();`
- Tell `samBot` to move forward 1 step → `samBot.moveForward(1);`
- Tell `samBot` to turn right → `samBot.turnRight();`
- Tell `samBot` to move forward 3 steps → `samBot.moveForward(3);`

"pseudocode"

An informal notation of English, math, and Java-like commands



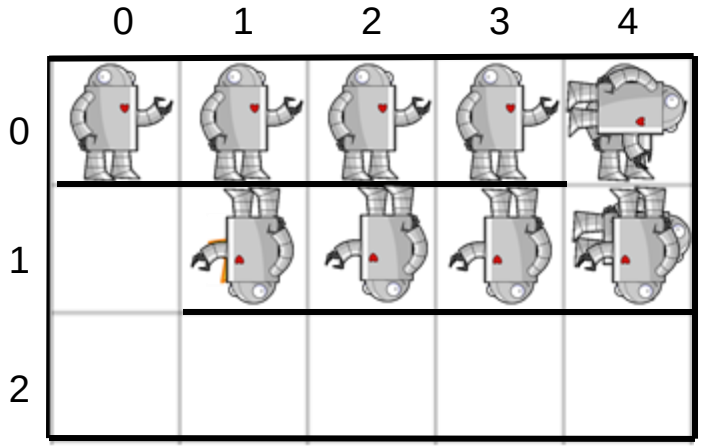
Java code

Hand Simulation

- Simulating lines of code **by hand** checks that each line produces correct action
- In **hand simulation**, **you play the role of the computer**
  - lines of code are “instructions” for the computer
  - try to follow “instructions” and see if you get desired result
  - if result is incorrect, one or more instructions or the order of instructions may be incorrect

Hand Simulation of This Code

```
samBot.moveForward(4);
samBot.turnRight();
samBot.moveForward(1);
samBot.turnRight();
samBot.moveForward(3);
```



TopHat Question Logistics

Join Code: 316062

- To make lectures less passive and improve engagement
- To gauge how well you are following a lecture, stop lecture and let you answer simple questions through **TopHat**
  - sign up here if you haven't done so already
- Questions will be released when a "TopHat Question" slide comes up
- Approximately 1-minute window to answer the question
- We will collect results real-time and discuss the answers during lecture
- 8% of total grade (with PLQs) – good reason to attend!
- Drop lowest 4 scores

TopHat Question

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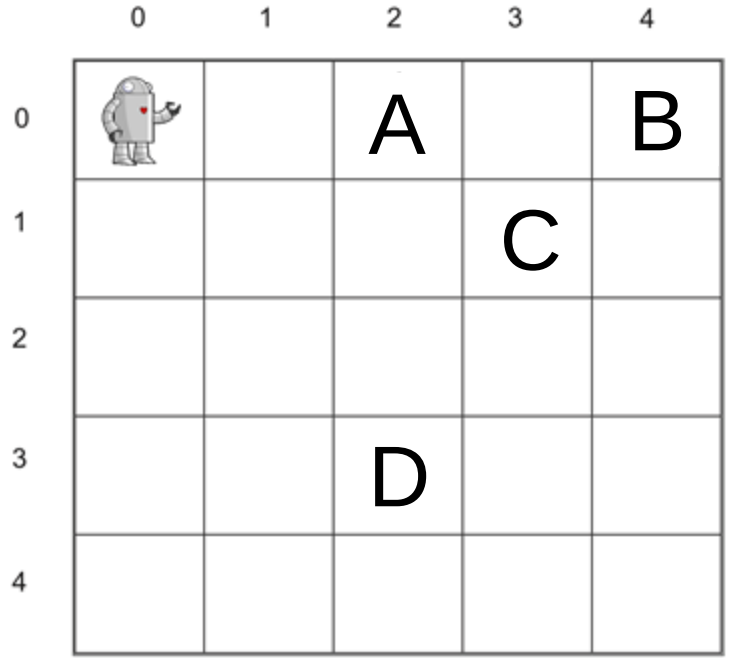
Where will `samBot` end up when this code is executed?

```
samBot.moveForward(3);
samBot.turnRight();
samBot.turnRight();
samBot.moveForward(1);
```

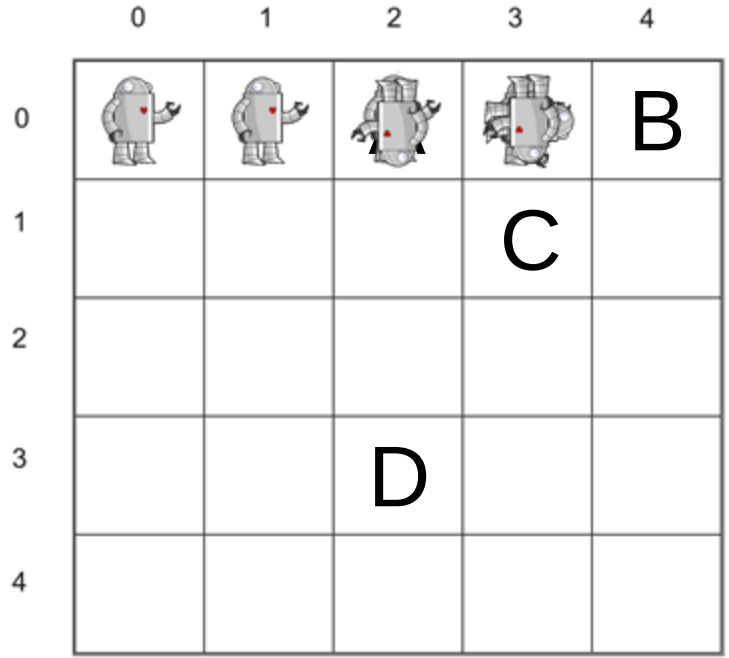


Choose one of the positions or
E: None of the above

Hand Simulation

Where will `samBot` end up when this code is executed?

```
samBot.moveForward(3);
samBot.turnRight();
samBot.turnRight();
samBot.moveForward(1);
```



Choose one of the positions or
E: None of the above

Putting Code Fragments in a Real Program (1/2)

- Let's demonstrate this code for real
- First, put it inside real Java program
- Grayed-out code specifies context in which an arbitrary robot named `myRobot`, a parameter of the `moveRobot` method, executes instructions
  - part of **stencil code** written for you by the TAs, which also includes any robot's capability to respond to `moveForward` and `turnRight`– more on this later

```
public class RobotMover {

    /* additional stencil code elided*/

    public void moveRobot(Robot myRobot) {
        myRobot.moveForward(4);
        myRobot.turnRight();
        myRobot.moveForward(1);
        myRobot.turnRight();
        myRobot.moveForward(3);
    }
}
```

Putting Code Fragments in a Real Program (2/2)

- Before, we've talked about objects that handle messages with "methods"
- Introducing a new concept… **classes**!

