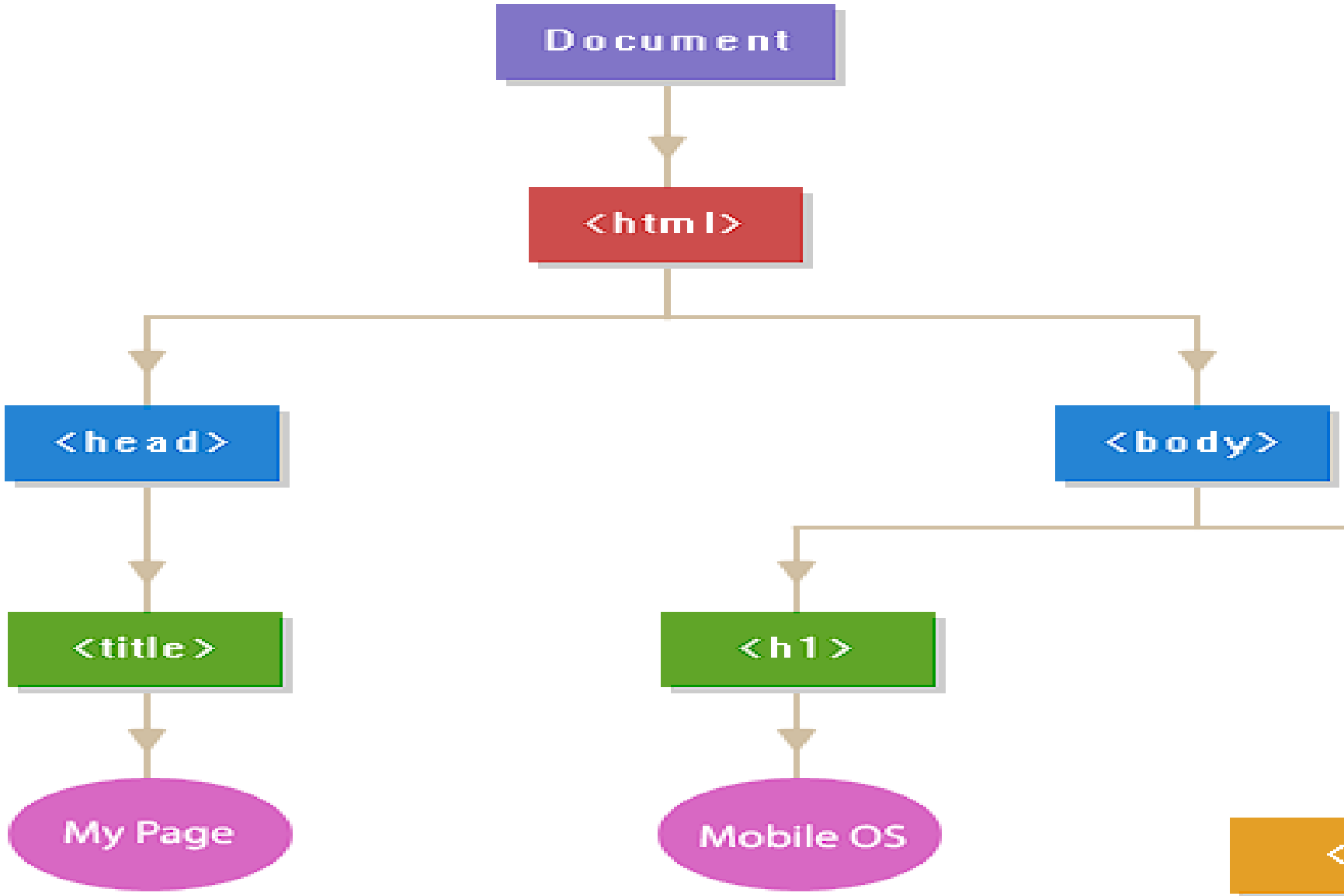
Course Module 1: Course Unit 7: JavaScript (Document Object Model)

Week 9

Document Object Model (DOM)




```
<!DOCTYPE html>
<html>
<head>
    <title>My Page</title>
</head>
<body>
    <h1>Mobile OS</h1>
    <ul>
        <li>Android</li>
        <li>iOS</li>
    </ul>
</body>
</html>
```

Document Object Model (DOM)

- a W3C (World Wide Web Consortium) standard

"The W3C Document Object Model (DOM) is a platform and language-neutral interface that allows programs and scripts to dynamically access and update the content, structure, and style of a document."

