
PROGRAMMING ADVICES
LEARN THE RIGHT WAY
26+ Years of Experience
Mohammed Abu-Hadhoud
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لا تنسى الاشتراك في قناتنا على اليوتيوب ومشاركة القناة مع اصدقائك
لتعم الفائدة للجميع وانقاذ الاف الناس من التشتت وجزاكم الله خيرا
لا تنسونا من دعائكم وادعو لوالدي بالرحمة
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مهم جداً
هذا الملف للمراجعة السريعة واخذ الملاحظات عليه فقط ،لانه يحتوي
على اقل من 20٪ مما يتم شرحه في الفيديوهات
الاستعجال والاعتماد عليه فقط سوف يجعلك تخسر كميه معلومات
وخبرات كثيره
يجب عليك مشاهدة فيديو الدرس كاملا
لاتنسى عمل لايك ومشاركة القناة لتعم الفائدة للجميع
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STOP
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LEARN THE
RIGHT WAY

لا تخن الامانة

الأسعار الخاصة بالكورسات رمزية للغاية ولا تمثل 1% من قيمتها الفعلية، ومع ذلك تتوفر كوبونات دعم لكل طالب محتاج.

عند شراء الكورس، فهو مخصص لك وحدك، ولا يحق لك القيام بما يلي:

- تحميل الفيديوهات وتوزيعها.
- مشاركة حسابك مع الآخرين.
- الاشتراك في شراء الكورس مع أصدقائك، حيث يحق لكل فرد كوبون دعم إذا كان بحاجة إليه.
- استخدام كوبون دعم دون وجه حق.

إن مخالفة هذه التعليمات قد تؤدي إلى إغلاق المنصة، مما يحرم آلاف الطلاب من فرصة التعلم. وستكون مسؤولًا أمام الله عن ذلك، وأنا لن اسامح من يسيء استخدام هذه المنصة.

تذكر أن الله لا يبارك في عمل مبني على أخذ حقوق الآخرين أو حرمانهم من التعلم. لا تبدأ حياتك بما لا يرضي الله.

مع تحياتي، د. محمد أبو هدهود

How Browsers Render HTML? No JavaScript

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HTML DEEP DIVE

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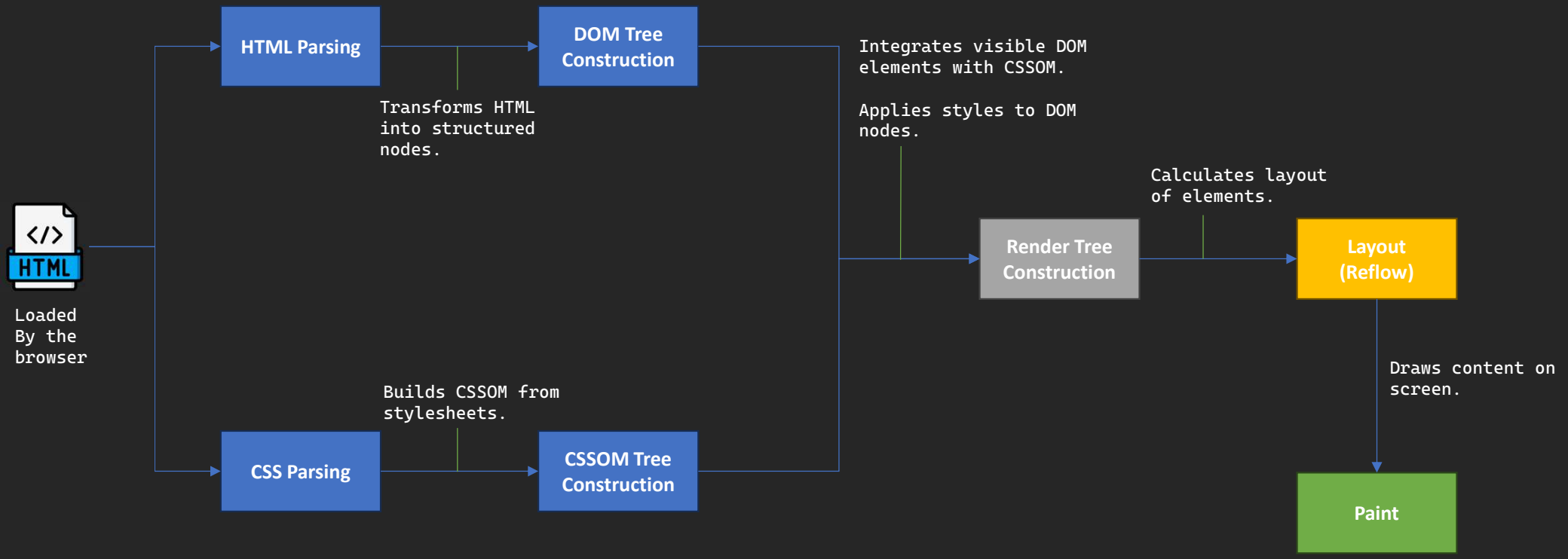
How Browsers Render HTML?



