TRAINOSYS

REACTJS & TYPESCRIPT

Day 2

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Course Overview

- Introduction to ReactJS and TypeScript (Day 1)
- React Component Development (Day 2)
- React Routing and Data Fetching (Day 3)
- State Management with Redux and TypeScript (Day 4)
- Advanced Topics and Project Development (Day 5)

Program

Day 01

- Introduction to ReactJS and it's benefits
- Setting up the development environment with NodeJS and npm
- Creating a new React project with Typescript using Create React App
- Understanding the basics of TypeScript: types, interfaces, and modules
- Building a simple React component with TypeScript

Day 02

- Recap of React component structure and lifecycle methods
- Creating functional components with TypeScript
- Working with props and prop types in TypeScript
- State management in React components using hooks with TypeScript
- Building a simple React component with TypeScript
- Handling events and form inputs in TypeScript-based components

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RECAP

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React Code Example

```
import * as React from "react";

class HelloWorld extends React.Component {
  render() {
    return (
      <div>
        <h1>Hello Delegates</h1>
        <p>And good morning!</p>
      </div>
    );
  }
}
```

imports the React Library
* (imports all)

New Class Component called "Hello World"
that extends React.Component

responsible for returning JSX
JSX - JavaScript XML

JSX - defining our HTML

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Let’s create our first project with ReacJS + Typescript

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Starter Kit using Vite

```
npm create vite@latest
npm create vite@4.1.0
```

Generate a project template for ReactJS & TypeScript and many more

STEP 1 →

```
PS C:\Users\admin\Desktop\TRAINOSYS\reactjs-typescript-training\day-2\code-alongs> npm create vite@latest
? Project name: » vite-project
```

STEP 2 →

```
PS C:\Users\admin\Desktop\TRAINOSYS\reactjs-typescript-training\day-2\code-alongs> npm create vite@latest
√ Project name: ... my-app
? Select a framework: » - Use arrow-keys. Return to submit.
    Vanilla
    Vue
>   React
    Preact
    Lit
    Svelte
    Solid
    Qwik
    Others
```

