Tutorial 3: HTML and CSS

CS 104

Spring, 2024-25

TA: Kritin Gupta
Credits: Sabyasachi & Guramrit Singh

Topics

- Visual Studio Code
- HTML tags (review)
- CSS
- Exercises

Visual Studio Code

- Introduction
- Demo

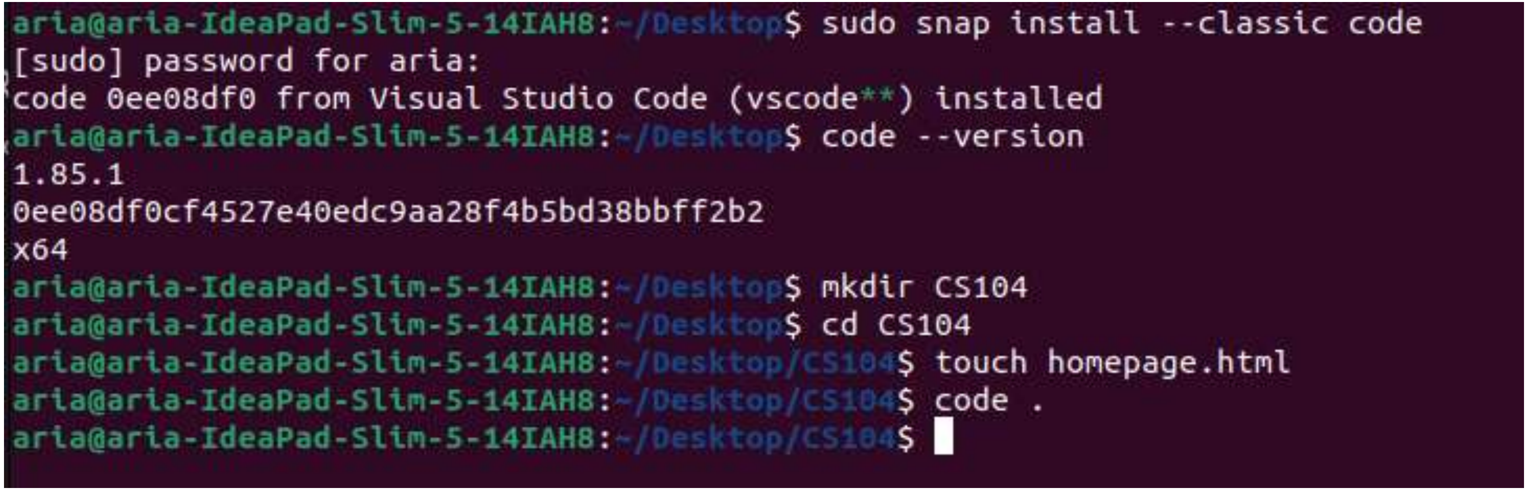
VS Code

Some pros of VSCode :-

- It is free and open-source.
- It is cross-platform, so it can be used on Windows, macOS, and Linux.
- It is extensible, with a large number of extensions available to add new features and functionality.
- It is customizable, so you can change the look and feel to suit your preferences.
- It is lightweight and fast, so it can be used on even older computers.
- It has a large and active community, with a lot of resources available online.
- It is a popular choice for web development, data science etc
- It has built-in git support
- It has intellisense, an intelligent code completion feature.

Installation

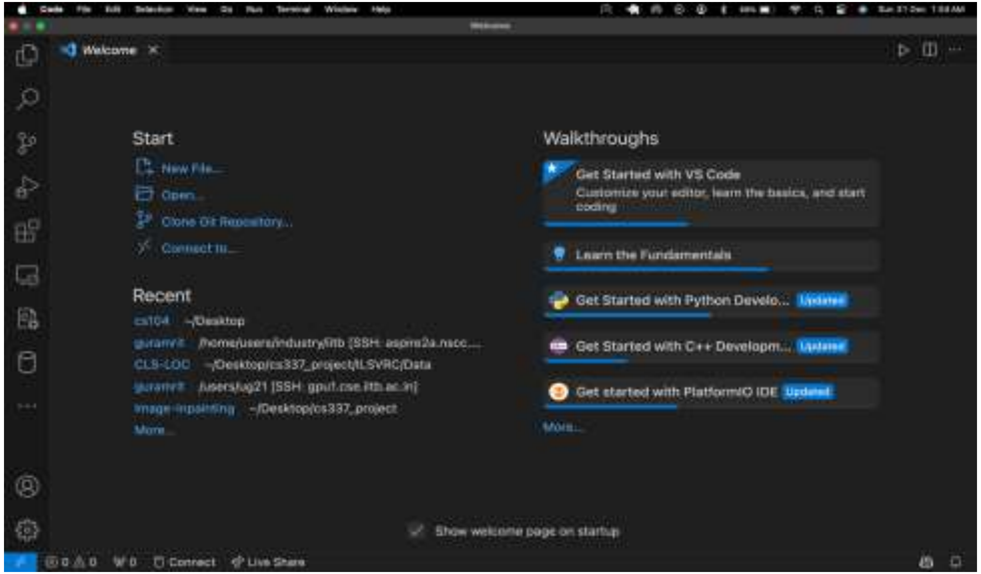
- For Ubuntu, Windows, MacOS



```
aria@aria-IdeaPad-Slim-5-14IAH8:~/Desktop$ sudo snap install --classic code
[sudo] password for aria:
code 0ee08df0 from Visual Studio Code (vscode**) installed
aria@aria-IdeaPad-Slim-5-14IAH8:~/Desktop$ code --version
1.85.1
0ee08df0cf4527e40edc9aa28f4b5bd38bbff2b2
x64
aria@aria-IdeaPad-Slim-5-14IAH8:~/Desktop$ mkdir CS104
aria@aria-IdeaPad-Slim-5-14IAH8:~/Desktop$ cd CS104
aria@aria-IdeaPad-Slim-5-14IAH8:~/Desktop/CS104$ touch homepage.html
aria@aria-IdeaPad-Slim-5-14IAH8:~/Desktop/CS104$ code .
aria@aria-IdeaPad-Slim-5-14IAH8:~/Desktop/CS104$ 
```

Useful Features

- An integrated terminal
- Auto-save
- Syntax highlighting
- Many, many extensions like IntelliSense, Live Preview
- VS Code IntelliSense is provided for JavaScript, TypeScript, JSON, HTML, CSS, SCSS, and Less out of the box.
- Can have a richer IntelliSense by installing language extensions



Start

New File...

Open...

Clone Git Repository...

Connect to...

Recent

cs104 ~/Desktop

guramrit /home/users/industry/iitb [SSH: aspire2a.nscc...

CLS-LOC ~/Desktop/cs337_project/ILSVRC/Data

guramrit /users/ug21 [SSH: gpu1.cse.iitb.ac.in]

image-inpainting ~/Desktop/cs337_project

More...

Walkthroughs

Get Started with VS Code
Customize your editor, learn the basics, and start coding

