Context for today

Today, we're going to learn about

1. DOM manipulation (slightly more advanced)
2. Create a mock Reconcilers
3. State and State management

Complex DOM manipulation

Creating a DOM element which has another DOM element inside

Lets write some code in which you have a button. When you click on a button, a slightly complex DOM element gets appended to the DOM.

```
<div>
  <h1>hi there<h1>
</div>
```

Approach #1

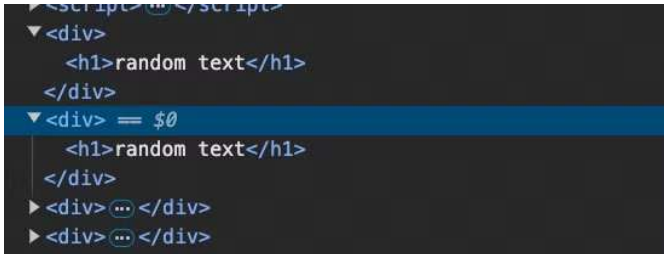
```
<body>
  <button onclick="createComplexDomElement()">Add</button>
</body>
<script>
  function createComplexDomElement() {
    const div = document.createElement("div");
    div.innerHTML = "<h1> hi there </h1>";
    document.querySelector("body").appendChild(div);
  }
</script>
```

Finishing the TODO App - 2

Let's look at a slightly better approach of doing the same thing.

Creating a DOM element which has another DOM element inside

```
<body>
  <button onclick="createComplexDomElement()">Add</button>
</body>
<script>
  function createComplexDomElement() {
    const div = document.createElement("div");
    const h1 = document.createElement("h1");
    h1.innerHTML = "random text";
    div.appendChild(h1);
    document.querySelector("body").appendChild(div);
  }
</script>
```



TODO app

Can you now create a TODO application with the slightly complex approach of appending DOM elements?

```
<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">

                                        lete</button>
```

```
 </div>
<
 DOM Part 2  4 of 8
<
 <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.');
   return;
  }

  const parentEl = document.getElementById("todos");

  // Create new todo div
  const newTodo = document.createElement('div');
  newTodo.setAttribute("id", 'todo-' + currentIndex);

  // Create new heading element
  const newHeading = document.createElement('h4');
  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);

                                        ement

  .              . .
```