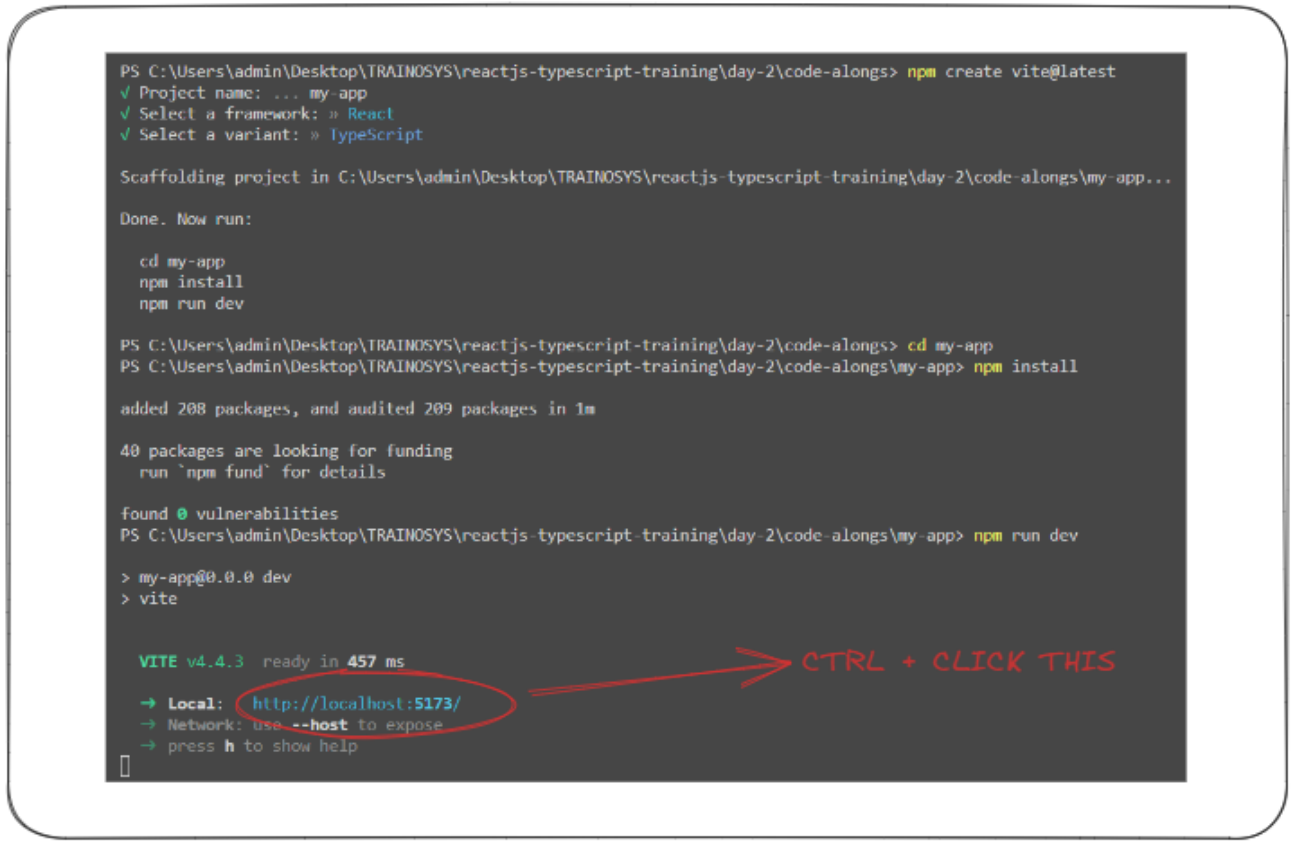
STEP 3 →

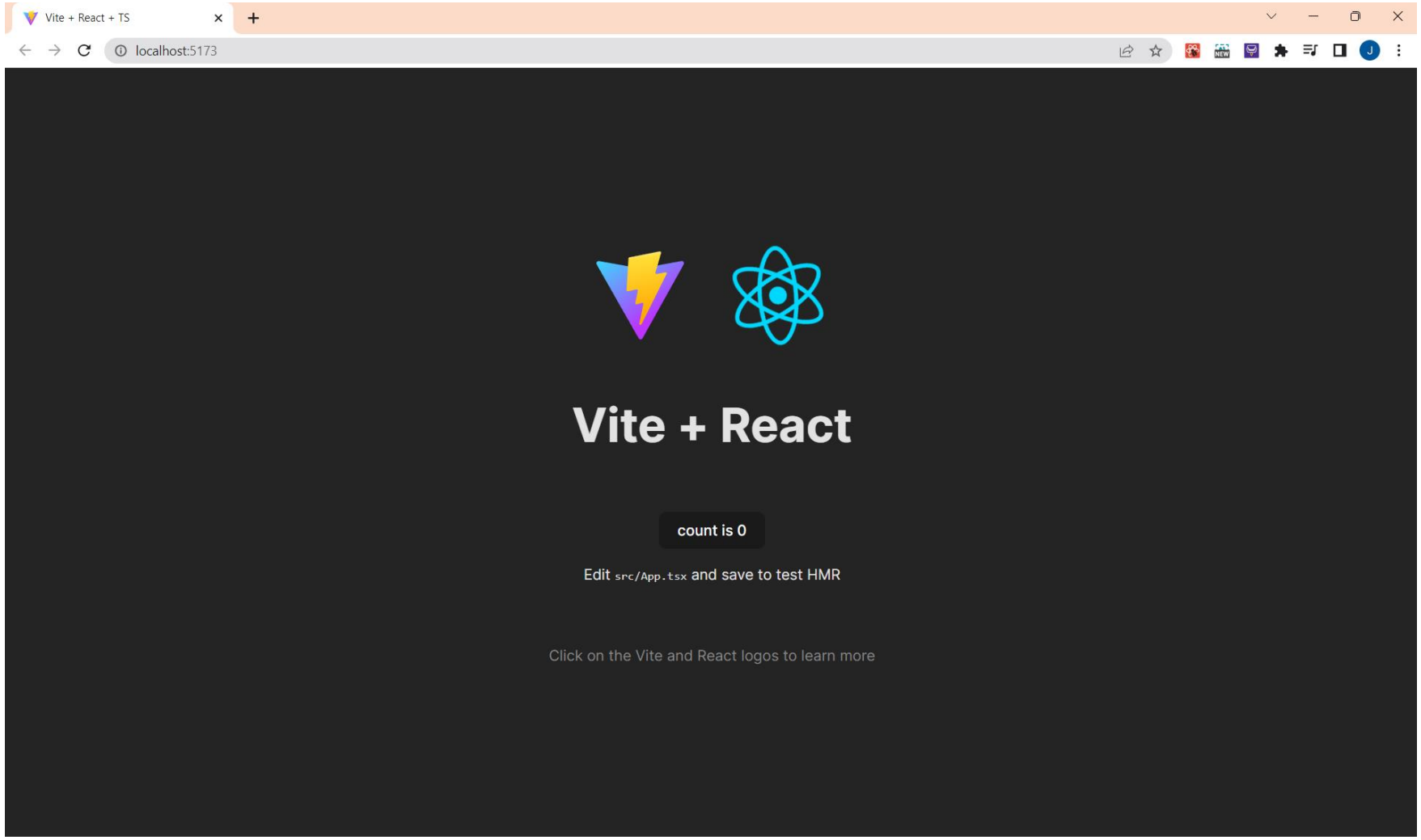
```
PS C:\Users\admin\Desktop\TRAINOSYS\reactjs-typescript-training\day-2\code-alongs> npm create vite@latest
√ Project name: ... my-app
√ Select a framework: » React
? Select a variant: » - Use arrow-keys. Return to submit.
>   TypeScript
    TypeScript + SWC
    JavaScript
    JavaScript + SWC
```

STEP 4 →

```
PS C:\Users\admin\Desktop\TRAINOSYS\reactjs-typescript-training\day-2\code-alongs> npm create vite@latest
√ Project name: ... my-app
√ Select a framework: » React
√ Select a variant: » TypeScript

Scaffolding project in C:\Users\admin\Desktop\TRAINOSYS\reactjs-typescript-training\day-2\code-alongs\my-app...

Done. Now run:

  cd my-app
  npm install
  npm run dev

PS C:\Users\admin\Desktop\TRAINOSYS\reactjs-typescript-training\day-2\code-alongs>
```