Learn the Fundamentals

Get Started with Python Develo... Updated

Get Started with C++ Developm... Updated

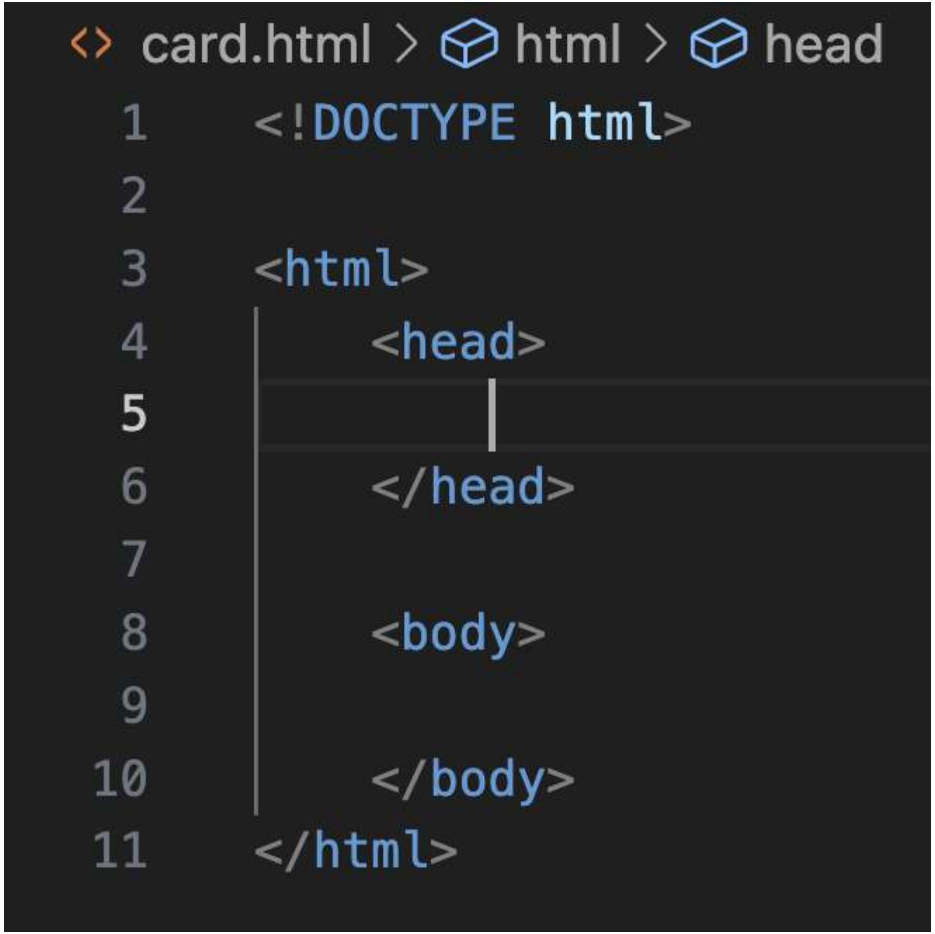
Get started with PlatformIO IDE Updated

More...

HTML tags (review)

- VSCode preview extension
- Tags

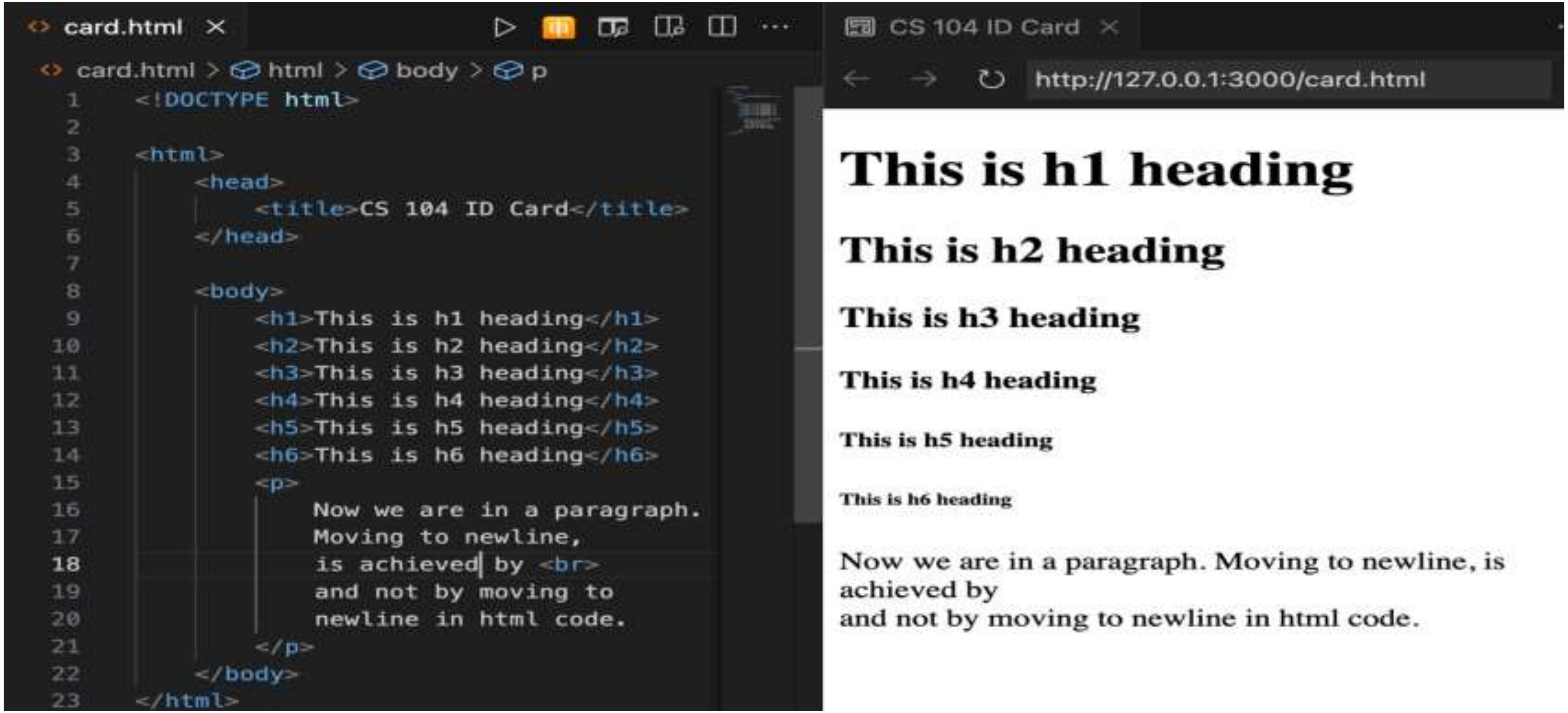
HTML Document



```html
<!DOCTYPE html>

<html>
    <head>

    </head>

    <body>

    </body>
</html>
```

- ❖ <!DOCTYPE html> declares the document type to be HTML.
- ❖ The HTML document is enclosed between <html> and </html> tags.
- ❖ HTML document is divided in two parts, head and body.
- ❖ The head element enclosed within <head> and </head> represents a collection of metadata for the Document.
- ❖ The body element present in <body> and </body> represents the content of the document.

Title, headings and paragraphs.



```html
<!DOCTYPE html>

<html>
    <head>
        <title>CS 104 ID Card</title>
    </head>

    <body>
        <h1>This is h1 heading</h1>
        <h2>This is h2 heading</h2>
        <h3>This is h3 heading</h3>
        <h4>This is h4 heading</h4>
        <h5>This is h5 heading</h5>
        <h6>This is h6 heading</h6>
        <p>
            Now we are in a paragraph.
            Moving to newline,
            is achieved by <br>
            and not by moving to
            newline in html code.
        </p>
    </body>
</html>
```