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

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

</html>
```

index for the next todo item

State derived frontends

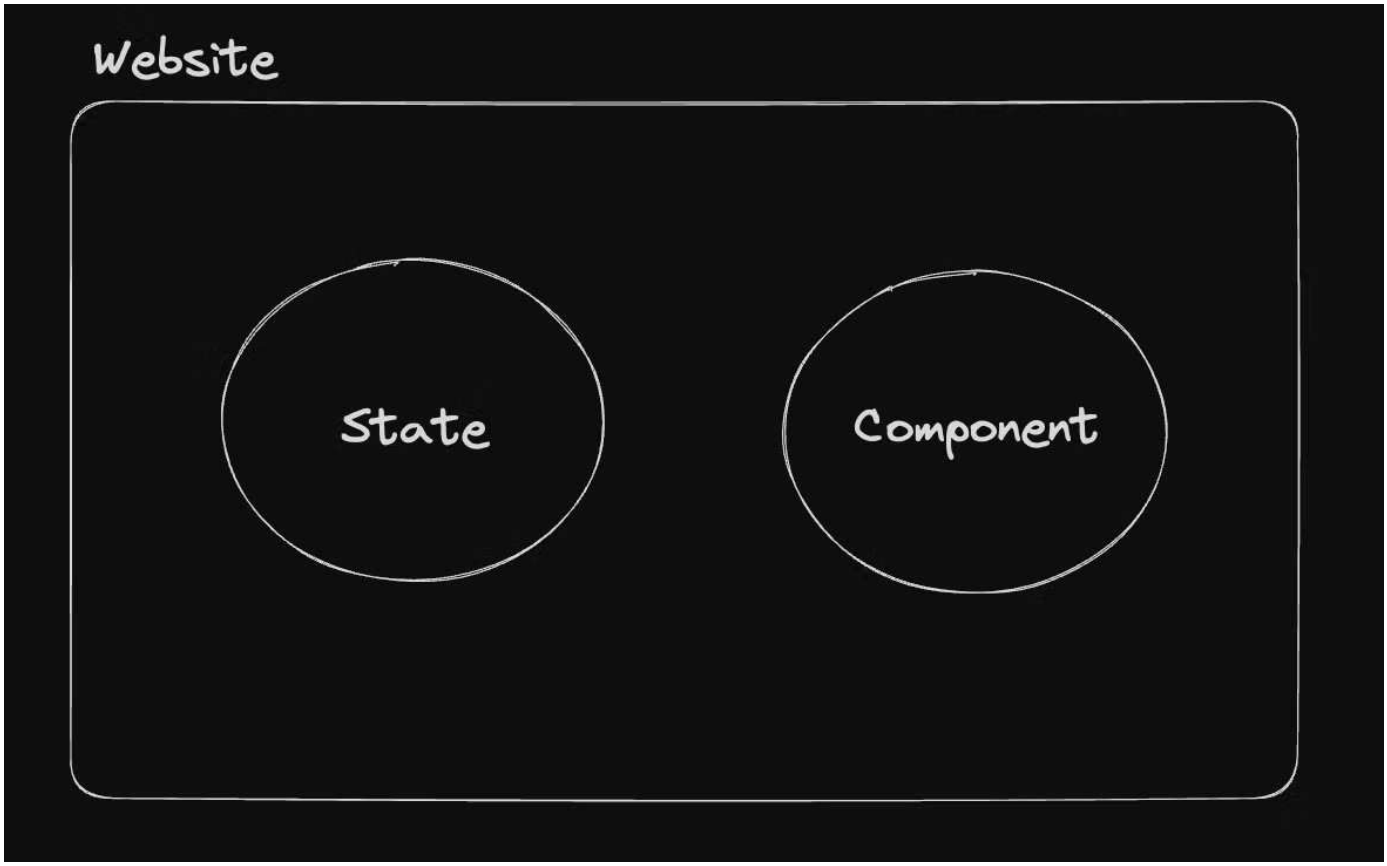
To make frontends easier to code, the concept of state came into the picture. You will see this more when we reach react.

There are three jargon we need to understand

1. State - The variable parts of an app.

on screen.

3 Rendering - Taking the state and rendering it on the DOM based on the



TODO App

State

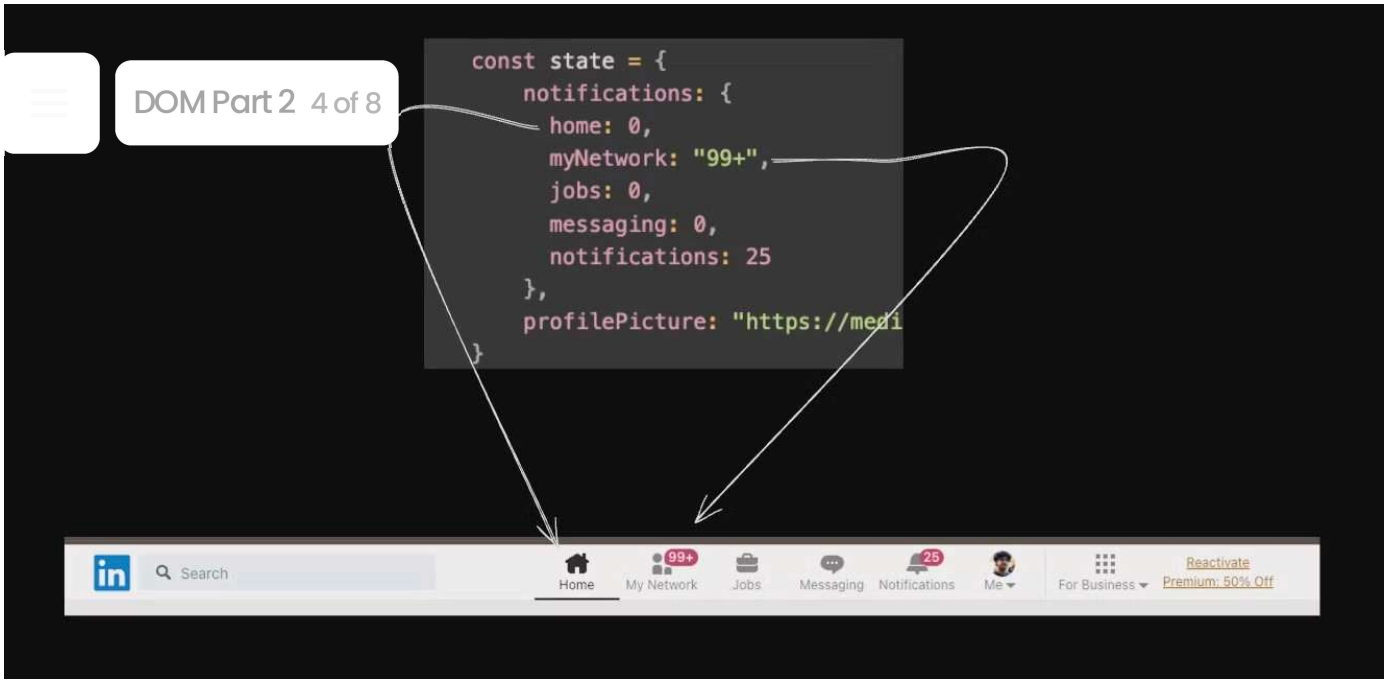
```
const todos = [{
  id: 1,
  description: "Go to gym"
}, {
  id: 2,
  description: "Eat food"
}];
```

