Web Technology
MCA-124

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Outline

Unit-II

- Hyper Text Markup Language(HTML) ✓
- Cascading Style Sheets (CSS)✓
- eXtensible Markup Language (XML)
- Standard Generalized Markup Language (SGML)

References Books

1. Web Technologies, 1/e -Uttam K. Roy ,Oxford University Press, USA
2. Web Technology: Theory and Practice -M. Srinivasan, Pearson Education India,
3. Deitel, Deitel and Nieto, Internet and Worldwide Web -How to Program, 5th Edition, PHI, 2011.
4. Developing Web Application-Second Editon -Ralph Moseley & M. T. Savaliya, Wiley
5. Web Programming Step by Step, Stepp/Miller/Kirst, 2nd edition, 2009

Hyper Text Markup Language

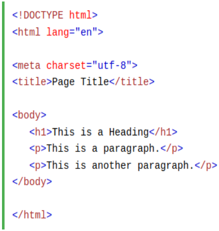
1. HTML is the standard markup language for Web pages
2. HTML elements are the building blocks of HTML pages
3. HTML elements are represented by $<>$ tags

HTML Elements
An HTML element is a start tag and an end tag with content in between:

Example
$< h1 >$This is a Heading$< /h1 >$

HTML Attributes

- HTML elements can have attributes.
- Attributes provide additional information about the element
- Attributes come in name/value pairs like charset=”utf-8”



```
<!DOCTYPE html>
<html lang="en">

<meta charset="utf-8">
<title>Page Title</title>

<body>
   <h1>This is a Heading</h1>
   <p>This is a paragraph.</p>
   <p>This is another paragraph.</p>
</body>

</html>
```

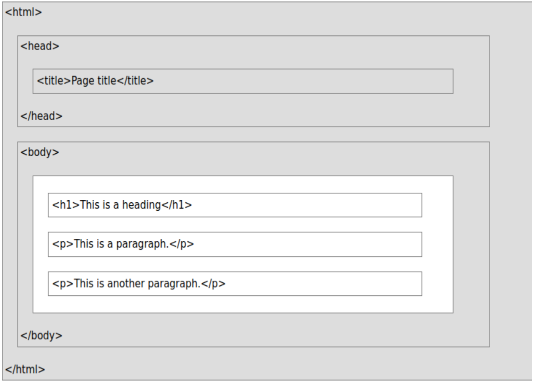
Figure: 1 A Simple HTML Document

Example Explained

HTML elements are the building blocks of HTML pages.

- The $<!DOCTYPE\ html>$ declaration defines this document to be HTML5
- The $<html>$ element is the root element of an HTML page
- The lang attribute defines the language of the document
- The $<meta>$ element contains meta information about the document
- The charset attribute defines the character set used in the document
- The $<title>$ element specifies a title for the document
- The $<body>$ element contains the visible page content
- The $<h1>$ element defines a large heading
- The $<p>$ element defines a paragraph

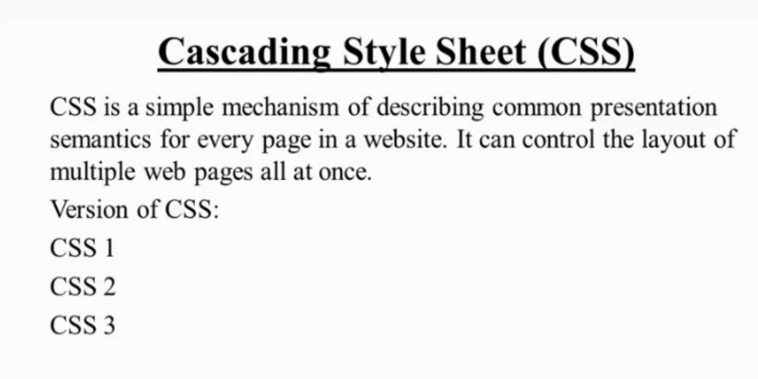
HTML Document Structure



```
<html>
  <head>
    <title>Page title</title>
  </head>
  <body>
      <h1>This is a heading</h1>
      <p>This is a paragraph.</p>
      <p>This is another paragraph.</p>
  </body>
</html>
```

Figure: 2 Visualization of an HTML document

Cascading Style Sheet



Cascading Style Sheet (CSS)

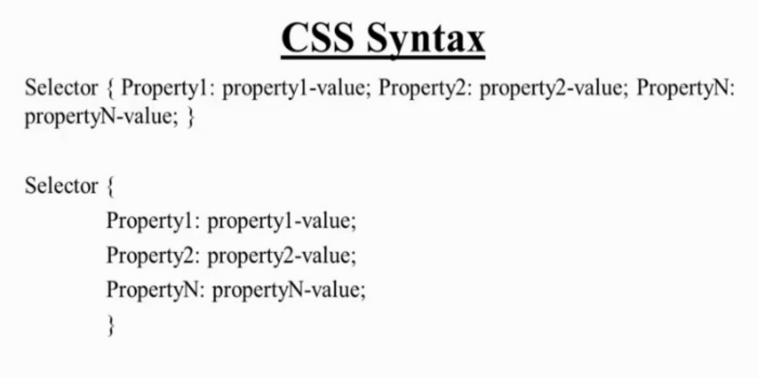
CSS is a simple mechanism of describing common presentation semantics for every page in a website. It can control the layout of multiple web pages all at once.

Version of CSS:

CSS 1

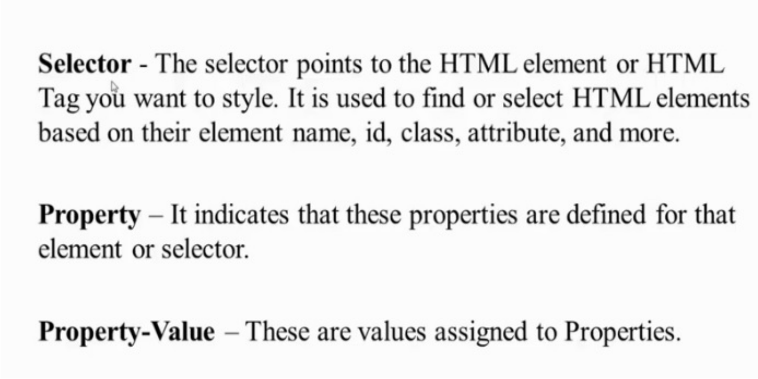
CSS 2

CSS 3



CSS Syntax

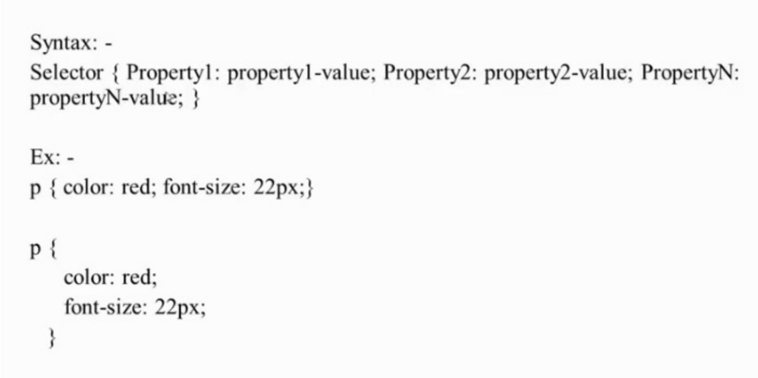
```
Selector { Property1: property1-value; Property2: property2-value; PropertyN:
propertyN-value; }

Selector {
          Property1: property1-value;
          Property2: property2-value;
          PropertyN: propertyN-value;
          }
```



Selector - The selector points to the HTML element or HTML Tag you want to style. It is used to find or select HTML elements based on their element name, id, class, attribute, and more.

Property – It indicates that these properties are defined for that element or selector.

Property-Value – These are values assigned to Properties.