We're about to explain this part of the code!

```
public class RobotMover {

    /* additional code elided */

    public void moveRobot(Robot myRobot) {
        myRobot.moveForward(4);
        myRobot.turnRight();
        myRobot.moveForward(1);
        myRobot.turnRight();
        myRobot.moveForward(3);
    }
}
```

Outline

- Calling methods
- Declaring and defining a class
- Instances of a class
- Defining methods
- The `this` keyword

What is a class?

- A `class` is a blueprint for a corresponding type of object
- An object's `class` defines its properties and capabilities (methods)
  - more on this in a few slides!
- Let's embed the `moveRobot` code fragment (method) that moves `samBot` (or any other `Robot`) in a new `class` called `RobotMover`
- Need to tell Java compiler about `RobotMover` before we can use it

```
public class RobotMover {

    /* additional code elided */

    public void moveRobot(Robot myRobot) {
          myRobot.moveForward(4);
          myRobot.turnRight();
          myRobot.moveForward(1);
          myRobot.turnRight();
          myRobot.moveForward(3);
    }
}
```

Declaring and Defining a Class (1/3)

- Like a dictionary entry, first **declare** term, then provide **definition**
- First line **declares** `RobotMover` class
- Breaking it down:
  - `public` indicates any other object can use instances of this class
  - `class` indicates to Java compiler that we are about to define a new class
  - `RobotMover` is name chosen for our class

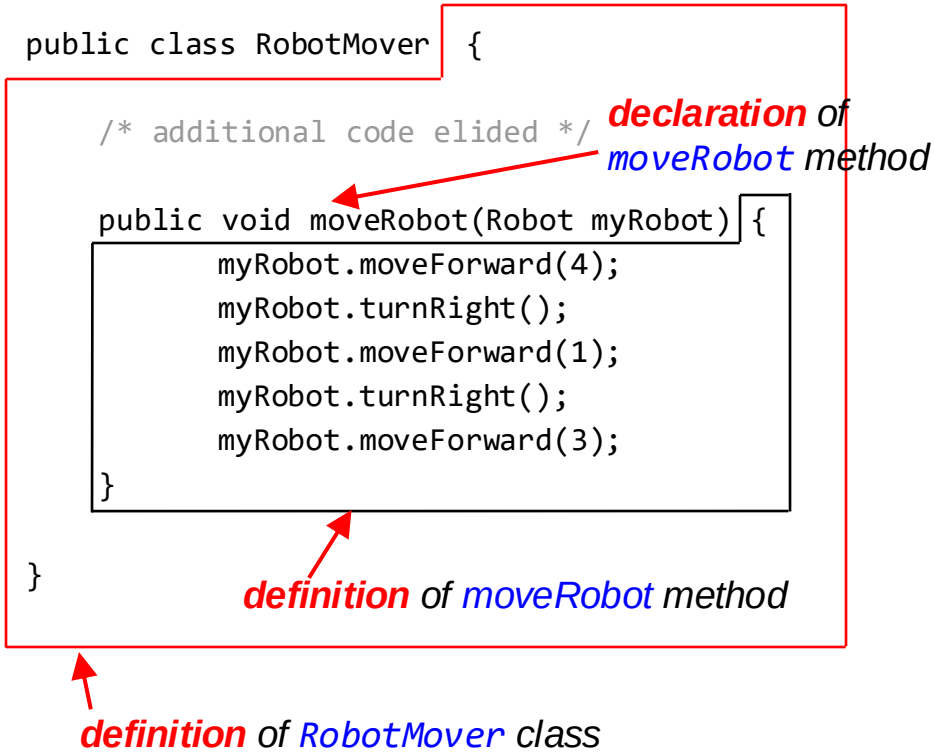
***declaration** of the `RobotMover` class*

```
public class RobotMover {

    /* additional code elided */

    public void moveRobot(Robot myRobot) {
          myRobot.moveForward(4);
          myRobot.turnRight();
          myRobot.moveForward(1);
          myRobot.turnRight();
          myRobot.moveForward(3);
     }
}
```

Note: `public` and `class` are Java "reserved words" aka "keywords" and have pre-defined meanings in Java; use Java keywords a lot

Declaring and Defining a Class (2/3)

- **Class definition** (aka “body”) defines properties and capabilities of `class`
  - contained within curly braces that follow the `class` declaration
- A `class`’s capabilities (“what it knows how to do”) are defined by its **methods** – `RobotMover` thus far only shows one specific method, `moveRobot`
  - each method has a declaration followed by its definition (also enclosed in {…} braces)
- A `class`’s properties are defined by its **instance variables** – more next week



Declaring and Defining a Class (3/3)

- **General form for a class:**

```
<visibility> class <Name> {
    <code (properties and
capabilities) that defines class>

}
```

declaration

definition

```
public class RobotMover {
    /* additional code elided */
    public void moveRobot(Robot myRobot) {
        /* method body */
    }
}
```

- To make code more compact, typically put opening brace on same line as declaration - Java compiler doesn't care
- Each `class` goes in its own file, where **name of file must match name of class**
  - `RobotMover` class is contained in file "RobotMover.java"

The Robot class (defined by the TAs)