This is h1 heading

This is h2 heading

This is h3 heading

This is h4 heading

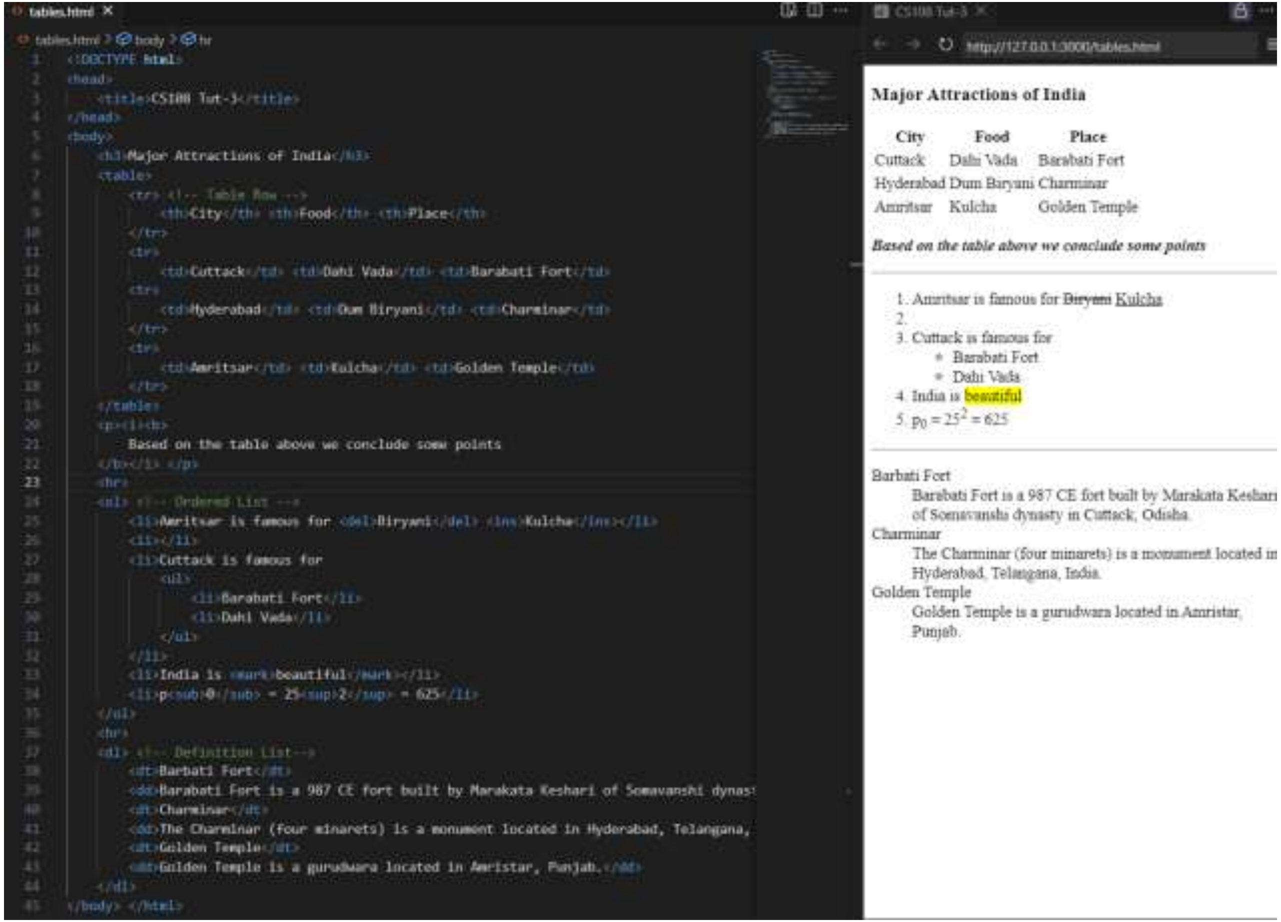
This is h5 heading

This is h6 heading

Now we are in a paragraph. Moving to newline, is achieved by
and not by moving to newline in html code.

- The title of the webpage is written within <title> and </title> in the head element
- There are 6 heading levels, from <h1> to <h6>, largest to smallest.
- The paragraph is written inside <p> and </p>, whereas <br> is used to break line.

Tables, Lists and Formatting



```
<!DOCTYPE html>
<head>
    <title>CS108 Tut-3</title>
</head>
<body>
    <h3>Major Attractions of India</h3>
    <table>
        <tr> <!-- Table Row -->
            <th>City</th> <th>Food</th> <th>Place</th>
        </tr>
        <tr>
            <td>Cuttack</td> <td>Dahi Vada</td> <td>Barabati Fort</td>
        <tr>
            <td>Hyderabad</td> <td>Dum Biryani</td> <td>Charminar</td>
        </tr>
        <tr>
            <td>Amritsar</td> <td>Kulcha</td> <td>Golden Temple</td>
        </tr>
    </table>
    <p><i><b>
        Based on the table above we conclude some points
    </b></i> </p>
    <hr>
    <ol> <!-- Ordered List -->
        <li>Amritsar is famous for <del>Biryani</del> <ins>Kulcha</ins></li>
        <li></li>
        <li>Cuttack is famous for
            <ul>
                <li>Barabati Fort</li>
                <li>Dahi Vada</li>
            </ul>
        </li>
        <li>India is <mark>beautiful</mark></li>
        <li>p<sub>0</sub> = 25<sup>2</sup> = 625</li>
    </ol>
    <hr>
    <dl> <!-- Definition List-->
        <dt>Barbati Fort</dt>
        <dd>Barabati Fort is a 987 CE fort built by Marakata Keshari of Somavanshi dynas
        <dt>Charminar</dt>
        <dd>The Charminar (four minarets) is a monument located in Hyderabad, Telangana,
        <dt>Golden Temple</dt>
        <dd>Golden Temple is a gurudwara located in Amristar, Punjab.</dd>
    </dl>
</body> </html>
```

Major Attractions of India

City	Food	Place
Cuttack	Dahi Vada	Barabati Fort
Hyderabad	Dum Baryani	Charminar
Amritsar	Kulcha	Golden Temple

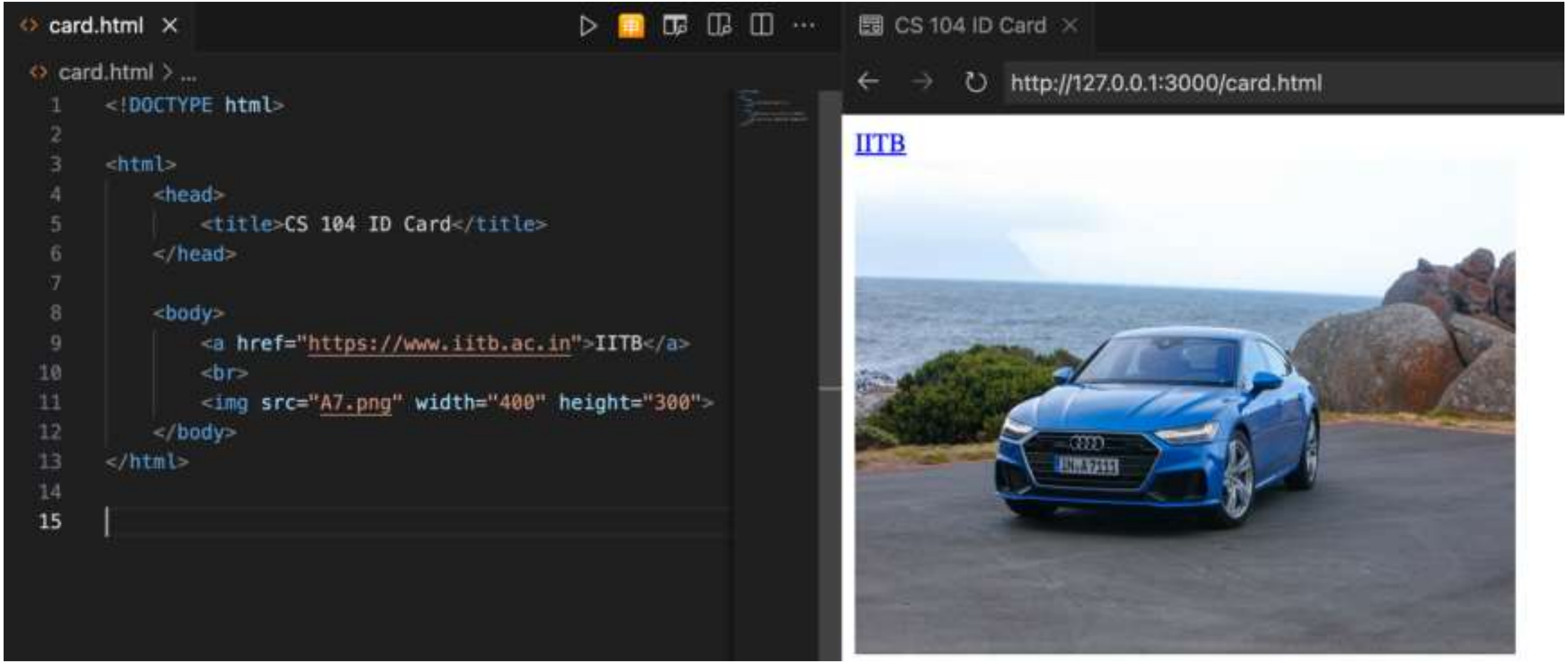
Based on the table above we conclude some points

1. Amritsar is famous for ~~Biryani~~ Kulcha
2.
3. Cuttack is famous for
    - Barabati Fort
    - Dahi Vada
4. India is beautiful
5. $p_0 = 25^2 = 625$

Barbati Fort
    Barabati Fort is a 987 CE fort built by Marakata Keshari
    of Somavanshi dynasty in Cuttack, Odisha.
Charminar
    The Charminar (four minarets) is a monument located in
    Hyderabad, Telangana, India.
Golden Temple
    Golden Temple is a gurudwara located in Amristar,
    Punjab.

