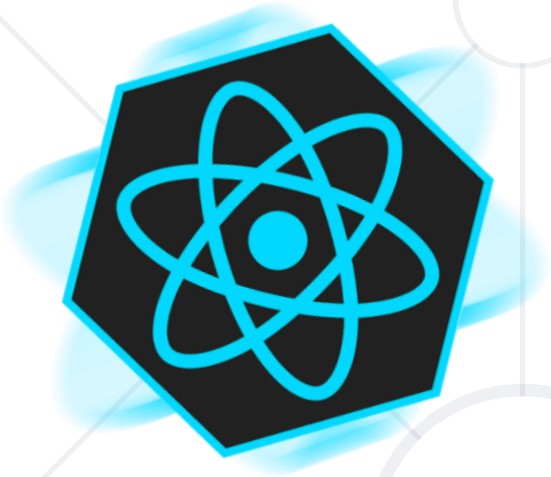
Introduction to React.js

What is React, JSX, Overview and Syntax



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#react

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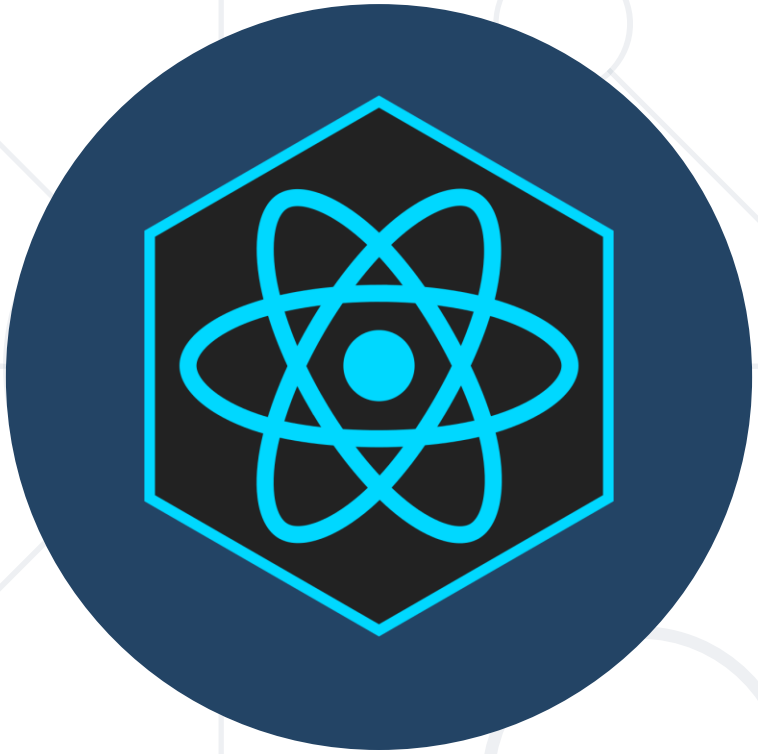


React Overview

History and Philosophy

What is React.js?

- **React** is a JavaScript library for building **user interfaces** (UI)
- Focused on creating **reusable components**
- Developed by **Facebook**

```
const HelloMessage = (props) => (
  <div>Hello {props.name}</div>
);

const root = ReactDOM.createRoot(document.getElementById('root'));

root.render(
  <HelloMessage name="Maria" />
);
```

Features

- Open-source
- Declarative
  - Design **simple** views for each **state** in your app
  - Easier to **debug**
- Component-Based
  - Encapsulated **components** that manage their **own** state
  - Keep **state** out of the **DOM**

Features

- Isomorphic
  - JavaScript that runs on **both** client & server
  - Better user experience
- Native support
  - Compose rich **mobile** UI in **Android**, **iOS**
- Ecosystem
  - Next.js, Remix, Gatsby, Expo, CRA, Vite…

Advantages

- Easy to learn
- Fast **performance**
- Use all **ES6** features
  - **Promises**, **Classes** and **Modules**
- Compatible with other **libraries**
- Great **error reporting**

React Installation

Packages, Setup, Structure

Vite

- Instant Feedback - **rapid reloading** for efficient development
- Only one dependency - no complicated version mismatches
- No Lock-In - under the hood **Webpack**, **Babel**, **ESLint**

Install and Run Vite

- Run the React app creator

```
npm create vite my-app
```

- Select Framework >> `React`
- Select Variant >> `JavaScript`
- Starts your React app from the command line

```
cd my-app
```

```
npm install
```

```
npm run dev
```

