Web Development

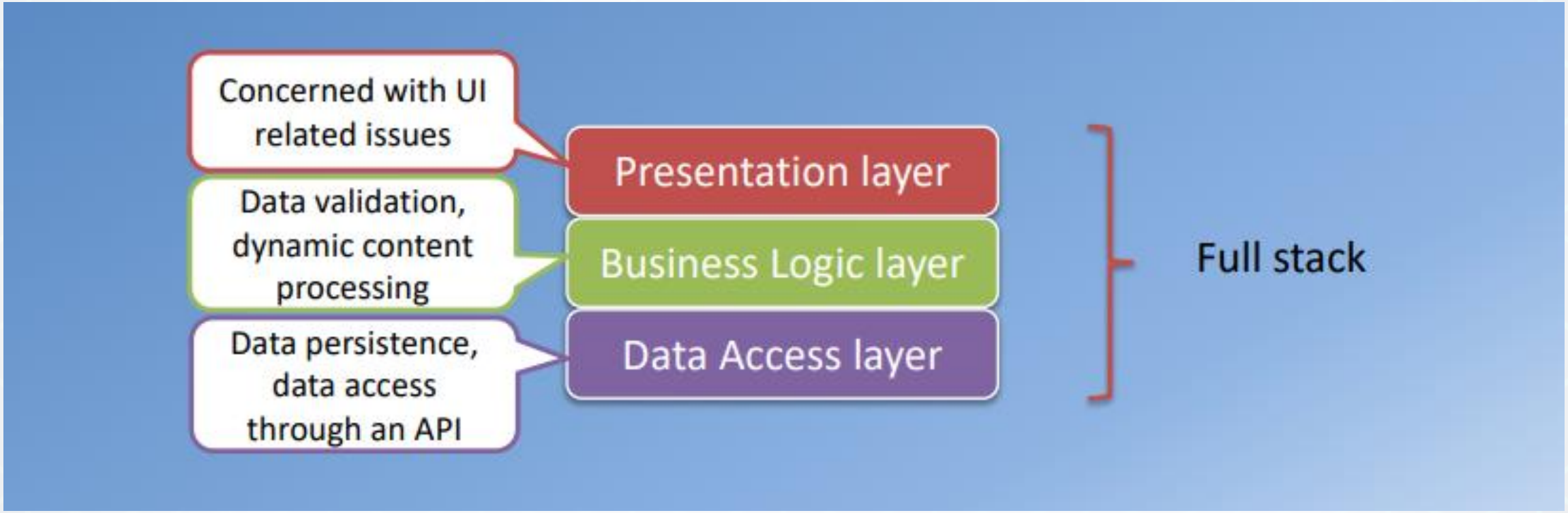
Introduction to Full Stack Web Development

