SGML
Standard Generalized Markup Language (SGML) is a formal system for building text markup languages. Any document can be thought of as consisting of content and markup.

Content is the information contained in the document that you want to convey to the user.

Markup is information used to define the structure and the formatting of the document.

- **Structure** tells how the document breaks down into parts, such as chapters, sections, and paragraphs.
- **Format** governs the presentation, such as the type of fonts and their sizes.
Example of a made-up SGML

.recipe
.title
  .bold{Chocolate Milk}
.end-title

.ingredient-list
  .ingredient
    Milk
  .end-ingredient
  .ingredient
    .copyright{Nestle’s Quik}
  .end-ingredient
.end-ingredient-list

.instruction-list
  .step
    Pour milk in glass
  .end-step
  .step
    Stir in one teaspoon of .copyright{Nestle’s Quik} to glass
  .end-step
.end-instruction-list
.end-recipe
The idea behind SGML is to separate presentation from content.

- SGML was designed to ensure document portability in spite of incompatible proprietary technologies.

- The advantage is that the same document can be rendered appropriately in different contexts.

This means SGML is a computer language, not a data format. You need an SGML parser to read and analyze the document.

From SGML's viewpoint, a document is a hierarchical structure of nested elements.

- When you create a document, you specify what the document’s Document Type Definition (DTD) is, so that SGML knows what “language” your tags will be in.
Elements of Web Programming
Dr. William C. Bulko

HTML
One of the most important applications of SGML is Hypertext Markup Language, or HTML.

- HTML is the standard markup language for documents designed to be displayed in a web browser. It can be assisted by technologies such as Cascading Style Sheets (CSS), and scripting languages such as JavaScript.

- Basic HTML specifies a small set of structural and semantic tags, and includes support for hypertext and multimedia.

- HTML5 is the version of HTML currently being used.
  - It is an extension of XHTML, HTML 4 and CSS3 designed to work with XML user agents.
  - It incorporates MathML (Mathematical Markup Language) and SVG (Scalable Vector Graphics) into HTML.
Building Web Pages

HTML, CSS, and JavaScript are used together to create Web pages.

- HTML defines the structure and content of a Web page.
- CSS specifies the layout and visible appearance.
- JavaScript describes the dynamic behavior and actions.

HTML files are usually saved with a .html or .htm extension, such as myPage.html.
Forms

The `<form>` tag allows the Web browser to send information from the user to the server. It has two primary attributes:

- **method**: the HTTP request type - such as GET or POST (remember those?)
- **action**: specifies the URL where the form data should be sent.

An example:

```
<form action="https://www.someWebPage.com" method="GET">
    . . .
    *HTML describing the content of the form, including widgets*
    . . .
</form>
```
Widgets

A **widget** is an interactive component that the browser uses to interact with a user. These may include:

- buttons
- drop-down menus
- data entry fields
- text boxes
- etc.
The `<input>` tag allows the user to enter information into a web page. It cannot enclose any additional page content, so it does not have a closing tag.

It has five primary attributes:

- **type**: the widget type, such as `text`, `password`, `submit`, and `button`.
- **name**: an identifier (not necessarily unique) used in the backend
- **id**: a unique identifier used in the frontend
- **placeholder**: initial help text that appears in a text widget
- **value**: a default value
**<label> and <textarea>**

The `<label>` tag typically displays descriptive text associated with another widget. It has a `for` attribute whose value should match the id attribute for the widget being labeled.

- A label can also be used to create a different type of control. The `type` attribute can have the value `checkbox` or `radio`.
- It can also contain a `<select>` structure to create a dropdown list.

The `<textarea>` tag is an element that allows users to enter multiple lines of text – it's like a multi-line version of a text box. It has optional `rows` and `cols` attributes to specify the size of the text area.
Since buttons are such a commonly used feature on a web page, there is a different HTML tag completely unrelated to forms that can be used to create them. Unsurprisingly, it's called `<button>`.

Since it's not a form widget:

- It doesn't have to be included in a `<form>` – you can use it anywhere.
- It has a close tag `</button>`.
- You specify the button text between the open and close tags instead of using a value attribute.
- You can use formatting tags on the text, such as `<i>`, `<strong>`, `<br>`, etc.
- You can style it using CSS.