Note: Normally, support code is a “black box” that you can’t examine

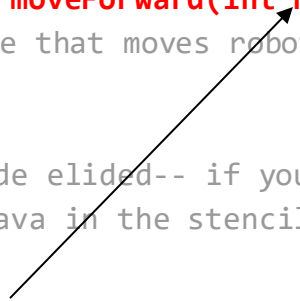

```
public class Robot {

    public void turnRight() {
        // code that turns robot right
    }

    public void moveForward(int numberOfSteps) {
        // code that moves robot forward
    }

    /* other code elided-- if you’re curious,
    check out Robot.java in the stencil code!*/
}
```

in-line comment

- `public class Robot` **declares** a **class** called `Robot`
- Information about the properties and capabilities of `Robot`s (the **class definition**) goes within the red curly braces

Methods of the TA's `Robot` class

```
public class Robot {

      public void turnRight() {
            // code that turns robot right
      }

      public void moveForward(int numberOfSteps) {
            // code that moves robot forward
      }

      /* other code elided-- if you're curious, check
      out Robot.java in the stencil code!*/
}
```



Note that when we call `moveForward`, we have to pass an argument of type `int` or the Java compiler will throw an error

- `public void turnRight()` and `public void moveForward(int numberOfSteps)` each **declare a method**
  - more on `void` later!
- `moveForward` needs to know how many steps to move, so the parameter is `int numberOfSteps` within parentheses
  - `int` tells compiler this parameter is an "integer" ("`moveForward` takes a single parameter called `numberOfSteps` of type `int`")

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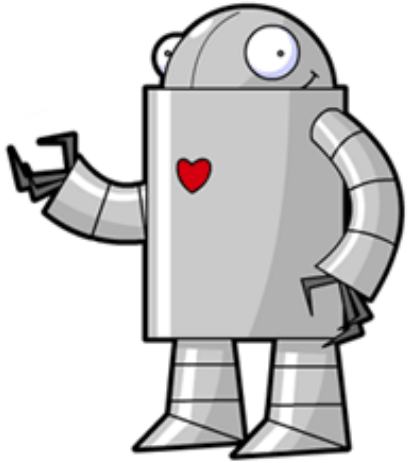
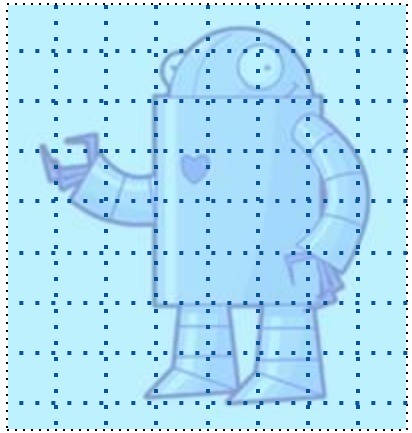
Classes and Instances (1/4)



- `samBot` is an **instance** of class `Robot`
  - this means `samBot` is a particular `Robot` that was built using the `Robot` class as a blueprint (another **instance** could be `chloeBot`)
- All `Robot`s (all **instances** of the class `Robot`) are restricted to **the exact same capabilities**: the methods defined in the `Robot` class. What one `Robot` **instance** can do, all **instances** can do since they are made with the same blueprint!
- All `Robot`s also have **the exact same properties** (i.e., every `Robot` has a `color` and a `size`)
  - they all have these properties (e.g. `size`), but values of these properties may differ between **instances** (e.g., a big `samBot` and small `chloeBot`)

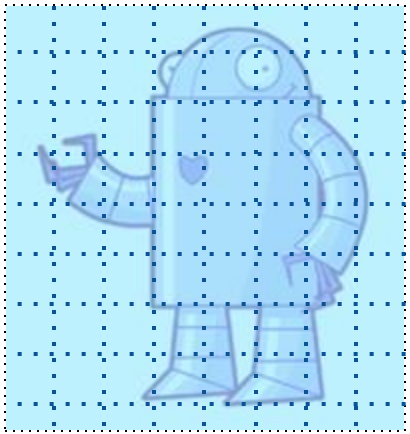
Classes and Instances (2/4)



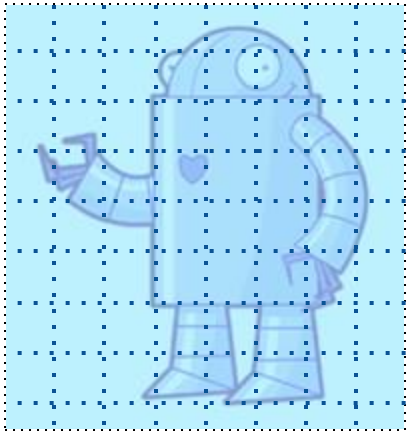
The `Robot` class is like a blueprint

Classes and Instances (3/4)

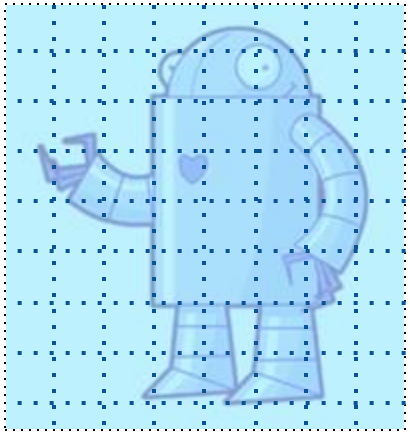
- Can use the `Robot` class to build actual `Robot`s - **instances** of the class `Robot`, whose properties (like their color in this case) may vary (next lecture)



