EDTECH

Session 02: Frontend Development

JavaScript and Frontend Frameworks in Web Development

- JavaScript is a high-level, dynamic, and interpreted programming language
- Primarily used for client-side scripting on the web
- Executed on the client-side (in the browser) or server-side (with technologies like Node.js)

JavaScript in Web Development

Why JavaScript is essential for web development

- Creates interactive web pages and web applications
- Adds dynamic effects and animations to websites
- Enables responsive and adaptive user interfaces
- Supports server-side programming with Node.js

Frontend Frameworks

Overview of popular frontend frameworks

- **Popular frameworks:**
  - React.js
  - Angular
  - Vue.js

Components and State Management

Understanding components and state management in frontend frameworks

- Components: reusable, self-contained pieces of code
- State management: managing and updating data in an application
- Props, state, and context API

Setting up a Development Environment

Installing Node.js and npm

1. Install Node.js and npm
2. Create a new project folder and navigate to it in the terminal

3. Run npm init to create a package.json file
4. Install React and other dependencies with npm install

Building a Simple React Component

Creating a functional component with React

Jsx

```jsx
import React from 'react';

function HelloWorld() {
  return <h1>Hello, World!</h1>;
}

export default HelloWorld;
```

Managing Component State with React Hooks

Using the useState hook

Jsx

```jsx
import React, { useState } from 'react';

function Counter() {
  const [count, setCount] = useState(0);

  return (
    <div>
      <p>Count: {count}</p>
      <button onClick={() => setCount(count + 1)}>Increment</button>
    </div>
  );
}
```

Troubleshooting and Debugging

- **Common Mistakes:**
  - Syntax errors
  - Missing or incorrect imports
  - State management issues
- **Debugging tools:**
  - Browser DevTools
  - React DevTools

- Debugging libraries like React Debugger

Conclusion

- JavaScript and frontend frameworks are essential for web development
- Understanding components and state management is crucial for building interactive web applications
- Practice and experimentation are key to mastering web development skills

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