REACT

CAP756

What Is React?

- React (sometimes called React.js or ReactJS) is a JavaScript library for building a fast and interactive user interface.
- It was originated at Facebook in 2011 and allow developers to create sizeable web applications or complex UIs by integrating a small and isolated snippet of code.
- In some quarters, React is often called a framework because of its behaviour and capabilities. But technically, it is a library.

- When building an application with React, you build a bunch of independent, isolated and reusable components.
- Think of component as a simple function that you can call with some input and they render some output.

- **Features**

The salient features of *React library* are as follows −

1. Solid base architecture
2. Extensible architecture
3. Component based library
4. JSX based design architecture
5. Declarative UI library

- **Benefits**

Few benefits of using *React library* are as follows –

1. Easy to learn
2. Easy to adept in modern as well as legacy application
3. Faster way to code a functionality
4. Availability of large number of ready-made component
5. Large and active community

- **ReactJS – Architecture**
- React's primary purpose is to enable the developer to create user interface using pure JavaScript.
- Instead of introducing new template language, React introduces three simple concepts as given below –
- **React elements**

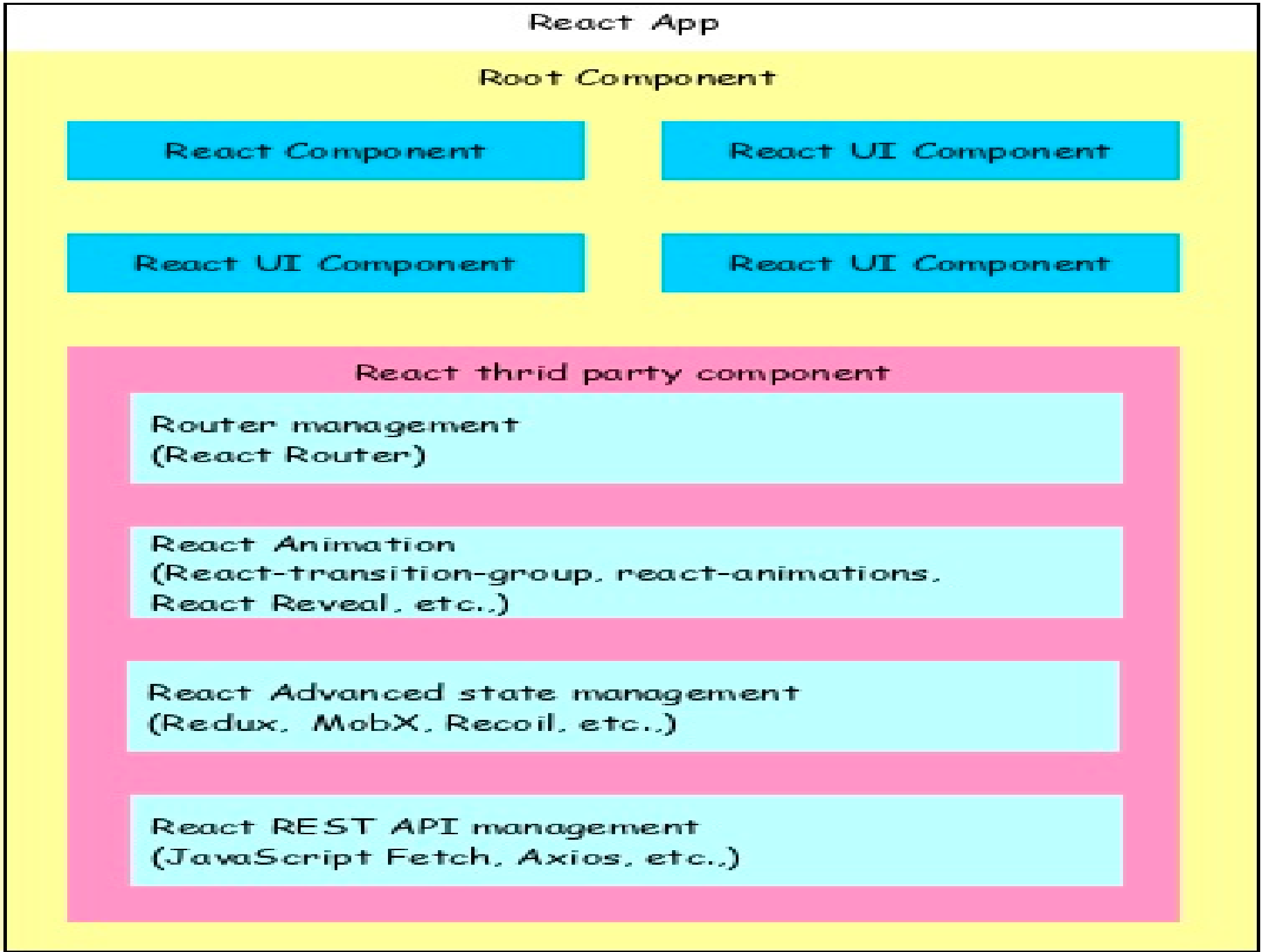
-JavaScript representation of HTML DOM. React provides an API, ***React.createElement*** to *create React Element*.

