**WEEK – 6(HandsOn)**

**React**

1. **ReactJS-HOL**

**Objectives**

**Define SPA and its benefits:**

SPA is a web application that loads a single HTML page and dynamically updates it.

**Benefits:**

* Faster user experience
* Less server load
* Easy to develop and debug with frameworks like React

**Define React and identify its working:**

* **React** is a JavaScript library for building **user interfaces**.
* It works using:
  + **Components**: Reusable building blocks
  + **JSX**: JavaScript + HTML
  + **Virtual DOM** for efficient rendering

**Differences Between SPA and MPA:**

| **Feature** | **SPA** | **MPA (Multi Page Application)** |
| --- | --- | --- |
| Page Loads | Loads content dynamically in one page | Loads a new page from the server |
| Speed | Faster after initial load | May be slower due to full reloads |
| Navigation | Smoother (no reloads) | Page refresh on each navigation |
| Development | Usually simpler after setup | More complex, multiple files/pages |
| SEO | Needs special handling | Easier because each page is separate |

**Pros & Cons of SPA:**

**Pros:**

* Fast and responsive
* Less server request

**Cons:**

* SEO is harder
* Initial loading might be slower

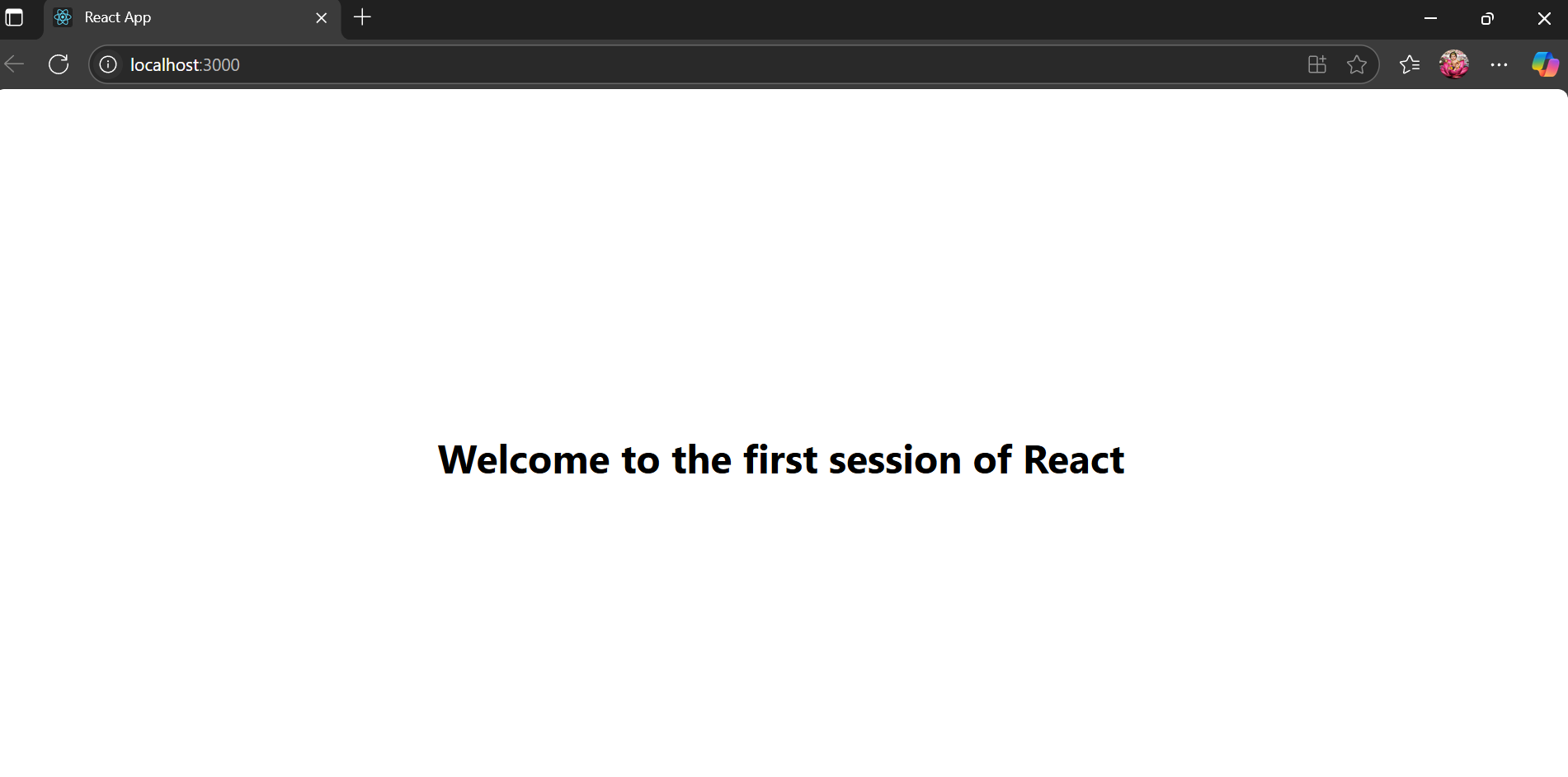
**Define Virtual DOM:**

* A lightweight copy of the real DOM.
* React updates the virtual DOM, then syncs changes with the real DOM efficiently.

**Features of React**

* Component-Based Architecture
* Virtual DOM
* JSX
* One-way Data Binding
* Fast Rendering

**OUTPUT:**

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