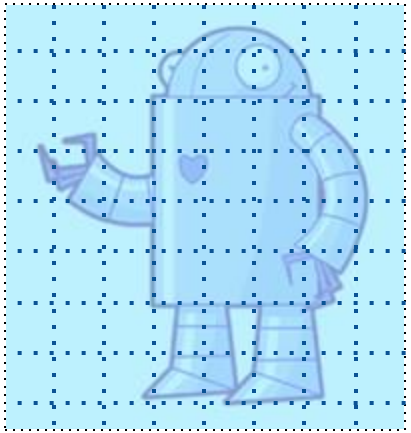
samBot



blueBot



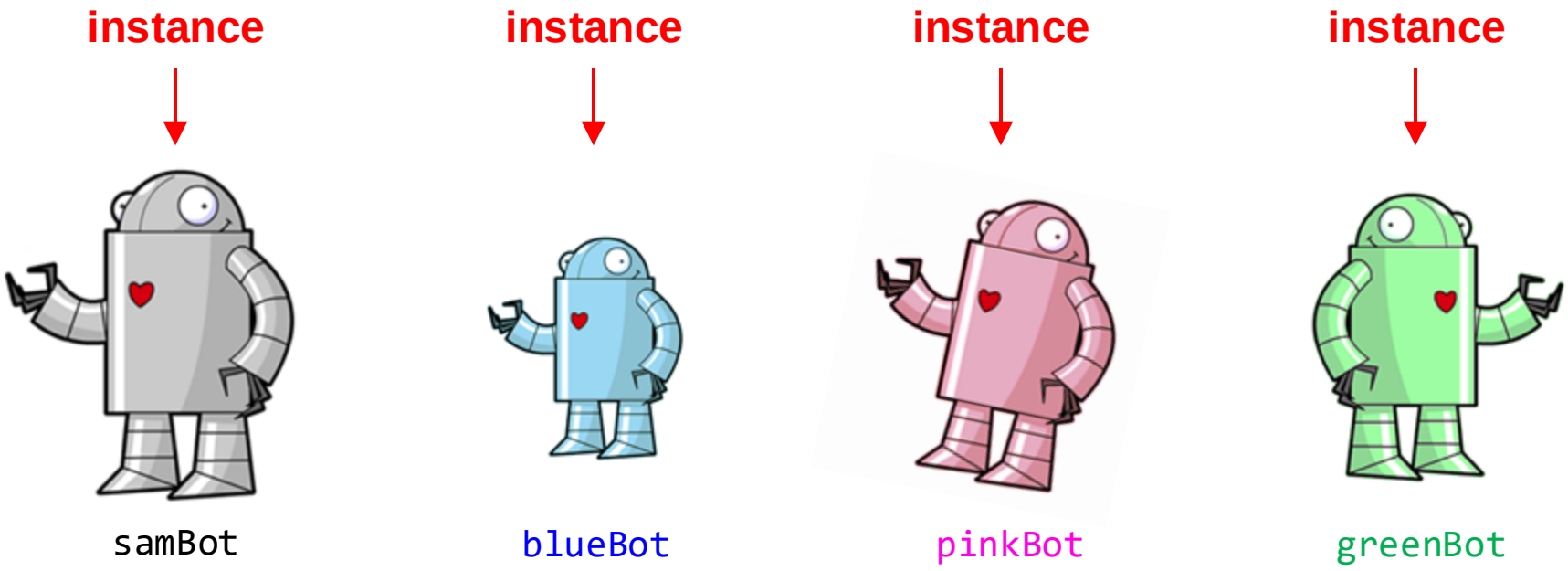
pinkBot



greenBot

Classes and Instances (4/4)

- Method calls are done on instances of the `class`. These are four instances of the same `class` (blueprint)



TopHat Question

Join Code: 316062

You know that `blueBot` and `pinkBot` are instances of the same class. Let's say that the call `pinkBot.chaChaSlide();` makes `pinkBot` do the cha-cha slide. Which of the following is true?

A. The call `blueBot.chaChaSlide();` might make `blueBot` do the cha-cha slide or another popular line dance instead

B. The call `blueBot.chaChaSlide();` will make `blueBot` do the cha-cha slide

C. You have no guarantee that `blueBot` has the method `chaChaSlide();`

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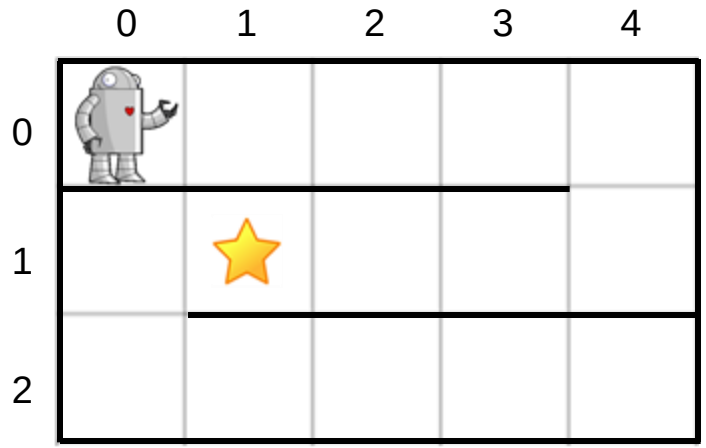
Defining Methods



- We have already learned about **defining classes**, let's now talk about **defining methods**
- Let's use a variation of our previous example

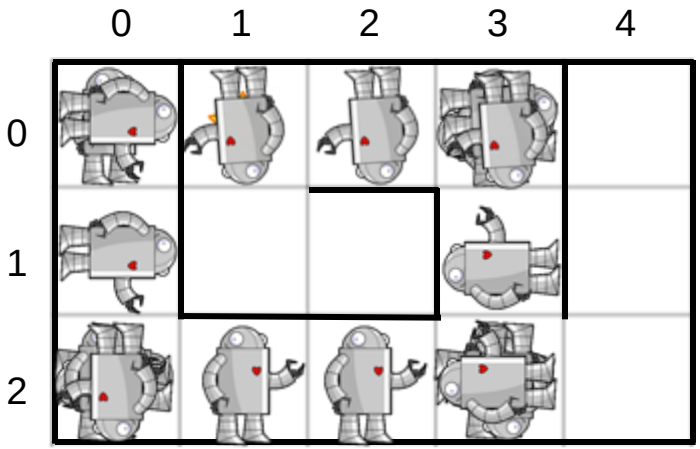
```
public class RobotMover {
    /* additional code elided */

    public void moveRobot(Robot myRobot) {
          // Your code goes here!
          // …
          // …
     }
}
```