- **JSX**

-A JavaScript extension to design user interface. JSX is an XML based, extensible language supporting HTML syntax with little modification. JSX can be compiled to React Elements and used to create user interface.

- **React component**

-React component is the primary building block of the React application. It uses React elements and JSX to design its user interface


React App
Root Component
React Component
React UI Component
React UI Component
React UI Component
React thrid party component
Router management
(React Router)
React Animation
(React-transition-group, react-animations,
React Reveal, etc.)
React Advanced state management
(Redux, MobX, Recoil, etc.)
React REST API management
(JavaScript Fetch, Axios, etc.)

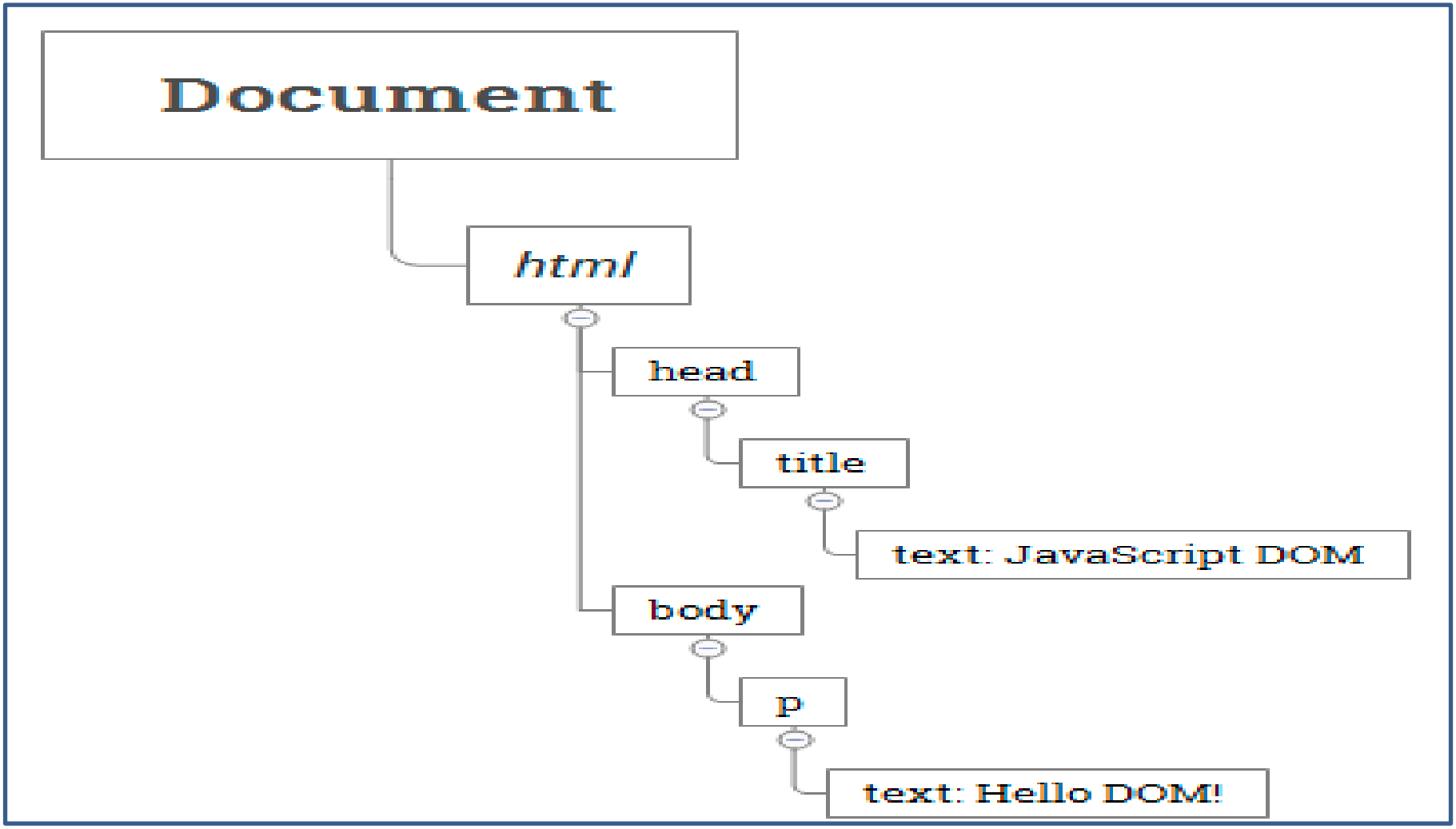
What is Document Object Model (DOM)

