HTML and Website Development Fundamentals

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Introduction to HTML

HTML (HyperText Markup Language) is the standard markup language for creating web pages and applications. It provides the structural foundation and semantic meaning for all web content.

1

Purpose

Defines content structure and meaning using semantic tags

2

Role in Web

Works alongside CSS for styling and JavaScript for interactivity

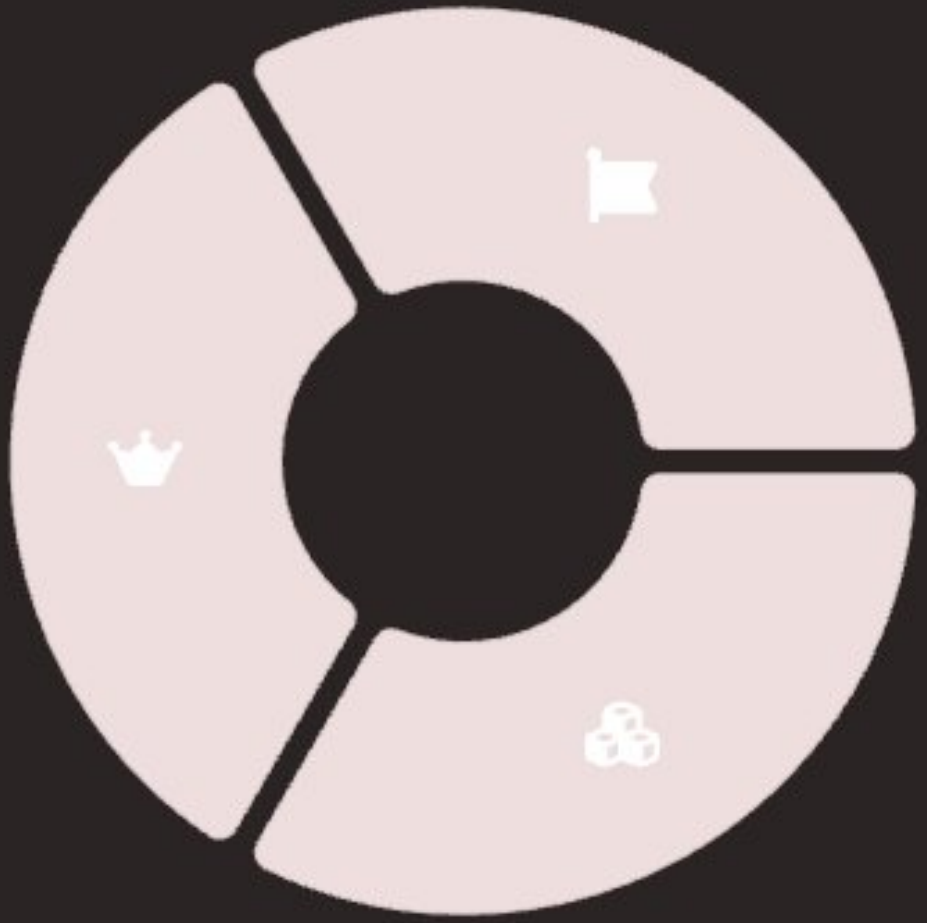
3

Evolution

Continuously updated to support modern web standards and accessibility

CSS Fundamentals

CSS (Cascading Style Sheets) controls visual presentation and layout of HTML elements. Styles cascade based on specificity and source order.



Selectors

Target HTML elements (element, class, ID, pseudo-class)

Properties

Define styling (color, size, spacing, position)

Values

Specify how properties appear (pixels, percentages, named colors)

Styling Methods & Box Model

Method	Location	Use Case
Inline	HTML attribute	Quick fixes, not recommended
Internal	<style>tag in head	Single page styling
External	Separate .css file	Multi-page consistency

The box model layers elements: content → padding → border → margin, controlling spacing and sizing relationships.

```
<!doctype html>
<html lang="en">
    <head>
        <meta charset="utf-8">
        <title>Hello, world!</title>
    </head>
    <body>
        <h1>Hello, world!</h1>
         <p>My first web page.</p>
    </body>
</html>
```

Website Design Principles

Design Fundamentals

Effective website design balances aesthetics, usability, and performance. Core principles guide consistent, intuitive user experiences across all pages.

Visual Hierarchy

Guide user attention through size, color, contrast, placement

Consistency

Maintain uniform navigation, typography, spacing across pages

Whitespace

Use negative space to reduce clutter and improve readability

Accessibility

Ensure content is usable by all users including those with disabilities

Storyboarding Methodology

Storyboarding Purpose & Process

Storyboarding visualizes user journeys and content flow before development. This planning phase identifies information architecture, interactions, and design consistency requirements.

1

Definition

Sequential visual representation of user interactions and page flow

2

Benefits

Clarify requirements, identify gaps, facilitate team communication

3

Tools

Sketches, wireframes, digital mockups capture progressive design stages

Computer Graphics Basics

3D Graphics Overview

3D graphics create three-dimensional digital representations using coordinate systems, geometric objects, and rendering techniques. Applications span visualization, gaming, animation, and simulation.

Coordinate System

X, Y, Z axes define object position and orientation in 3D space

Geometric Primitives

Basic shapes (cubes, spheres, polygons) build complex models

Transformation

Translate, rotate, scale objects to position and manipulate scene

Rendering Pipeline

Process transforms 3D data into 2D screen display

Graphics Pipeline & Display

The graphics pipeline stages process vertex data, geometry, and pixel operations sequentially, ultimately producing displayed imagery on screen.

Vertex Processing

Transform object coordinates to screen space, apply lighting

Rasterization

Convert geometric primitives to pixel fragments

Fragment Processing

Apply textures, lighting, effects to individual pixels

Output

Final image displayed on monitor or device screen