- ❖ Tables are created using <table> tag. <tr> represents table rows. <th> and <td> are table header and table data respectively.
- ❖ List items are defined inside <li> tags. <ol> creates ordered lists, and <ul> creates unordered lists.
- ❖ Try out nesting <ol> inside <ol> and same for <ul>!
- ❖ Definition lists <dl> creates a list of terms with definition.
- ❖ <b> (bold) and <i> (italic) are text styling tags.
- ❖ <sub> and <sup> produce subscripting and superscripting respectively.
- ❖ <mark>, <ins> and <del> are used to highlight, underline and strikethrough

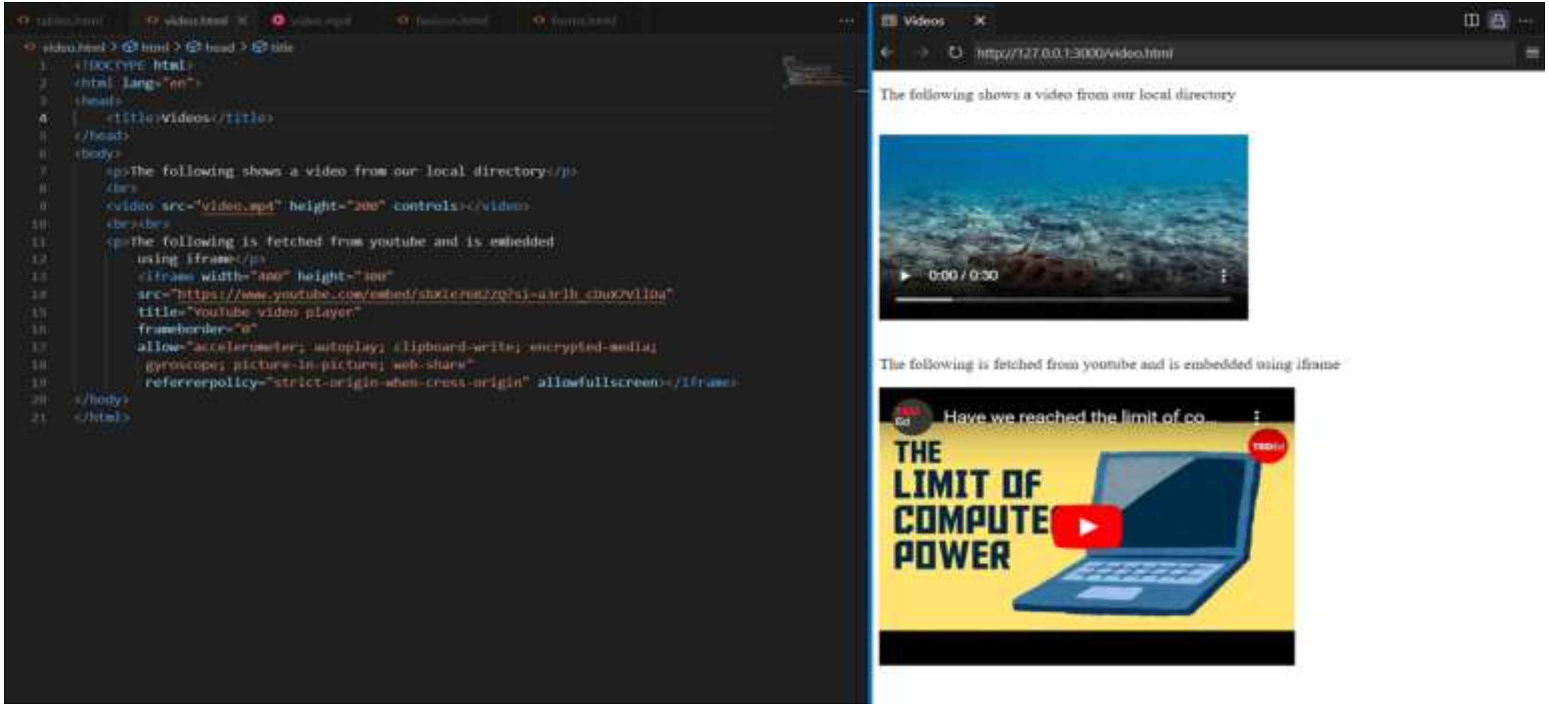
Links and images



```
<!DOCTYPE html>

<html>
    <head>
        <title>CS 104 ID Card</title>
    </head>

    <body>
        <a href="https://www.iitb.ac.in">IITB</a>
        <br>
        <img src="A7.png" width="400" height="300">
    </body>
</html>

```

- The url is written in href attribute of <a> tag, text enclosed in between <a> and </a> is displayed on the webpage. When clicked, the page redirects to the url, to open on a new tab, set target attribute to "_blank".
- The image location is given to the src attribute of <img> tag, height and width can be adjusted.

Videos and iframe



tables.html
video.html
video.mp4
fashion.html
forms.html
video.html > html > head > title
Videos
http://127.0.0.1:3000/video.html
0:00 / 0:30
Have we reached the limit of co...
THE LIMIT OF COMPUTE POWER

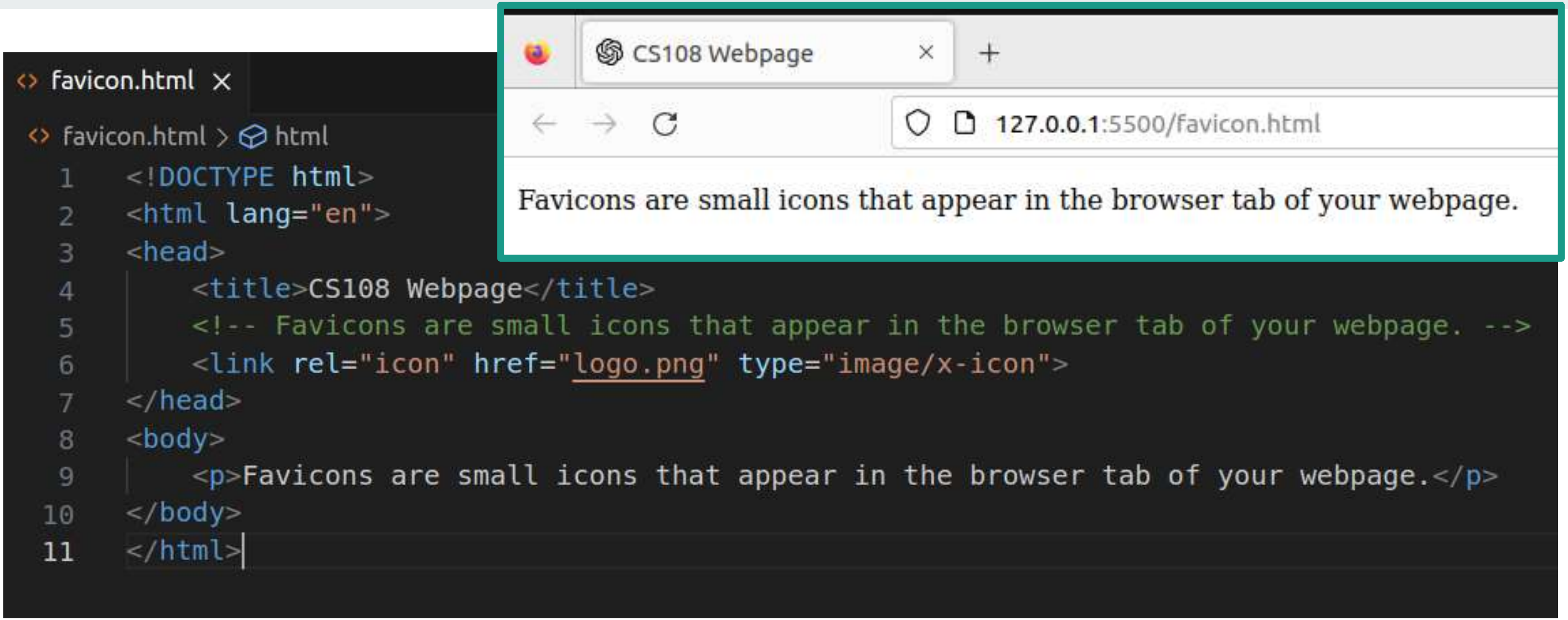
```html
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Videos</title>
</head>
<body>
    <p>The following shows a video from our local directory</p>
    <br>
    <video src="video.mp4" height="200" controls></video>
    <br><br>
    <p>The following is fetched from youtube and is embedded
        using iframe</p>
        <iframe width="400" height="300"
        src="https://www.youtube.com/embed/sbKIeY8BZZQ?si=a3rlh_cDuX7vl1ba"
        title="YouTube video player"
        frameborder="0"
        allow="accelerometer; autoplay; clipboard-write; encrypted-media;
         gyroscope; picture-in-picture; web-share"
         referrerpolicy="strict-origin-when-cross-origin" allowfullscreen></iframe>
</body>
</html>
```

The following shows a video from our local directory

The following is fetched from youtube and is embedded using iframe

- Like images, video location is given to the src attribute of the <video> tag. The controls attribute adds video controls like play, pause and volume.
- The <iframe> tag can be used to display a youtube video in the web page.