STEP 5 →


PS C:\Users\admin\Desktop\TRAINOSYS\reactjs-typescript-training\day-2\code-alongs> npm create vite@latest
√ Project name: ... my-app
√ Select a framework: » React
√ Select a variant: » TypeScript
Scaffolding project in C:\Users\admin\Desktop\TRAINOSYS\reactjs-typescript-training\day-2\code-alongs\my-app...
Done. Now run:
cd my-app
npm install
npm run dev
PS C:\Users\admin\Desktop\TRAINOSYS\reactjs-typescript-training\day-2\code-alongs> cd my-app
PS C:\Users\admin\Desktop\TRAINOSYS\reactjs-typescript-training\day-2\code-alongs\my-app> npm install
added 208 packages, and audited 209 packages in 1m
40 packages are looking for funding
run `npm fund` for details
found 0 vulnerabilities
PS C:\Users\admin\Desktop\TRAINOSYS\reactjs-typescript-training\day-2\code-alongs\my-app> npm run dev
> my-app@0.0.0 dev
> vite
VITE v4.4.3 ready in 457 ms
➜ Local: http://localhost:5173/
➜ Network: use --host to expose
➜ press h to show help
CTRL + CLICK THIS



CRA

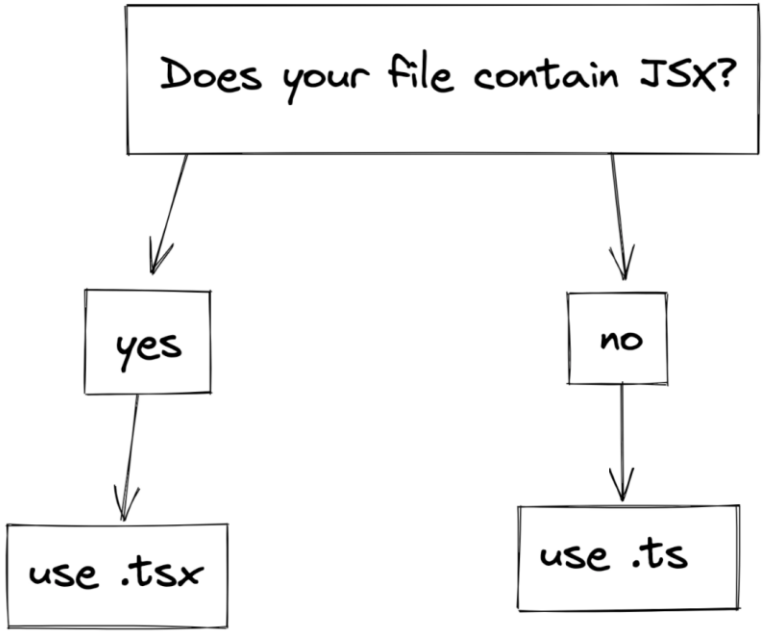
- create-react-app
- Great for beginners
- Easy to use and has some great features
- Uses Webpack under the hood which makes quite slow
- Webpack is responsible for bundling and optimizing your project's code and assets

VITE

- Modern JS Build Tool
- Focuses on developer experience by leveraging ES browser module support
- In other words: VITE IS FASTER AND MODERN

.tsx and .ts files

.tsx vs .ts



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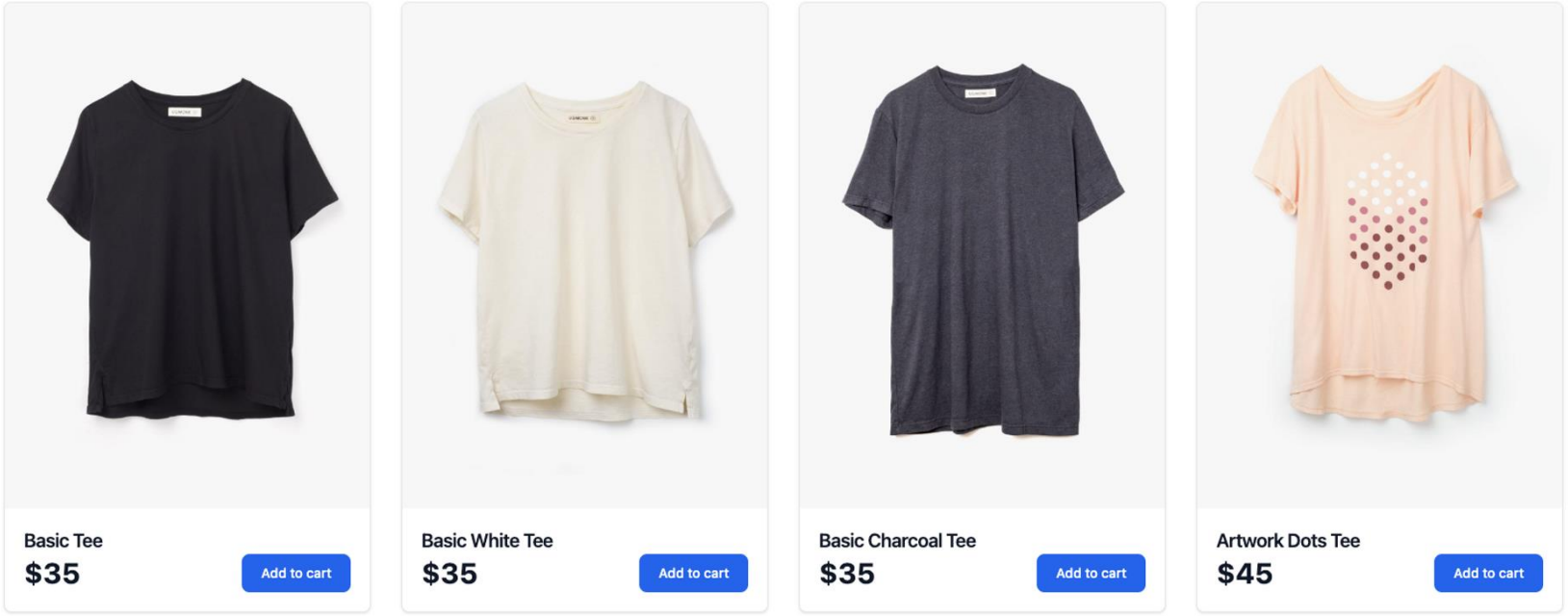
Activity 1