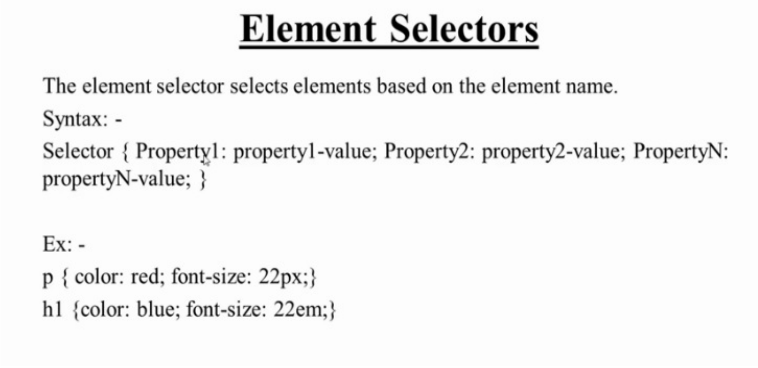


Syntax: -

```
Selector { Property1: property1-value; Property2: property2-value; PropertyN:
propertyN-value; }
```

Ex: -

```
p { color: red; font-size: 22px;}

p {
    color: red;
    font-size: 22px;
  }
```



Element Selectors

The element selector selects elements based on the element name.

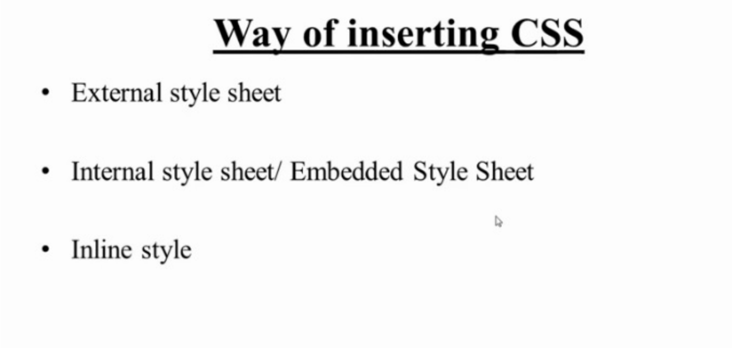
Syntax: -

Selector { Property1: property1-value; Property2: property2-value; PropertyN: propertyN-value; }

Ex: -

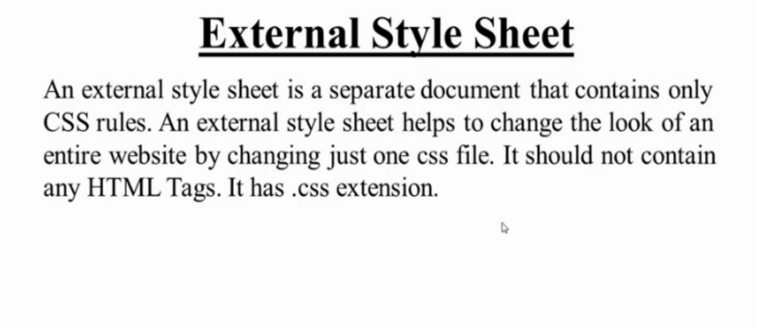
p { color: red; font-size: 22px;}

h1 {color: blue; font-size: 22em;}



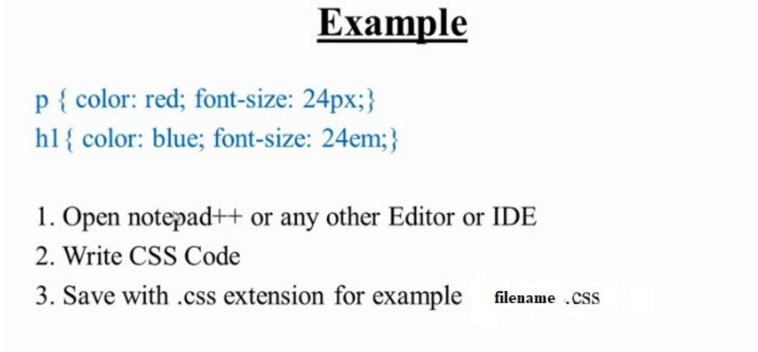
Way of inserting CSS

- External style sheet
- Internal style sheet/ Embedded Style Sheet
- Inline style



External Style Sheet

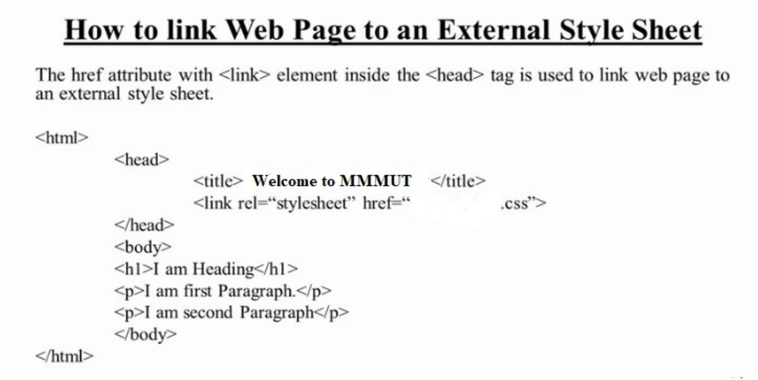
An external style sheet is a separate document that contains only CSS rules. An external style sheet helps to change the look of an entire website by changing just one css file. It should not contain any HTML Tags. It has .css extension.



Example

```
p { color: red; font-size: 24px;}
h1{ color: blue; font-size: 24em;}
```

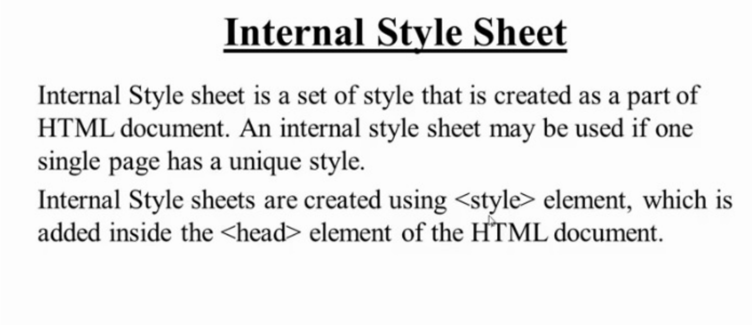
1. Open notepad++ or any other Editor or IDE
2. Write CSS Code
3. Save with .css extension for example **filename** .css



How to link Web Page to an External Style Sheet

The href attribute with <link> element inside the <head> tag is used to link web page to an external style sheet.

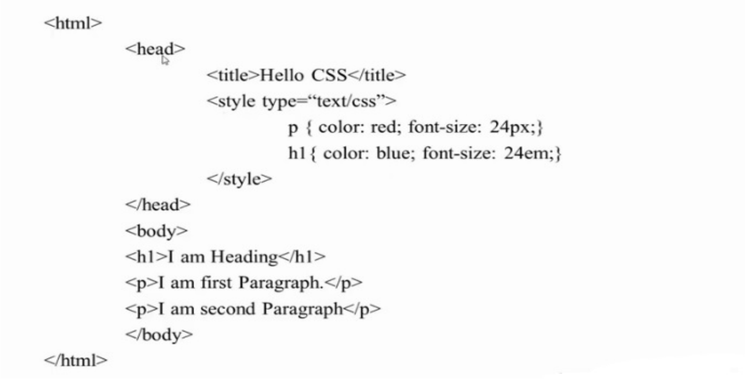
```
<html>
          <head>
                    <title> Welcome to MMMUT  </title>
                    <link rel="stylesheet" href="          .css">
          </head>
          <body>
          <h1>I am Heading</h1>
          <p>I am first Paragraph.</p>
          <p>I am second Paragraph</p>
          </body>
</html>
```



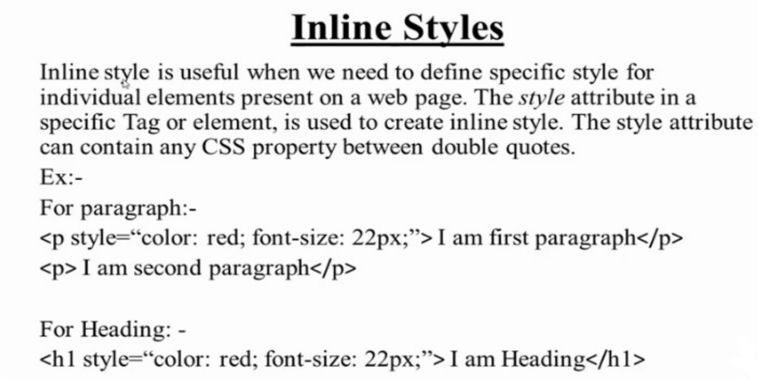
Internal Style Sheet

Internal Style sheet is a set of style that is created as a part of HTML document. An internal style sheet may be used if one single page has a unique style.

