

# Class No: 05

# Introduction to the DOM

## What is the DOM?

The DOM (Document Object Model) is a representation of the structure of an HTML document as a tree of nodes. It allows JavaScript to access, manipulate, and modify the structure and content of web pages.

## DOM Structure:

HTML elements are represented as nodes (e.g., `<html>`, `<body>`, `<div>`, etc.). Text content is also represented as text nodes.

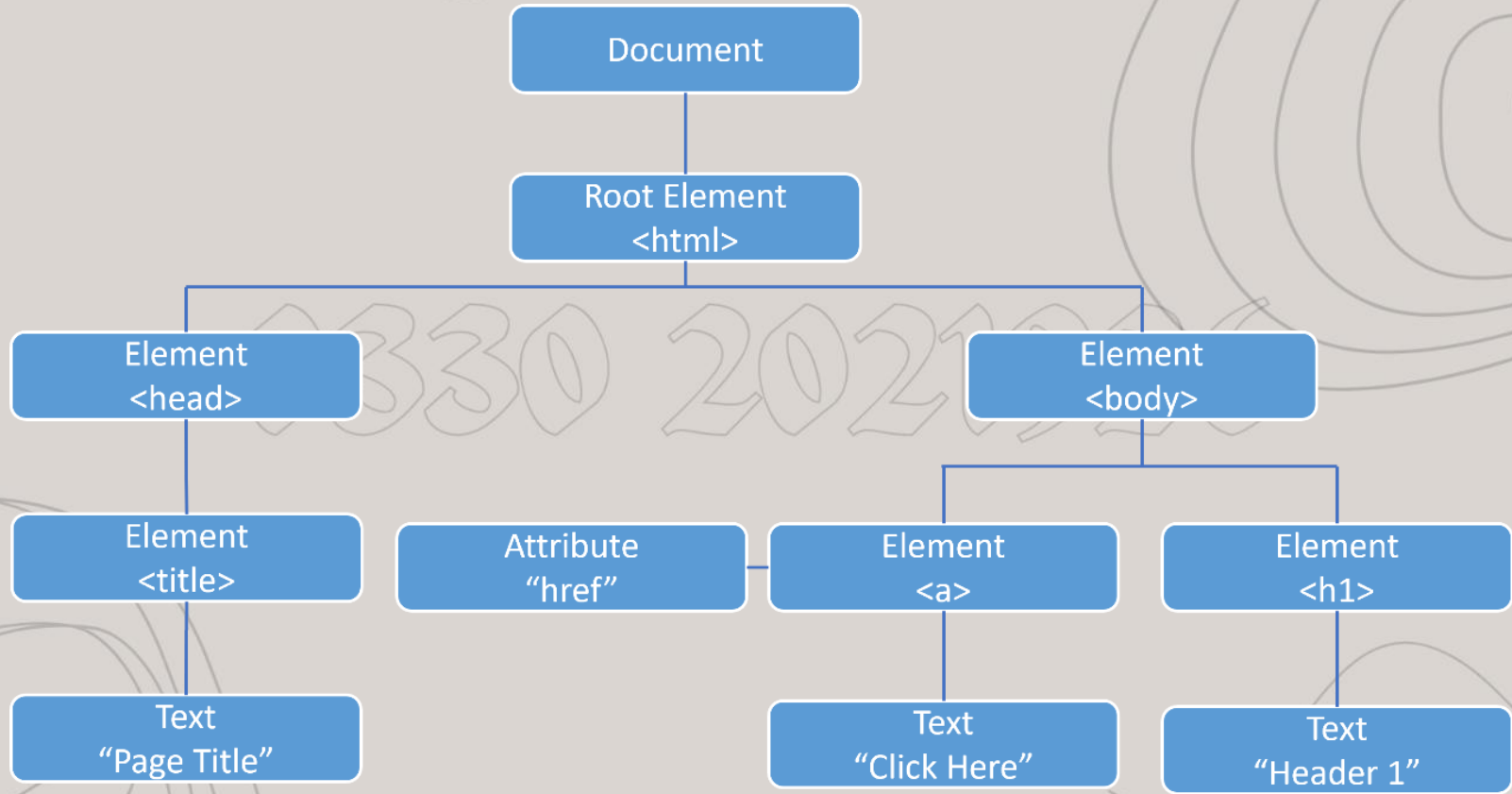
## Example (HTML and its DOM Structure):

```
<body>  
  <h1 id="heading">Hello</h1>  
  <p>This is a paragraph.</p>  
</body>
```

## DOM Tree Structure:

body

- h1 (with id heading)
- p (Text: "This is a paragraph.")



## Accessing DOM Elements

We can use JavaScript methods to access elements and manipulate them.

- `document.getElementById()`  
Retrieves an element by its id.

### html

```
<h1 id="heading">Hello, World!</h1>
```

### javascript

```
let heading = document.getElementById("heading");  
console.log(heading.innerText); // Output: Hello, World!
```

## Web Development

- `document.getElementsByClassName()`  
Retrieves elements by their class name (returns an `HTMLCollection`).

### html

```
<div class="box">Box 1</div>  
<div class="box">Box 2</div>
```

### javascript

```
let boxes = document.getElementsByClassName("box");  
console.log(boxes[0].innerText);           // Output: Box 1
```

## Web Development

- `document.getElementsByTagName()`  
Retrieves all elements with the specified tag name.

### html

```
<p>Paragraph 1</p>
```

```
<p>Paragraph 2</p>
```

### javascript

```
let paragraphs = document.getElementsByTagName("p");
```

```
console.log(paragraphs[1].innerText);
```

```
// Output: Paragraph 2
```

## Web Development

- `querySelector()`  
Selects the first element that matches the CSS selector.

### html

```
<h1 id="heading">Hello!</h1>
```

### javascript

```
let heading = document.querySelector("#heading");  
console.log(heading.innerText); // Output: Hello!
```



## Web Development

- `querySelectorAll()`  
Selects all elements that match the CSS selector (returns a `NodeList`).

### html

```
<div class="box">Box 1</div>  
<div class="box">Box 2</div>
```

### javascript

```
let boxes = document.querySelectorAll(".box");  
boxes.forEach(box => console.log(box.innerText));
```

# Modifying the DOM

## Change Text Content:

Using innerText or innerHTML, we can change the text inside an element.

### html

```
<h1 id="heading">Original Text</h1>
```

### javascript

```
let heading = document.getElementById("heading");  
heading.innerText = "Updated Text"; // Changes text to "Updated Text"
```

## Change Attributes:

Using `setAttribute()`, we can modify the attributes of an element.

### html

```

```

### javascript

```
let img = document.getElementById("image");  
img.setAttribute("src", "new-image.jpg");           // Changes the image source
```

## Change Styles:

Using the style property, we can modify the element's CSS.

### javascript

```
heading.style.color = "blue";           // Changes text color to blue  
heading.style.fontSize = "24px";        // Changes font size
```

## Home Task 5

- Access elements using `getElementById()`, `getElementsByClassName()`, and `querySelector()`.
- Change the text content of a paragraph element.
- Change the background color of a div when a button is clicked.
- Add a border to an image on mouse hover.
- Create a form with two inputs and a submit button. Display the entered values when the button is clicked.