January 6, 2022

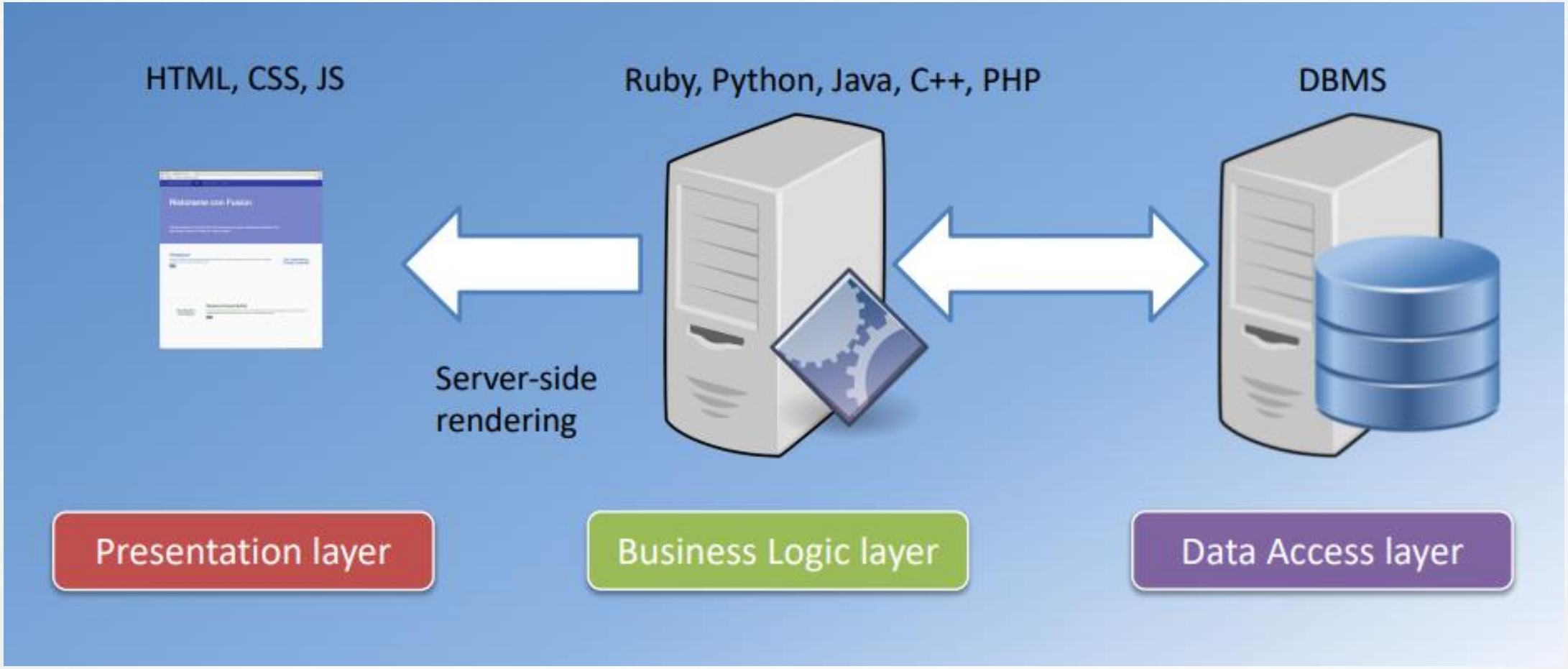
Front end and Back end

- Front end / Client-side
  - HTML, CSS and Javascript
- Back end / Server-side
  - Various technologies and approaches
  - PHP, Java, ASP.NET, Ruby, Python