- The Document Object Model (DOM) is an application programming interface (API) for manipulating HTML documents.
- The DOM represents an HTML document as a tree of nodes. The DOM provides functions that allow you to add, remove, and modify parts of the document effectively.

- The DOM represents an HTML document as a hierarchy of nodes. Consider the following HTML document:

```
<html>
    <head>
        <title>JavaScript DOM</title>
    </head>
    <body>
        <p>Hello DOM!</p>
    </body>
</html>
```

- The following tree represents the above HTML document:



- Each node in the DOM tree is identified by a node type. JavaScript uses integer numbers to determine the node types.

Constant	Value	Description
Node.ELEMENT_NODE	1	An Element node like <p> or .
Node.TEXT_NODE	3	The actual Text inside an Element or Attr.
Node.CDATA_SECTION_NODE	4	A CDATASection, such as <!CDATA[[…]]>.
Node.PROCESSING_INSTRUCTION_NODE	7	A ProcessingInstruction of an XML document, such as <?xml-stylesheet … ?>.
Node.COMMENT_NODE	8	A Comment node, such as <!-- … -->.
Node.DOCUMENT_NODE	9	A Document node.
Node.DOCUMENT_TYPE_NODE	10	A DocumentType node, such as <!DOCTYPE html>.
Node.DOCUMENT_FRAGMENT_NODE	11	A DocumentFragment node.

- To get the type of node, you use the nodeType property:

```
node.nodeType
```

- You can compare the nodeType property with the above constants to determine the node type. For example:

```
if (node.nodeType == Node.ELEMENT_NODE) {
    // node is the element node
}
```