Internal Style sheets are created using <style> element, which is added inside the <head> element of the HTML document.



```
<html>
        <head>
                <title>Hello CSS</title>
                <style type="text/css">
                        p { color: red; font-size: 24px;}
                        h1{ color: blue; font-size: 24em;}
                </style>
        </head>
        <body>
        <h1>I am Heading</h1>
        <p>I am first Paragraph.</p>
        <p>I am second Paragraph</p>
        </body>
</html>
```



Inline Styles

Inline style is useful when we need to define specific style for individual elements present on a web page. The *style* attribute in a specific Tag or element, is used to create inline style. The style attribute can contain any CSS property between double quotes.

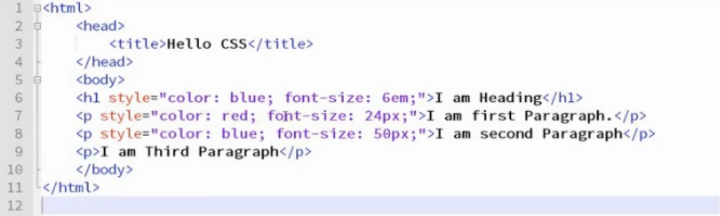
Ex:-

For paragraph:-

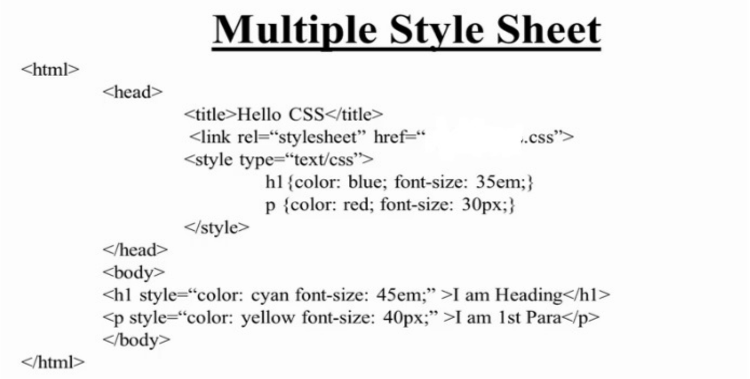
```
<p style="color: red; font-size: 22px;"> I am first paragraph</p>
<p> I am second paragraph</p>
```

For Heading: -

```
<h1 style="color: red; font-size: 22px;"> I am Heading</h1>
```

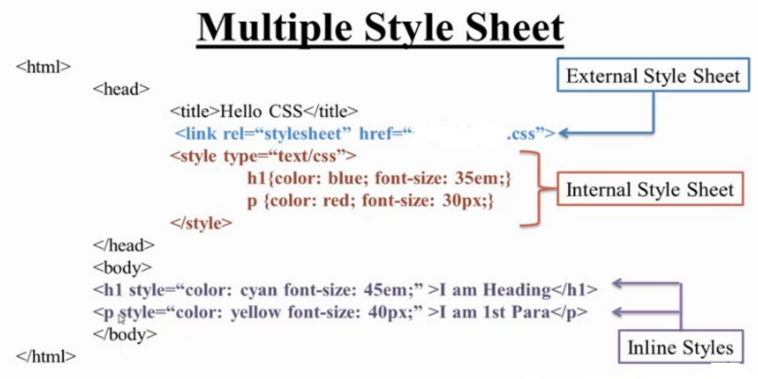


```html
<html>
    <head>
        <title>Hello CSS</title>
    </head>
    <body>
    <h1 style="color: blue; font-size: 6em;">I am Heading</h1>
    <p style="color: red; font-size: 24px;">I am first Paragraph.</p>
    <p style="color: blue; font-size: 50px;">I am second Paragraph</p>
    <p>I am Third Paragraph</p>
    </body>
</html>

```



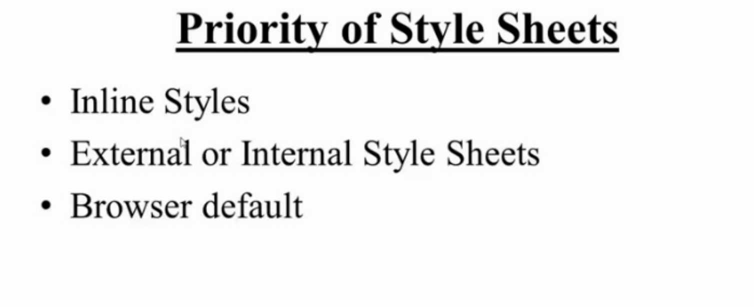
Multiple Style Sheet

```
<html>
        <head>
                <title>Hello CSS</title>
                 <link rel=“stylesheet” href=“          .css”>
                <style type=“text/css”>
                        h1{color: blue; font-size: 35em;}
                        p {color: red; font-size: 30px;}
                </style>
        </head>
        <body>
        <h1 style=“color: cyan font-size: 45em;” >I am Heading</h1>
        <p style=“color: yellow font-size: 40px;” >I am 1st Para</p>
        </body>
</html>
```



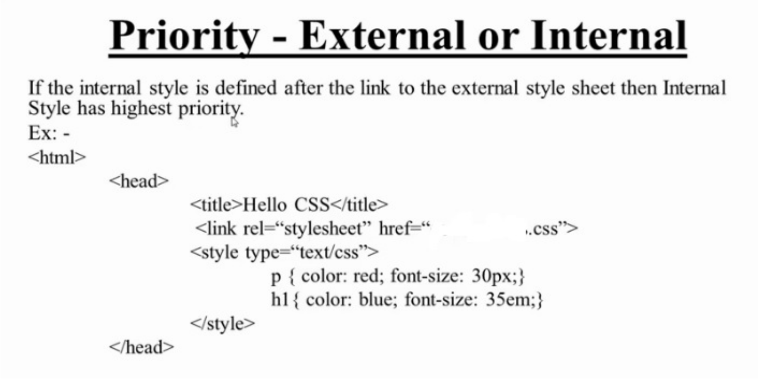
Multiple Style Sheet

```
<html>
        <head>
                <title>Hello CSS</title>
                <link rel=“stylesheet” href=“          .css”>
                <style type=“text/css”>
                        h1{color: blue; font-size: 35em;}
                        p {color: red; font-size: 30px;}
                </style>
        </head>
        <body>
        <h1 style=“color: cyan font-size: 45em;” >I am Heading</h1>
        <p style=“color: yellow font-size: 40px;” >I am 1st Para</p>
        </body>
</html>
```



Priority of Style Sheets

- Inline Styles
- External or Internal Style Sheets
- Browser default

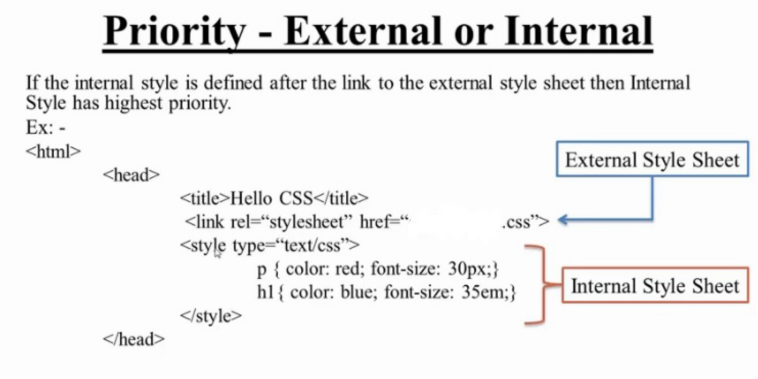


Priority - External or Internal

If the internal style is defined after the link to the external style sheet then Internal Style has highest priority.