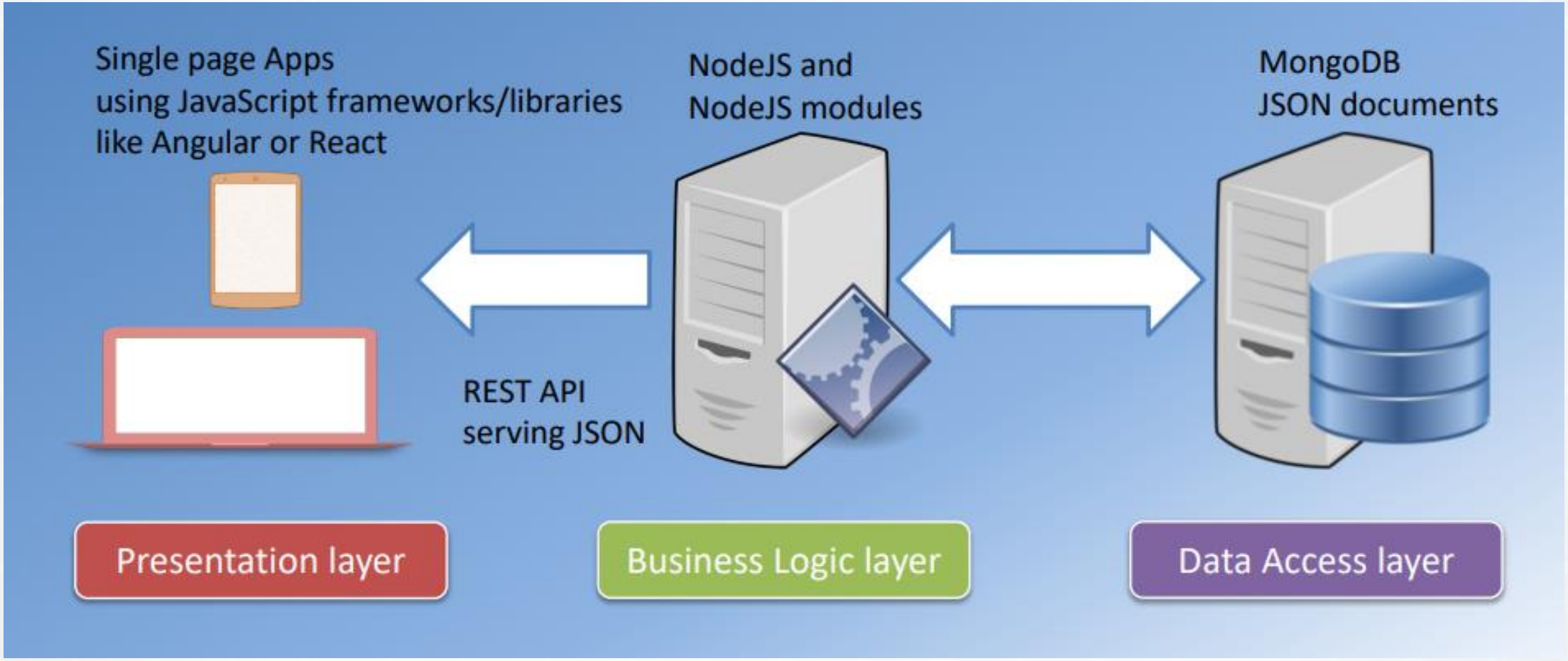
Three Tier Architecture



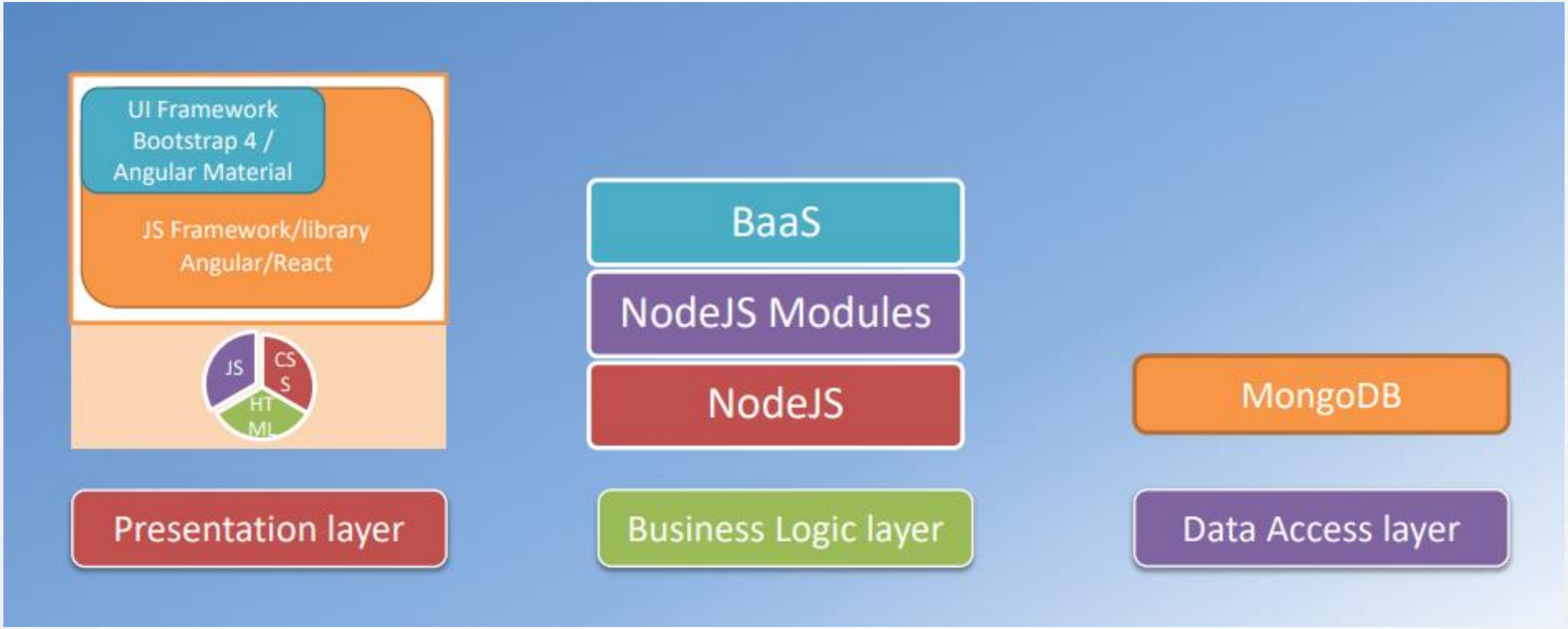
Traditional Web Development



Full Stack JavaScript Development



Full Stack Web Development



Useful Links

- What is a Full Stack developer?
- Wait, Wait… What is a Full-stack Web Developer After All?
- The Myth of the Full-stack Developer
- Multi-tier Architecture
- What is the 3-Tier Architecture?

