

React: State and Events

Phase 2 // Week 1, Day 2

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The background features a minimalist design with abstract, undulating shapes in shades of orange and purple. The orange shape, which has a slight gradient, occupies the lower right portion of the frame and extends upwards towards the center. Above it, several layers of purple and maroon shapes create a sense of depth, resembling hills or waves. The overall aesthetic is clean and modern, with a focus on color and form.

First, a question.

Today's Objectives

Today, we'll answer the following questions:

1. *What is **state** in React?*
 - A. *How do we create it?*
 - B. *How do we update it?*
2. *How do we handle **events** in React?*

What is state?

- A component's **state** is its *memory between renders*.
1. State is dynamic. It is data that changes over a component's lifetime.
 2. State is independent. Its value cannot be derived from existing props or state.

State: An Example

Let's say you're building a website for a museum.

It consists of an **App** that renders multiple **Gallery** components.

A **Gallery** is a navigable slideshow for a given artist and their works.

What might make sense for **App** to pass with props?

What might make sense for **Gallery** to hold in state?

Which of these are(n't) state?

1. The address a user's typed into a Form, before they've clicked submit.
2. An App's name.
3. A user's fullName, given that a Form holds firstName and lastName in state.
4. Whether or not a user has added a Product to their cart.
5. A Car's name, passed down as a prop from the Garage it belongs to.
6. How many times you've clicked "Generate!" in a DALLEImageGenerator component.

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How do we hold memory in state?

To hold something in state, we invoke useState.

```
const [ isInCart, setIsInCart ] = useState(false);
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```
const [ something, setSomething ] = useState(initialValue);
```

What not to hold in state

1. **Don't mirror props in state.** If you want to rename a prop for the purposes of a component, assign it to a new constant.

```
function NutritionFacts({ foodCalories }) {  
  const calories = foodCalories;  
}
```

2. **Don't hold things in state that you can derive.** Declare a new constant if you want a name to refer to what you're deriving.

```
const [ firstName, setFirstName ] = useState("");  
  
const [ lastName, setLastName ] = useState("");  
  
const fullName = firstName + " " + lastName;
```

How do we update state?

To update state, we use call its **setter**.

```
const [ isInCart, setIsInCart ] = useState(false);
```

...

```
function addToCart() { setIsInCart(true) };
```

How do we update state?

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```
const [ something, setSomething ] = useState(initialValue);  
...  
function updateSomething() { setSomething(newValue) };
```

What happens when we update state?

Thinking in React means we follow two principles:

1. Any app can be broken into independent, reusable components.
2. We shouldn't have to re-render an entire DOM whenever something happens.

State is how React ensures its second principle. **Updating state tells React to queue up a re-render of the component it belongs to with fresh data.**



Handling Events

We handle **events** in React similarly to how we added event listeners in JS:

1. We declare a function that will handle an event of our choice.

```
function sayHi () { alert("Hi!") } ;
```

2. We pass that function as a prop to the event's target.

```
<button onClick={sayHi}>Hey there.</button>
```

Handling Events with State

Since state is dynamic and independent, we'll often want to update it inside event handlers:

1. We declare a function that will handle an event of our choice.

```
const [ isOn, setIsOn ] = useState(false);  
  
function toggleLamp() { setIsOn(!isOn) };
```

2. We pass that function as a prop to the event's target.

```
<button onClick={toggleLamp}>Turn Lamp On/Off</button>
```

The background features a minimalist design with abstract, rounded shapes. The lower half is a solid orange color, while the upper half is divided into several overlapping layers of purple and dark red. These colors create a sense of depth and movement, resembling waves or hills.

Time to sell a TV.
And a spatula.

The background features a stylized landscape of overlapping, rounded shapes in shades of orange, red, and purple, creating a sense of depth and motion.

Questions? // Thanks!