Favicon and Comments

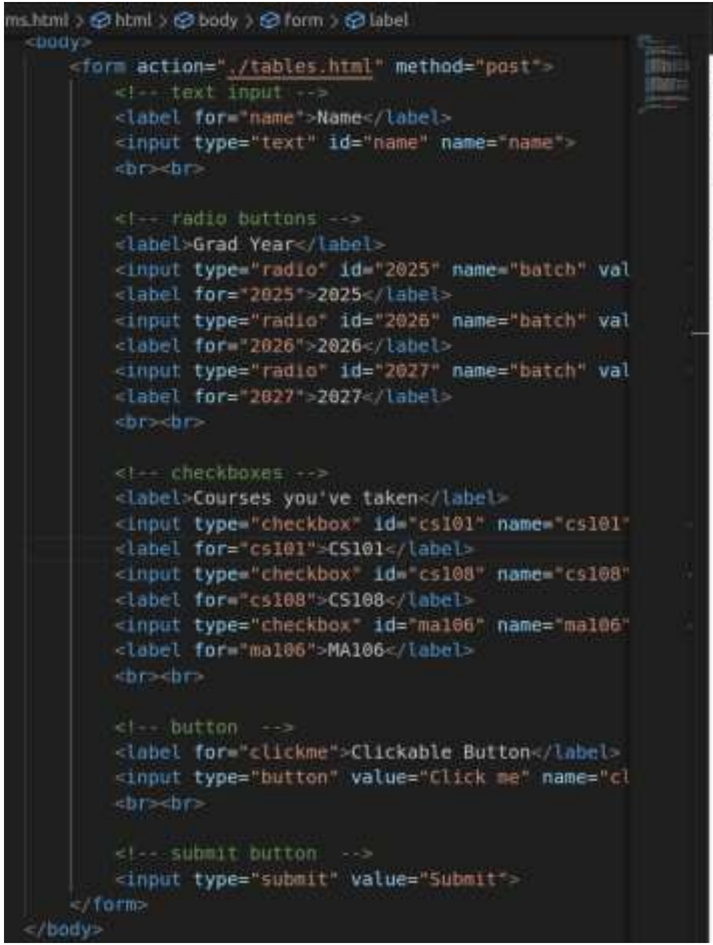


```html
<!DOCTYPE html>
<html lang="en">
<head>
    <title>CS108 Webpage</title>
    <!-- Favicons are small icons that appear in the browser tab of your webpage. -->
    <link rel="icon" href="logo.png" type="image/x-icon">
</head>
<body>
    <p>Favicons are small icons that appear in the browser tab of your webpage.</p>
</body>
</html>
```

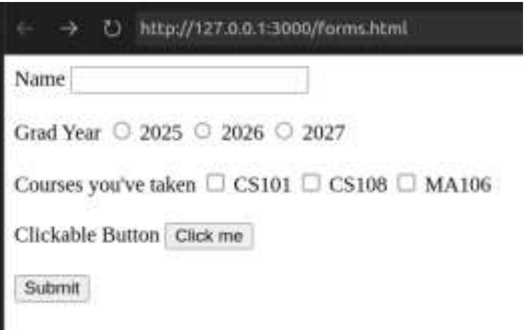
Favicons are small icons that appear in the browser tab of your webpage.

- ❖ Everything between <!-- and the --> will be hidden from the display on the web page.
- ❖ To setup a favicon, we <link> our current document to the icon in the href attribute, we also specify the type of linked resource to be an icon by setting rel and type attributes as shown

Forms



```html
<body>
    <form action="./tables.html" method="post">
        <!-- text input -->
        <label for="name">Name</label>
        <input type="text" id="name" name="name">
        <br><br>

        <!-- radio buttons -->
        <label>Grad Year</label>
        <input type="radio" id="2025" name="batch" val
        <label for="2025">2025</label>
        <input type="radio" id="2026" name="batch" val
        <label for="2026">2026</label>
        <input type="radio" id="2027" name="batch" val
        <label for="2027">2027</label>
        <br><br>

        <!-- checkboxes -->
        <label>Courses you've taken</label>
        <input type="checkbox" id="cs101" name="cs101"
        <label for="cs101">CS101</label>
        <input type="checkbox" id="cs108" name="cs108"
        <label for="cs108">CS108</label>
        <input type="checkbox" id="ma106" name="ma106"
        <label for="ma106">MA106</label>
        <br><br>

        <!-- button  -->
        <label for="clickme">Clickable Button</label>
        <input type="button" value="Click me" name="cl
        <br><br>

        <!-- submit button  -->
        <input type="submit" value="Submit">
    </form>
</body>
```



http://127.0.0.1:3000/forms.html

Name [ ]

Grad Year ○ 2025 ○ 2026 ○ 2027

Courses you've taken □ CS101 □ CS108 □ MA106

Clickable Button [Click me]

[Submit]

- The for attribute in <label> corresponds to the id attribute of <input>.
- The name attribute is used for server side script.
- In case of buttons and submit input, the value attribute determines the text on the button.
- <select> tag lists a dropdown. More on this in Exercise!

- We use <form> to create a HTML form, action attribute specified the target URL where the data will be sent, method attribute defines the HTTP method to be used.
  - In case of get, the data is displayed in the URL
- The <input> tags are used to take any input from user side. The attribute type specifies what kind of input. By default it is “text”
  - type = “radio” : Single Choice
  - type = “checkbox” : Multi Choice
  - type = “button” : Clickable button
  - type = “submit” : Submitting form data to a handler that is specified in the action attribute of <form>

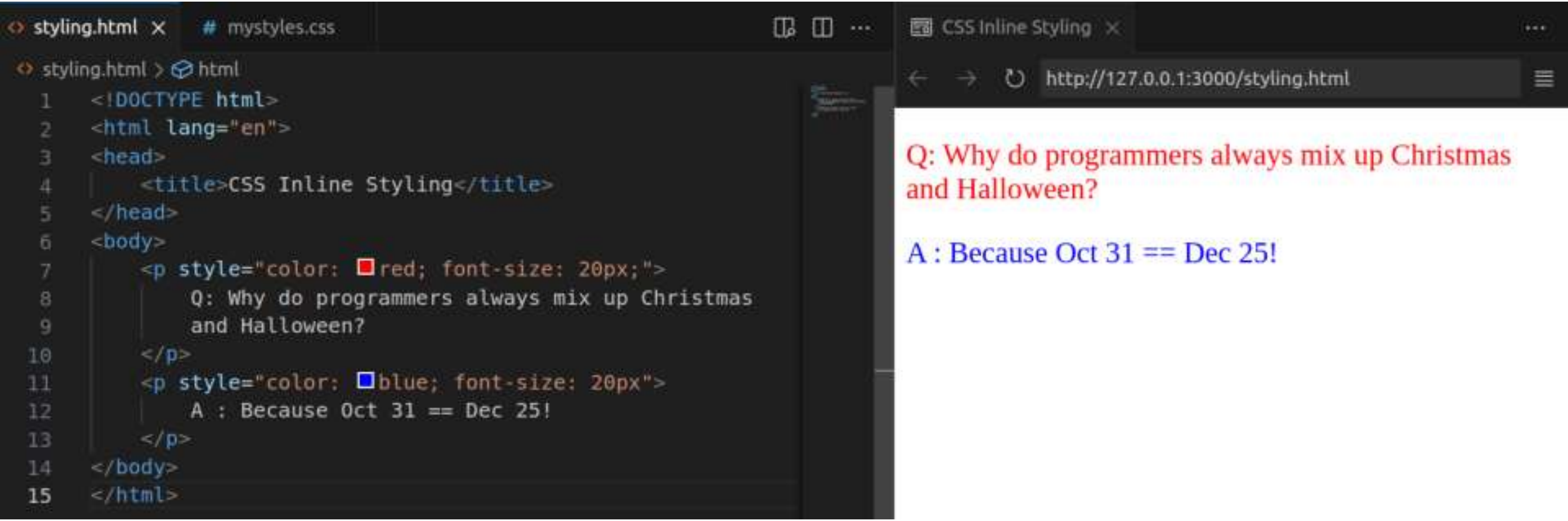
CSS

- Class and ID
- Inline Styling
- Internal Styling
- External Styling
- Div element