Document Object Model (DOM)

- a platform and language independent model to represent the HTML or XML documents.

The W3C DOM standard is separated into 3 different parts:

- Core DOM - standard model for all document types
- XML DOM - standard model for XML documents
- HTML DOM - standard model for HTML documents

Document Object Model (DOM)

- It defines the logical structure of the documents and the way in which they can be accessed and manipulated by an application program.
- all parts of the document, such as elements, attributes, text, etc. are organized in a hierarchical tree-like structure.
- individual parts of the document are known as nodes.

Why Document Object Model (DOM) is required?

Document Object Model (DOM)

HTML is used to *structure* the web pages and *JavaScript* is used to add *behavior* to our web pages. When an HTML file is loaded into the browser, the JavaScript cannot understand the HTML document directly. So, a corresponding document is created(DOM).

DOM is basically the representation of the same HTML document but in a different format with the use of objects.

Document Object Model (DOM)

DOM is a way to represent the webpage in a structured hierarchical way so that it will become easier for programmers and users to glide through the document.

With DOM, we can easily access and manipulate tags, IDs, classes, Attributes, or Elements using commands or methods provided by the Document object.

What Document Object Model (DOM) is not?

Document Object Model (DOM)

- The Document Object Model is not a **binary description** where it does not define any binary source code in its interfaces.

- The Document Object Model is not used to describe **objects in XML or HTML** whereas the DOM describes XML and HTML documents as objects.

Document Object Model (DOM)

