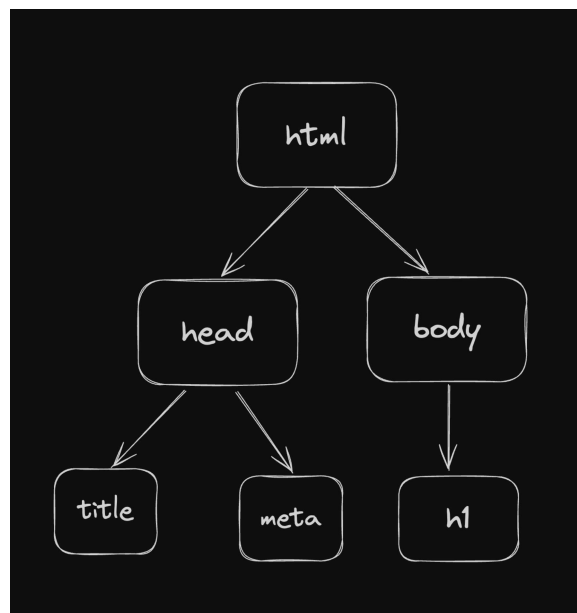


What is DOM?

The DOM, or Document Object Model, is a programming interface for web documents. It represents the structure of a web page as a tree of objects.

```
<html>
  <head>
    <title>Simple app</title>
    <meta name="description" cont
  </head>
  <body>
    <h1>
      hi there
    </h1>
  </body>
</html>
```



hi there


Why DOM?

The DOM abstracts the structure of the document into a tree of objects, allowing scripts to manipulate the content and structure dynamically. This abstraction enables more complex interactions and functionalities beyond just static HTML.

Static HTML

As the name suggests, **static HTML** represents HTML that does not change.

For example -



```
<!DOCTYPE html>
<html>
  <head>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width">
    <title>replit</title>
    <link href="style.css" rel="stylesheet" type="text/css" />
  </head>

  <body>
    <h1>Todo list</h1>
    <h4>1. Take class</h4>
    <h4>2. Go out to eat</h4>
    <div>
      <input type="text"></input>
      <button>Add Todo</button>
    </div>
    <script src="script.js"></script>
  </body>

</html>
```

If you click on the **Add Todo** button, nothing happens

Todo list

1. Take class

2. Go out to eat

Add Todo



Dynamic HTML

How can you update the elements of the page **dynamically** ?

Assignment

When the user clicks on the **Add todo** button, a new TODO should be added.

Todo list

1. Take class
2. Go out to eat

document object

In the browser, the **document** object is a fundamental part of the Document Object Model (DOM). It represents the web page currently loaded in the browser and provides a way to interact with and **manipulate** its content.

Fetching elements

There are 5 popular methods available for fetching DOM elements -

- `querySelector`
- `querySelectorAll`
- `getElementById`
- `getElementsByClassName`
- `getElementsByName`

1. Fetching the title



Todo list

1. Take class

2. Go out to eat

```
const title = document.querySelector('h1');  
console.log(title.innerHTML)
```



2. Fetching the first TODO (Assignment)

Todo list

1. Take class

2. Go out to eat

Add Todo

```
const firstTodo = document.querySelector('h4');  
console.log(firstTodo.innerHTML)
```



3. Fetching the **second** TODO (Assignment)

Todo list

1. Take class

2. Go out to eat

Add Todo

```
const secondTodo = document.querySelectorAll('h4')[1];  
console.log(secondTodo.innerHTML)
```



Updating elements

- `.innerHTML` - Used for updating the `HTML` inside an element
- `.textContent` - Used for updating the `text content` inside an element

Assignment - Update the first todo's contents

Todo list

1. Take class

2. Go out to eat

Add Todo

```
const firstTodo = document.querySelector("h4");  
firstTodo.innerHTML = "Dont' take class"
```



Deleting elements

- `removeChild` - Removes a specific `node` of a `parent`
- `onclick` - function that triggers whenever you `click` on a button

Assignment - Add a `delete` button right next to the `todo` that deletes that todo

```
<!DOCTYPE html>
<html>

<head>
  <meta charset="utf-8">
  <meta name="viewport" content="width=device-width">
  <title>replit</title>
  <link href="style.css" rel="stylesheet" type="text/css" />
</head>

<body>
  <h1>Todo list</h1>
  <div>
    <div id="todo-1">
      <h4>1. Take class</h4>
      <button onclick="deleteTodo(1)">delete</button>
    </div>
    <div id="todo-2">
      <h4>2. Go out to eat</h4>
      <button onclick="deleteTodo(2)">delete</button>
    </div>
  </div>
  <div>
    <input type="text"></input>
    <button>Add Todo</button>
  </div>
</body>

<script>
  function deleteTodo(index) {
```



```
    const element = document.getElementById("todo-" + index);  
    element.parentNode.removeChild(element);  
  }  
</script>  
  
</html>
```

Another experiment we did in class -

```
<html>  
  <body id="body">  
    <h2>Todo 1</h2>  
    <h2>Todo 2</h2>  
    <h2>Todo 3</h2>  
    <button onclick="deleteRandomTodo()">Delete todo!</button>  
  </body>  
  <script>  
    function deleteRandomTodo() {  
      const element = document.querySelector("h2");  
      const parentElement = element.parentNode;  
      parentElement.removeChild(element);  
    }  
  
  </script>  
</html>
```