Ex: -

```
<html>
        <head>
                <title>Hello CSS</title>
                 <link rel="stylesheet" href="          .css">
                <style type="text/css">
                        p { color: red; font-size: 30px;}
                        h1{ color: blue; font-size: 35em;}
                </style>
        </head>
```



Priority - External or Internal

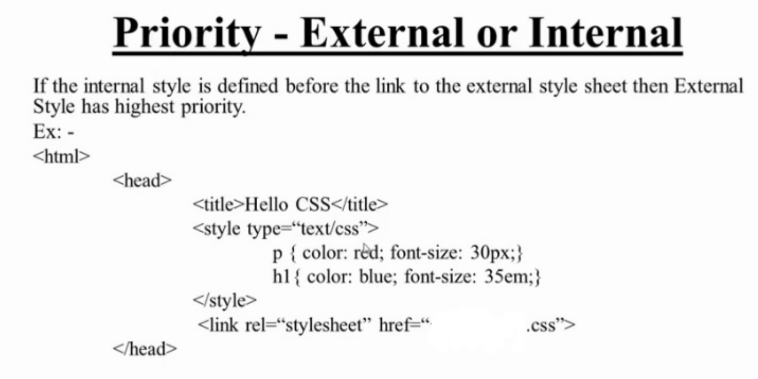
If the internal style is defined after the link to the external style sheet then Internal Style has highest priority.

Ex: -

```
<html>
        <head>
                <title>Hello CSS</title>
                 <link rel=“stylesheet” href=“            .css”>
                <style type=“text/css”>
                        p { color: red; font-size: 30px;}
                        h1 { color: blue; font-size: 35em;}
                </style>
        </head>
```

External Style Sheet

Internal Style Sheet

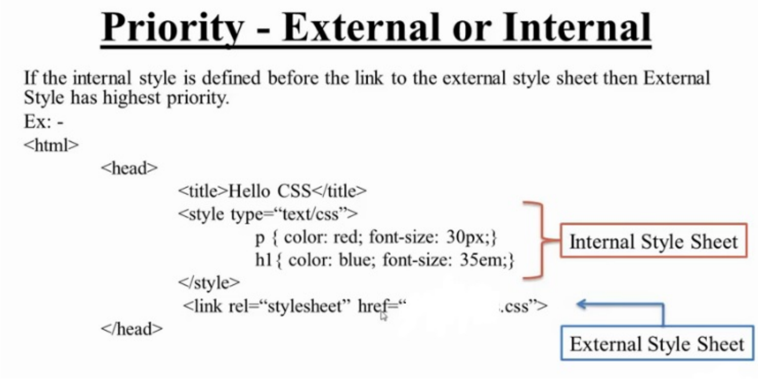


Priority - External or Internal

If the internal style is defined before the link to the external style sheet then External Style has highest priority.

Ex: -

```
<html>
        <head>
                <title>Hello CSS</title>
                <style type="text/css">
                        p { color: red; font-size: 30px;}
                        h1 { color: blue; font-size: 35em;}
                </style>
                 <link rel="stylesheet" href="          .css">
        </head>
```



Priority - External or Internal

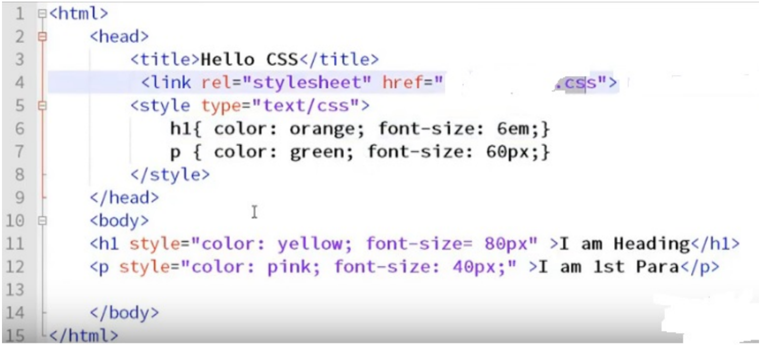
If the internal style is defined before the link to the external style sheet then External Style has highest priority.

Ex: -

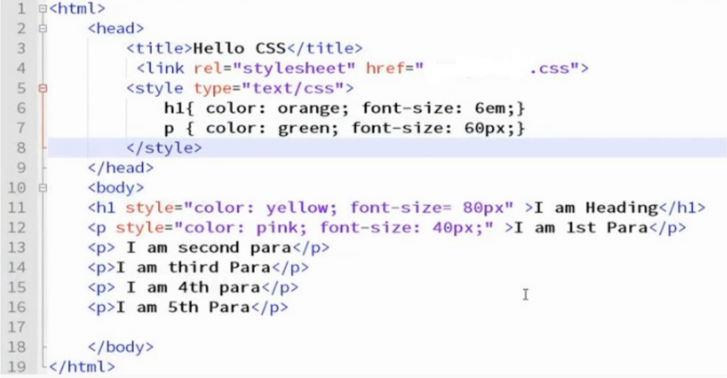
```
<html>
        <head>
                <title>Hello CSS</title>
                <style type="text/css">
                        p { color: red; font-size: 30px;}
                        h1 { color: blue; font-size: 35em;}
                </style>
                 <link rel="stylesheet" href="                 .css">
        </head>
```

Internal Style Sheet

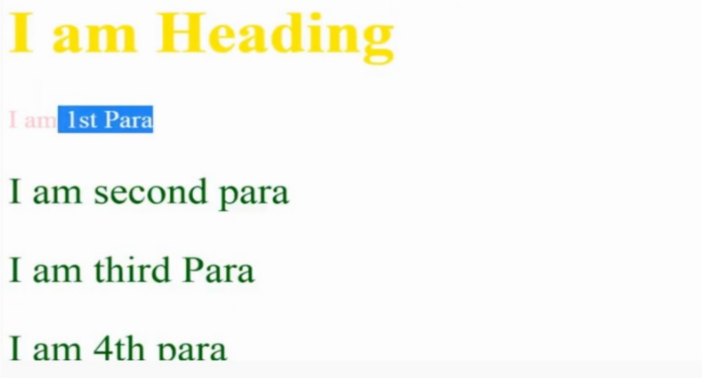
External Style Sheet



```
<html>
    <head>
        <title>Hello CSS</title>
         <link rel="stylesheet" href="          .css">
        <style type="text/css">
            h1{ color: orange; font-size: 6em;}
            p { color: green; font-size: 60px;}
        </style>
    </head>
    <body>
    <h1 style="color: yellow; font-size= 80px" >I am Heading</h1>
    <p style="color: pink; font-size: 40px;" >I am 1st Para</p>

    </body>
</html>
```



```
<html>
    <head>
        <title>Hello CSS</title>
         <link rel="stylesheet" href="          .css">
        <style type="text/css">
            h1{ color: orange; font-size: 6em;}
            p { color: green; font-size: 60px;}
        </style>
    </head>
    <body>
    <h1 style="color: yellow; font-size= 80px" >I am Heading</h1>
    <p style="color: pink; font-size: 40px;" >I am 1st Para</p>
    <p> I am second para</p>
    <p>I am third Para</p>
    <p> I am 4th para</p>
    <p>I am 5th Para</p>

    </body>
</html>
```



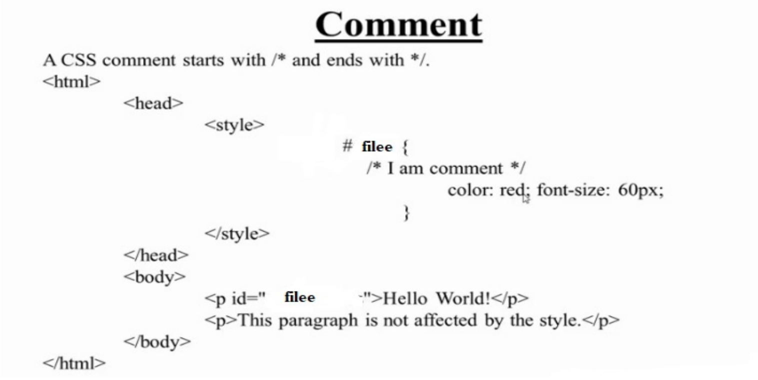
I am Heading

I am 1st Para

I am second para

I am third Para

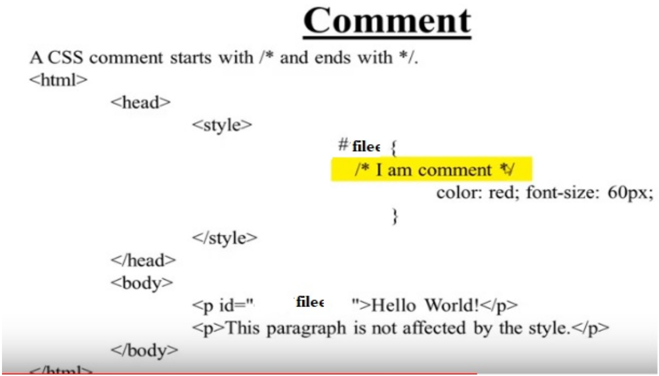
I am 4th para



Comment

A CSS comment starts with /* and ends with */.

