GENERAL ASSEMBLY

JAVASCRIPT DEVELOPMENT

Sasha Vodnik, Instructor

HELLO!

1. Pull changes from the `svodnik/JS-SF-7` repo to your computer
2. Navigate to the `starter-code` folder

JAVASCRIPT DEVELOPMENT

INTRODUCTION TO REACT

LEARNING OBJECTIVES

At the end of this class, you will be able to

- Understand the roles of model, view, and controller
- Describe the difference between frameworks and libraries
- Recognize the primary uses of React
- Create a component hierarchy
- Build a React component

AGENDA

- Model View Controller (MVC)
- Frameworks and libraries
- React overview
- Creating React components
- React lab

WEEKLY OVERVIEW

WEEK 9	CRUD & Firebase / Deploying your app
WEEK 10	(holiday) / React
WEEK 11	Final Project Lab / Final presentations & graduation!

Checkin and questions

- The **most significant thing I learned** about deploying an app is ____________.
- My **biggest outstanding question** about deploying an app is ____________.

Final Project Checkin

ACTIVITY

EXERCISE

KEY OBJECTIVE

- Check in on final project

TYPE OF EXERCISE

- Groups of 3

TIMING

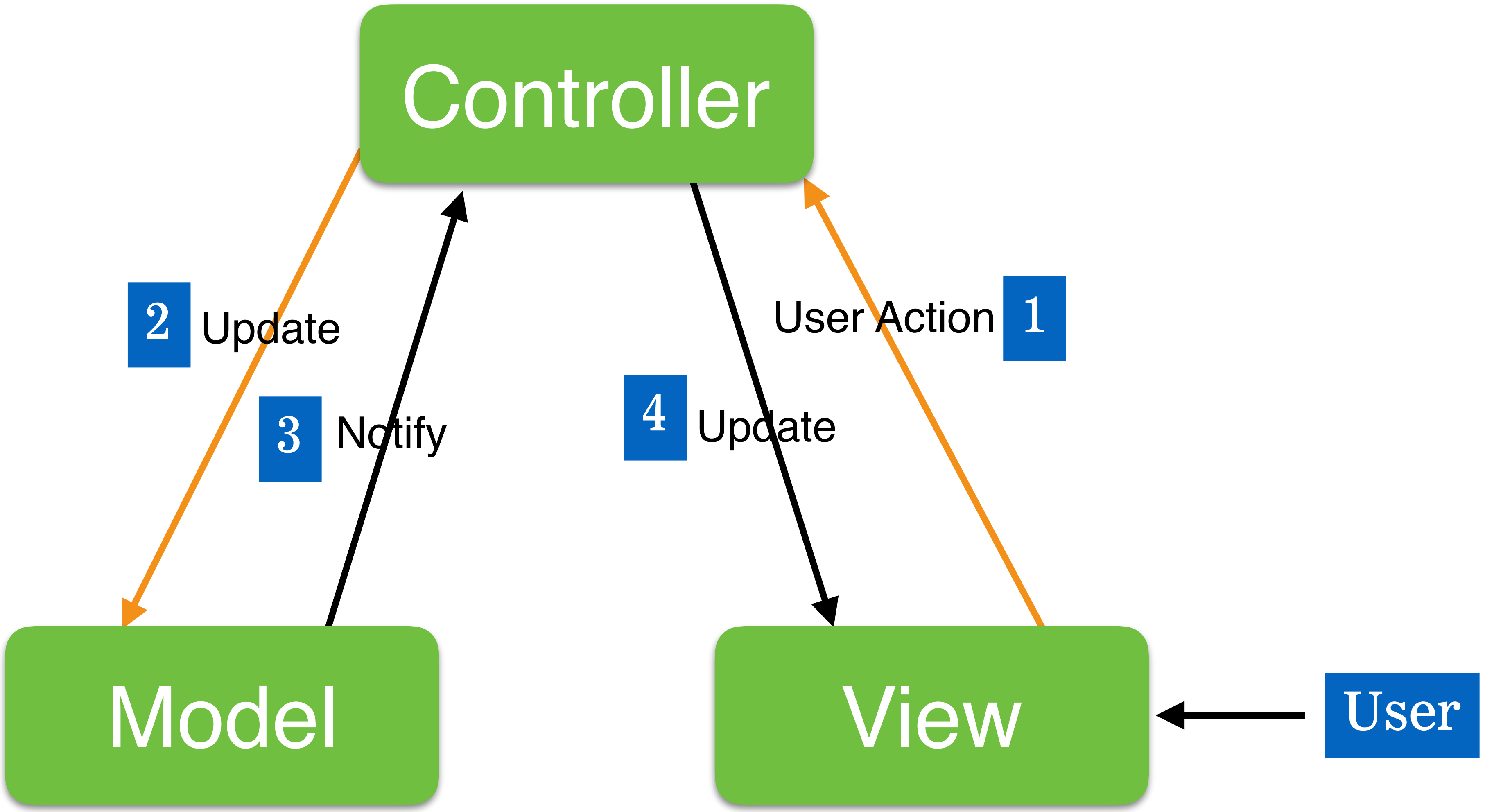
10 min

1. Take turns checking in about where you are with your final project. If you have a working prototype, display your app in your browser, demonstrate its functionality, and explain what you plan to add to your app.
2. Share a challenge you've run into with your project. If you've overcome it, describe how. If not, brainstorm resources and next steps with your group members.

MODEL–VIEW–CONTROLLER (MVC)

- **Model**: handles data and business logic
- **View**: presents data to user in any supported format and layout
- **Controller**: receives user inputs and calls appropriate resources to carry them out

MODEL-VIEW-CONTROLLER (MVC)



LIBRARIES VS FRAMEWORKS

- Your code calls a **library**
- A **framework** calls your code

WHY USE FRAMEWORKS?

- Standard / well known
    - Dictates a method that cannot be (easily) ignored
- Common problems already solved
    - Cross Browser
    - Accessibility
    - Complexity of state

LIBRARIES

- Target a single problem
- Are usable in any project
- Often consist of a set of independent functions
- Are lightweight