Web Development

HTML5

January 6, 2022

What is HTML5?

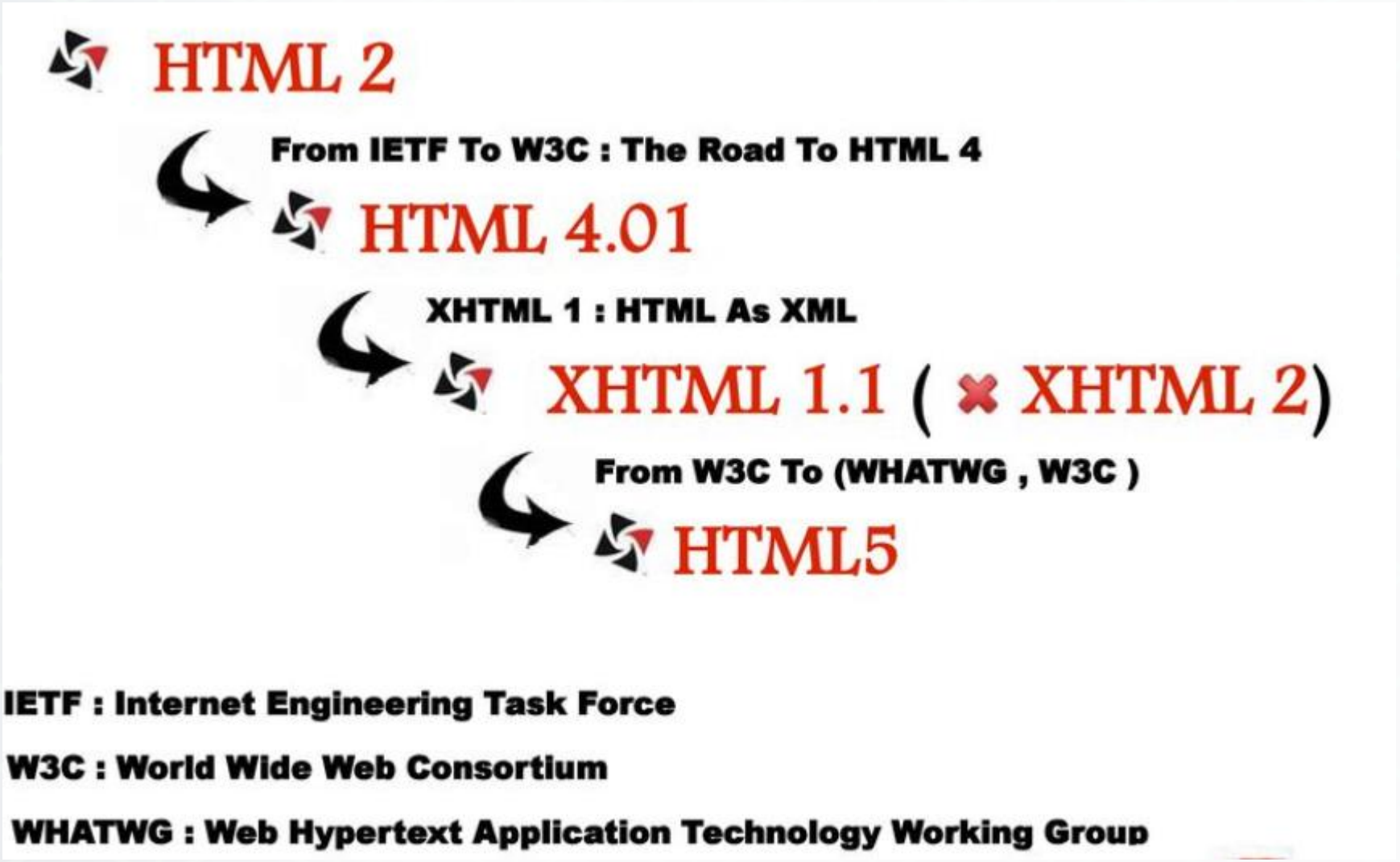
HTML5 is the new standard for HTML.

The previous version of HTML was – HTML 4.01, came in 1999.