- ❑ npm create vite@latest / npm create vite@4.1.0
- ❑ Project name: rts-d2-act-one

- ❑ Create a reusable <Card /> component with TypeScript
- ❑ It takes props for imageUrl, title, price, buttonText

Activity 1 – expected output



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REACT DATA

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React Data

- ✓ Props
- ✓ State
- ❑ Events
- ❑ Two-way binding
- ❑ Conditionals

Events

- A react component can specify event handlers
- Just like DOM, use onClick for buttons, onChange for inputs, etc

Events – Data Binding

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App.tsx

```tsx
const [firstName, setFirstName] = useState<string>("");
const [age, setAge] = useState<number>(0);

const handleFirstNameChanged = (e: ChangeEvent<HTMLInputElement>): void => {
   setFirstName(e.target.value);
}

return (
    <input
        type="text"
        value={firstName}
        onChange={(e) => handleFirstNameChanged(e)}
    />
)
```

CodeImage

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REACT JSX – CONDITIONALS

- React won't render false, null or undefined values in curlies
- You can't use if but you can use conditionals and ternary

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ACTIVITY – Kahoot!

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ACTIVITY 2

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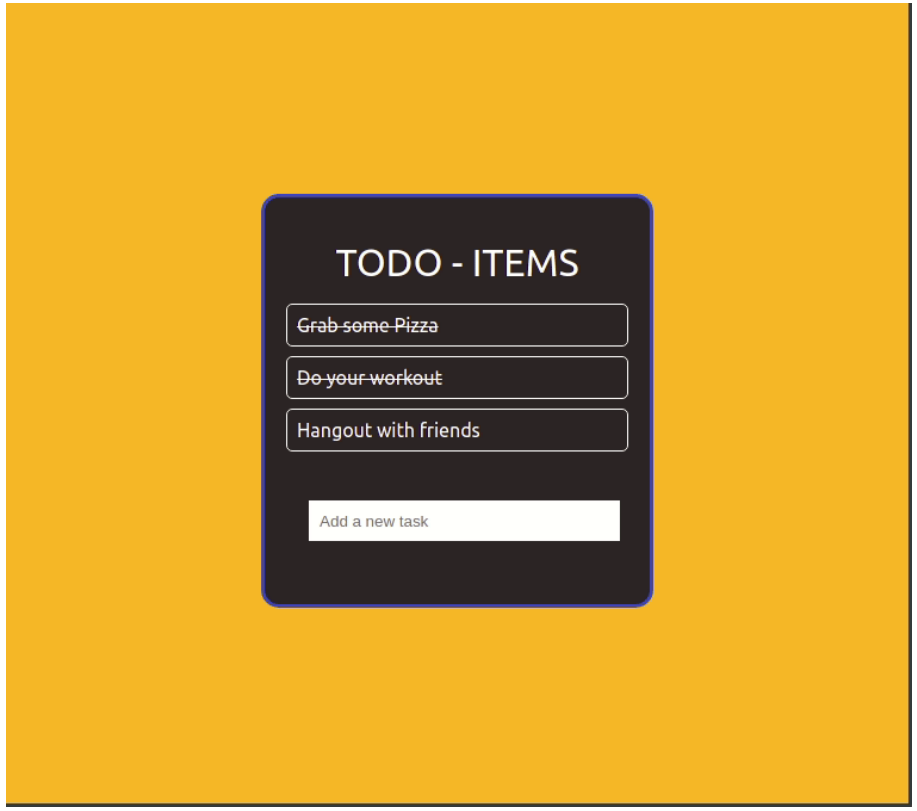
Activity 2

- ❑ npm create vite@latest / npm create vite@4.1.0
- ❑ Project name: rts-d2-act-two

- ❑ Create an input form that accepts a string when an "Add task" button is clicked
- ❑ Create a <Task /> component that accepts task's name as props and display the initial Tasks array
- ❑ Conditionally render the component if the Tasks array is empty - "No Tasks for today <insert a beautiful quote here>"