Adding elements

What we're learning -

- createElement
- appendChild

Assignment - Write a function to add a TODO `text` to the list of todos

Steps -

1. Get the current text inside the input element
2. Create a new `div` element
3. Add the `text` from step 1 to the `div` element
4. Append the `div` to the todos list

```
<!DOCTYPE html>
<html>

<head>
  <meta charset="utf-8">
  <meta name="viewport" content="width=device-width">
  <title>replit</title>
  <link href="style.css" rel="stylesheet" type="text/css" />
</head>

<body>
  <h1>Todo list</h1>
  <div id="todos">
    <div id="todo-1">
      <h4>1. Take class</h4>
      <button onclick="deleteTodo(1)">delete</button>
    </div>
    <div id="todo-2">
      <h4>2. Go out to eat</h4>
      <button onclick="deleteTodo(2)">delete</button>
    </div>
  </div>
```



```
<div>
  <input id="inp" type="text"></input>
  <button onclick="addTodo()">Add Todo</button>
</div>
</body>

<script>
  function addTodo() {
    const inputEl = document.getElementById("inp");
    const textNode = document.createElement("div");
    textNode.innerHTML = inputEl.value;
    const parentEl = document.getElementById("todos");
    parentEl.appendChild(textNode);

  }
</script>

</html>
```

Todo list

1. Take class

delete

2. Go out to eat

delete

hi

hello

hi there

hi there

Add Todo

More complex elements

Until now, we created a simple `div` element

```
const textNode = document.createElement("div");
textNode.innerHTML = inputEl.value;
```



The problem is it doesn't have a corresponding `delete` button.

1. Take class



Can you try to fix it?

Solution #1

```
<!DOCTYPE html>
<html>

<head>
  <meta charset="utf-8">
  <meta name="viewport" content="width=device-width">
  <title>replit</title>
  <link href="style.css" rel="stylesheet" type="text/css" />
</head>

<body>
  <h1>Todo list</h1>
```



```
<div id="todos">
  <div id="todo-1">
    <h4>1. Take class</h4>
    <button onclick="deleteTodo(1)">delete</button>
  </div>
  <div id="todo-2">
    <h4>2. Go out to eat</h4>
    <button onclick="deleteTodo(2)">delete</button>
  </div>
</div>
<div>
  <input id="inp" type="text"></input>
  <button onclick="addTodo()">Add Todo</button>
</div>
</body>

<script>
  let currentIndex = 3;
  function addTodo() {
    const inputEl = document.getElementById("inp");
    const textNode = document.createElement("div");
    textNode.innerHTML = "<div id='todo-" + currentIndex + "'><h4>" + inputEl.value + "
    const parentEl = document.getElementById("todos");
    parentEl.appendChild(textNode);

    currentIndex = currentIndex + 1;
  }

  function deleteTodo(index) {
    const element = document.getElementById("todo-" + index);
    element.parentNode.removeChild(element);
  }
</script>

</html>
```

Solution #2

```
<html>
```

```
<head>
```




```
<meta charset="utf-8">
<meta name="viewport" content="width=device-width">
<title>Todo List</title>
<link href="style.css" rel="stylesheet" type="text/css" />
</head>

<body>
  <h1>Todo list</h1>
  <div id="todos">
    <div id="todo-1">
      <h4>1. Take class</h4>
      <button onclick="deleteTodo(1)">Delete</button>
    </div>
    <div id="todo-2">
      <h4>2. Go out to eat</h4>
      <button onclick="deleteTodo(2)">Delete</button>
    </div>
  </div>
  <div>
    <input id="inp" type="text">
    <button onclick="addTodo()">Add Todo</button>
  </div>

  <script>
    let currentIndex = 3;

    function addTodo() {
      const inputEl = document.getElementById("inp");
      const todoText = inputEl.value.trim();

      if (todoText === '') {
        alert('Please enter a todo item.');
```

```
newHeading.textContent = currentIndex + '. ' + todoText;

// Create new button element
const newButton = document.createElement('button');
newButton.textContent = 'Delete';
newButton.setAttribute("onclick", "deleteTodo(" + currentIndex + ")");

// Append elements to the new todo div
newTodo.appendChild(newHeading);
newTodo.appendChild(newButton);

// Append new todo to the parent element
parentEl.appendChild(newTodo);

// Increment the index for the next todo item
currentIndex++;

// Clear the input field
inputEl.value = '';
}

function deleteTodo(index) {
  const element = document.getElementById("todo-" + index);
  if (element) {
    element.parentNode.removeChild(element);
  }
}
</script>
</body>

</html>
```

Code to debug

```
<html>

<body>
  <input type="text"></input>
  <button onclick="addTodo()">Add todo!</button>
</body>
<script>
```



```
let ctr = 1;
function deleteTodo(index) {
  const element = document.getElementById(index);
  element.parentNode.removeChild(element);
}

function addTodo() {
  const inputEl = document.querySelector("input");
  const value = inputEl.value;

  const newDivEl = document.createElement("div");
  newDivEl.setAttribute("id", ctr);
  ctr = ctr + 1;
  newDivEl.innerHTML = "<div>" + value + '</div><button onclick="deleteTodo('

  document.querySelector("body").appendChild(newDivEl)
}
</script>

</html>
```