HTML5 is designed to deliver almost everything you want to do online without requiring additional plugins. It does everything from animation to apps, music to movies, and can also be used to build complicated applications that run in your browser.

HTML5 is also cross-platform (it does not care whether you are using a tablet or a smartphone, a notebook, notebook or a Smart TV).

Brief History of Markup



Differences Between HTML4 and HTML5

- HTML5 is a work in progress
- Simplified Syntax
- The New <canvas> Element for 2D drawings
- New content-specific elements, like <article>, <header>, <footer>, <nav>, <section>
- New <menu> and <figure> Elements
- New <audio> and <video> Elements
- New form controls, like calendar, date, time, email, url, search
- No More <frame>, , <big>, and <b>, <font>
- Support for local storage

Tag Structure

The doctype for HTML 4.01

```
<!DOCTYPE HTML PUBLIC
"-//W3C//DTD HTML 4.01//EN"
"http://www.w3.org/TR/html4/strict.dtd">
```

The doctype for XHTML 1.0

```
<!DOCTYPE html PUBLIC
"-//W3C//DTD XHTML 1.0 Strict //EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-
strict.dtd">
```

The doctype for HTML5

```
<!DOCTYPE html>
```

Tag Structure

<meta> Tag

The meta declaration for document written in HTML 4.01

```
<meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
```

In HTML5

```
<meta charset="UTF-8">
```

<script> Tag

```
<script type="text/javascript" src="file.js"></script>
```

In HTML5

```
<script src="file.js"></script>
```

Tag Structure

<link> Tag

```
<link rel="stylesheet" type="text/css" href="file.css">
```

In HTML5

```
<link rel="stylesheet" href="file.css">
```

Obsolete Elements In HTML5

Frame , frameset , noframes , font , big , center and few more.
Attributes like bgcolor, cellspacing, cellpadding, and valign.

Use of <a> Tag in HTML5

```
<a href="/about">
    <h2>About me</h2>
    <p>Find out what makes me tick.</p>
</a>
```

Minimum HTML5 Document

Below is a simple HTML5 document, with the minimum of required tags:

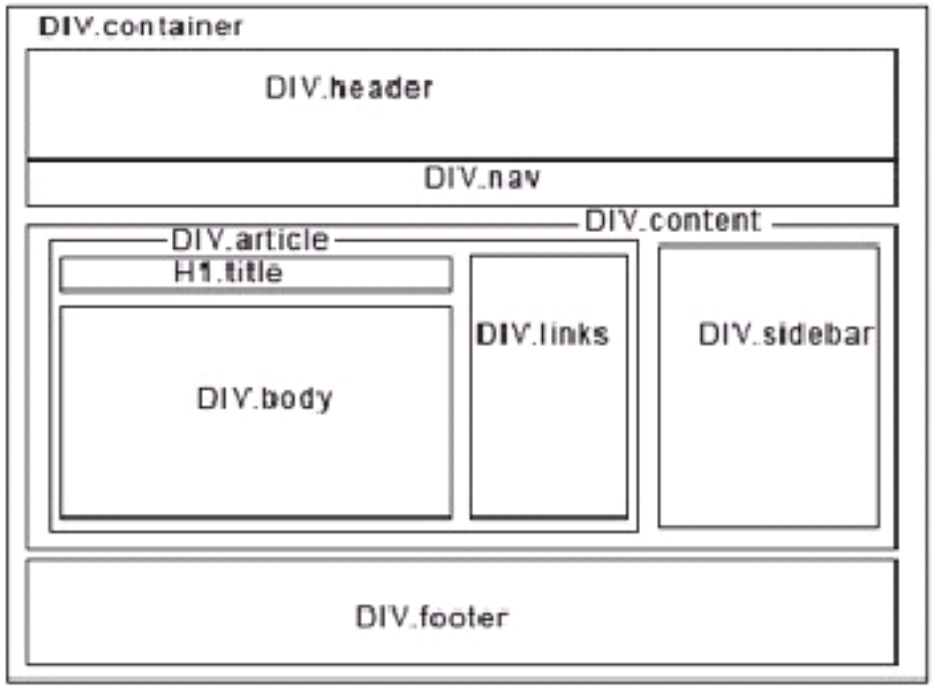
```
<!DOCTYPE html>
<html>
<head>
<meta charset="UTF-8">
<title>Title of the document</title>
</head>

<body>
   Content of the document.....
</body>

</html>
```