Class and ID

- ❖ Classes are used to group HTML elements together and apply styles or behavior to multiple elements simultaneously.
  - ➢ `<tag class="classname">Content</tag>`
- ❖ Elements can have multiple classes separated by spaces
  - ➢ `<tag class="class1 class2">Content</tag>`
- ❖ IDs are used to uniquely identify a single HTML element on a page. IDs must be unique within a document. No two elements should share the same ID.
  - ➢ `<tag id="elementID">Content</tag>`
- ❖ Classes and IDs are commonly used in CSS to apply styles to specific groups of elements:
  - ➢ `.classname { /* styles */ }`
  - ➢ `#elementID { /* styles */ }`
  - ➢ `tagname {/* styles */ }`
- ❖ Classes are often used in JavaScript for selecting and manipulating groups of elements, whereas IDs are to target and manipulate specific elements.

Inline Styling



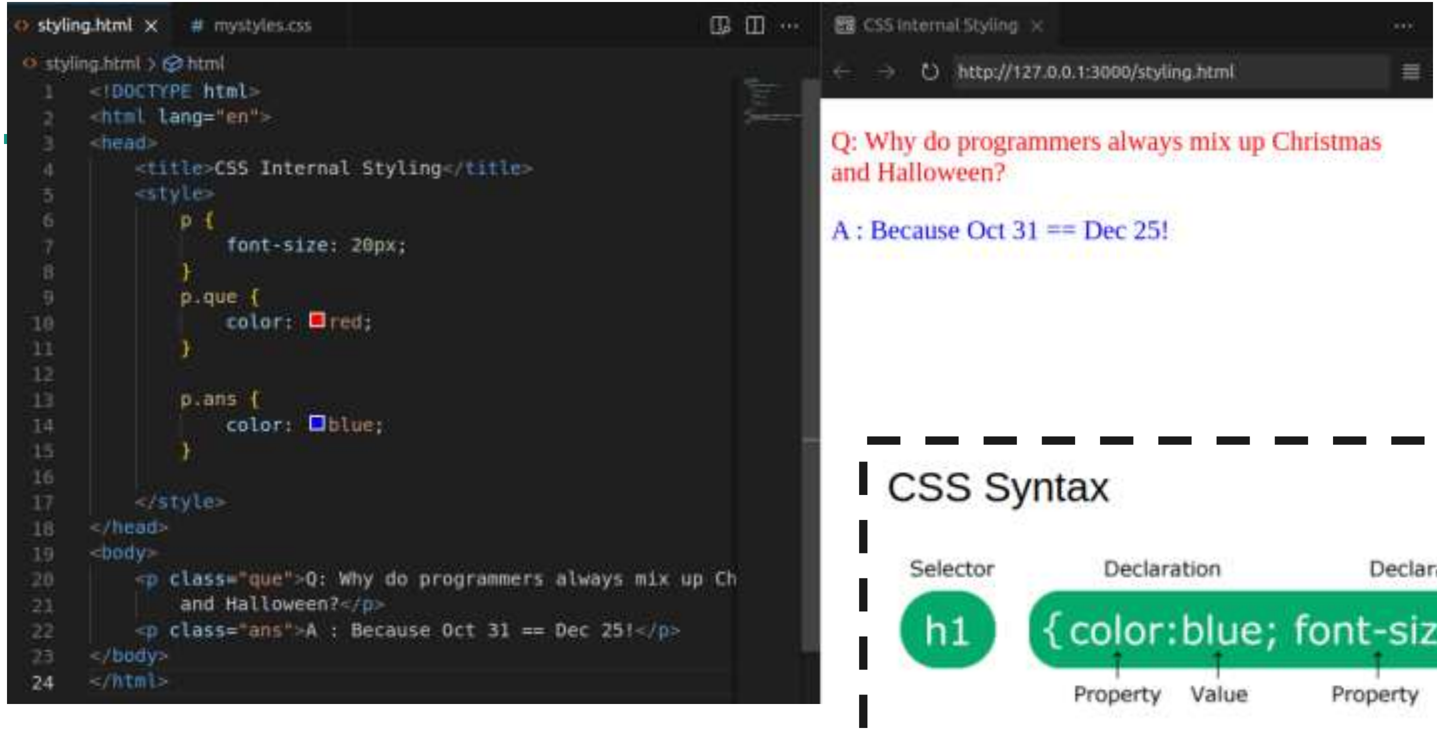
```html
<!DOCTYPE html>
<html lang="en">
<head>
    <title>CSS Inline Styling</title>
</head>
<body>
    <p style="color: red; font-size: 20px;">
        Q: Why do programmers always mix up Christmas
        and Halloween?
    </p>
    <p style="color: blue; font-size: 20px">
        A : Because Oct 31 == Dec 25!
    </p>
</body>
</html>
```

Q: Why do programmers always mix up Christmas and Halloween?

A : Because Oct 31 == Dec 25!

- Inline styling involves applying styles directly to individual HTML elements using the style attribute.
- In this example, the style attribute is used to set the color to red for the Question and blue for the Answer and the font size is 20px for both the <p> tags.

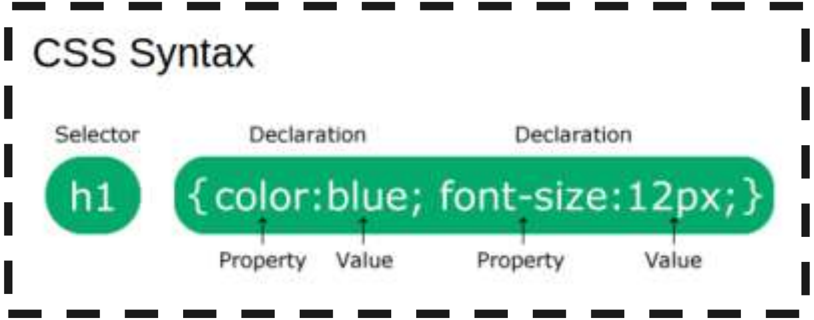
Internal Styling



```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>CSS Internal Styling</title>
    <style>
        p {
            font-size: 20px;
        }
        p.que {
            color: red;
        }

        p.ans {
            color: blue;
        }

    </style>
</head>
<body>
    <p class="que">Q: Why do programmers always mix up Ch
        and Halloween?</p>
    <p class="ans">A : Because Oct 31 == Dec 25!</p>
</body>
</html>
```