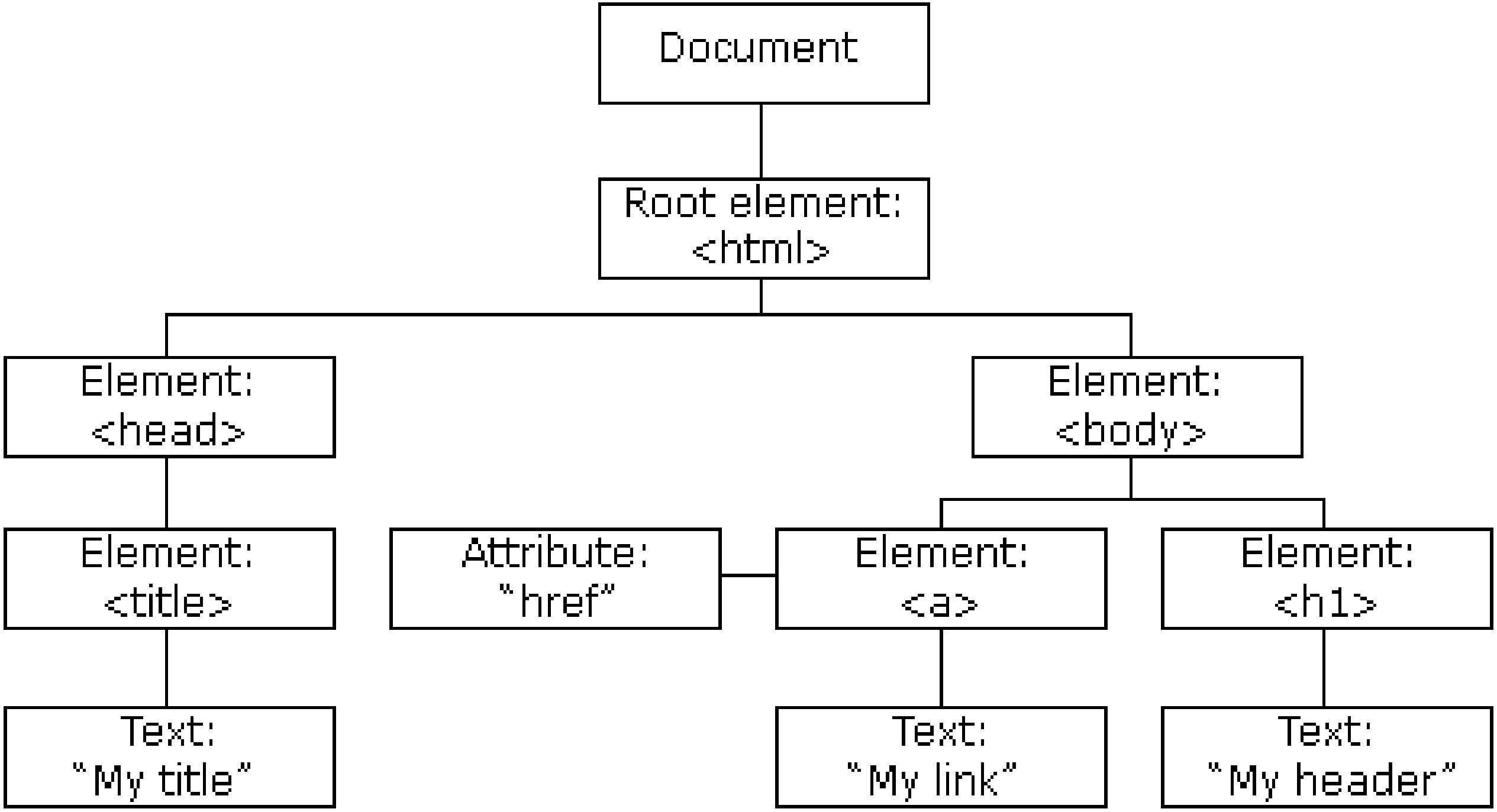
- The Document Object Model is not represented by a **set of data structures**; it is an interface that specifies object representation.

- The Document Object Model does not show the **criticality of objects** in documents i.e it doesn't have information about which object in the document is appropriate to the context and which is not.

Structure of Document Object Model (DOM)

Structure of DOM

DOM can be thought of as a **Tree or Forest** (more than one tree). The term structure model is sometimes used to describe the tree-like representation of a document.


Document
Root element:
<html>
Element:
<head>
Element:
<body>
Element:
<title>
Attribute:
"href"
Element:
<a>
Element:
<h1>
Text:
"My title"
Text:
"My link"
Text:
"My header"

Structure of DOM

With the object model, JavaScript gets all the power it needs to create dynamic HTML:

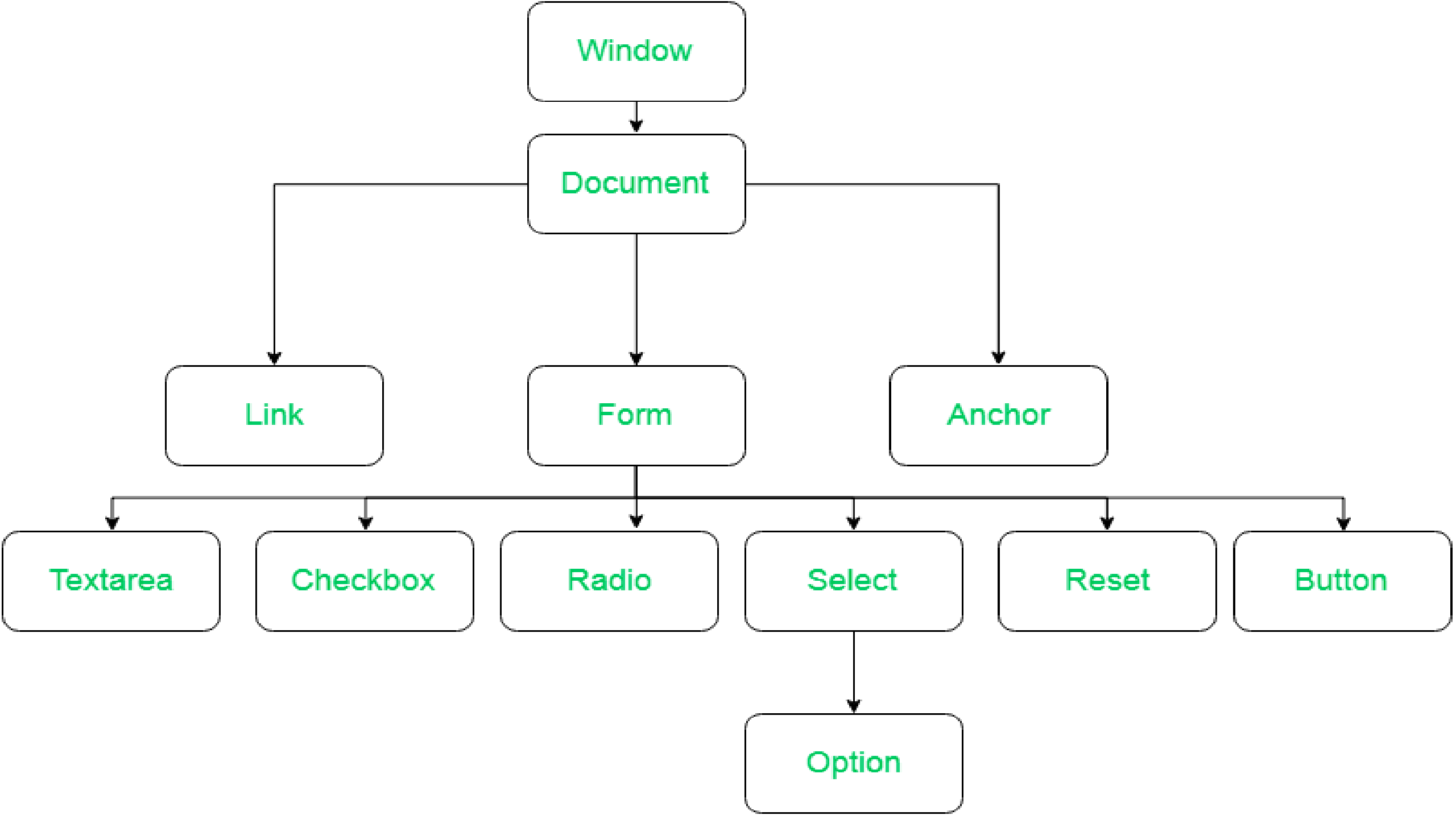
- JavaScript can change all the HTML elements in the page
- JavaScript can change all the HTML attributes in the page
- JavaScript can change all the CSS styles in the page

Structure of DOM

With the object model, JavaScript gets all the power it needs to create dynamic HTML:

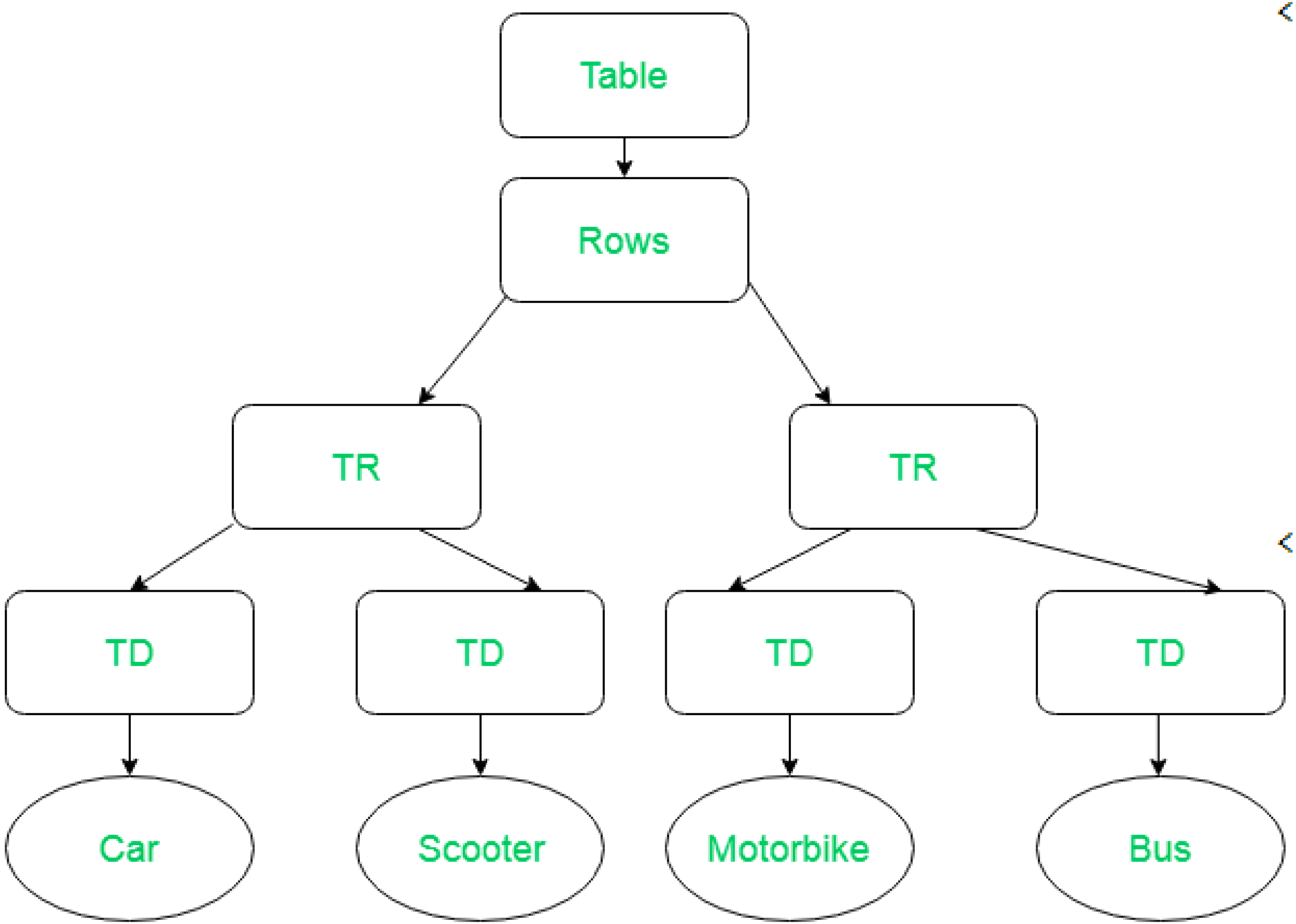
- JavaScript can remove existing HTML elements and attributes
- JavaScript can add new HTML elements and attributes
- JavaScript can react to all existing HTML events in the page
- JavaScript can create new HTML events in the page

Properties of Document Object Model (DOM)


Window
Document
Link
Form
Anchor
Textarea
Checkbox
Radio
Select
Reset
Button
Option

Properties of DOM

- Window Object: Window Object is always at top and outmost element of the hierarchy.
- Document object: When an HTML document is loaded into a window, it becomes a document object.
- Form Object: It is represented by form tags.
- Link Object: It is represented by link tags.
- Anchor Object: It is represented by a href tags.
- Form Control Elements: Form can have many control elements such as text fields, buttons, radio buttons, and checkboxes, etc.



HTML elements in tree-like structure

```
<table>
  <ROWS>
    <tr>
      <td>Car</td>
      <td>Scooter</td>
    </tr>
    <tr>
      <td>MotorBike</td>
      <td>Bus</td>
    </tr>
  </ROWS>
</table>
```

Applications???

Any questions???

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