Organizing code using blocking elements

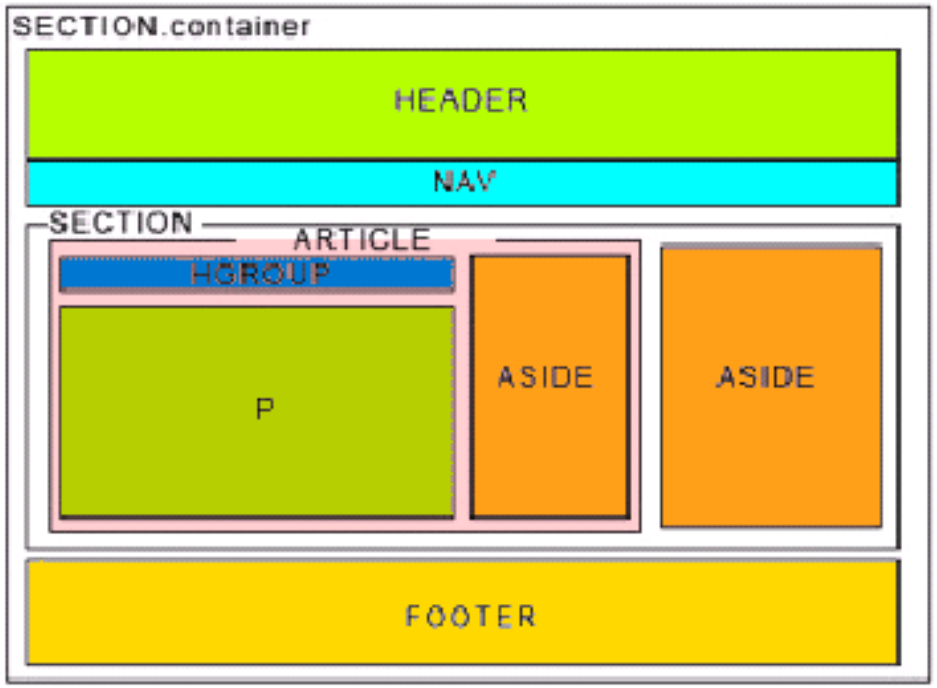
Structural Elements

- No need for div elements all over the place
- New ways to mean what you actually meant to mean