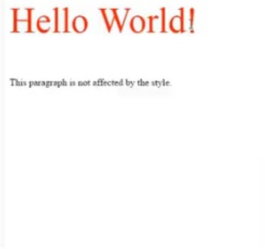
```
<html>
        <head>
                <style>
                                # filee {
                                  /* I am comment */
                                          color: red; font-size: 60px;
                                       }
                </style>
        </head>
        <body>
                <p id=" filee ">Hello World!</p>
                <p>This paragraph is not affected by the style.</p>
        </body>
</html>
```



Comment

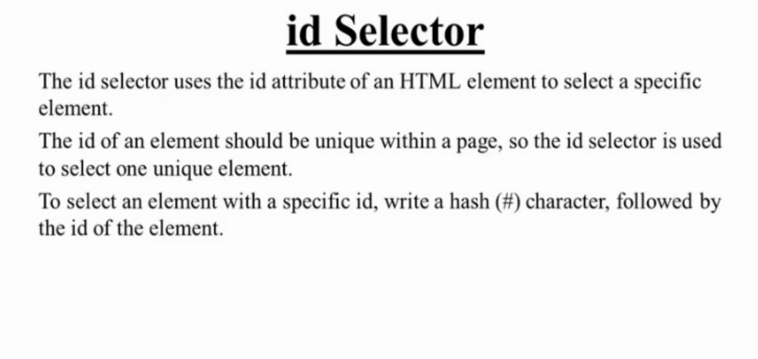
A CSS comment starts with /* and ends with */.

```
<html>
        <head>
                <style>
                                    #filee {
                                     /* I am comment */
                                              color: red; font-size: 60px;
                                          }
                </style>
        </head>
        <body>
                <p id="   filee   ">Hello World!</p>
                <p>This paragraph is not affected by the style.</p>
        </body>
</html>
```



Hello World!

This paragraph is not affected by the style.

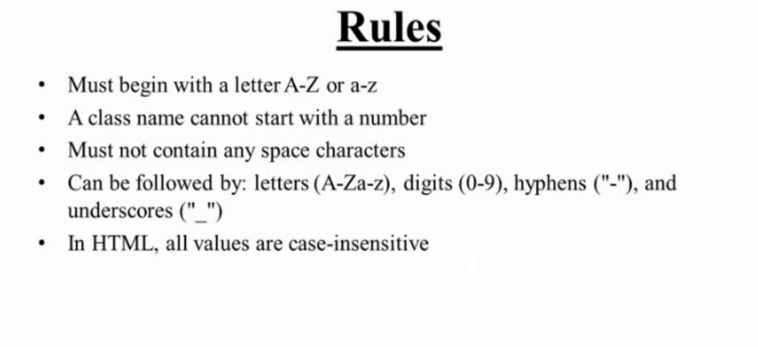


id Selector

The id selector uses the id attribute of an HTML element to select a specific element.

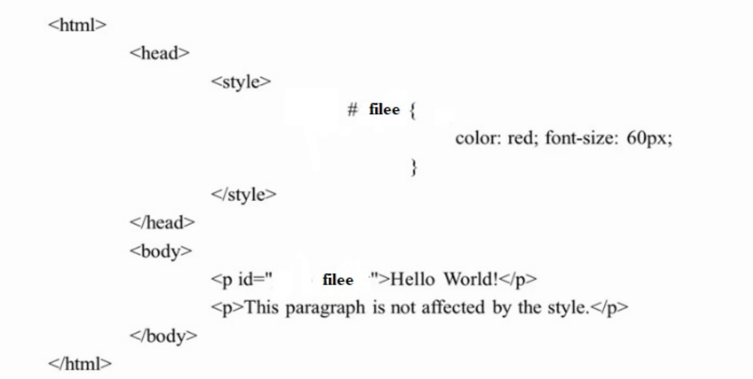
The id of an element should be unique within a page, so the id selector is used to select one unique element.

To select an element with a specific id, write a hash (#) character, followed by the id of the element.

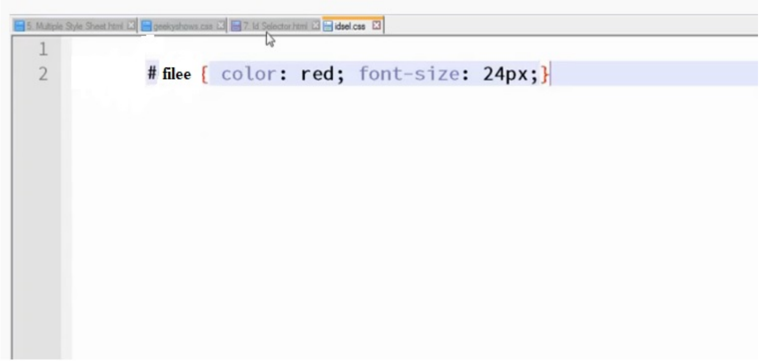


Rules

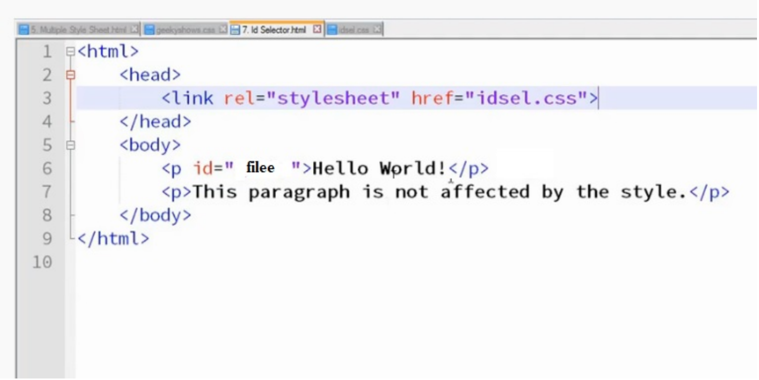
- Must begin with a letter A-Z or a-z
- A class name cannot start with a number
- Must not contain any space characters
- Can be followed by: letters (A-Za-z), digits (0-9), hyphens ("-"), and underscores ("_")
- In HTML, all values are case-insensitive



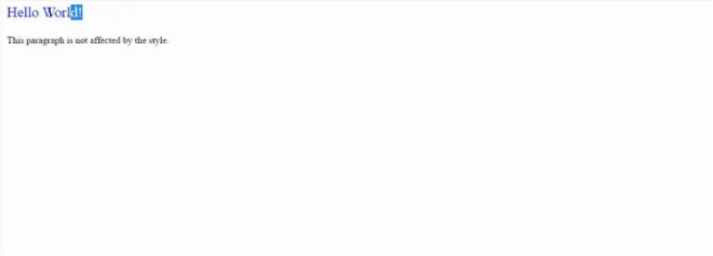
```
<html>
        <head>
                <style>
                                # filee {
                                                color: red; font-size: 60px;
                                      }
                </style>
        </head>
        <body>
                <p id="      filee   ">Hello World!</p>
                <p>This paragraph is not affected by the style.</p>
        </body>
</html>
```



```css

            # filee { color: red; font-size: 24px;}
```



```
<html>
    <head>
        <link rel="stylesheet" href="idsel.css">
    </head>
    <body>
        <p id=" filee ">Hello World!</p>
        <p>This paragraph is not affected by the style.</p>
    </body>
</html>
```



Hello World!

This paragraph is not affected by the style.

