WEB TECHNOLOGIES

React JS – refs

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Acknowledgement
The slides are created from various internet resources with valuable contributions from multiple professors and teaching assistants in the university.

refs and keys

Agenda

- Introduction to refs
- Create and use refs
- Callback refs

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Introduction to refs

- Provides a **way to directly access and interact with DOM nodes or React elements created in the render method**

- Used to return a reference to DOM node or React element, allowing us to perform operations directly on them

- Refs are generally used when we need to perform actions that are not easily achieved through declarative React patterns.

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Introduction to refs

- Good use cases for refs to be used:
  - **Managing Focus, Text Selection, or Media Playback**: To programmatically manage focus, text selection, or control media elements.
  - **Triggering Imperative Animations**: Refs can be used to trigger animations that require direct manipulation of the DOM.
  - **Integrating with Third-Party DOM Libraries**: When integrating with libraries that interact with the DOM, refs provide a way to access and manipulate the DOM elements.

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How to create and use refs?

- **Creating Refs:**
    - **React.createRef()** is used to create refs in React, and it's typically done in the constructor (or with a class field).
    - These refs can then be attached to a React element via the ref attribute.

- **Accessing Refs:**
    - After the ref is attached to an element in the render() method, the DOM node can be accessed via **this.myRef.current**.
    - This is useful when we need to directly interact with the DOM node, like focusing on an input element or retrieving its value.

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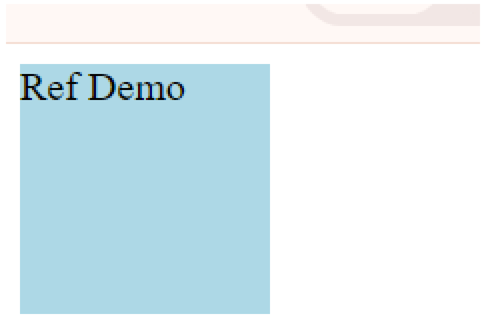
How to create and use refs? (coding example)

```
class MyComponent extends React.Component {
  constructor(props) {
    super(props);
    // Creating a ref using React.createRef()
    this.myRef = React.createRef();
  }

  componentDidMount() {
    // Accessing the DOM node when the component mounts
    const node = this.myRef.current;
    console.log('DOM Node:', node);
  }

  render() {
    return (
      // Attaching the ref to the div element
      <div ref={this.myRef} style={{ width: '100px', height: '100px', backgroundColor: 'lightblue' }}>
        Ref Demo
      </div>
    );
  }
}
```


Ref Demo

```
// Rendering the component
const root = ReactDOM.createRoot(document.getElementById('root'));
root.render(<MyComponent />);
```

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Callback refs

Fine-Grain Control:

- Callback refs give more control over when refs are set and unset. We can define a function that will be called when the element is rendered or removed.

Function as Ref:

- Instead of using React.createRef(), a function is used as the ref to assign the DOM element or component instance to a class property.
- This function receives the React component instance or HTML DOM element as an argument, allowing us to store and access the ref elsewhere.

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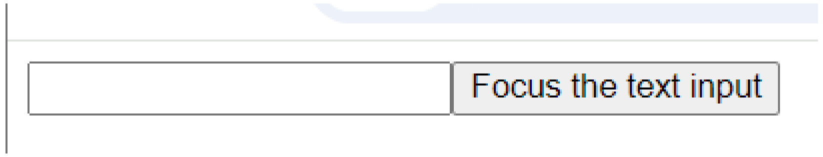
Callback refs (coding example)

```
class CustomTextInput extends React.Component {
 constructor(props) {
  super(props);
  this.textInput = null;

  // Callback ref function to assign the DOM element to this.textInput
  this.setTextInputRef = element => {
   this.textInput = element;
  };

  this.focusTextInput = () => {
   // Use the raw DOM API to focus the text input if it exists
   if (this.textInput) this.textInput.focus();
  };
 }
```



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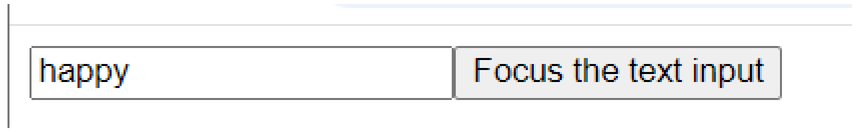
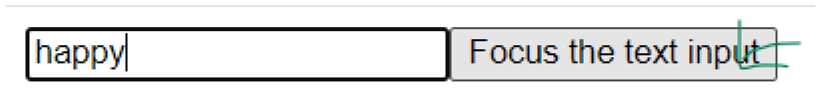
Callback refs (coding example) continuation...

```
componentDidMount() {
  // Automatically focus the input when the component mounts
  this.focusTextInput();
}

render() {
  return (
    <div>
      {/* Use the callback ref to get the input DOM element */}
      <input type="text" ref={this.setTextInputRef} />
      <input type="button" value="Focus the text input" onClick={this.focusTextInput} />
    </div>
  );
}}
```





THANK YOU

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