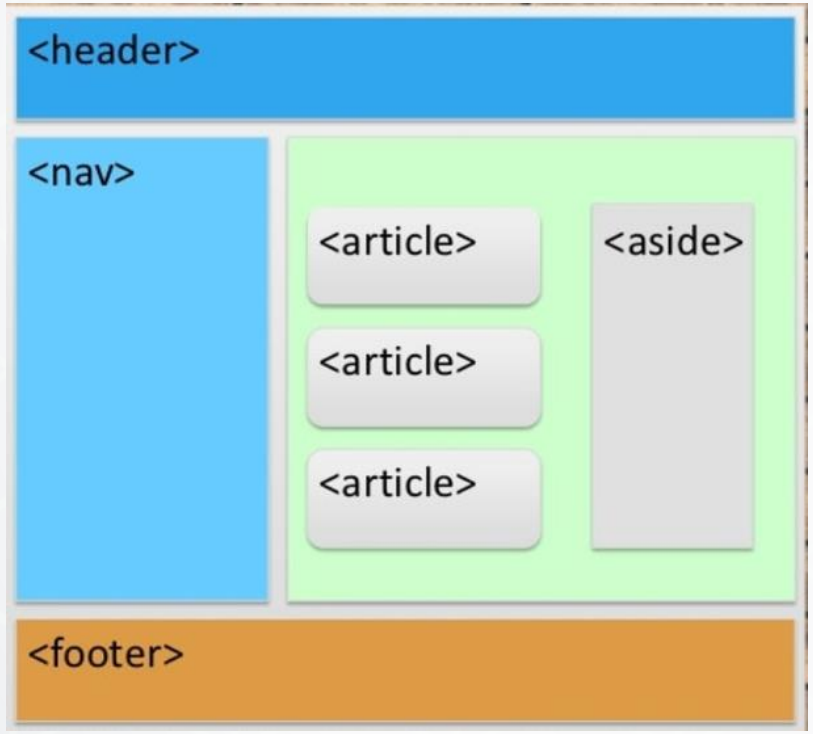
HTML 4

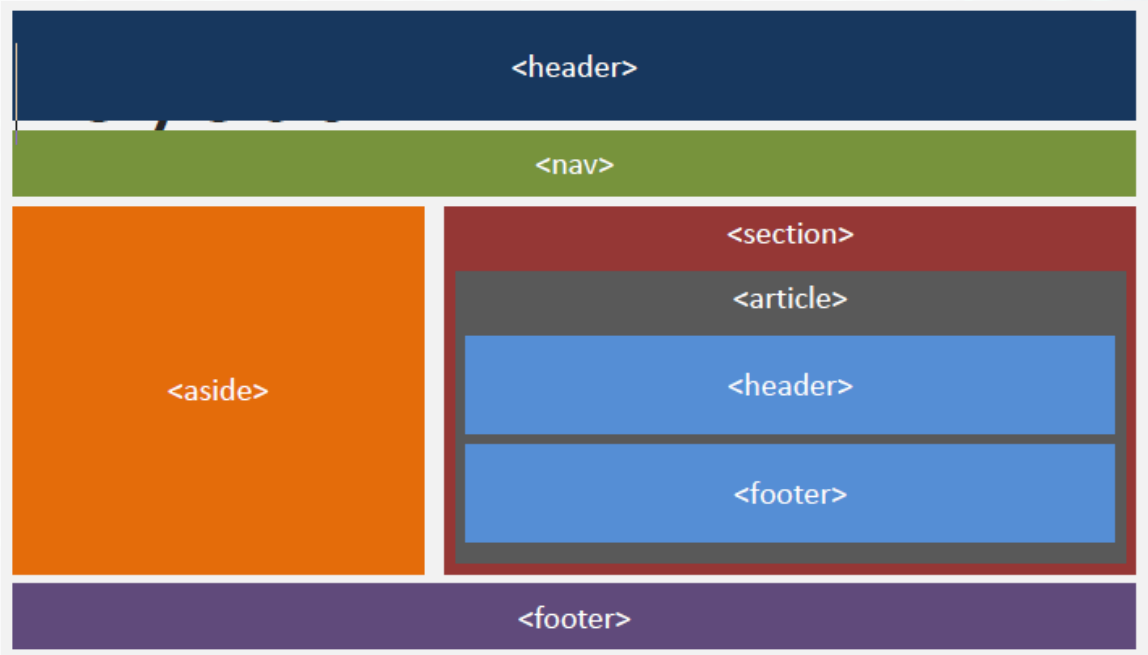


HTML 5



Organizing code using blocking elements





Main Structural Elements

Element	Description
Article	Defines an article (for example within a section)
Footer	Footer elements contain information about their containing element: who wrote it, copyright, etc.
Header	The page header shown on the page, not the same as <head>
Nav	Collection of links to other pages
Section	A part or chapter in a book, or essentially the content body of the page

Inline Semantic Elements

Element	Description
Mark	Defines marked text
Meter	Represents a scalar gauge providing a measurement within a known range, or a fractional value
Progress	Represents the completion progress of a task
Output	Represents the result of a calculation
Time	Represents a specific moment in time

Forms in HTML5

- In addition to GET and POST action , PUT and DELETE are added as an action for form.
- Form elements can be anywhere and can be associated to form by giving form's ID to form attribute of that element.

```
<form id=foo>
<input type=”text”>
...
</form>
<textarea form=foo></textarea>
```