Declaring vs. Defining Methods

- **Declaring** a method means the `class` knows how to do a new task, e.g., any instance of class `Robot` can `chaChaSlide()`
- **Defining** a method actually explains how all **instances** of the `class` execute this task (i.e., what sequence of commands it specifies)
  - `chaChaSlide()` could include stepping backwards, alternating feet, stepping forward
- For now, you will need to both **declare** and **define** your methods

A Variation on `moveRobot` (1/2)




```
public class RobotMover {
    /* additional code elided */

    public void newMoveRobot(Robot myRobot) {
        myRobot.turnRight();
        myRobot.moveForward(2);
        myRobot.turnRight();
        myRobot.turnRight();
        myRobot.turnRight();
        myRobot.moveForward(3);
        myRobot.turnRight();
        myRobot.turnRight();
        myRobot.turnRight();
        myRobot.moveForward(2);
        myRobot.turnRight();
        myRobot.turnRight();
        myRobot.turnRight();
        myRobot.moveForward(2);
    }
}
```

A Variation on `moveRobot` (2/2)

- Lots of code for a simple problem
- Any Robot instance like `samBot` only knows how to turn right, so must call `turnRight` three times to make her turn left
- If she understood how to “turn left,” would be much less code!
- We can modify `samBot` to turn left by **declaring** and **defining** a new method in `Robot` called `turnLeft`

```
public class RobotMover {
    /* additional code elided */

    public void newMoveRobot(Robot myRobot) {
        myRobot.turnRight();
        myRobot.moveForward(2);
        myRobot.turnRight();
        myRobot.turnRight();
        myRobot.turnRight();
        myRobot.moveForward(3);
        myRobot.turnRight();
        myRobot.turnRight();
        myRobot.turnRight();
        myRobot.moveForward(2);
        myRobot.turnRight();
        myRobot.turnRight();
        myRobot.turnRight();
        myRobot.moveForward(2);
    }
}
```

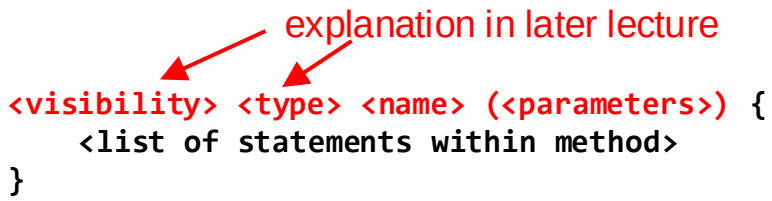
“turn left”

“turn left”

“turn left”

Defining a Method (1/2)

- Almost all methods take on this general form:



- When **calling** `turnRight` or `moveForward` on an **instance** of the `Robot` class, all code between method's curly braces is executed

```
public class Robot {

      public void turnRight() {
            // code that turns robot right
      }

      public void moveForward(int numberOfSteps) {
            // code that moves robot forward
      }

}
```

Defining a Method (2/2)

- We're going to **define** a new method: `turnLeft`
- To make a `Robot` turn left, tell it to turn right three times

```
public class Robot {

      public void turnRight() {
            // code that turns robot right
      }

      public void moveForward(int numberOfSteps) {
            // code that moves robot forward
      }

      public void turnLeft() {
            this.turnRight();
            this.turnRight();
            this.turnRight();
      }
}
```

Outline

- Calling methods
- Declaring and defining a class
- Instances of a class
- Defining methods
- The `this` keyword

The `this` keyword (1/3)

- When working with the class `RobotMover`, we were talking to `samBot`, an instance of class `Robot`
- To tell her to turn right, we said "`samBot.turnRight();`"
- Why do the TAs now write "`this.turnRight();`"?
- Recall the syntax for calling methods: <instance>.<method>();

```
public class Robot {

    public void turnRight() {
        // code that turns robot right
    }

    public void moveForward(int numberOfSteps) {
        // code that moves robot forward
    }

    public void turnLeft() {
        this.turnRight();
        this.turnRight();
        this.turnRight();
    }
}
```

The `this` keyword (2/3)

- The `this` keyword allows an instance (like `samBot`) to call one of its own methods on itself
- `this` is short for “this same instance” or “defined in this method”
- Use `this` to call an existing method of `Robot` class (`turnRight()`) within a new method of `Robot` class (`turnLeft()`)

```
public class Robot {

      public void turnRight() {
            // code that turns robot right
      }

      public void moveForward(int numberOfSteps) {
            // code that moves robot forward
      }

      public void turnLeft() {
            this.turnRight();
            this.turnRight();
            this.turnRight();
      }
}
```

The `this` keyword (3/3)

- When `samBot` is told by, say, a `RobotMover` instance to `turnLeft`, she responds by telling herself to `turnRight` three times
- `this.turnRight();` means “hey me, turn right!”
- `this` is not required for code to work, but it is good style and CS15 expects it

```
public class Robot {

	public void turnRight() {
		// code that turns robot right
	}

	public void moveForward(int numberOfSteps) {
		// code that moves robot forward
	}

	public void turnLeft() {
		this.turnRight();
		this.turnRight();
		this.turnRight();
	}
}
```

We're done!

- Now that `Robot` class has `turnLeft()`, we can call `turnLeft()` on any instance of `Robot`
- We'll see how we can use `turnLeft()` to simplify our code in a few slides

```
public class Robot {

	public void turnRight() {
		// code that turns robot right
	}

	public void moveForward(int numberOfSteps) {
		// code that moves robot forward
	}

	public void turnLeft() {
		this.turnRight();
		this.turnRight();
		this.turnRight();
	}
}
```

TopHat Question

Join Code: 316062

```
public class Robot {

      /* additional code elided */

      public void turnLeft() {
            this.turnRight();
            this.turnRight();
            this.turnRight();
      }
}
```

Given the `turnLeft` method, what can we say about `this.turnRight();`?

