

# WEB TECHNOLOGIES & IMAGE PROCESSING

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# INTRODUCTION

What is common between these two topics?

→ The programming language **JavaScript**

→ used by the **web browser** for dynamic HTML pages

→ used by Image Processing software **ImageJ** for repetitive tasks

→ Same language used in different contexts and purposes:

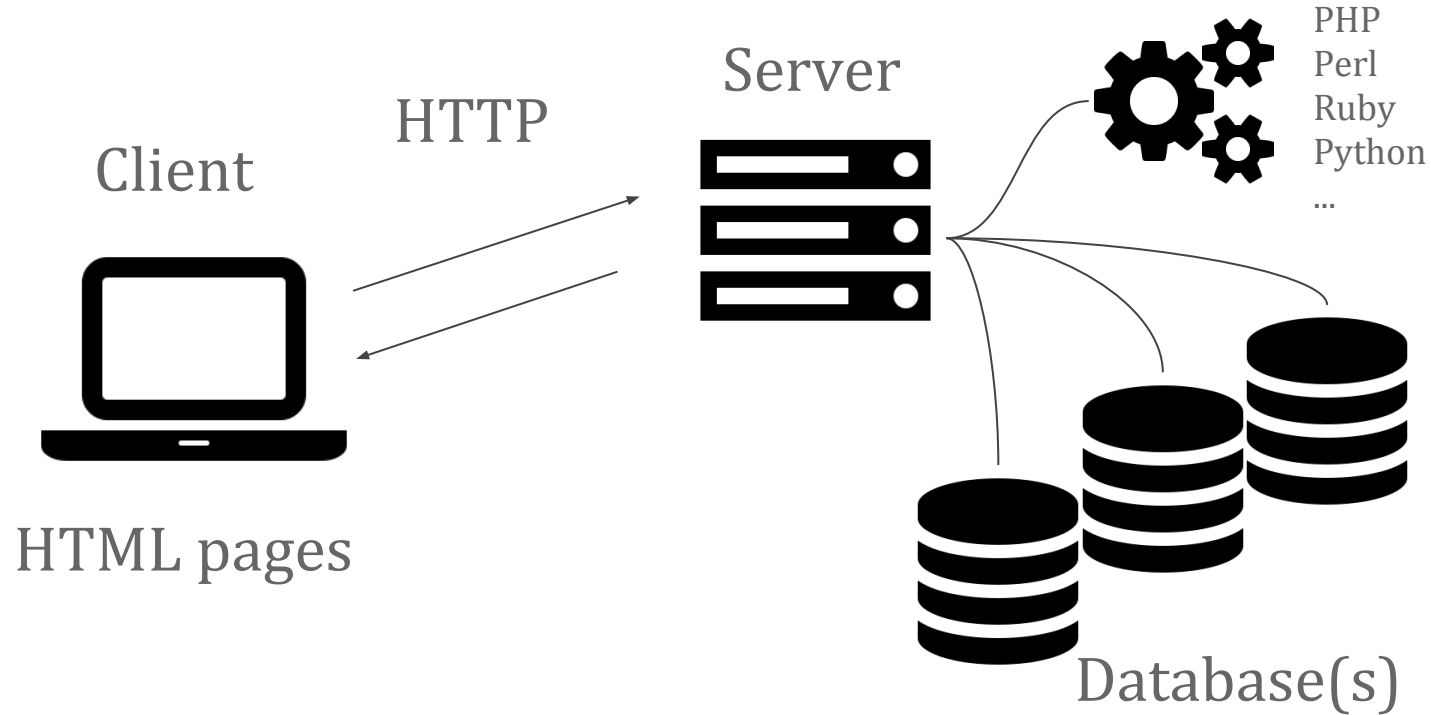
→ Interacting with the HTML document

→ Interacting with the ImageJ core API

# WEB TECHNOLOGIES

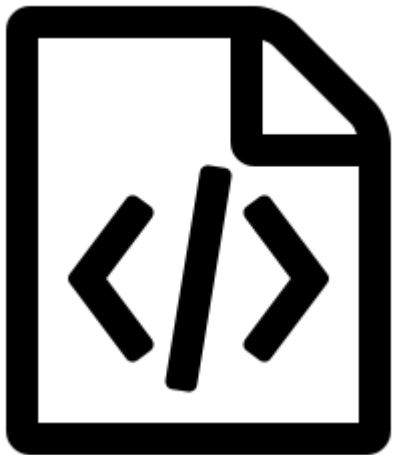
2016-2017

# INTRODUCTION: DEFINITIONS



# INTRODUCTION: DEFINITIONS

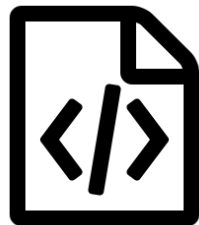
## HTML Page



- **HTML5** elements
- Display style (**CSS3**)
- Program in **JavaScript**
  - JS5
  - ECMAScript 6 (ES6)