New Input Types

New INPUT types

- Email input type

  `<input type=email>`

- URL input type

  `<input type=url>`

- Date input type

  `<input type=date>`

- Time input type

  `<input type=time>`

- datetime input type

  `<input type=datetime>`

- Month input type

  `<input type=month>`

New Input Types

- Week input type

```
<input type=week>
```

- Number input type

```
<input type=number min=0 max=20 step=2 >
```

- range input type

```
<input type=range >
```

In Chrome

- Search input type

```
<input type=search>
```

- tel input type

```
<input type=tel>
```

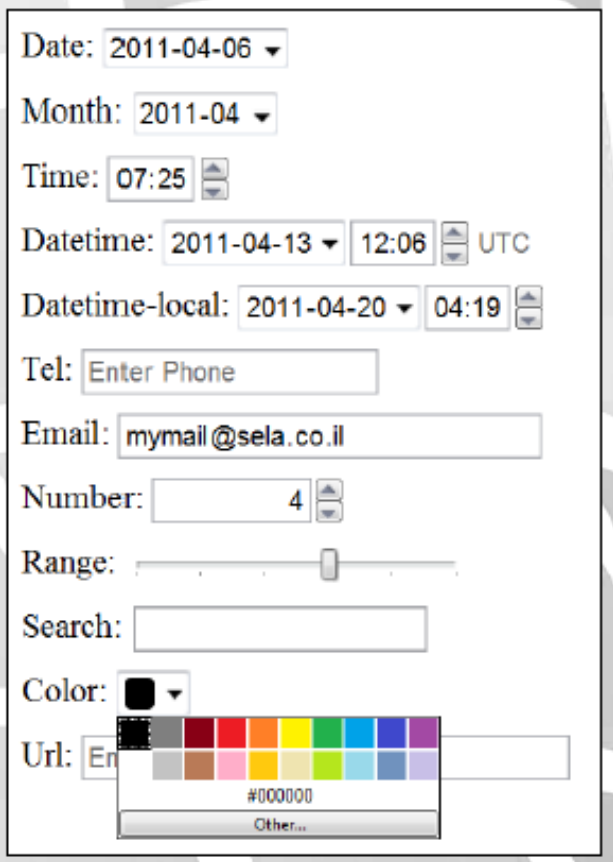
- color input type

```
<input type=color >
```

In Blackberry web browser

Input types

Types
Email
Url
Tel
Number
Range
Search
Color
Date pickers (date, month, week, time, datetime, datetime-local)



New Attributes

Required attribute

```
<input id="pass" name="pass" type="password" required>
```

Autocomplete attribute

```
<input type="text" name="onetimetoken" autocomplete="off">
```

Autofocus attribute

```
<input id="status" name="status" type="text" autofocus>
```

Placeholder attribute

```
<label for="search">My Search</label>

<input id="search" name="search" type="text"
placeholder="Search Here">
```

New Attributes

Attribute	Description
Min, Max	Accepted min and max values
Multiple	Related to file input type, allows selection of multiple files
Pattern	Specifies a pattern used to validate an input field
Placeholder	A short hint intended to aid the user with data entry
Required	Boolean attribute to indicate that the element is required
Step	Limits allowed values, thus indicating the granularity required

Video/Audio Elements

HTML5 <video> Element

- Enables to play video natively in the browser
  - Video can be composited with anything else on the page
    - HTML content, images, SVG graphics
    - Include standard codecs like: h.264, ogg and webm
    - Hardware accelerated, GPU-based decoding in most of the browsers

```
<video src="video.mp4" id="videoTag" width="640px" height="360px">
  <!-- Only shown when browser doesn't support video -->
  <!-- You Could Embed Flash or Silverlight Video Here -->
</video>
```

HTML5 <audio> Element

- Enables to play audio natively in the browser
  - Industry-standard MP3 and AAC audio
  - Fully scriptable via the DOM

```
<audio src="audio.mp3" id="audioTag" autoplay controls>
  <!-- Only shown when browser doesn't support audio -->
  <!-- You could embed Flash or Silverlight audio here -->
</audio>
```

Introduction to CSS3

- Cascading Style Sheets (CSS) is a language that is used to illustrate the look, style, and format of a document written in any markup language. In simple words, it is used to style and organize the layout of Web pages. CSS3 is the latest version of an earlier CSS version, CSS2.

- Some of the key modules of CSS3 are:

  - Box model
  - Image values and replaced content
  - Text effects
  - Selectors
  - Backgrounds and borders
  - Animations
  - User interface (UI)
  - Multiple column layouts / GRID System 12 grid system
  - 2D/3D transformations

Advantages of CSS3

- CSS3 provides a consistent and precise positioning of navigable elements.
- It is easy to customize a web page as it can be done by merely altering a modular file.
- Graphics are easier in CSS3, thus making it easy to make the site appealing.
- It permits online videos to be seen without using third-party plug-ins.
- CSS3 is economical, time-saving, and most browsers support it.

Use and Need of CSS3

- CSS3 is used with HTML to create and format content structure. It is responsible for colours, font properties, text alignments, background images, graphics, tables, etc. It provides the positioning of various elements with the values being fixed, absolute, and relative.

- CSS3 allows the designer to create websites, rich in content and low in code. This technology brings some exciting features that make the page look good, simple for the user to navigate, and functions flawlessly.

Thank You