THEORY EXERCISE

- **Introduction to React.js**

Question 1: What is React.js? How is it different from other JavaScript frameworks and libraries?

Answer:
React.js is a **JavaScript library** for building **user interfaces**, mainly for **single-page applications (SPAs)**. It is maintained by **Meta (Facebook)** and focuses on creating reusable **components**.

Differences from Other Frameworks/Libraries:

- Uses a **Virtual DOM** for faster updates.
- Follows a **component-based architecture**.
- Supports **one-way data binding**, making debugging easier.
- Unlike Angular (a full framework), React focuses only on the **view layer**.

Question 2: Explain the core principles of React such as the Virtual DOM and component-based architecture.

Answer:

Core Principles of React:

1. **Virtual DOM**
    - A lightweight copy of the real DOM that updates only the changed parts, improving performance.
2. **Component-Based Architecture**
    - UI is broken into small, reusable **components**, making code modular and maintainable.
3. **One-Way Data Flow**
    - Data moves in a **single direction**, ensuring predictable state management.

Question 3: What are the advantages of using React.js in web development?

- **Answer:**

  Fast Performance – Uses **Virtual DOM** for efficient updates.
  Reusable Components – Saves time and improves maintainability.
  Strong Community Support – Backed by **Meta** and widely used.
  Easy to Learn & Use – Uses **JSX** (JavaScript + HTML) for simplicity.
  Great for SPAs – Works well with modern **web applications**.