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Step 1: Parsing HTML

- Process: When a browser loads an HTML file, it reads, or "parses," the HTML code to understand the structure and content of the page.
- Outcome: The browser converts HTML tags into DOM (Document Object Model) nodes, creating a "DOM tree."

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Step 1: Parsing HTML

```html
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>This is my page title</title>
  <style>
    body {
      font-family: Arial, sans-serif;
      background-color: #f0f0f0;
    }
    h1 {
      color: blue;
    }
    p {
      color: #333;
      font-size: 16px;
    }
    b {
      color: red;
    }
  </style>
</head>
<body>
  <h1>Welcome to HTML</h1>
  <p>This is my <b>First</b> paragraph.</p>
  <p>This is my <b>Second</b> paragraph</p>
  <p>This is my third <b>paragraph</b>  </p>
</body>
</html>
```

DOM Tree

```
Document
|
└── DOCTYPE: html
|
└── html (lang="en")
    |
    ├── head
    |   ├── meta (charset="UTF-8")
    |   ├── meta (name="viewport", content="width=device-width, initial-scale=1.0")
    |   ├── title: "This is my page title"
    |   └── style: [CSS rules]
    |
    └── body
        ├── h1: "Welcome to HTML"
        ├── p: "This is my [b: 'First'] paragraph."
        ├── p: "This is my [b: 'Second'] paragraph"
        └── p: "This is my third [b: 'paragraph']"
```


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Step 2: Parsing CSS

- Process: Alongside HTML, the browser parses external, internal, and inline CSS to determine the styling of various HTML elements.
- Outcome: The CSS information is used to create the CSSOM (CSS Object Model).

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Step 2: Parsing CSS

```html
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>This is my page title</title>
  <style>
    body {
      font-family: Arial, sans-serif;
      background-color: #f0f0f0;
    }
    h1 {
      color: blue;
    }
    p {
      color: #333;
      font-size: 16px;
    }
    b {
      color: red;
    }
  </style>
</head>
<body>
  <h1>Welcome to HTML</h1>
  <p>This is my <b>First</b> paragraph.</p>
  <p>This is my <b>Second</b> paragraph</p>
  <p>This is my third <b>paragraph</b>  </p>
</body>
</html>
```

CSSOM Tree

```
CSSOM Tree
|
└── style rules
    |
    ├── body {font-family: Arial, sans-serif; background-color: #f0f0f0;}
    ├── h1 {color: blue;}
    ├── p {color: #333; font-size: 16px;}
    └── b {color: red;}
```


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Step 3: Constructing the Render Tree

- It is a combination of the DOM and CSSOM, containing only visible elements and their styles, crucial for painting the page.
- **Process:** The browser combines the DOM and CSSOM to form the render tree, which represents the visual layout of the webpage. Only elements that are actually visible (i.e., those that affect layout and are not set to display: none) are included.
- **Outcome:** The render tree includes all the visual elements of the page, like text and colors, positioned according to CSS rules.

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Step 3: Constructing the Render Tree

DOM Tree

```
Document
|
└── DOCTYPE: html
|
└── html (lang="en")
    |
    ├── head
    |   ├── meta (charset="UTF-8")
    |   ├── meta (name="viewport", content="width=device-width, initial-scale=1.0")
    |   ├── title: "This is my page title"
    |   └── style: [CSS rules]
    |
    └── body
        ├── h1: "Welcome to HTML"
        ├── p: "This is my [b: 'First'] paragraph."
        ├── p: "This is my [b: 'Second'] paragraph"
        └── p: "This is my third [b: 'paragraph']"
```

CSSOM Tree

```
CSSOM Tree
|
└── style rules
    |
    ├── body {font-family: Arial, sans-serif; background-color: #f0f0f0;}
    ├── h1 {color: blue;}
    ├── p {color: #333; font-size: 16px;}
    └── b {color: red;}
```

DOM Tree + CSSOM Tree = Render Tree

```
Render Tree
|
└── body (font-family: Arial, sans-serif; background-color: #f0f0f0)
    |
    ├── h1 (color: blue): "Welcome to HTML"
    ├── p (color: #333; font-size: 16px): "This is my [b (color: red): 'First'] paragraph."
    ├── p (color: #333; font-size: 16px): "This is my [b (color: red): 'Second'] paragraph"
    └── p (color: #333; font-size: 16px): "This is my third [b (color: red): 'paragraph']"
```


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Not in the RederTree

- Non-Visual Elements: Head , script, Title ..etc.
- Nodes Hidden via Display:None

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Step 4: Layout Process

- **Process:**
  - The browser calculates the exact position and size of each object on the page, a process known as "layout" or "reflow" .
  - This process can be affected by JavaScript, especially if scripts alter the geometry of elements (like changing the size, position, or display properties).
- **Outcome:** Determines how elements are spatially positioned on the screen.

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Step 5: Painting

- **Process:**
  - The final step is painting, where the render tree is converted into actual pixels on the screen.
  - Painting can be triggered by changes in visual styles that don’t affect layout, such as color changes or shadows.
- **Outcome:** The visual representation of the page is displayed to the user.

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Important:

Understanding this interaction is crucial for optimizing performance and ensuring compatibility across different browsers and devices.

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