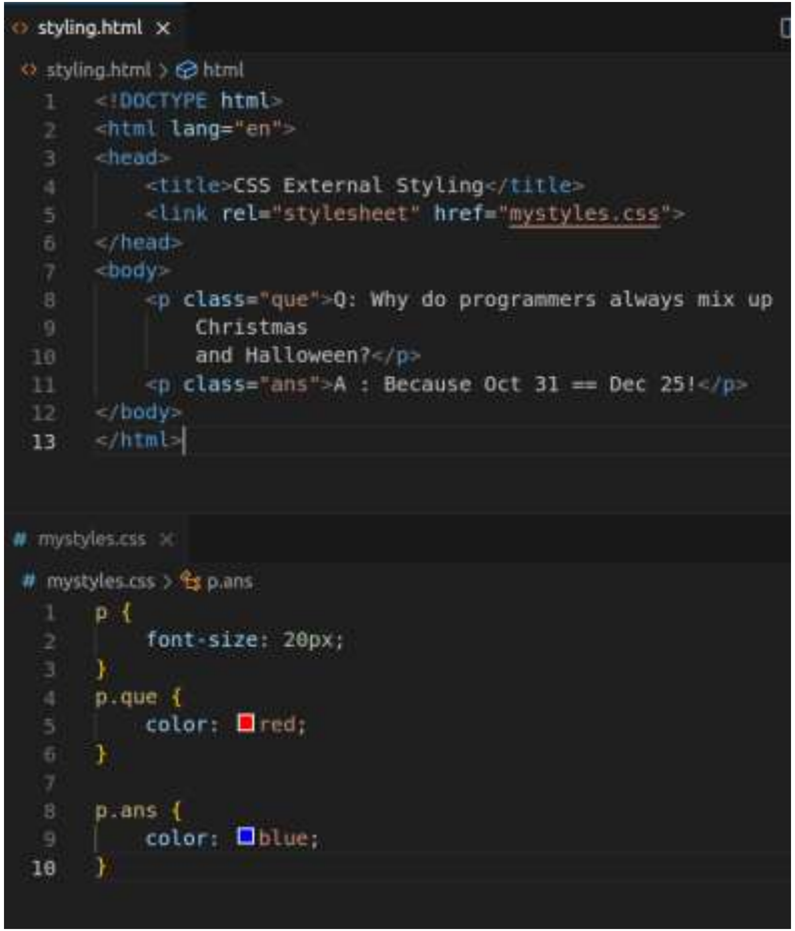
Q: Why do programmers always mix up Christmas and Halloween?

A : Because Oct 31 == Dec 25!



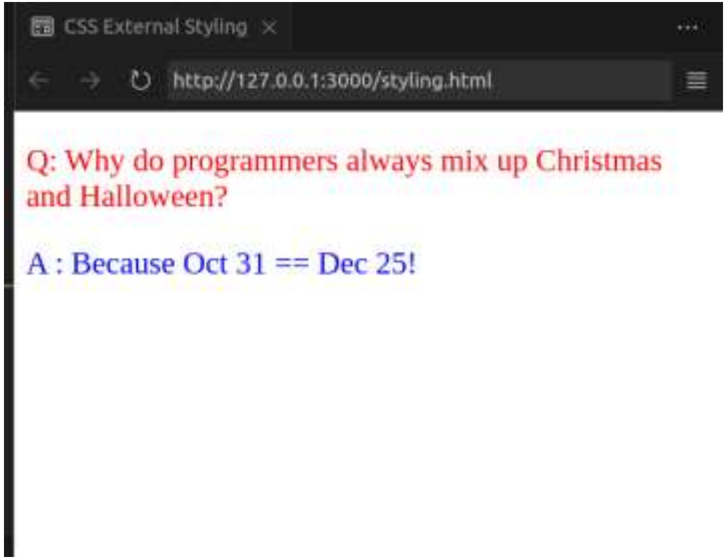
- Internal styling is achieved by placing CSS rules within a <style> tag in the HTML document, typically within the <head> section.
- Follow the CSS syntax to add styles to different elements, classes, ids. Selector p describes styling for all <p> tags, Selector p.que describes styling for all <p> tags with class = “que”

External Styling



```html
<!DOCTYPE html>
<html lang="en">
<head>
    <title>CSS External Styling</title>
    <link rel="stylesheet" href="mystyles.css">
</head>
<body>
    <p class="que">Q: Why do programmers always mix up
        Christmas
        and Halloween?</p>
    <p class="ans">A : Because Oct 31 == Dec 25!</p>
</body>
</html>
```

```css
p {
    font-size: 20px;
}
p.que {
    color: 🟥red;
}

p.ans {
    color: 🟦blue;
}
```

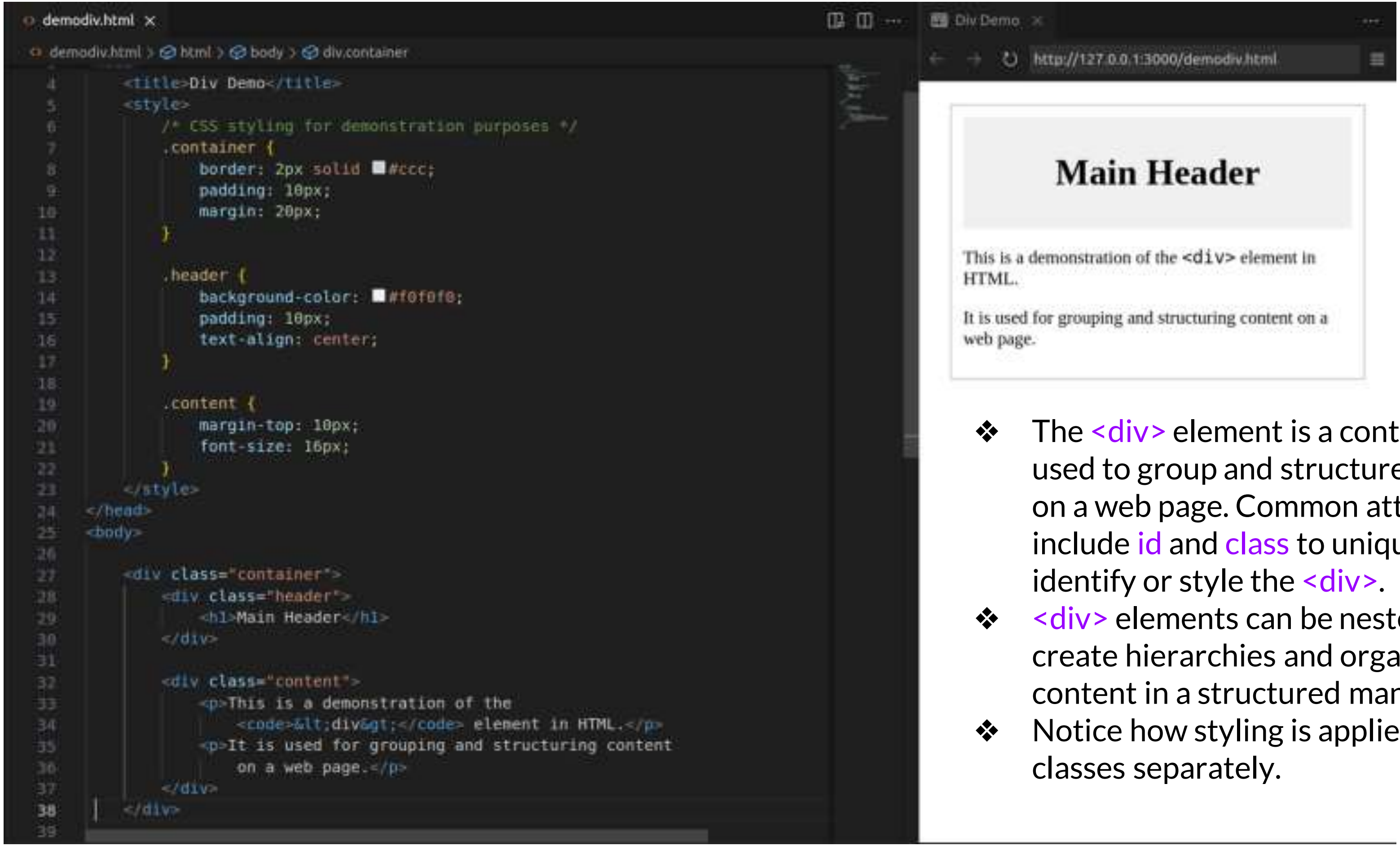


Q: Why do programmers always mix up Christmas and Halloween?

A : Because Oct 31 == Dec 25!