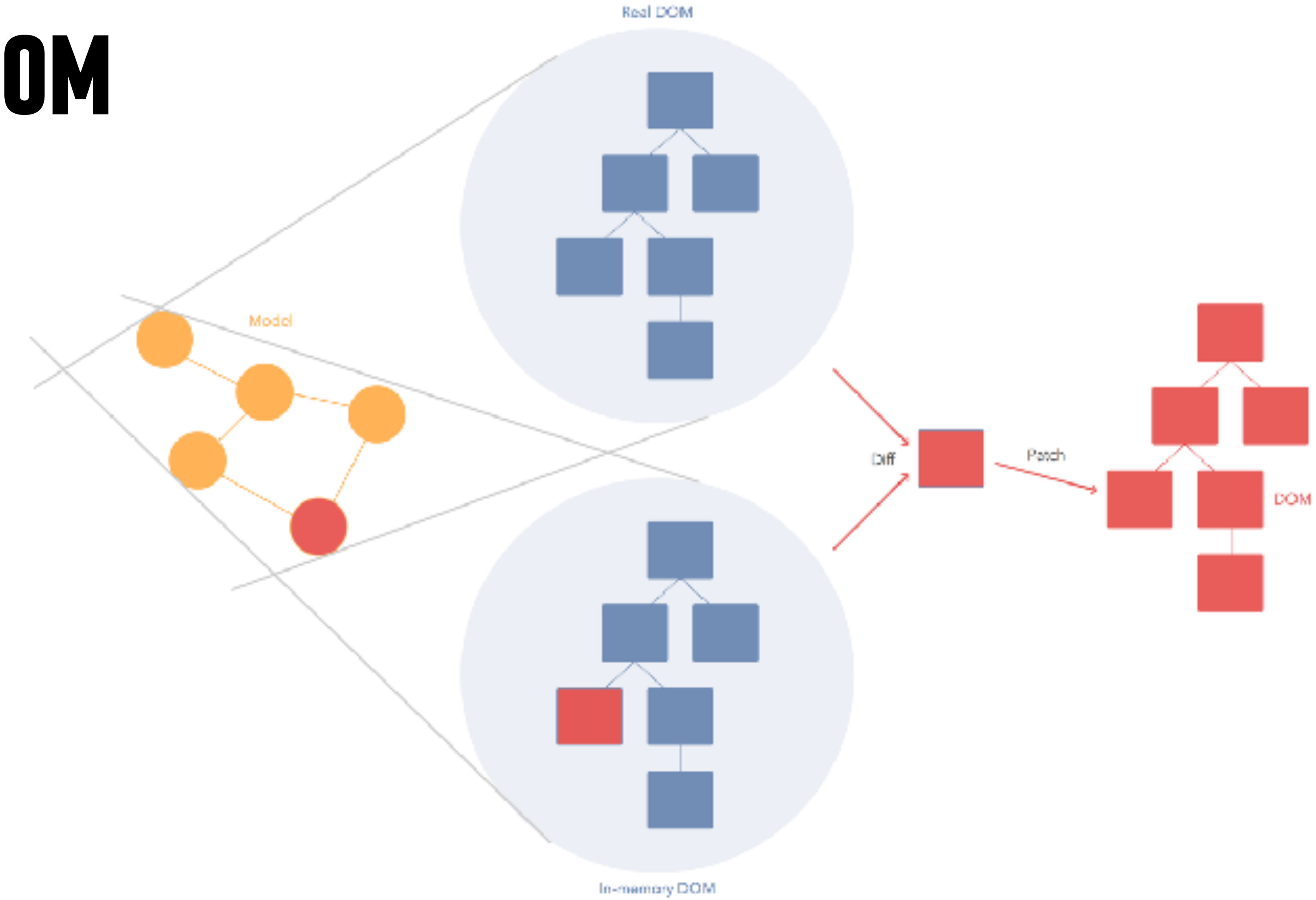
REACT

- somewhere between a framework and a library
    - “a framework that feels like a library”
- It only cares about your views (V from MVC)
- BUT you must do your views the React way

VIRTUAL DOM

- Tracks changes to DOM without making them immediately
- React changes DOM to match only when necessary
- This is quicker than doing direct DOM manipulation

VIRTUAL DOM



from https://stackoverflow.com/questions/21109361/why-is-reacts-concept-of-virtual-dom-said-to-be-more-performant-than-dirty-mode#23995928

REACT COMPONENTS

- Define a small view template
- Use some values passed in to display data
- Are declarative
- Small, reusable, and independent

CREATING REACT COMPONENTS

- Create a component function
  - initial cap in function name
  - `props` is parameter name
- Add a `return` statement to the component function
  - Contents should be JSX