# HTML: elements

HTML : HyperText Markup Language



→ **HTML** elements enclosed by tags:

→ Opening tag `<keyword>`

→ Closing tag `</keyword>`

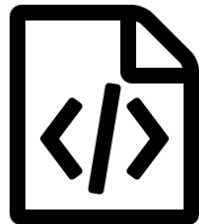
**Ex:**

`<p>Here is a paragraph</p>`

# HTML: elements

## Minimal HTML page

```
<html>
  <head>
    <title>A minimal web page</title>
  </head>
  <body>
    <p>First HTML.</p>
  </body>
</html>
```



# HTML: elements



- An element can contain other (nested) elements
  - hierarchical structure.

`<em>I <strong>really</strong> mean that</em>.`

- Overlapping elements are not possible

`<!--Invalid:-->`

`<em>I <strong>really</em> mean that</strong>.`

- Some elements have non content: **empty element** with no closing tag

``



# HTML: elements



## Attributes

start tag may contain additional information: **attribute** consisting of 2 parts:

- An attribute **name**
- An attribute **value**

```

```

Two attributes:

- `src="smileyface.jpg"`
- `alt="Smiley face"`

# HTML: elements



## How to use reserved characters

```
<!-- Wrong -->  
<p> i < 5</p>
```

→ Use named character references

- **&gt;** denotes the greater-than sign (>)
- **&lt;** denotes the less-than sign (<)
- **&amp;** denotes the ampersand (&)
- **&quot;** denotes double quote (")

```
<p> i &lt; 5</p>
```

# HTML: elements



## Comments and doctype

### → Comments

```
<!-- This is comment text -->
```

### → Doctype declaration

In **HTML5**, there is only one declaration and is written like this:

```
<!DOCTYPE html>
```

# HTML: elements



## Comments and doctype

### → Comments

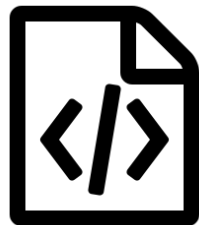
```
<!-- This is comment text -->
```

### → Doctype declaration

In **HTML5**, there is only one declaration and is written like this:

```
<!DOCTYPE html>
```

# HTML: elements



## Metadata

<base> <head> <link> <meta> <style> <title>

## Content sectioning

<address> <article> <aside> <footer> <header> <h1>, <h2>, <h3>, <h4>, <h5>, <h6> <hgroup> <nav> <section>

## Text content

<dd> <div> <dl> <dt> <figcaption> <figure> <hr> <li> <main> <ol> <p> <pre> <ul>

## Inline text semantics

<a> <abbr> <b> <bdi> <bdo> <br> <cite> <code> <data> <dfn> <em> <i> <kbd> <mark> <q> <rp> <rt> <rtc> <ruby> <s>  
<samp> <small> <span> <strong> <sub> <sup> <time> <u> <var> <wbr>

# HTML: elements



## Multimedia

`<area>` `<audio>` `<img>` `<map>` `<track>` `<video>`

## Table

`<caption>` `<col>` `<colgroup>` `<table>` `<tbody>` `<td>` `<tfoot>` `<th>` `<thead>` `<tr>`

## Forms

`<button>` `<datalist>` `<fieldset>` `<form>` `<input>` `<label>` `<legend>` `<meter>` `<optgroup>` `<option>``<output>` `<progress>` `<select>`  
`<textarea>`

