

The logo for NextGen Tech Institute is centered in the background. It features a light pink gear-like outer ring. Inside this ring is a stylized 'N' shape, which is composed of two overlapping, curved, arrow-like forms pointing towards each other.

Introduction to Web Development

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Learning Outcomes

A large, light pink watermark logo for NextGen Tech Institute is centered in the background. It features a gear-like circular emblem with a stylized 'N' and 'G' inside, and the text 'NextGen Tech' and 'INSTITUTE' below it.

1. Build and style a static webpage using HTML and CSS.
2. Use VS Code and development tools (e.g., Live Server) to streamline coding and testing.
3. Understand foundational concepts required for advanced topics

Development Environment Setup



Code Editor

- [Visual Studio Code](#)

Extensions

- [Web Starter Extension Pack](#)

Database

- [Workbench](#)

Version Control

- [Git](#)
- [GitHub](#)

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What is HTML?

- **HTML = HyperText Markup Language**
- **HTML** is the standard language for creating web pages. It acts as the **skeleton** of a webpage, defining structure and content.
- **HyperText**: Allows linking between pages
e.g :- `Contact Us`
- **Markup**: Uses **tags** (enclosed in `< >`) to organize content
e.g :- *headings, paragraphs, images*

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Why is HTML Important?

- **Every Website Uses HTML:**

- Browsers (Chrome, Firefox) rely on HTML to display text, images, links, and forms.
e.g:-
 - Without ****, you can't display images;
 - without **<input>**, you can't create input fields.

- **Accessibility:**

Proper HTML structure helps screen readers interpret content for visually impaired users.

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How Browsers Handle HTML

1. **Fetch HTML File:** The browser requests the HTML file from the server.
2. **Parse HTML:** The browser reads the tags and builds the **DOM (Document Object Model)**, a tree-like structure.
3. **Render:** The browser displays the parsed content visually.

Example HTML code

```
<html>
<head>
  <title>My Page</title>
</head>
<body>
  <h1>Welcome</h1>
</body>
</html>
```

Basic HTML Tags

Tag	Purpose	Example
<h1>—<h6>	Headings (h1 = largest)	<h1>Main Title</h1>
<p>	Paragraph	<p>This is a paragraph.</p>
<a>	Hyperlink	Go to Google
	Image (self-closing tag)	
, 	Unordered list and list items	Item 1

Practical: Create Your First HTML Page

1. Create a new folder named week1_project.
2. Inside it, create a file called index.html (this is the default filename browsers look for).

3. Write the following code:

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <title>My First HTML Page</title>
</head>
<body>
  <h1>Hello, World!</h1>
  <p>This is my first webpage. I'm learning HTML!</p>
  <a href="https://example.com">Visit Example.com</a>
</body>
</html>
```

4. Save the file and open it in a browser:
Right-click the file → "Open With" → Choose Chrome/Firefox.

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What is CSS?

- CSS (**Cascading Style Sheets**) is used to style and layout web pages.
- It is used to, add colors, fonts, spacing, and positioning to HTML elements.
- *CSS in the Web Development Triad:*
 - **HTML:** Structure
 - **CSS:** Styling
 - **JavaScript:** Interactivity

How CSS Works with HTML

- **Inline CSS:** Styles applied directly within HTML tags
e.g., `<p style="color: red;">`
- **Internal CSS:** Styles written inside a `<style>` tag in the `<head>` section.
- **External CSS:** Styles written in a separate `.css` file and linked to **HTML** using `<link>`.

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Basic CSS Syntax

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- **Selector:** Targets HTML elements

e.g., h1, .class, #id

- **Property:** Defines what to style

e.g., color, font-size, background

- **Value:** Specifies the style

e.g., red, 20px, #ffffff

Inline CSS

(CSS is written inside the HTML tag)

```
<!DOCTYPE html>
<html>
<head>
  <title>Inline CSS Example</title>
</head>
<body>
  <h1 style="color: blue; font-size: 24px;">This is Inline CSS</h1>
</body>
</html>
```

Internal CSS

(CSS is written inside a **<style>** tag within the **<head>** section)