  - Can include JavaScript expressions wrapped in `{ }`

JSX

- Extension to JavaScript
- Lets you write JavaScript code that looks like HTML (actually XML)
- Compiles to a JavaScript object
- Supports JavaScript expressions in curly braces

JSX SPREAD OPERATOR

- . . . characters
- lets you specify an object as the parameter of a function, but transforms that argument into key-value pairs at runtime
- essentially setting key-value pairs as HTML attributes in the React code
- only evaluated at runtime, so it's based on the current value of the state at runtime

LOOPING IN REACT COMPONENTS

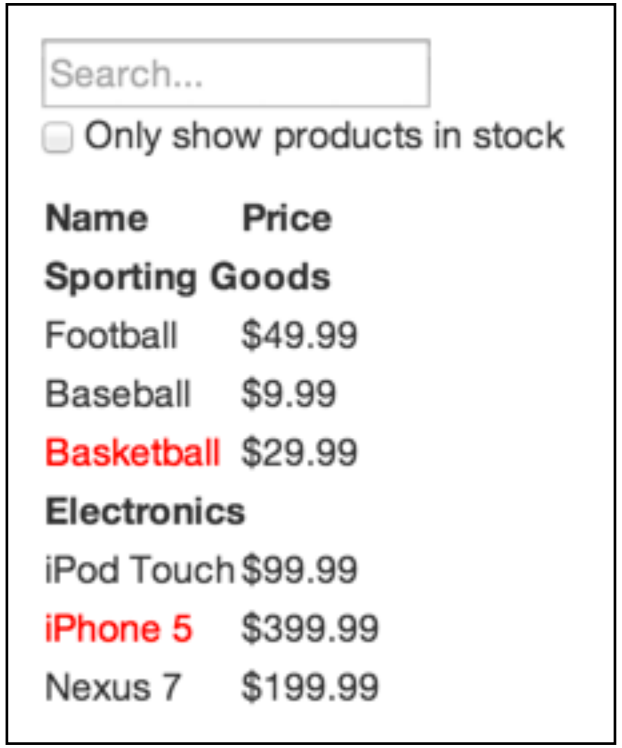
- Commonly used for an array of values
- `array.map()` function built into JavaScript
    - accepts a function as an argument
    - loops through the array, executing the specified function with each element as the argument
    - can return a JSX expression to build out an HTML structure based on a set of values