- Browse your app from http://localhost:5173

Finding Information

- Visit the **official website**

  https://reactjs.org/

- Documentation

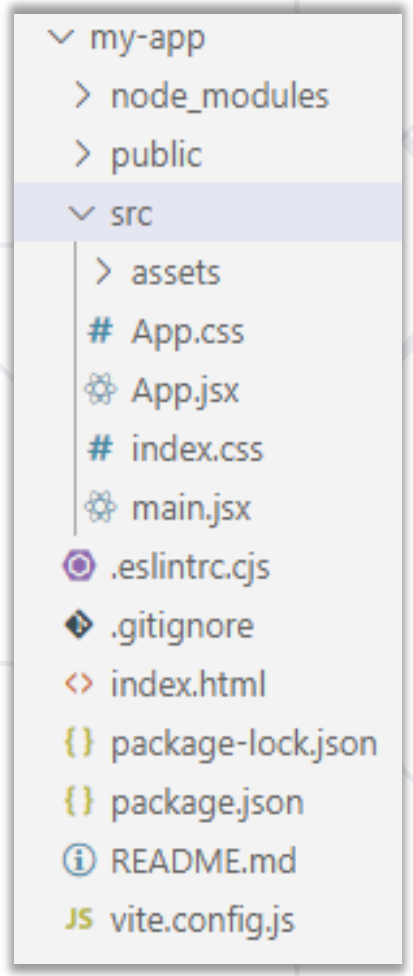
  https://react.dev/learn/installation

- Online sandbox

  https://codesandbox.io/

React App Structure

- `package.json` - project configuration
  - Module name, dependencies, build actions
- `index.html`
  - App main HTML file
- `main.jsx`
  - App main JS file (startup script)
- `App.jsx`, `App.css`,
- React component "`App`"



JSX Syntax

Overview, Syntax, Advantages

JSX Overview

- **JSX** is React's JavaScript **superset language**
  - Has all of JavaScript's **features** and more
- Unique approach to **mixing HTML and JS**
- Compiles to **plain JavaScript**

```
<div className="red">Children Text</div>
```

```
React.createElement('div',
  { className: 'red' },
  'Children Text'
);
```

JSX Rules and Principles

- Standard elements use lowercase names
  - `div`, `span`, `form`, `input`, …
- Custom components **always** use Pascal case
  - `MyCustomComponent`, `Greeting`, `ScoreBoard`, …
- Component name cannot be an expression
  - Use a **variable** instead
- There must be a **root element**
- More info at: https://react.dev/learn/writing-markup-with-jsx

Compilation

- JSX **compiles** to function calls

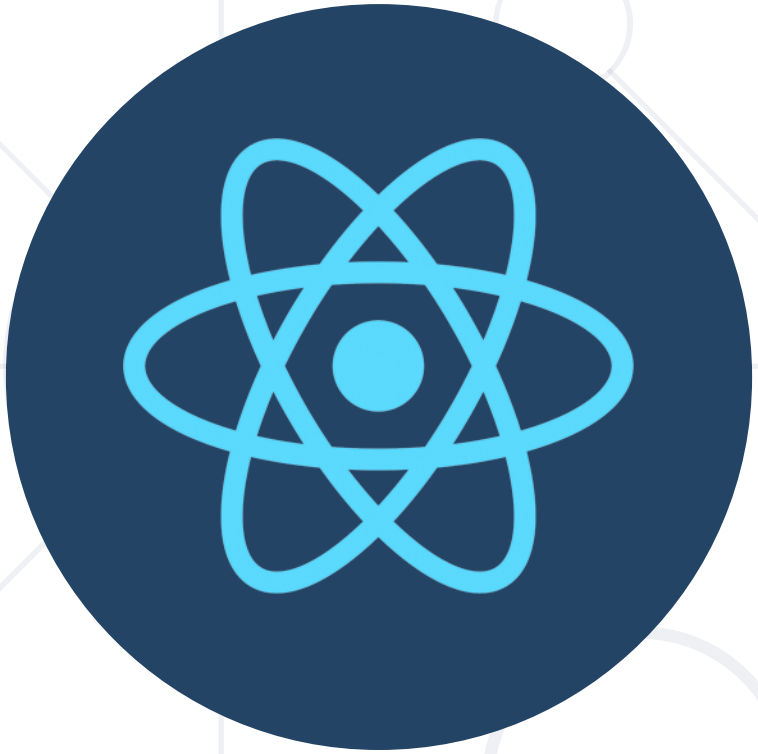
```
<div className="red">Children Text</div>
```

Element type (HTML tag name)

Properties object

```
React.createElement('div',
                    { className: 'red' },
                    "Children Text" [, …]);
```