Activity 2 – example expected output



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LIFECYCLE METHODS

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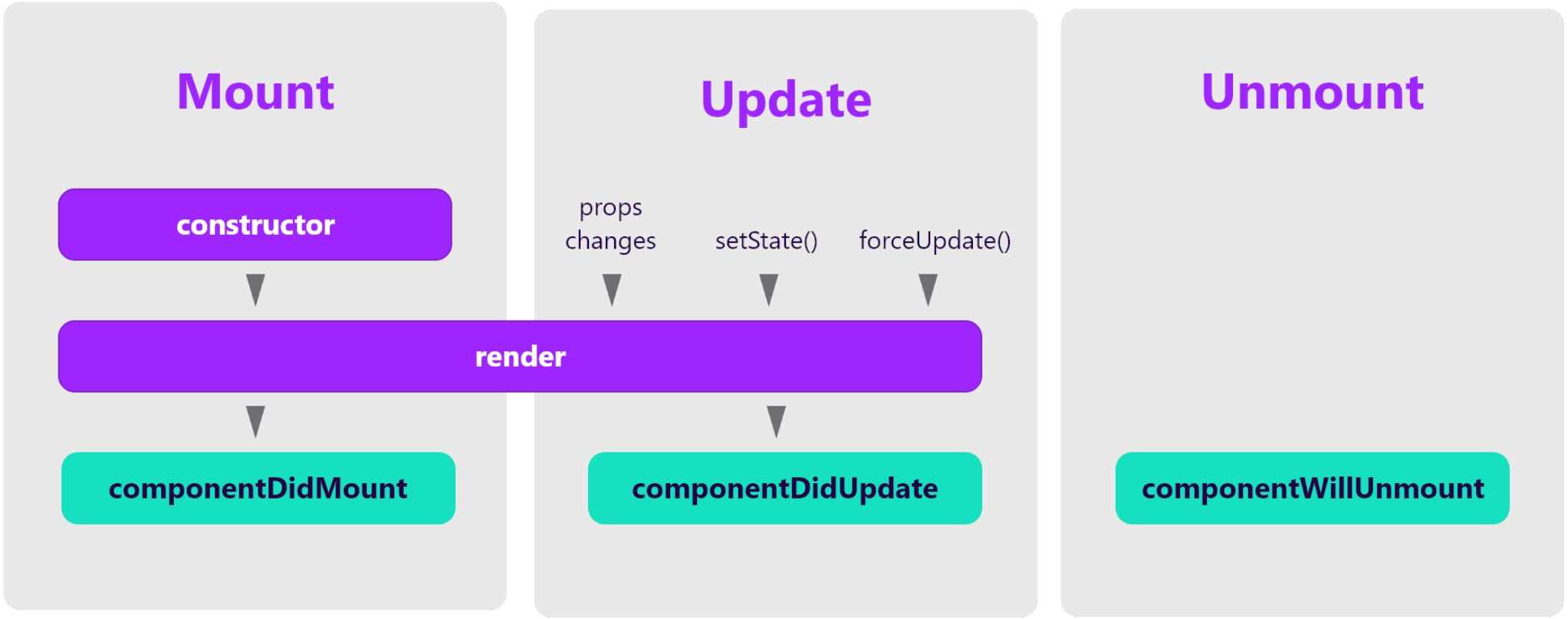
Mount
constructor
render
componentDidMount
Update
props changes
setState()
forceUpdate()
render
componentDidUpdate
Unmount
componentWillUnmount