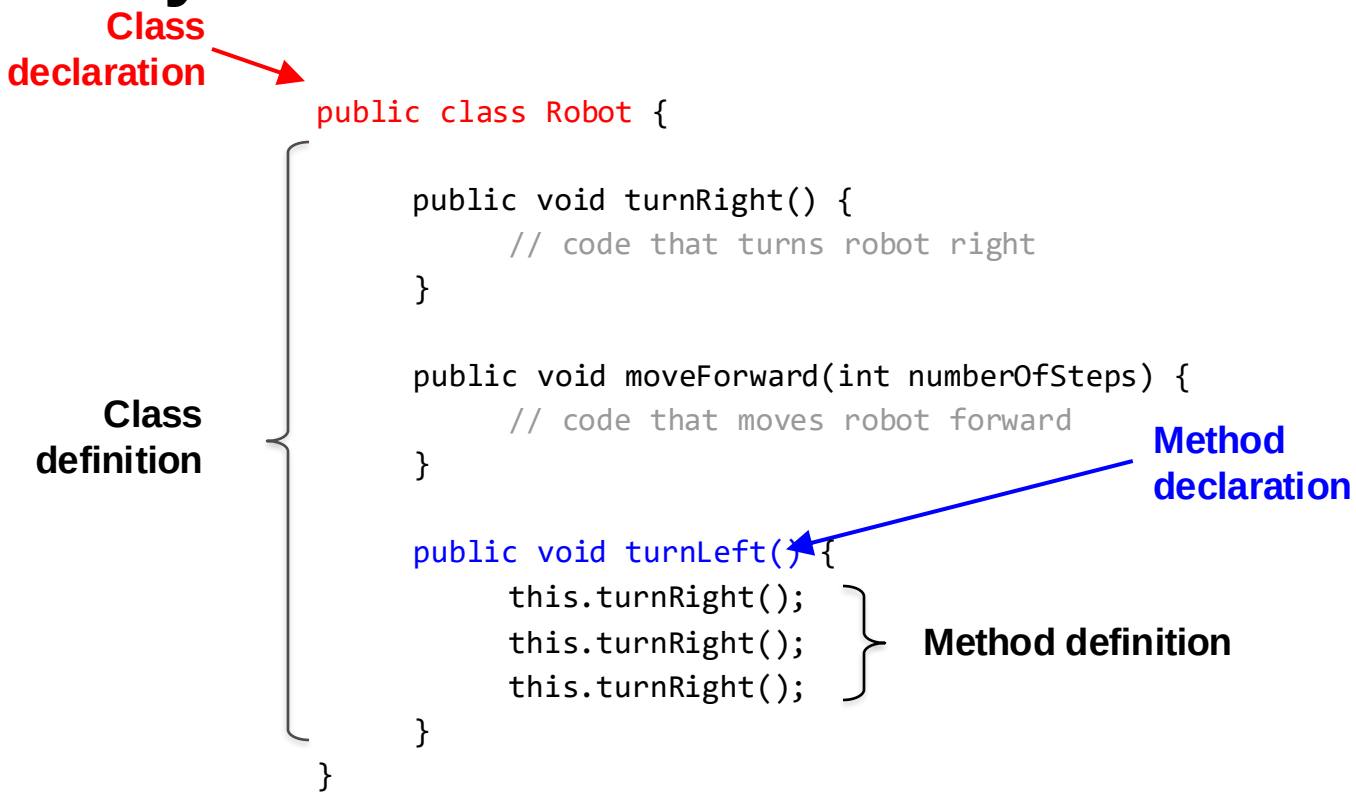
A. Other objects cannot call the `turnRight()` method on instances of the `Robot` class

B. The current instance of the `Robot` class is calling `turnRight()` on another instance of `Robot`

C. The current instance of the `Robot` class is calling the `turnRight()` method on itself

D. The call `this.turnRight();` will not appear anywhere else in the `Robot`'s class definition

Summary


Class declaration
public class Robot {
public void turnRight() {
// code that turns robot right
}
public void moveForward(int numberOfSteps) {
// code that moves robot forward
}
public void turnLeft() {
this.turnRight();
this.turnRight();
this.turnRight();
}
}
Class definition
Method declaration
Method definition

Simplifying our code using `turnLeft`

```
public class RobotMover {
      public void newMoveRobot(Robot myRobot) {
            myRobot.turnRight();
            myRobot.moveForward(2);
            myRobot.turnRight();
            myRobot.turnRight();
            myRobot.turnRight();
            myRobot.moveForward(3);
            myRobot.turnRight();
            myRobot.turnRight();
            myRobot.turnRight();
            myRobot.moveForward(2);
            myRobot.turnRight();
            myRobot.turnRight();
            myRobot.turnRight();
            myRobot.moveForward(2);
      }
}
```

```
public class RobotMover {
      public void newMoveRobot(Robot myRobot) {
            myRobot.turnRight();
            myRobot.moveForward(2);
            myRobot.turnLeft();
            myRobot.moveForward(3);
            myRobot.turnLeft();
            myRobot.moveForward(2);
            myRobot.turnLeft();
            myRobot.moveForward(2);
      }
}
```

We've saved a lot of lines of code by using turnLeft!

This is good! More lines of code make your program harder to read, debug, and maintain

turnAround (1/3)

- The TAs could also define a method that turns the Robot around 180^{o}
- See if you can declare and define the method turnAround

```
public class Robot {
	public void turnRight() {
		// code that turns robot right
	}

	public void moveForward(int numberOfSteps) {
		// code that moves robot forward
	}

	public void turnLeft() {
		this.turnRight();
		this.turnRight();
		this.turnRight();
	}

	// your code goes here!
	// …
	// …
	// …
}
```

turnAround (2/3)

- Now that the Robot class has the method turnAround, we can call the method on any instance of the class Robot
- There are other ways of implementing this method that can work as well

```
public class Robot {
	public void turnRight() {
		// code that turns robot right
	}

	public void moveForward(int numberOfSteps) {
		// code that moves robot forward
	}

	public void turnLeft() {
		this.turnRight();
		this.turnRight();
		this.turnRight();
	}

	public void turnAround() {
		this.turnRight();
		this.turnRight();
	}
}
```

turnAround (3/3)