# HTML: elements

## Content sectioning

### Heading 1

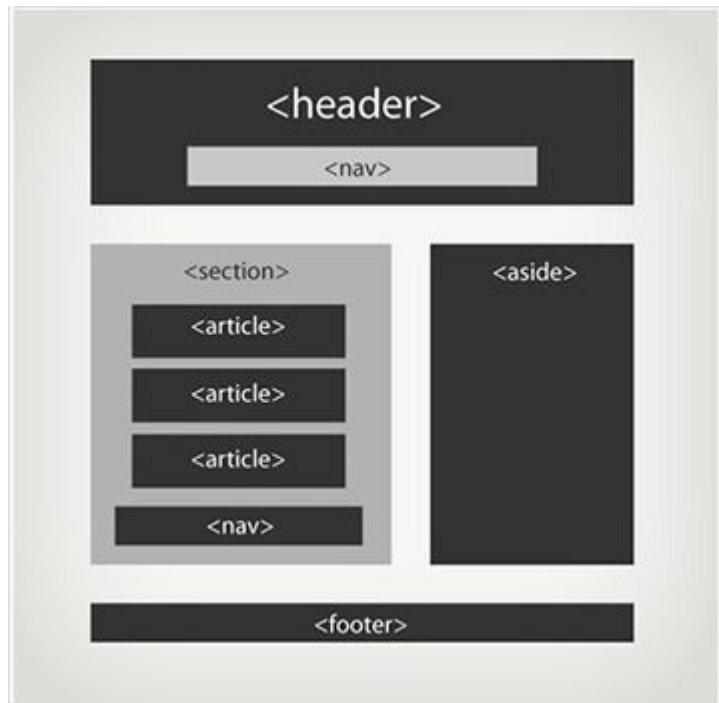
### Heading 2

### Heading 3

`<h1>Heading 1</h1>`

`<h2>Heading 2</h2>`

`<h3>Heading 3</h3>`



Source: [alsacreation.com](https://alsacreation.com)

# HTML: elements

## Text content

- item1
- item2
- item3

```
<ul>  
<li>item1</li>  
<li>item1</li>  
<li>item1</li>  
</ul>
```

1. item1
2. item2
3. item3

```
<ol>  
<li>item1</li>  
<li>item1</li>  
<li>item1</li>  
</ol>
```





# HTML: elements

## Inline text semantics

→ Hyperlink

```
<a href="www.address.somewhere.edu" >My Link</a>
```

My Link

→ Text

```
<em>I <strong>really</strong> mean that</em>
```



# HTML: elements

## Multimedia

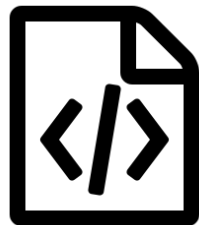
→ Image

```

```

→ Video

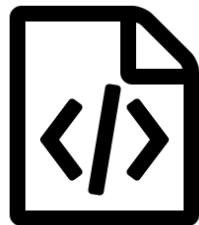
```
<video controls src="video.ogv">alt. description</video>
```



# HTML: elements

## Table

```
<table>
  <thead>
    <tr>
      <th>Header content 1</th>
      <th>Header content 2</th>
    </tr>
  </thead>
  <tfoot>
    <tr>
      <td>Footer content 1</td>
      <td>Footer content 2</td>
    </tr>
  </tfoot>
  <tbody>
    <tr>
      <td>Body content 1</td>
      <td>Body content 2</td>
    </tr>
  </tbody>
</table>
```



Header content 1	Header content 2
Body content 1	Body content 2
Footer content 1	Footer content 2

# HTML: elements

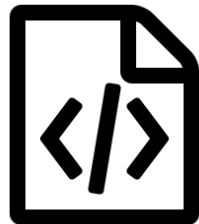
## Forms

```
<!-- Simple form which will send a GET request -->
<form action="">
  <label for="GET-name">Name:</label>
  <input id="GET-name" type="text">
  <input type="submit" value="Save">
</form>
```

```
<!-- Form with fieldset, legend, and label -->
<form action="" method="post">
  <fieldset>
    <legend>Title</legend>
    <input type="radio" id="radio"> <label for="radio">Click me</label>
  </fieldset>
</form>
```

Name:

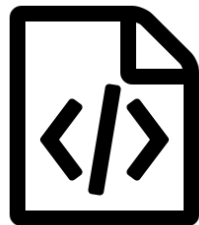
☐ Click me



# CSS: INTRODUCTION

## CSS: Cascading Style Sheets

→ Used to set the visual style of web pages & user interfaces written in HTML



External File

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

In the header, `<style>` element

```
<style>
p {
  color : red;
}
</style>
```