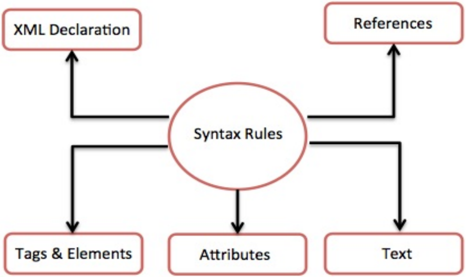
eXtensible Markup Language (XML)

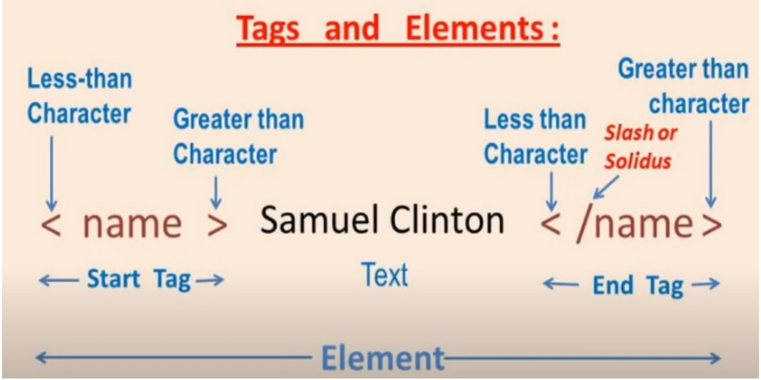
- XML stands for Extensible Markup Language and is a text-based markup language derived from Standard Generalized Markup Language (SGML).
- XML tags identify the data and are used to store and organize the data, rather than specifying how to display it like HTML tags, which are used to display the data.

There are three important characteristics of XML that make it useful in a variety of systems and solutions

1. **XML is extensible** XML allows you to create your own self-descriptive tags, or language, that suits your application.
2. **XML carries the data, does not present it** XML allows you to store the data irrespective of how it will be presented.
3. **XML is a public standard** XML was developed by an organization called the World Wide Web Consortium (W3C) and is available as an open standard.

The following diagram depicts the syntax rules to write different types of markup and text in an XML document.





Tags and Elements:

Less-than Character

Greater than Character

Less than Character

Slash or Solidus

Greater than character

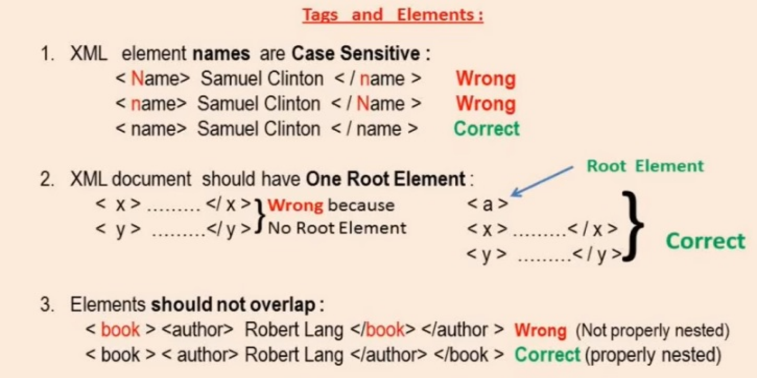
< name > Samuel Clinton < /name >

← Start Tag →

Text

← End Tag →

← Element →



Tags and Elements :

1. XML element **names** are **Case Sensitive** :

   < Name> Samuel Clinton < / name > Wrong

   < name> Samuel Clinton < / Name > Wrong

   < name> Samuel Clinton < / name > Correct

2. XML document should have **One Root Element** :

   < x > .... </ x >
   < y > ....</ y >
   } Wrong because No Root Element

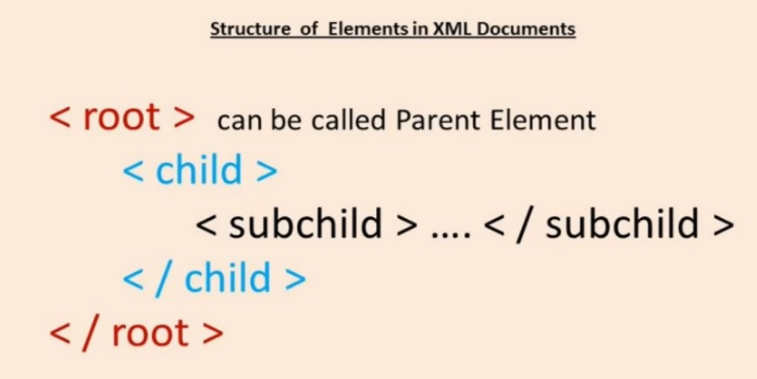
   Root Element

   < a >
   < x > ....< / x >
   < y > ....< / y >
   } Correct

3. Elements **should not overlap** :

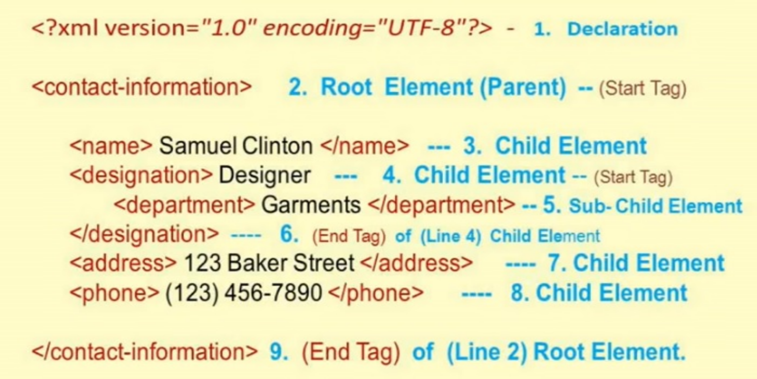
   < book > <author> Robert Lang </book> </author > Wrong (Not properly nested)

   < book > < author> Robert Lang </author> </book > Correct (properly nested)

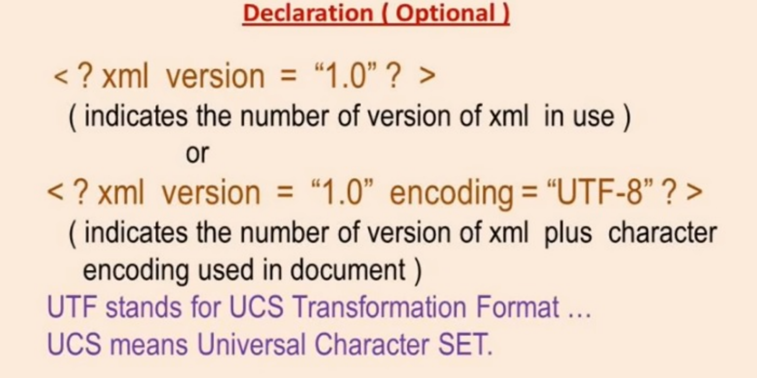


Structure of Elements in XML Documents

```
< root >  can be called Parent Element
    < child >
        < subchild > .... < / subchild >
    < / child >
< / root >
```



```
<?xml version="1.0" encoding="UTF-8"?>  -  1. Declaration

<contact-information>    2. Root Element (Parent) -- (Start Tag)

    <name> Samuel Clinton </name>  --- 3. Child Element
    <designation> Designer   ---   4. Child Element -- (Start Tag)
        <department> Garments </department> -- 5. Sub-Child Element
    </designation>  ----  6. (End Tag) of (Line 4) Child Element
    <address> 123 Baker Street </address>    ---- 7. Child Element
    <phone> (123) 456-7890 </phone>     ----  8. Child Element

</contact-information> 9. (End Tag) of (Line 2) Root Element.
```



Declaration (Optional)

< ? xml version = “1.0” ? >

(indicates the number of version of xml in use)

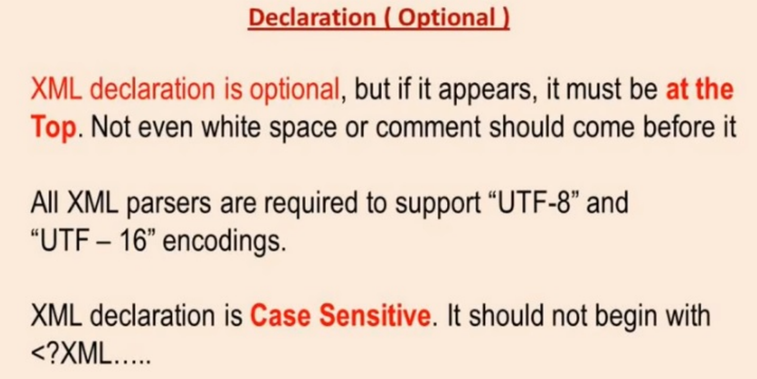
or

< ? xml version = “1.0” encoding = “UTF-8” ? >

(indicates the number of version of xml plus character encoding used in document)

UTF stands for UCS Transformation Format …

UCS means Universal Character SET.