List of children



Composition

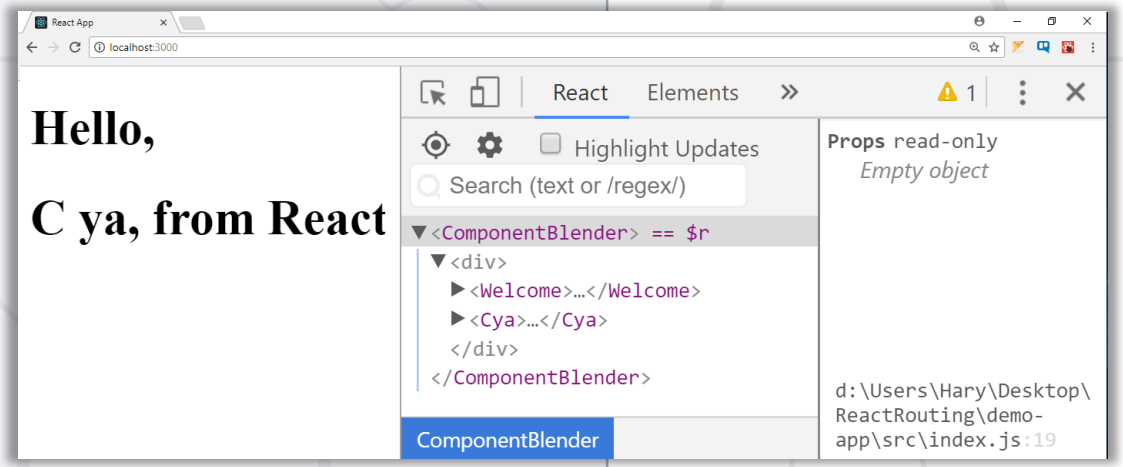
Definition and Advantages

Composition

- React components can be **nested**, like DOM elements

```
function Welcome() {
  return <h1>Hello, from React</h1>;
}
function Cya() {
  return <h1>C ya, from React</h1>;
}
function ComponentBlender() {
  return (
    <div>
      <Welcome />
      <Cya />
    </div>
  );
}
```

```
ReactDOM.createRoot(
      document.getElementById('root')
).render(<ComponentBlender />);
```



Component Syntax

- Names always start with **uppercase**
- Tags must be **closed**
  - If there are no children - use **self-closing tags**
- **Information** is passed via **props**

```
<Heading size="large">Hello React</Heading>
```

```
<UserHead name="homeHeader" />
```

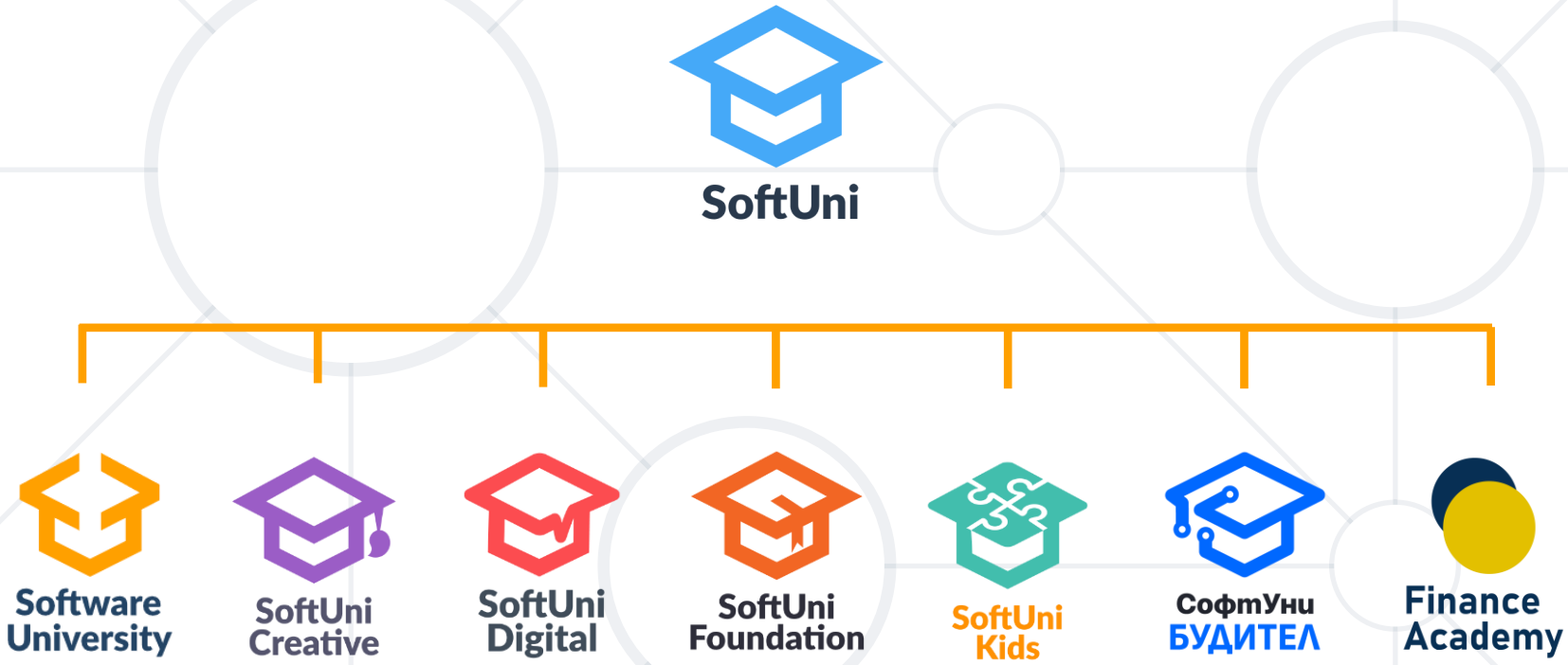
Advantages

- Encapsulate logic
- **Separate** your code
  - Easier to **maintain** and **debug**
  - Allows **reusability**
- Components are neat

Summary

- React is a JavaScript library for building user interfaces
- React uses all ES6 features
- JSX is React's JavaScript superset
- React components can be nested (composition)

Questions?



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