- Instead of calling `turnRight`, could call our newly created method, `turnLeft`
- Both solutions will lead to the same end goal, in that they will turn the robot around 180^{o}
- How do they differ? When we try each of these implementations with `samBot`, what will we see in each case? Is one way better than the other?

```
public class Robot {
	public void turnRight() {
		// code that turns robot right
	}

	public void moveForward(int numberOfSteps) {
		// code that moves robot forward
	}

	public void turnLeft() {
		this.turnRight();
		this.turnRight();
		this.turnRight();
	}

	public void turnAround() {
		this.turnLeft();
		this.turnLeft();
	}
}
```

Summary (1/2)

- Classes
  - a **class** is a blueprint for a certain type of object
    - example: `Robot` is a `class`
- Instances
  - an **instance** of a `class` is a particular member of that `class` whose methods we can call
    - example: `samBot` is an **instance** of `Robot`

Summary (2/2)

- Calling methods
  - an instance can call on the methods defined by its `class`
  - **general form**: `instance.<method name>(<parameters>);`
    - example: `samBot.turnRight();`
- Declaring and defining methods
  - how we describe a capability of a `class`
  - **general form:** `<visibility> <type> <name> (<parameters>) { … }`
    - example: `public void turnLeft() { … }`
    - declaration is the “header” (shown above), definition inside the curly braces
- The `this` keyword
  - how an instance calls a method on itself within its class definition
    - example: `this.turnRight();`

Announcements

- Lab 0 Linux and Terminal out today
  - If you did not sign up for section or have not received an email about your section, please email the HTAs
  - Review GitHub/IntelliJ setup before lab!
- Rattytouille out tomorrow!
  - Due Saturday 09/14
  - No Early or Late Hand-in
- RISD students: please email the HTAs after class so we can make sure we have your emails
- Newly registered RISD students come up to speak with Andy after class

Intro to SRC!!!!!!

CS15 Fall 2024

Meet your STAs!

Sarah Roberts

Year: *super* Senior
CS + Religious Studies

A.J. Shulman

Year: Sophomore
CS + Comp Neuro

Lily Young

Year: Sophomore
English + CS

SRC @ Brown (by the numbers)

2019
Year SRC program was founded

4
F ‘24 SRC-focused courses

18
F ‘24 CS Courses Implement SRC

CSCI 1805 -- Computers, Freedom and Privacy
CSCI 1860 – Cybersecurity Law and Policy
CSCI 1870 – Cybersecurity Ethics
CSCI 1953A - Accessible and Inclusive Cybersecurity and Privacy

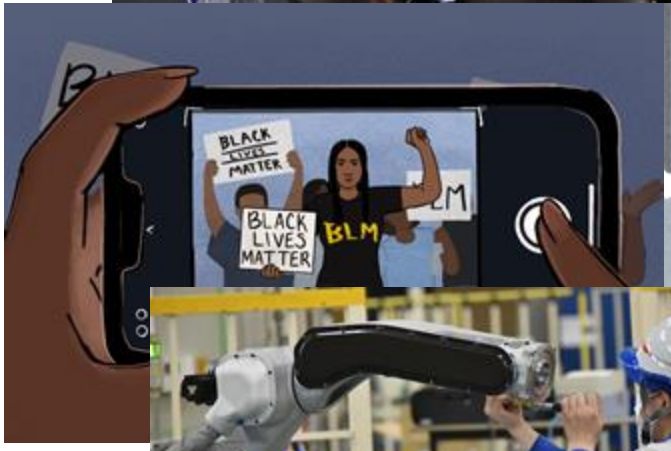
E.U. Takes Aim at Social Media's Harms With Landmark New Law

'Google Is a Monopolist,' Judge Rules in Landmark Antitrust Case

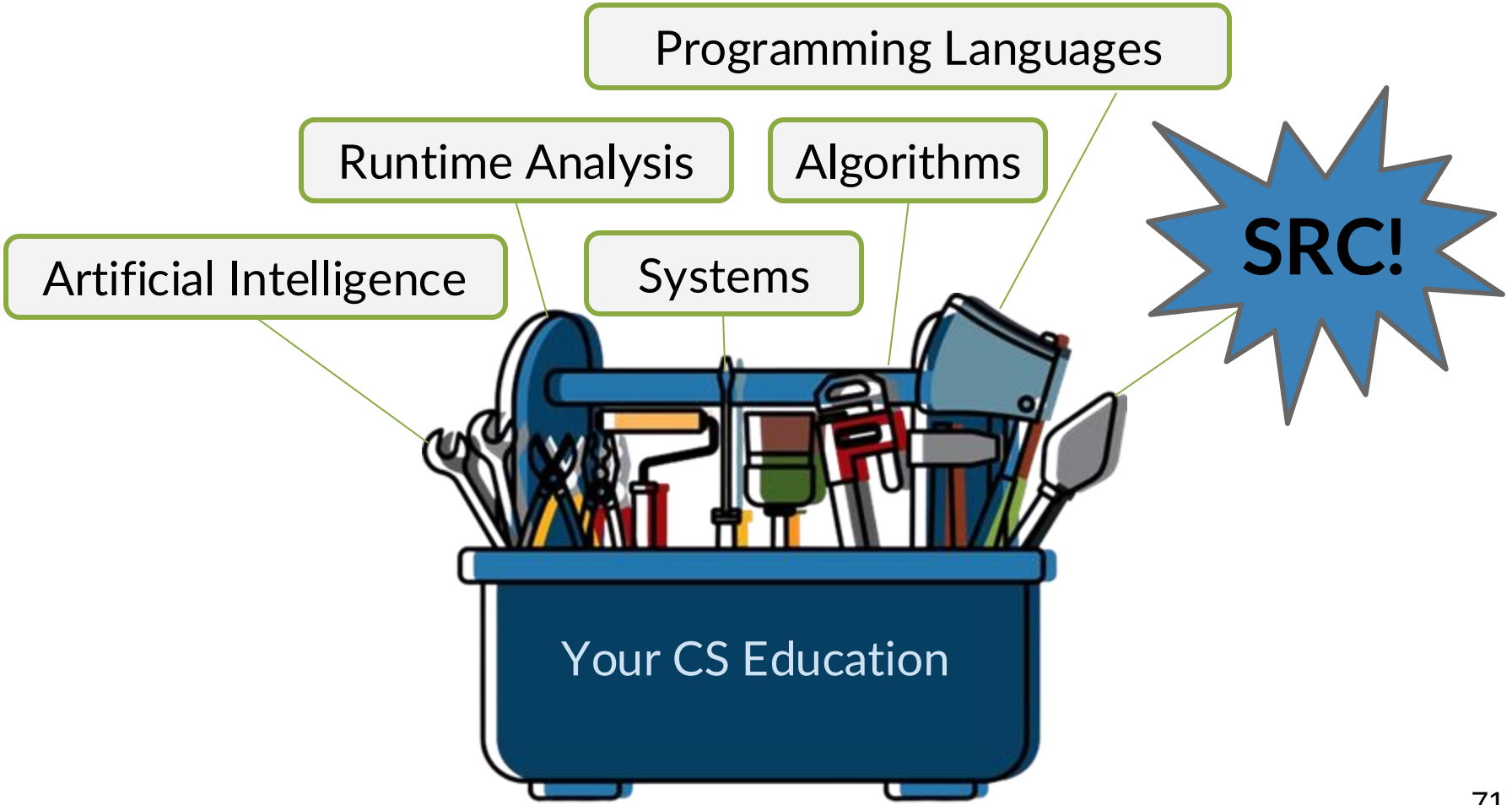
Every Bitcoin payment 'uses a swimming pool of water'

