

Rendering in React js



Agenda

- **React.js Rendering**
- **What is DOM?**
- **DOM Diffing**
- **DOM Update in React**

What is DOM?

- **DOM- Document Object Model**
- **Structure of HTML elements that makeup a web page**
- **It is an interface that allows a programming language to manipulate the content, structure, and style of a website.**
- **JavaScript is the client-side scripting language that connects to the DOM in an internet browser.**
- **Actions, such as**
 - rotating between a slideshow of images,
 - displaying an error when a user attempts to submit an incomplete form, or
 - toggling a navigation menu,
- **it is the result of JavaScript accessing and manipulating the DOM.**
- **DOM API- how these elements are accessed and changed.**

What is a DOM?

- **Website- HTML documents**
- **Browser-**
 - a program that interprets HTML and CSS and renders the style, content, and structure into the page.
 - creates a representation of the document known as the Document Object Model.
- **This model(DOM) allows JavaScript to access the text content and elements of the website document as objects.**

Difference Between the DOM and HTML Source Code

- **The DOM is modified by client-side JavaScript**
- **The browser automatically fixes errors in the source code**

Example

- **1. Create index.html**
- **2. In Developer tool check elements in console**
- **3. Check document- exactly same as html document**
 - document
- **4. Change some of the live properties of the body object on this website. We'll edit the style attribute, changing the background color to fuchsia.**
 - `document.body.style.backgroundColor = 'fuchsia';`

Example

- **The JavaScript code assigning fuchsia to the background color of the body, is now a part of the DOM.**
- **The source of a website will not change and will never be affected by client-side JavaScript.**
- **Refresh the page, the new code we added in the console will disappear.**

Example

Document Object Model

The screenshot displays a web browser window with the address bar showing the file path: `file:///home/prave/React_js/lec_2/examples/index.html`. The browser's developer tools are open, showing the DOM tree on the left and the Styles pane on the right.

DOM Tree:

```
<!DOCTYPE html>
<html lang="en">
  <head>...</head>
  <body style="background-color: fuchsia;"> == $0
    <h1>Document Object Model</h1>
  </body>
</html>
```

Styles Pane:

The Styles pane shows the computed styles for the selected element (the `body` element). The styles are:

- `background-color: fuchsia;`
- `display: block;`
- `margin: 8px;`

The Styles pane also shows the user agent styles for the `body` element.

Console:

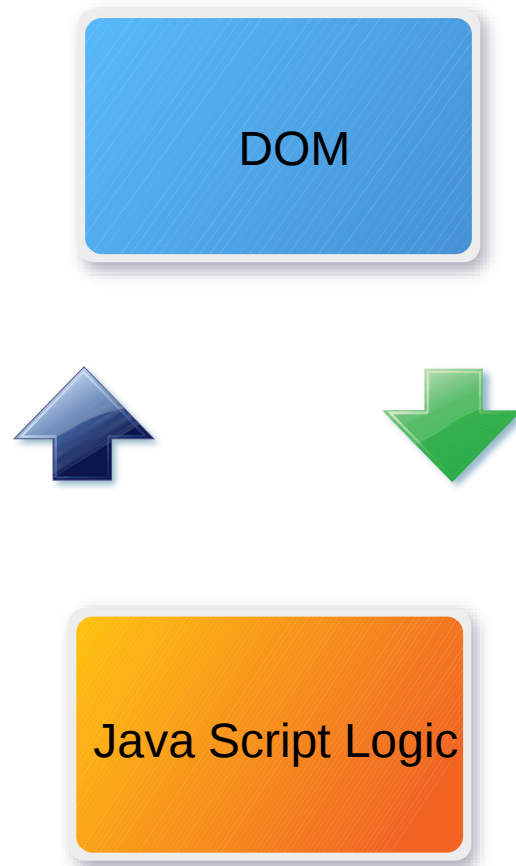
The Console shows the following output:

```
> document
< #document
  <!DOCTYPE html>
  <html lang="en">
    <head>...</head>
    <body>...</body>
  </html>
```


DOM Diffing in React

- **comparing rendered content with new UI changes those are about to take place**
- **React optimizes this by making only the minimal changes necessary**
- **Compares javascript objects, faster than writing or reading through DOM**

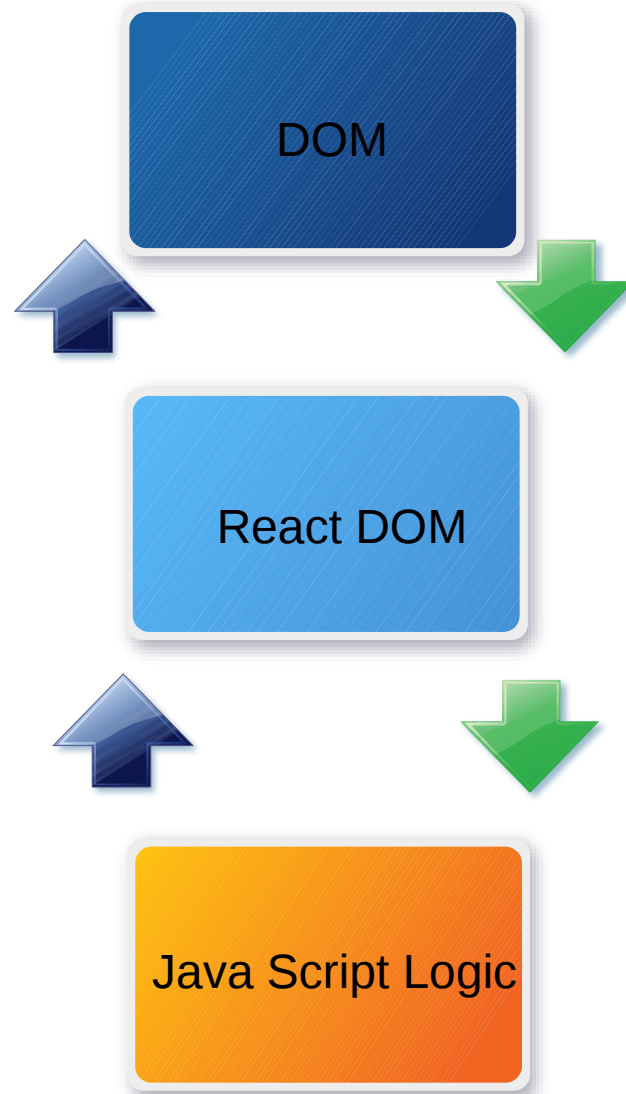
General DOM Update



General DOM Update

- **DOM update for example `getelementbyid` is a reading operation.**
- **Change classes or content writing to DOM**
- **Slower**

DOM Update in React



DOM Update in React

- **Only minimal changes will be rendered, for example updating single item in bulleted change so no need to get rid of all list item,**
- **just writing single item does the task, no reading from dom, mostly writing only the required item.**
- **Faster**

Resources

- [**https://reactjs.org/**](https://reactjs.org/)