THINKING IN REACT

Data returned from a JSON API

```
[
  {category: "Sporting Goods", price: "$49.99", stocked: true, name: "Football"},
  {category: "Sporting Goods", price: "$9.99", stocked: true, name: "Baseball"},
  {category: "Sporting Goods", price: "$29.99", stocked: false, name: "Basketball"},
  {category: "Electronics", price: "$99.99", stocked: true, name: "iPod Touch"},
  {category: "Electronics", price: "$399.99", stocked: false, name: "iPhone 5"},
  {category: "Electronics", price: "$199.99", stocked: true, name: "Nexus 7"}
];
```

Mock from designer



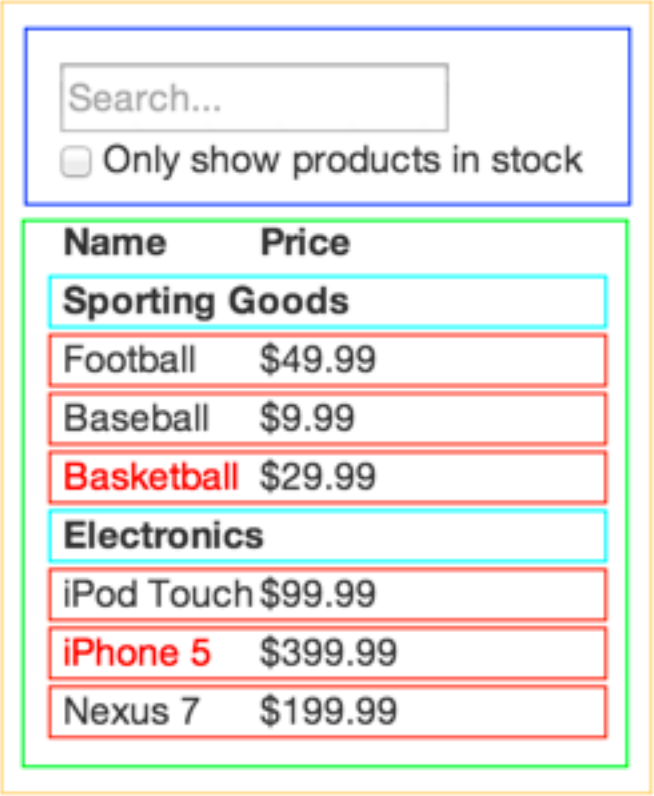
Search...

□ Only show products in stock

Name	Price
Sporting Goods	
Football	$49.99
Baseball	$9.99
Basketball	$29.99
Electronics	
iPod Touch	$99.99
iPhone 5	$399.99
Nexus 7	$199.99

THINKING IN REACT

DRAW SOME BOXES



Search...

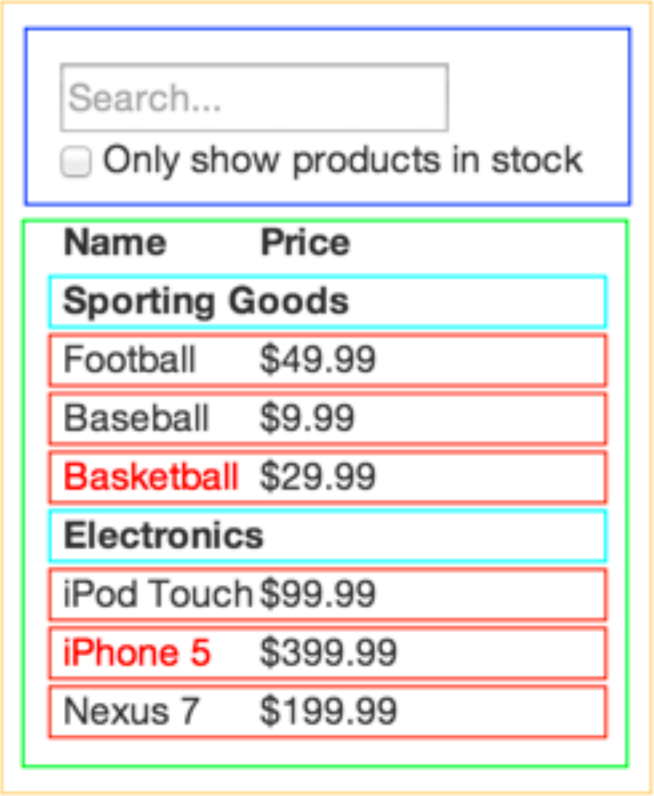
□ Only show products in stock

Name	Price
Sporting Goods	
Football	$49.99
Baseball	$9.99
Basketball	$29.99
Electronics	
iPod Touch	$99.99
iPhone 5	$399.99
Nexus 7	$199.99

THINKING IN REACT

NAME THE BOXES (SEMANTICALLY!)