Declaration (Optional)

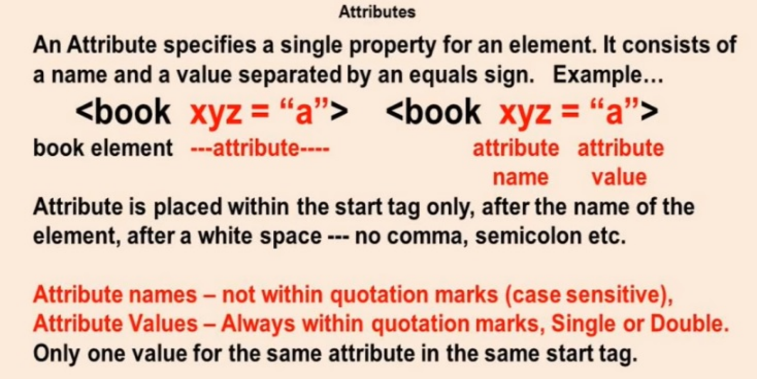
XML declaration is optional, but if it appears, it must be **at the Top**. Not even white space or comment should come before it

All XML parsers are required to support “UTF-8” and “UTF – 16” encodings.

XML declaration is **Case Sensitive**. It should not begin with <?XML…..

XML

Attributes



Attributes

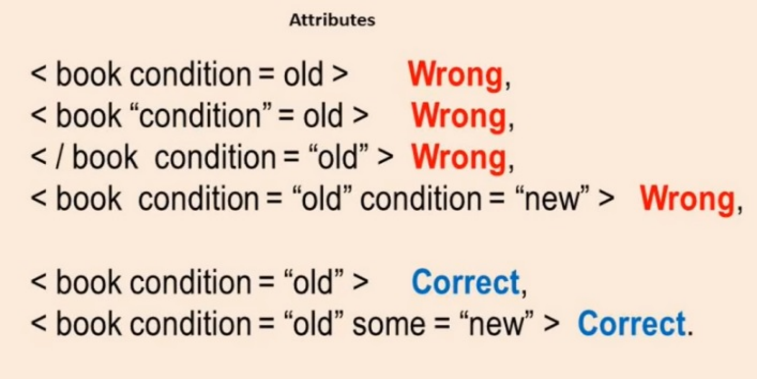
An Attribute specifies a single property for an element. It consists of a name and a value separated by an equals sign. Example...

<book xyz = “a”> <book xyz = “a”>

book element ---attribute---- attribute name attribute value

Attribute is placed within the start tag only, after the name of the element, after a white space --- no comma, semicolon etc.

Attribute names – not within quotation marks (case sensitive),
Attribute Values – Always within quotation marks, Single or Double.
Only one value for the same attribute in the same start tag.



Attributes

< book condition = old > **Wrong**,

< book “condition” = old > **Wrong**,

< / book condition = “old” > **Wrong**,

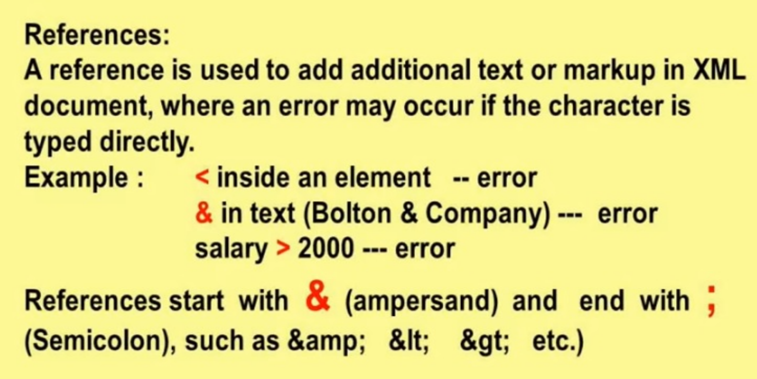
< book condition = “old” condition = “new” > **Wrong**,

< book condition = “old” > **Correct**,

< book condition = “old” some = “new” > **Correct**.

XML

References

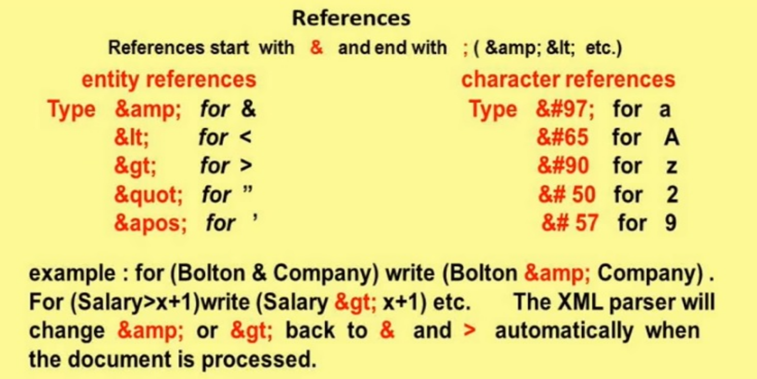


References:

A reference is used to add additional text or markup in XML document, where an error may occur if the character is typed directly.

Example : < inside an element -- error
& in text (Bolton & Company) --- error
salary > 2000 --- error

References start with & (ampersand) and end with ; (Semicolon), such as &amp; &lt; &gt; etc.)



References

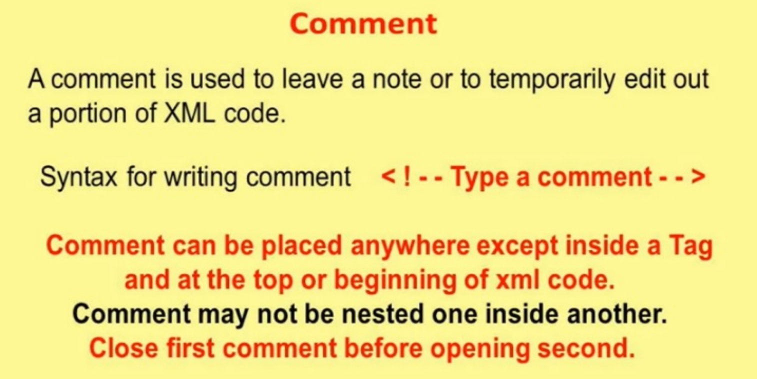
References start with & and end with ; (&amp; &lt; etc.)

entity references		character references	
Type &amp;	*for* &	Type &#97;	for a
&lt;	*for* <	&#65	for A
&gt;	*for* >	&#90	for z
&quot;	*for* ”	&# 50	for 2
&apos;	*for* ’	&# 57	for 9

example : for (Bolton & Company) write (Bolton &amp; Company) . For (Salary>x+1)write (Salary &gt; x+1) etc. The XML parser will change &amp; or &gt; back to & and > automatically when the document is processed.

XML

Comments



Comment

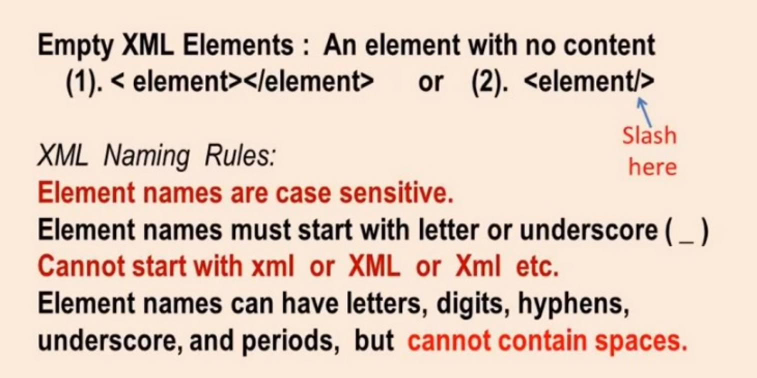
A comment is used to leave a note or to temporarily edit out a portion of XML code.

