**XML TUTORIAL**

**What is XML?**

* XML stands for eXtensible Markup Language.
* XML was designed to store and transport data.
* XML was designed to be both human- and machine-readable.
* **XML is extensible** − XML allows you to create your own self-descriptive tags, or language, that suits your application.

**XML USAGE:**

* XML can work behind the scene to simplify the creation of HTML documents for large web sites.
* XML can be used to exchange the information between organizations and systems.
* XML can be used to store and arrange the data, which can customize your data handling needs.
* XML can easily be merged with style sheets to create almost any desired output.
* Virtually, any type of data can be expressed as an XML document.

**Example:**

<?xml version="1.0" encoding="UTF-8"?>

<main>

<student>

<id>1</id>

<name>Muhammad Farhan</name>

<fname>Muhammad Ramzan</fname>

</student>

</main>

**Why Study XML ?**

* XML plays an important role in many different IT systems.
* XML is often used for distributing data over the Internet.
* It is important (for all types of software developers!) to have a good understanding of XML.

## XML Declaration

The XML document can optionally have an XML declaration. It is written as follows −

<?xml version = "1.0" encoding = "UTF-8"?>

XML tags are Case Sensitive.

**XML ELEMENTS:**

**XML elements** can be defined as building blocks of an XML. Elements can behave as containers to hold text, elements, attributes, media objects or all of these.

Each XML document contains one or more elements, the scope of which are either delimited by start and end tags, or for empty elements, by an empty-element tag.

**Syntax:**

<element-name attribute1 attribute2>

....content

</element-name>

**Elements with Attribute and value:**

<?xml version = "1.0"?>

<contact-info>

<address category = "residence">

<name>Tanmay Patil</name>

<company>TutorialsPoint</company>

<phone>(011) 123-4567</phone>

</address>

</contact-info>

**XML ELEMENTS RULES:**

Following rules are required to be followed for XML elements −

* An element *name* can contain any alphanumeric characters. The only punctuation mark allowed in names are the hyphen (-), under-score (\_) and period (.).
* Names are case sensitive. For example, Address, address, and ADDRESS are different names.
* Start and end tags of an element must be identical.
* An element, which is a container, can contain text or elements as seen in the above example.

**XML Comments:**

Comments can be used to include related links, information, and terms. They are visible only in the source code; not in the XML code. Comments may appear anywhere in XML code.

**Syntax:**

<!--Your comment-->

**XML COMMENTS RULES:**

Following rules should be followed for XML comments −

* Comments cannot appear before XML declaration.
* Comments may appear anywhere in a document.
* Comments must not appear within attribute values.
* Comments cannot be nested inside the other comments.

**XML Namespace:**

XML Namespaces provide a method to avoid element name conflicts.

**Name Conflict:**

In XML, element names are defined by the developer. This often results in a conflict when trying to mix XML documents from different XML applications.

**XML Namespace – The XMLNS Attribute:**

When using prefixes in XML, a **namespace** for the prefix must be defined.

The namespace can be defined by an **xmlns** attribute in the start tag of an element.

The namespace declaration has the following syntax. xmlns:*prefix*="*URI*".

**Example:**

<table xmlns:ab="https://www.ourwesbsite.com/furniture">  
  <ab:name>African Coffee Table</ab:name>  
  <ab:width>80</ab:width>  
  <ab:length>120</ab:length>  
</table>

**XML Validator:**

## Well Formed XML Documents”

An XML document with correct syntax is called "Well Formed".

The syntax rules were described in the previous chapters:

* XML documents must have a root element
* XML elements must have a closing tag
* XML tags are case sensitive
* XML elements must be properly nested
* XML attribute values must be quoted

**Valid XML Documents:**

A "well formed" XML document is not the same as a "valid" XML document.

A "valid" XML document must be well formed. In addition, it must conform to a document type definition.

There are two different document type definitions that can be used with XML:

* DTD - The original Document Type Definition
* XML Schema - An XML-based alternative to DTD

A document type definition defines the rules and the legal elements and attributes for an XML document.

**XML DTD :**

An XML document with correct syntax is called "Well Formed".

An XML document validated against a DTD is both "Well Formed" and "Valid".

**What is DTD?**

DTD stands for Document Type Definition.

A DTD defines the structure and the legal elements and attributes of an XML document.