OpenAI Insiders Warn of a 'Reckless' Race for Dominance

NYT, BBC


BLACK LIVES MATTER
BLACK LIVES MATTER
BLM


E. BARRETT PRETTYMAN
UNITED STATES COURT HOUSE


Programming Languages
Runtime Analysis
Algorithms
SRC!
Artificial Intelligence
Systems
Your CS Education

Our Philosophy:

We are NOT…

➔ passing judgements on different types of technologies or their uses
➔ telling you what to think
➔ presenting a single “right” path forward for ethical tech

We ARE…

➔ thinking about the social implications of technology
➔ starting the conversation
➔ empowering you to come to your own conclusions
➔ showing possible solutions and existing efforts to address issues

SRC in CS15

➔ Mini-lectures

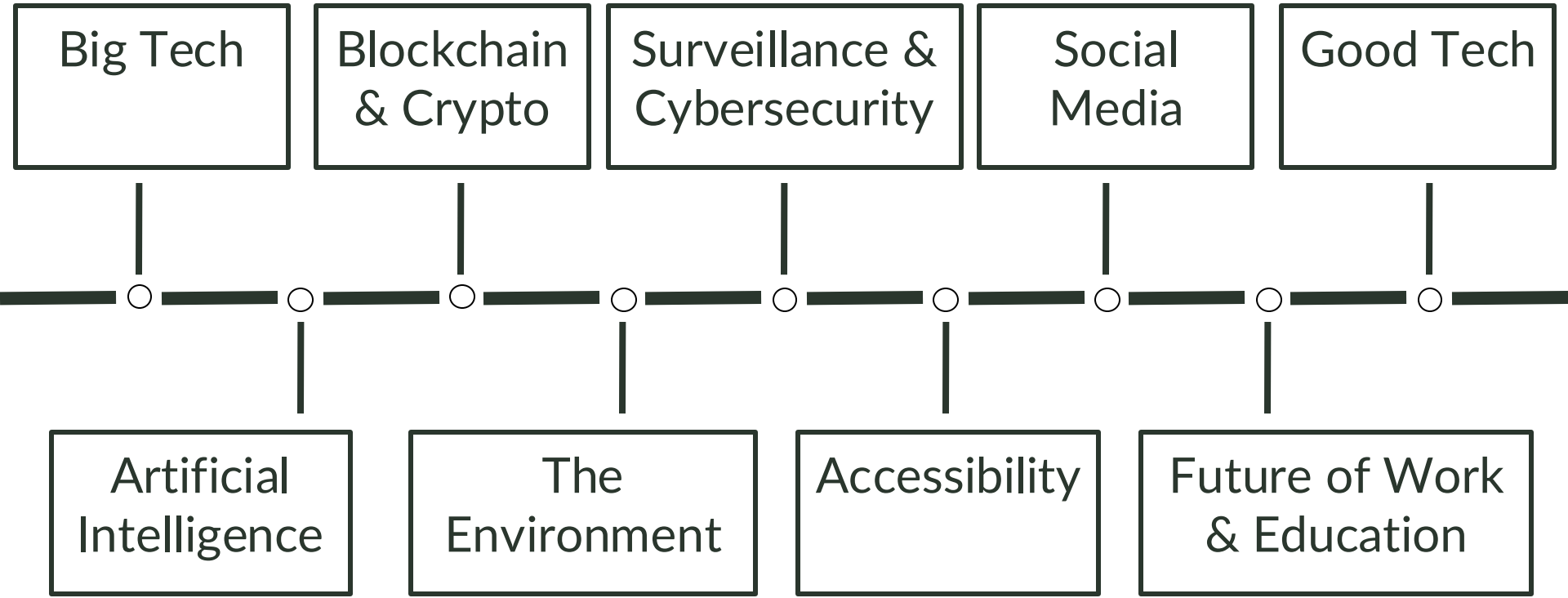
➔ Activities in Labs & Sections

➔ Extra credit discussions

➔ Assignments

Image source: Nickelodeon

Coming soon to a CS15 lecture near you…



You may be asking…

Why do I need to be thinking about this in my introductory CS class?

I don't even want to work in tech. Why should I care?

What if I'm only interested in the technical side of CS? Can't I just program?