Syntax for writing comment **< ! - - Type a comment - - >**

Comment can be placed anywhere except inside a Tag and at the top or beginning of xml code.

Comment may not be nested one inside another.

Close first comment before opening second.



Empty XML Elements : An element with no content

(1). < element></element> or (2). <element/>

Slash here

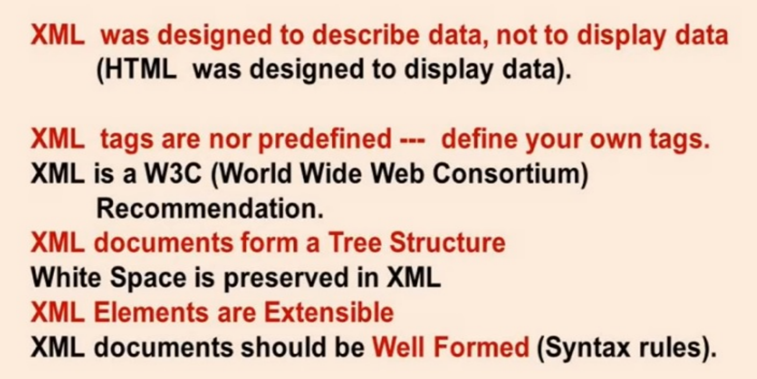
XML Naming Rules:

Element names are case sensitive.

Element names must start with letter or underscore (_)

Cannot start with xml or XML or Xml etc.

Element names can have letters, digits, hyphens, underscore, and periods, but cannot contain spaces.



XML was designed to describe data, not to display data (HTML was designed to display data).

XML tags are nor predefined --- define your own tags.

XML is a W3C (World Wide Web Consortium) Recommendation.

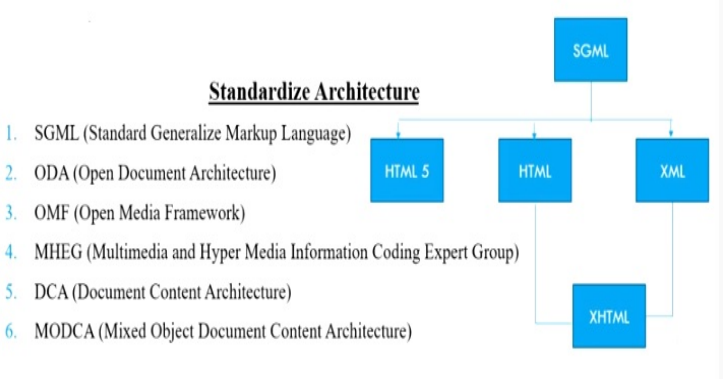
XML documents form a Tree Structure

White Space is preserved in XML

XML Elements are Extensible

XML documents should be Well Formed (Syntax rules).

Standard Generalized Markup Language (SGML)



Standardize Architecture

1. SGML (Standard Generalize Markup Language)
2. ODA (Open Document Architecture)
3. OMF (Open Media Framework)
4. MHEG (Multimedia and Hyper Media Information Coding Expert Group)
5. DCA (Document Content Architecture)
6. MODCA (Mixed Object Document Content Architecture)

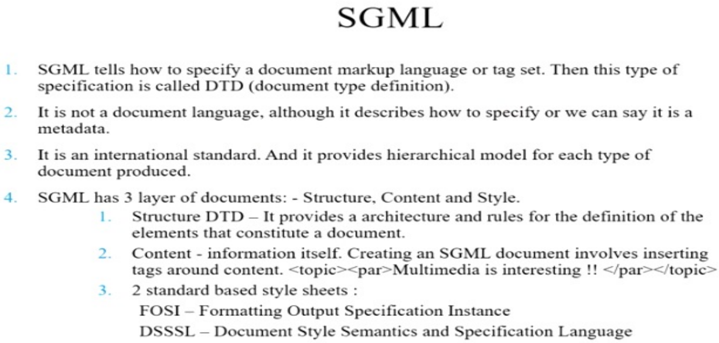
SGML

HTML 5

HTML

XML

XHTML

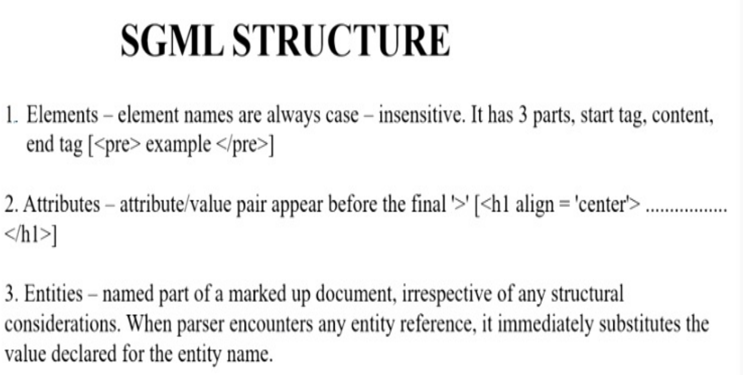


SGML

1. SGML tells how to specify a document markup language or tag set. Then this type of specification is called DTD (document type definition).
2. It is not a document language, although it describes how to specify or we can say it is a metadata.
3. It is an international standard. And it provides hierarchical model for each type of document produced.
4. SGML has 3 layer of documents: - Structure, Content and Style.
    1. Structure DTD – It provides a architecture and rules for the definition of the elements that constitute a document.
    2. Content - information itself. Creating an SGML document involves inserting tags around content. <topic><par>Multimedia is interesting !! </par></topic>
    3. 2 standard based style sheets :

       FOSI – Formatting Output Specification Instance

       DSSSL – Document Style Semantics and Specification Language

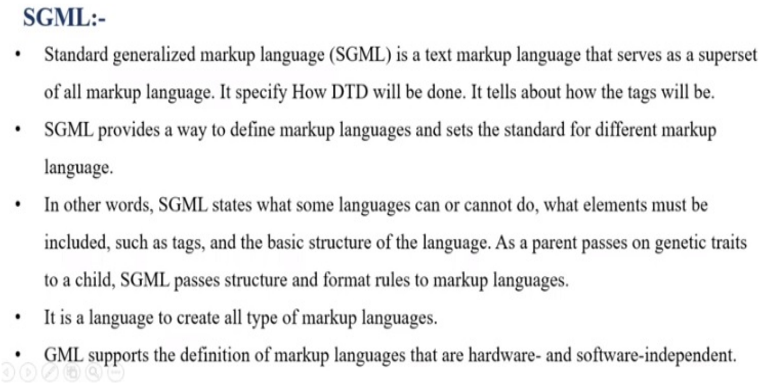


SGML STRUCTURE

1. Elements – element names are always case – insensitive. It has 3 parts, start tag, content, end tag [<pre> example </pre>]

2. Attributes – attribute/value pair appear before the final '>' [<h1 align = 'center'> .... </h1>]

3. Entities – named part of a marked up document, irrespective of any structural considerations. When parser encounters any entity reference, it immediately substitutes the value declared for the entity name.



SGML:-

- Standard generalized markup language (SGML) is a text markup language that serves as a superset of all markup language. It specify How DTD will be done. It tells about how the tags will be.
- SGML provides a way to define markup languages and sets the standard for different markup language.
- In other words, SGML states what some languages can or cannot do, what elements must be included, such as tags, and the basic structure of the language. As a parent passes on genetic traits to a child, SGML passes structure and format rules to markup languages.
- It is a language to create all type of markup languages.
- GML supports the definition of markup languages that are hardware- and software-independent.

References

- Web Enabled Commercial Application Development Using HTML, DHTML, Java Script, Perl & CGI -Ivan Bayross (BPB Publication), 2005.
- Internet and WebTechnologies, RAJ KAMAL, Tata McGraw Hill.
- Java Server Pages–Hans Bergsten, SPD O'Reilly.
- www.w3c.org

Thank You for Your Attention!

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