```
function todoComponent(todo) {
    DOM Part 2  4 of 8  nent.createElement("div");
  const h1 = document.createElement("h1");
  const button = document.createElement("button");
  button.innerHTML = "Delete";
  h1.innerHTML = todo.title;
  div.appendChild(h1);
  div.appendChild(button);
}
```

Linkedin Topbar

State

```
const state = {
  notifications: {
    home: 0,
    myNetwork: "99+",
    jobs: 0,
    messaging: 0,
    notifications: 25
  },
  profilePicture: "https://media.licdn.com/dms/image/v2/C5603AQFbOqG9og
}
```



Started code

```
<body>
  <input type="text"></input>
  <button onclick="addTodo()">Add todo!</button>
  <script>
    let todos = [];
    function addTodo() {
      todos.push({
        title: document.querySelector("input").value
      })
      render();
    }

    function deleteTodo() {

      render();
    }

    function createChild() {


    }
```

```
</script>
```

DOM Part 2 4 of 8

State derived rendering

Given a state variable called `todos` , can you write a function called `render` that takes this as an input and `renders` the current list of todos

Todos look something like this -

```
const todos = [{
    id: 1,
    title: "Go to gym"
}, {
    id: 2,
    title: "Clean the car"
}]
```

Boilerplate code

```
<body>
  <div id="root"></div>
  <script>
    function render(todos) {
      // your code here
    }
  </script>
</body>
```

ytime we re-render

```
</body>
</div>
<script>
  function render(todos) {
    const todoList = document.getElementById('root');
    todoList.innerHTML = ''; // Clear the list

    todos.forEach(todo => {
      const div = document.createElement('div');
      const h1 = document.createElement('h4');
      h1.textContent = todo.title;
      div.appendChild(h1);
      div.setAttribute('data-id', todo.id);
      todoList.appendChild(div);
    });
  }
  render([{
    id: 1,
    title: "Go to gym"
  }, {
    id: 2,
    title: "Clean the car"
  }])
</script>
</body>
```

💡 There is a better approach —- You find the diff and only do `deletes` / `updates` / `additions` that are necessary. But that'll boggle most folks heads so we're not going there. The general goal should be to minimize the number of interactions in the DOM.
React does this by using something called the virtual DOM.

DOM Part 2 4 of 8

Add TODO functionality

Lets add the functionality to

1. Add more TODOs
2. Delete functionality

> 💡 You only need to update state and call the `render` function. You `DONT` need to do the actual DOM manipulations, the `render` function will do it for you.

▼ Solution

```
<body>
  <div id="root"></div>
  <div>
    <input type="text"></input>
    <button onclick="addTodo()">Add Todo</button>
  </div>
  <script>
    let ctr = 2;
    let todos = [{
      id: 1,
      title: "Go to gym"
    }, {
      id: 2,
      title: "Clean the car"
    }]

    function addTodo() {

      title: document.querySelector("input").value
```

```
    })
  ';
```



```
  function render(todos) {
    const todoList = document.getElementById('root');
    todoList.innerHTML = ''; // Clear the list

    todos.forEach(todo => {
      const div = document.createElement('div');
      const h1 = document.createElement('h4');
      h1.textContent = todo.title;
      div.appendChild(h1);
      div.setAttribute('data-id', todo.id);
      todoList.appendChild(div);
    });
  }
  render(todos)
 </script>
</body>
```

Delete functionality

Can you add the `delete` functionality next?

💡 Again, we don't have to do any DOM manipulations here. It's all handled by our `render` function.

Started code

DOM Part 2 4 of 8

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

<button onclick="deleteLastTodo()">Delete last todo</button>

<button onclick="deleteFirstTodo()">Delete first todo</button>
<div id="todos"></div>
<script>
 let todos = [];
 function addTodo() {
  todos.push({
   title: document.querySelector("input").value
  })
  render()
 }

 function deleteLastTodo() {
  todos.splice(todos.length - 1, 1) // remove the last element from the arr
  render()
 }


 function deleteFirstTodo() {
  todos.splice(0, 1) // remove the last element from the arr
  render()
 }


 function createTodoComponent(todo) {
  const div = document.createElement("div");
  const h1 = document.createElement("h1");
  const button = document.createElement("button");
  button.innerHTML = "Delete"
  h1.innerHTML = todo.title;
  div.append(h1)
```

```
    }
```

DOM Part 2 4 of 8

```
    function render() {
      document.querySelector("#todos").innerHTML = "";
      for (let i = 0; i < todos.length; i++) {
        const element = createTodoComponent(todos[i]);
        document.querySelector("#todos").appendChild(element)
      }
    }

  </script>
</body>
```

Code - https://github.com/Master-utsav/Render-Todo

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