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REACT HOOKS

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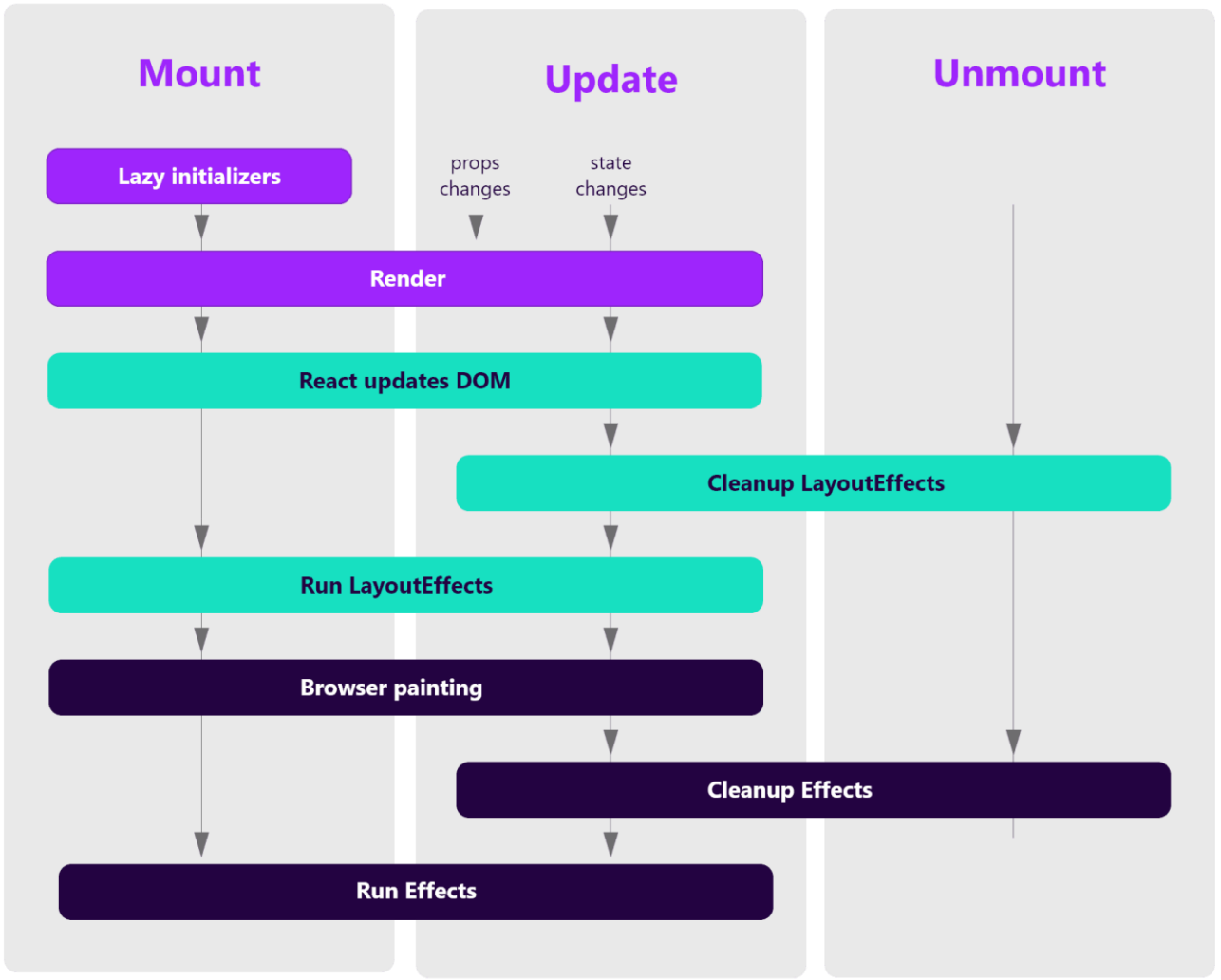
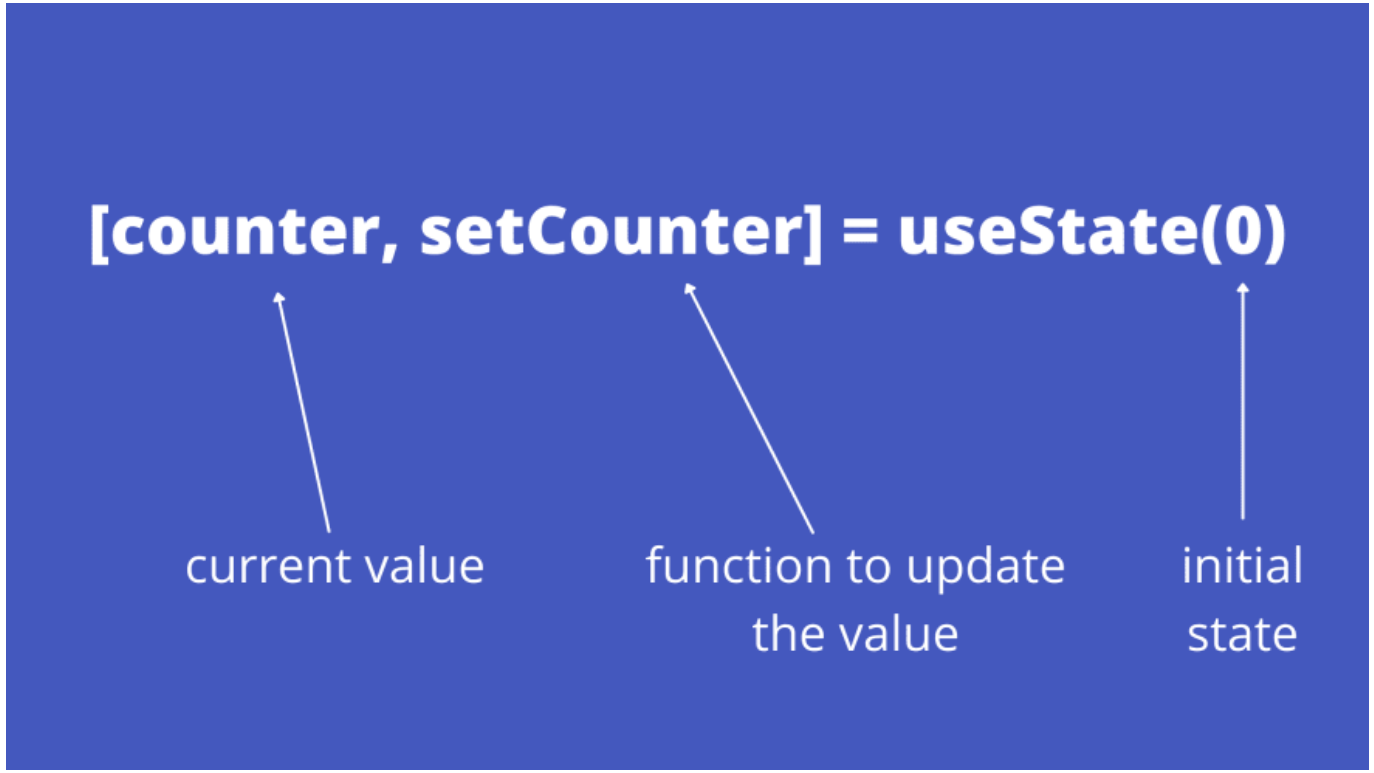
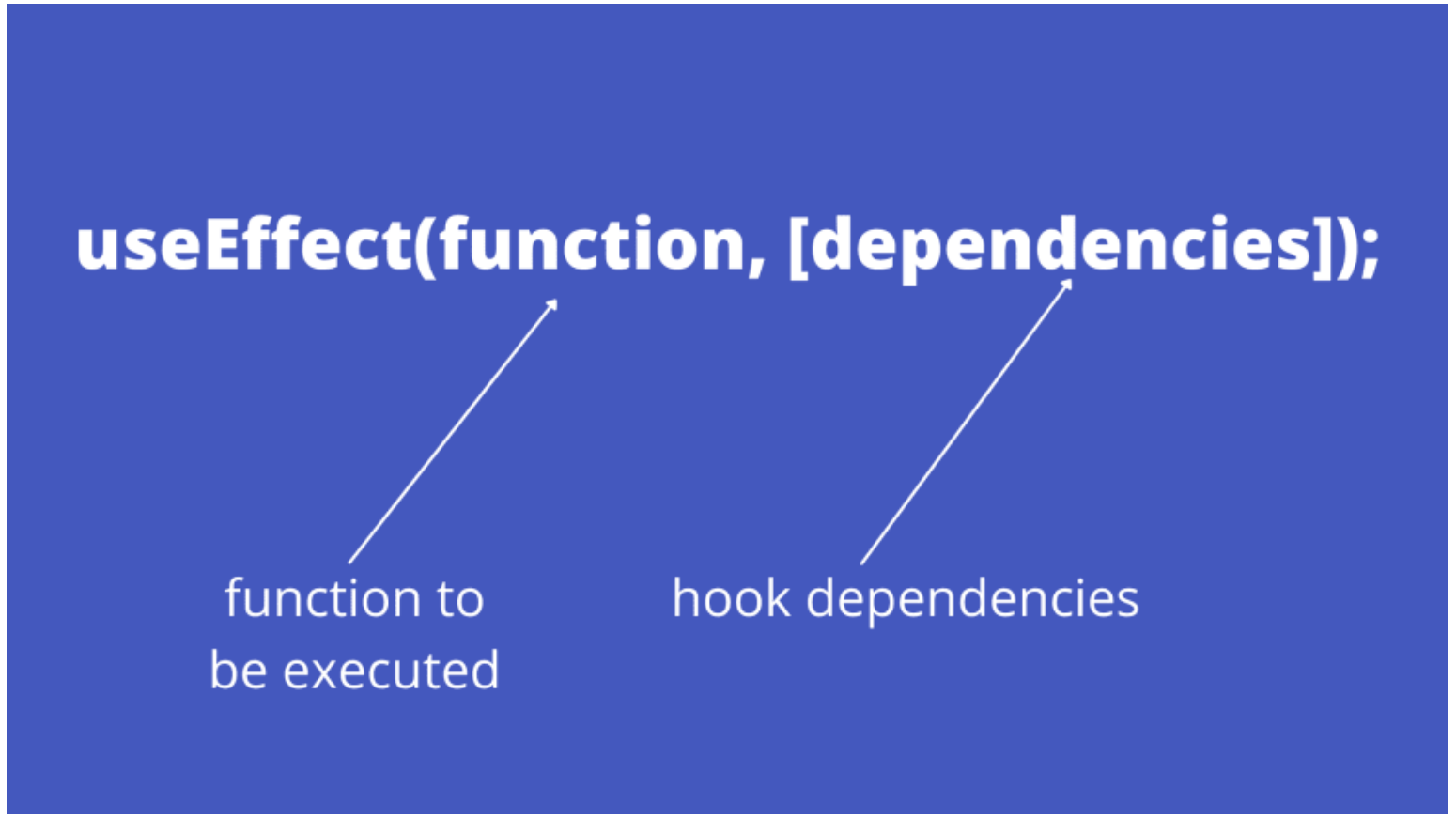