- FilterableProductTable
- SearchBar
- ProductTable
- ProductCategoryRow
- ProductRow



Search...

□ Only show products in stock

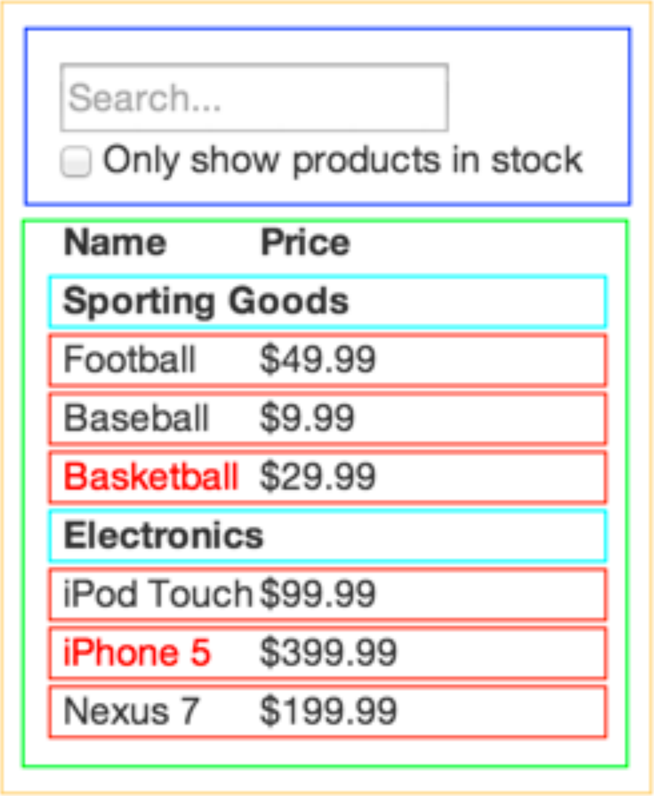
Name	Price
Sporting Goods	
Football	$49.99
Baseball	$9.99
Basketball	$29.99
Electronics	
iPod Touch	$99.99
iPhone 5	$399.99
Nexus 7	$199.99

THINKING IN REACT

MAKE A HIERARCHY

components!

- FilterableProductTable
  - SearchBar
  - ProductTable
    - ProductCategoryRow
    - ProductRow



Search...

□ Only show products in stock

Name	Price
Sporting Goods	
Football	$49.99
Baseball	$9.99
Basketball	$29.99
Electronics	
iPod Touch	$99.99
iPhone 5	$399.99
Nexus 7	$199.99

EXERCISE

- Partner up:
    - Choose a section of your favorite website
    - Write down the component hierarchy
        - Use semantic names!

1. Mock
2. Boxes
3. Name
4. Hierarchy

EXERCISE

EXERCISE

KEY OBJECTIVE

- Create a component hierarchy

TYPE OF EXERCISE

- Individual/pair

TIMING

7 min

1. Choose a section of your favorite website
2. Write down the component hierarchy (remember the steps: 1. Mock, 2. Boxes, 3. Name, 4. Hierarchy)
3. Don’t forget to use semantic names!

REACT LAB

- Created by Jess Telford, a GA JSD instructor in Australia

https://github.com/jesstelford/react-workshop

LEARNING OBJECTIVES – REVIEW

- Understand the roles of model, view, and controller
- Describe the difference between frameworks and libraries
- Recognize the primary uses of React
- Create a component hierarchy
- Build a React component

NEXT CLASS PREVIEW

Final project lab

- All of Monday’s class will be lab time for you to work on your final projects
- Larissa, Dante, and I will be available during class if you want to think through challenges together. (Your classmates will, too!)

Exit Tickets!

Q&A