Discussion: Why are the keys on a keyboard not aligned properly?
Reminders

- **Strongly** recommend going to section tomorrow
- No late days on HW9

Upcoming Deadlines

- HW7 due Thursday (8/03)
Last Time...

- Review
- Examples
  - Simplest React application
  - Character Counter

Today’s Agenda

- Review
- Examples
  - Class Picker
  - Messaging App
Event-driven programming

Register Event
public void myFunction() {
   System.out.println("I was here");
}
button1.addOnClickListener(myFunction);

Event loop:
do {
   e = getNextEvent();
   process event e;
}while (e != quit);
The Allen School

The Allen School is a Computer Science school at UW. The best course in the Allen School is CSE 331.
Demo 2

<html lang="en">
<head>
    <title>HTML Button</title>
</head>
<body>
    <script type="text/javascript">
        function sayHello() {
            alert("Hello, CSE 331!");
        }
    </script>
    <button onclick="sayHello()">Click Me!</button>
</body>
</html>
Reminder: Our Stack

(we write these)

TypeScript
React

Compiled/Combined by the Development Tooling

HTML Template

HTML
JavaScript

(sent to browser to execute)
Example 1

• The simplest source code to create a React website is these 3 files:
  – `index.html`
    • A very small amount of "necessary" HTML
    • Most of the actual web content will be generated by the TS/React code
  – `index.tsx`
    • Starting point of code – runs when the page loads
    • Starts React
  – `App.tsx`
    • Our first component – the App component

• When we build the React app, all these files will be incorporated into what is sent to the browser
Components

- We will have many components
  - e.g. Application, Column, LoginForm, Input, Button
Components

Application

TitleBar

EditPane

textarea

Application

TitleBar

EditPane

textarea
Example 3

register-react2/...
Passing Data from Parent -> Child

- We saw some data passed between components in Example 2
  - e.g. Application uses props to pass data to TitleBar, EditPane

![Diagram of component structure]
Structure of Example React App

App

Quarter Picker

Class Picker

State:
- quarter

Props:
- quarter

State:
- classes

onPick

quarter

onBack

CSE 331 Summer 2022
React setState

- **setState** does not update state instantly:

  ```javascript
  // this.state.x is 2
  this.setState({x: 3});
  console.log(this.state.x); // still 2!
  ```

- Update occurs after the event finishes processing
  - **setState** adds a new event to the queue
  - work is performed when that event is processed

- React can batch together multiple updates
React Gotchas

• render should not have side-effects
  – only read this.state in render

• Never modify this.state
  – use this.setState instead

• Never modify this.props
  – read-only information about parent’s state

• Not following these rules may introduce bugs that will be hard to catch!
Example 4

messaging/...
How should data flow?

MessageBar    MessageList

App
Data Flow

- **App**
  - State: messages

- **MessageBar**
  - State: inputText

- **MessageList**
  - Props: messages

Facts:
- `onSend` function is used between `App` and `MessageBar`.
Before next class...

1. Ask questions about HW7 if you have any
   - Will need to apply generics
   - Useful for implementing Dijkstra’s algorithm on a `Graph<Double>`