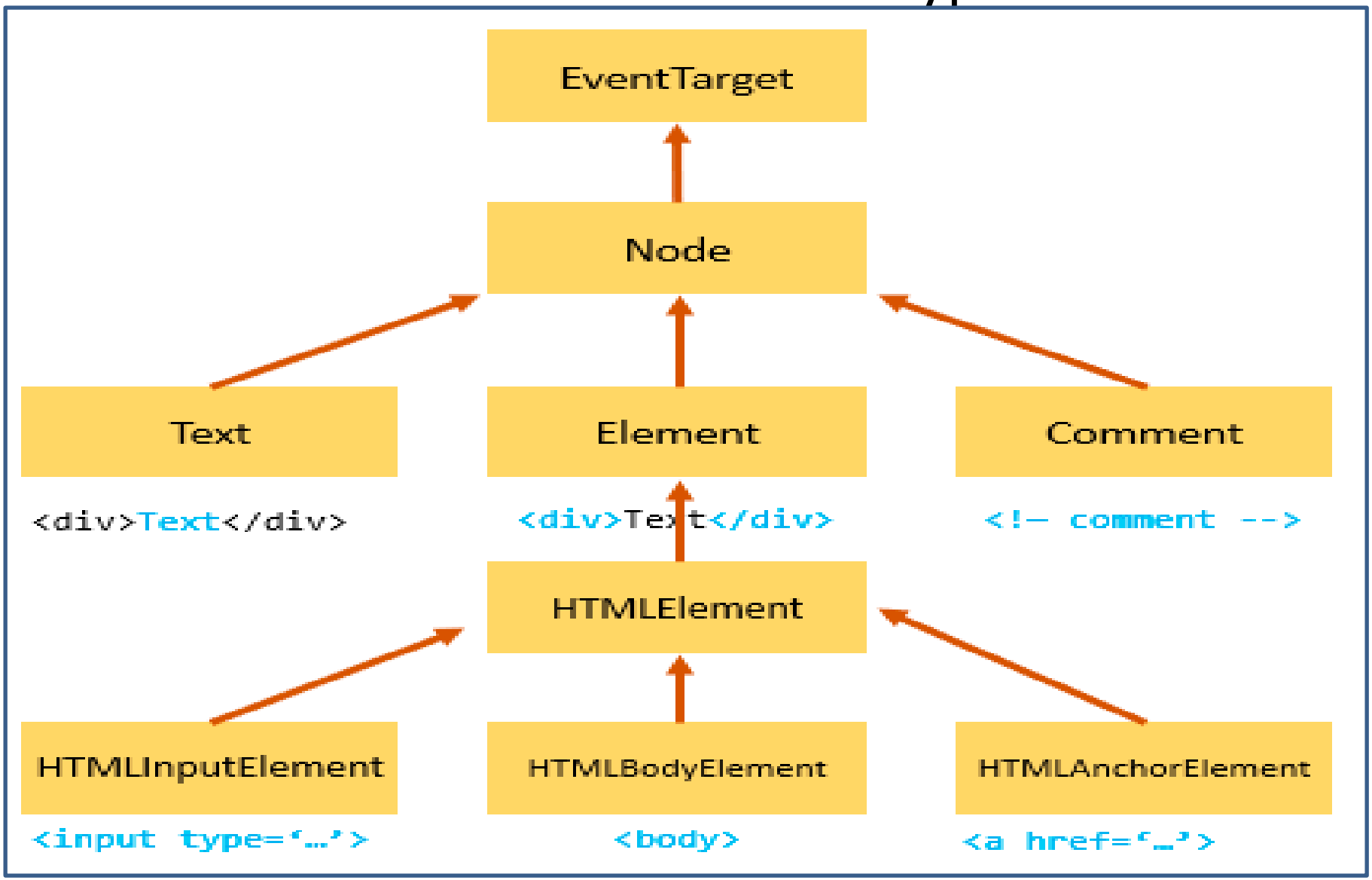
- The **nodeName** and **nodeValue** properties
- A node has two important properties
  : **nodeName** and **nodeValue** that provide specific information about the node.

```
if (node.nodeType == Node.ELEMENT_NODE) {

    let name = node.nodeName; // tag name like <p>

}
```

- The following picture illustrates the relationship between the Node and Element types:



- **React creates a VIRTUAL DOM in memory**.
- Instead of manipulating the browser's DOM directly, React creates a virtual DOM in memory, where it does all the necessary manipulating, before making the changes in the browser DOM.