```
<!DOCTYPE html>
<html>
<head>
  <title>Internal CSS Example</title>
  <style>
    h1 {color: red;
        font-size: 24px;}
  </style>
</head>
<body>
  <h1>This is Internal CSS</h1>
</body>
</html>
```

External CSS

(CSS is written in a separate file and linked to HTML)

Create a **CSS** file (**styles.css**):

```
h1 {  
  color: green;  
  font-size: 24px;  
}
```

Link it in an **HTML** file:

```
<!DOCTYPE html>  
<html>  
  <head>  
    <title>External CSS Example</title>  
    <link rel="stylesheet" type="text/css" href="styles.css">  
  </head>  
  <body>  
    <h1>This is External CSS</h1>  
  </body>  
</html>
```



CSS Advance

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CSS Flexbox

- What is Flexbox?
 - A layout model for arranging items in a container, allowing for flexible and responsive designs.
 - Ideal for creating one-dimensional layouts (rows or columns).
- Key Concepts:
 - Container: The parent element with `display: flex;`
 - Items: Child elements inside the container.
 - **Properties:**
 - `justify-content`: Aligns items horizontally (e.g., center, space-between).
 - `align-items`: Aligns items vertically (e.g., center, flex-start).
 - `flex-direction`: Defines the direction of items (e.g., row, column).

e.g:

```
.container {  
  display: flex;  
  justify-content: space-between;  
  align-items: center;  
}
```

CSS Grid

- What is CSS Grid?
 - A two-dimensional layout system for creating complex grid-based designs.
- Key Concepts:
 - Grid Container: The parent element with `display: grid;`
 - Grid Items: Child elements inside the container.
 - **Properties:**
 - `grid-template-columns`: Defines the number and size of columns.
 - `grid-template-rows`: Defines the number and size of rows.
 - `gap`: Adds spacing between grid items.

e.g:

```
.container {  
  display: grid;  
  grid-template-columns: 1fr 1fr 1fr;  
  gap: 10px;  
}
```

Media Queries

- What are Media Queries?
 - CSS techniques to apply styles based on screen size or device type.

e.g:

```
@media (max-width: 768px) {  
  body {  
    background-color: lightblue;  
  }  
}
```

- Breakpoints:
 - Mobile: max-width: **480px**
 - Tablet: max-width: **768px**
 - Desktop: min-width: **1024px**

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Animations and Transitions

Transitions:

Smoothly change property values over time (e.g., hover effects)

e.g:

```
button {  
  transition: background-color 0.5s ease;  
}  
button:hover {  
  background-color: blue;  
}
```

Animations:

Create complex animations using @keyframes.

e.g:

```
@keyframes slide {  
  0% { transform: translateX(0); }  
  100% { transform: translateX(100px); }  
}  
.box {  
  animation: slide 2s infinite;  
}
```

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CSS Frameworks

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What is a CSS Framework?

A **CSS framework** is a pre-written collection of CSS styles that helps developers design websites faster and more efficiently.

- Provides **ready-made components** like grids, buttons, and forms.
- Ensures **consistency** in design across different projects.
- Saves time by **reducing the need to write CSS from scratch**.

Popular CSS Frameworks

Framework	Features	Best For
Bootstrap	Responsive grid system, UI components, easy customization	General-purpose, fast development
Tailwind CSS	Utility-first approach, highly customizable, lightweight	Custom designs, modern UIs
Bulma	Simple, flexible, lightweight, grid-based	Minimalistic projects
Foundation	Advanced responsiveness, accessible, flexible grid	Large-scale responsive websites
Materialize	Google's Material Design principles, responsive UI	Material Design-styled apps

Bootstrap

Grid System:

Responsive 12-column grid for layouts.

```
<div class="row">
  <div class="col-md-6">Left Column</div>
  <div class="col-md-6">Right Column</div>
</div>
```

Pre-Styled Components:

- **Navbar:** Responsive navigation bars.
- **Cards:** Flexible content containers.
- **Modals:** Pop-up dialogs.

```
<div class="card">
  <div class="card-body">
    <h5 class="card-title">Card Title</h5>
    <p class="card-text">Card content here.</p>
  </div>
</div>
```


Referring Sources

- HTML: <https://www.w3schools.com/html>
- CSS: <https://www.w3schools.com/Css>
- Bootstrap: <https://getbootstrap.com>
- JavaScript: <https://www.w3schools.com/js>

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