useState() hook



useEffect() hook



Mount

```
useEffect(() => {

}, [])
```

Set "[]" empty dependency array to run an effect only on "mount"

Update

```
useEffect(() => {

})
```

Do not pass a dependency array at all to run an effect on each component update

```
useEffect(() => {

}, [dependencies])
```

Set dependencies array to run an effect only if any dependency change

Unmount

```
useEffect(() => {
  return () => {

  }
}, [])
```

Set return function to run on component unmount lifecycle.

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ACTIVITY

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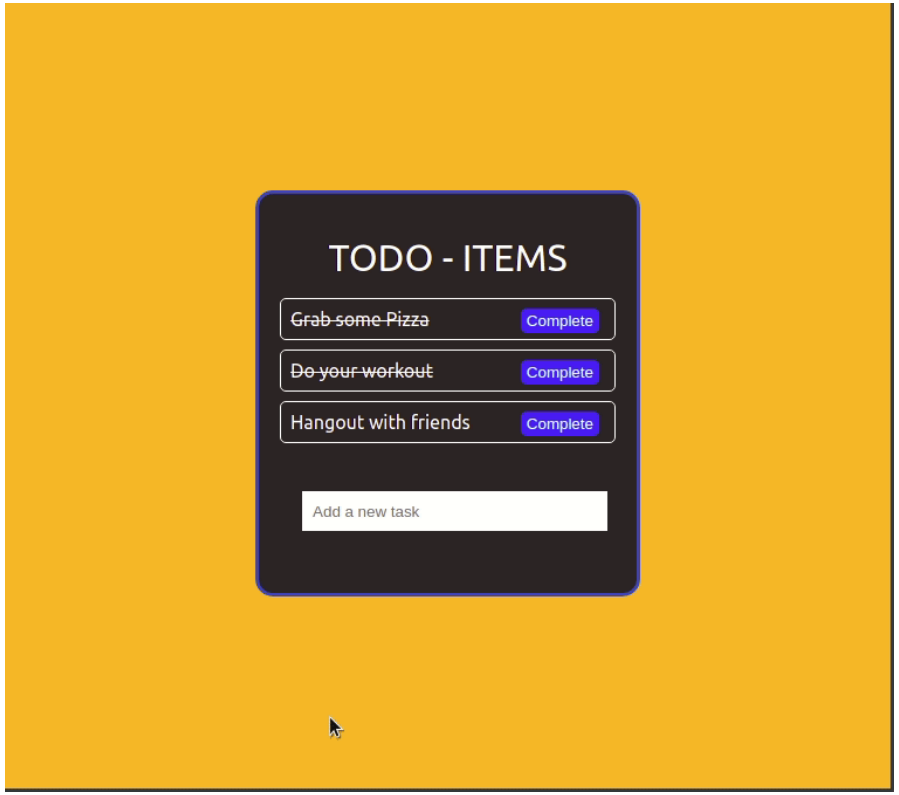
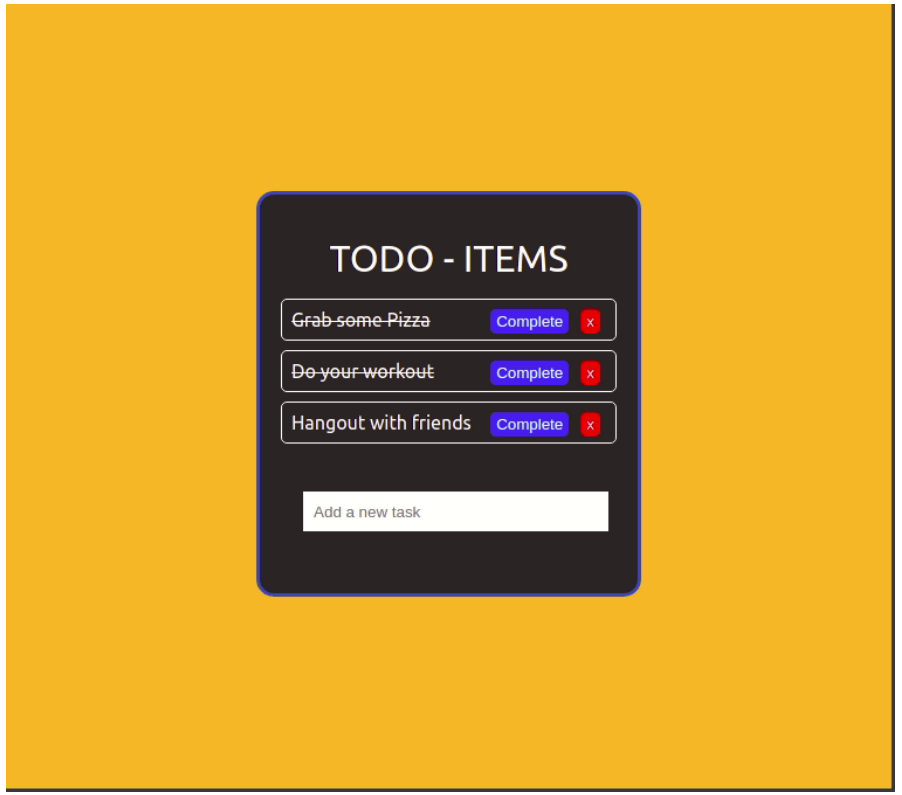
Activity 2 continuation

- ❑ Continue the Activity 2 and add a done, edit and delete button / icon in the <Task /> component
- ❑ Create another component <AddTask />
- ❑ Migrate the input form in the <AddTask /> component and make a function adding a task in the Tasks array
- ❑ Make the done button / icon work by creating a *doneTask* function
- ❑ Make the edit button / icon work by creating an *editTask* function (you can use a modal for the edit form)
- ❑ Make the delete button / icon work by creating a *deleteTask* function

Activity 2 cont – example expected output





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