- ❖ External styling involves linking an external CSS file to the HTML document using the <link> element within the <head> section.
- ❖ To read more about CSS selectors: https://www.w3schools.com/css/css_selectors.asp

<div> element


demodiv.html
demodiv.html > html > body > div.container
Div Demo
http://127.0.0.1:3000/demodiv.html

```
    <title>Div Demo</title>
    <style>
        /* CSS styling for demonstration purposes */
        .container {
            border: 2px solid #ccc;
            padding: 10px;
            margin: 20px;
        }

        .header {
            background-color: #f0f0f0;
            padding: 10px;
            text-align: center;
        }

        .content {
            margin-top: 10px;
            font-size: 16px;
        }
    </style>
</head>
<body>

    <div class="container">
        <div class="header">
            <h1>Main Header</h1>
        </div>

        <div class="content">
            <p>This is a demonstration of the
                <code>&lt;div&gt;</code> element in HTML.</p>
            <p>It is used for grouping and structuring content
                on a web page.</p>
        </div>
    </div>
```

Main Header

This is a demonstration of the `<div>` element in HTML.

It is used for grouping and structuring content on a web page.

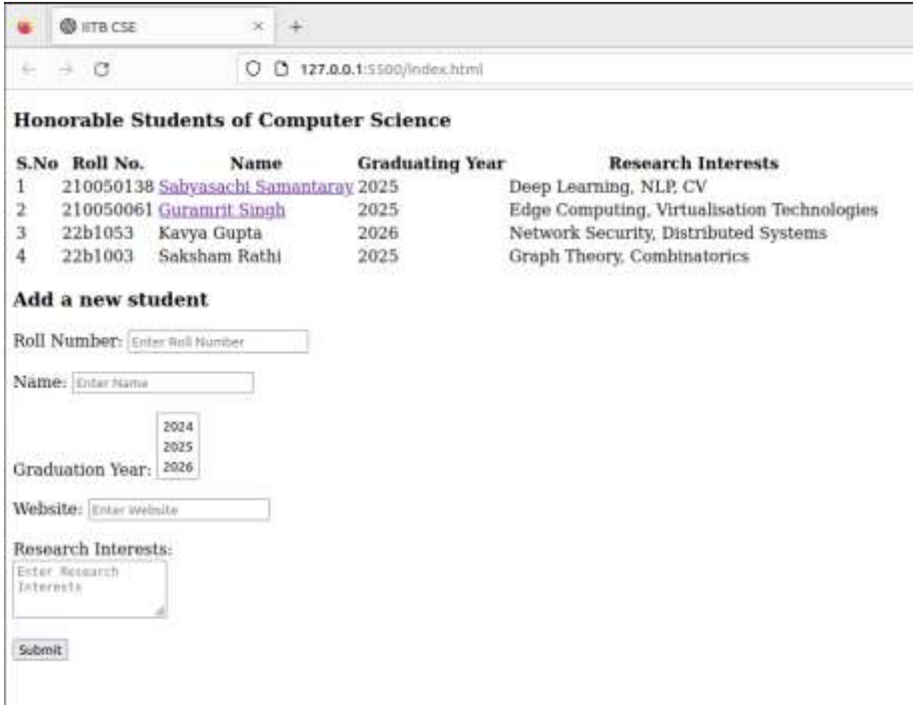
- ❖ The <div> element is a container used to group and structure content on a web page. Common attributes include id and class to uniquely identify or style the <div>.
- ❖ <div> elements can be nested to create hierarchies and organize content in a structured manner.
- ❖ Notice how styling is applied to div classes separately.

Exercises

- HTML
- CSS

Exercise 1 (Template with HTML)

- A simple template of a **IITB CSE student information page.**
- Deliverables:
  - Favicon and Title of the web page
  - Table of students with their information
  - Hyperlinked names with their webpages
  - A form to collect information of a new student to be added
  - All input sections except Website is mandatory
  - Dropdown for Graduation Year
  - Placeholder Text as shown in Figure
  - Submit Button(Non Functional as of Now)
- Solution: index.html (provided)



Honorable Students of Computer Science

S.No	Roll No.	Name	Graduating Year	Research Interests
1	210050138	Sabyasachi Samantaray	2025	Deep Learning, NLP, CV
2	210050061	Guramrit Singh	2025	Edge Computing, Virtualisation Technologies
3	22b1053	Kavya Gupta	2026	Network Security, Distributed Systems
4	22b1003	Saksham Rathi	2025	Graph Theory, Combinatorics

Add a new student

Roll Number: Enter Roll Number

Name: Enter Name

Graduation Year: 2024 2025 2026

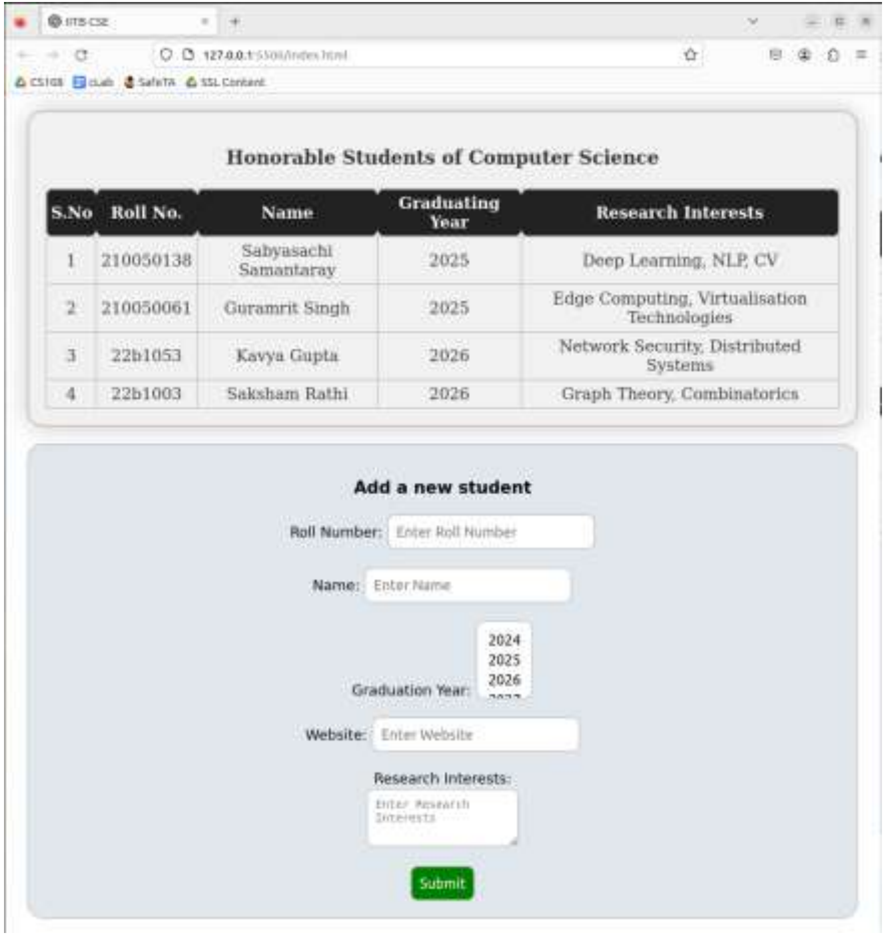
Website: Enter Website

Research Interests: Enter Research Interests

Submit

Exercise 2 (Styling with CSS)

- In extension to the previous exercise, now add styling to enhance the visual appeal of the HTML template.
- Additionally, remove the default features of the <a> tag, where in the links are blue and underlined. Instead now, it shows underline only when hovered.
- Do all the styling in file styles.css and link it with the html file.
- Solution: styles.css (provided)
- Coming Up (Next Week):
  - On submitting details of a new student, it updates the table above.



Honorable Students of Computer Science

S.No	Roll No.	Name	Graduating Year	Research Interests
1	210050138	Sabyasachi Samantaray	2025	Deep Learning, NLP, CV
2	210050061	Guramrit Singh	2025	Edge Computing, Virtualisation Technologies
3	22b1053	Kavya Gupta	2026	Network Security, Distributed Systems
4	22b1003	Saksham Rathi	2026	Graph Theory, Combinatorics

Add a new student

Roll Number: Enter Roll Number

Name: Enter Name

Graduation Year: 2024 2025 2026

Website: Enter Website

Research Interests: Enter Research Interests

Submit

Thank You !!!