



## XML Tutorial

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# XML Syntax Rules

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The syntax rules of XML are very simple and logical. The rules are easy to learn, and easy to use.

## XML Documents Must Have a Root Element

XML documents must contain one **root** element that is the **parent** of all other elements:

```
<root>
  <child>
    <subchild>.....</subchild>
  </child>
```

XML Quiz

XML Certificate

## XML DOM

DOM Intro

DOM Nodes

DOM XMLHttpRequest

DOM Accessing

DOM Node Info

DOM Node List

DOM Traversing

DOM Navigating

DOM Get Values

DOM Change Nodes

DOM Remove Nodes

DOM Replace Nodes

DOM Create Nodes

DOM Add Nodes

DOM Clone Nodes

DOM Examples

## DOM Reference

DOM Node Types

DOM Node

DOM NodeList

DOM NamedNodeMap

```
</root>
```

In this example **<note>** is the root element:

```
<?xml version="1.0" encoding="UTF-8"?>
<note>
  <to>Tove</to>
  <from>Jani</from>
  <heading>Reminder</heading>
  <body>Don't forget me this weekend!</body>
</note>
```

## The XML Prolog

This line is called the XML **prolog**:

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

The XML prolog is optional. If it exists, it must come first in the document.

XML documents can contain international characters, like Norwegian øæå or French êèé.

To avoid errors, you should specify the encoding used, or save your XML files as UTF-8.

DOM Document  
DOM Element  
DOM Attribute  
DOM Text  
DOM CDATA  
DOM Comment  
DOM XMLHttpRequest  
DOM Parser

## Web Services

XML Services  
XML WSDL  
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## XML DTD

DTD Intro  
DTD Building Blocks  
DTD Elements  
DTD Attributes  
DTD Elements vs Attr  
DTD Entities  
DTD Examples

UTF-8 is the default character encoding for XML documents.

Character encoding can be studied in our [Character Set Tutorial](#).



UTF-8 is also the default encoding for HTML5, CSS, JavaScript, PHP, and SQL.

## All XML Elements Must Have a Closing Tag

In HTML, some elements might work well, even with a missing closing tag:

```
<p>This is a paragraph.  
<br>
```

In XML, it is illegal to omit the closing tag. All elements **must** have a closing tag:

```
<p>This is a paragraph.</p>  
<br />
```



The XML declaration does not have a closing tag.  
This is not an error. The declaration is not a part of XML.

## XSD Schema

XSD Intro

XSD Why Use

XSD How To

XSD <schema>

## XSD Simple

XSD Elements

XSD Attributes

XSD Restrictions

## XSD Complex

XSD Elements

XSD Empty

XSD Elements Only

XSD Text Only

XSD Mixed

XSD Indicators

XSD <any>

XSD <anyAttribute>

XSD Substitution

XSD Example

## XSD Data

XSD String

# XML Tags are Case Sensitive

XML tags are case sensitive. The tag <Letter> is different from the tag <letter>.

Opening and closing tags must be written with the same case:

```
<Message>This is incorrect</message>  
<message>This is correct</message>
```

"Opening and closing tags" are often referred to as "Start and end tags". Use whatever you prefer. It is exactly the same thing.

# XML Elements Must be Properly Nested

In HTML, you might see improperly nested elements:

```
<b><i>This text is bold and italic</b></i>
```

In XML, all elements **must** be properly nested within each other:

```
<b><i>This text is bold and italic</i></b>
```

In the example above, "Properly nested" simply means that since the `<i>` element is opened inside the `<b>` element, it must be closed inside the `<b>` element.

---

## XML Attribute Values Must be Quoted

XML elements can have attributes in name/value pairs just like in HTML.

In XML, the attribute values must always be quoted.

INCORRECT:

```
<note date=12/11/2007>  
  <to>Tove</to>  
  <from>Jani</from>  
</note>
```

CORRECT:

```
<note date="12/11/2007">  
  <to>Tove</to>  
  <from>Jani</from>  
</note>
```

The error in the first document is that the date attribute in the note element is not quoted.

---

# Entity References

Some characters have a special meaning in XML.

If you place a character like "<" inside an XML element, it will generate an error because the parser interprets it as the start of a new element.

This will generate an XML error:

```
<message>salary < 1000</message>
```

To avoid this error, replace the "<" character with an **entity reference**:

```
<message>salary &lt; 1000</message>
```

There are 5 pre-defined entity references in XML:

&lt;	<	less than
&gt;	>	greater than
&amp;	&	ampersand
&apos;	'	apostrophe
&quot;	"	quotation mark



Only < and & are strictly illegal in XML, but it is a good habit to replace > with &gt; as well.

## Comments in XML

The syntax for writing comments in XML is similar to that of HTML.

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

Two dashes in the middle of a comment are not allowed.

Not allowed:

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

Strange, but allowed:

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

## White-space is Preserved in XML

XML does not truncate multiple white-spaces (HTML truncates multiple white-spaces to one single white-space):

XML:	Hello	Tove
HTML:	Hello Tove	

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## XML Stores New Line as LF

Windows applications store a new line as: carriage return and line feed (CR+LF).

Unix and Mac OSX uses LF.

Old Mac systems uses CR.

XML stores a new line as LF.

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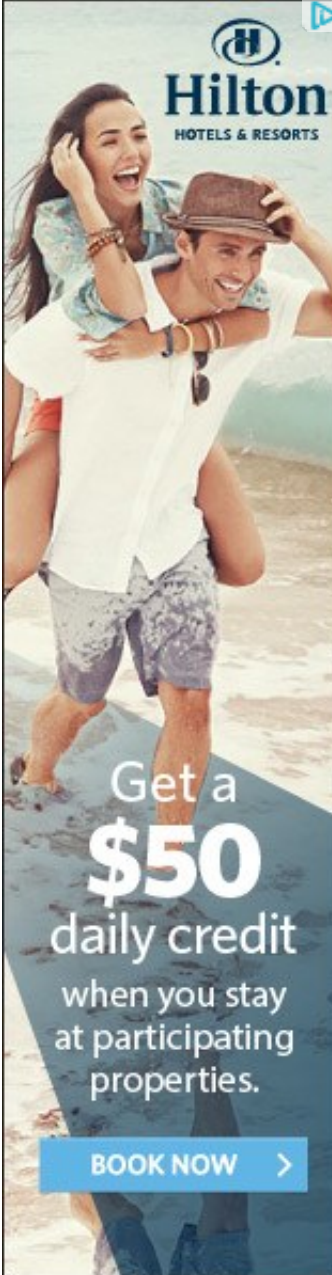
## Well Formed XML

XML documents that conform to the syntax rules above are said to be "Well Formed" XML documents.

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A vertical advertisement for Hilton Hotels & Resorts. The top section features the Hilton logo and the text "Hilton HOTELS & RESORTS" in a serif font. Below this, a man and a woman are shown on a beach. The man is carrying the woman on his shoulders; he is wearing a white short-sleeved shirt, patterned shorts, and a brown fedora, while the woman is wearing a blue patterned shirt and orange shorts. They are both smiling and looking towards the camera. The background shows a sandy beach and the ocean. In the lower half of the image, there is a dark blue overlay with white text that reads: "Get a \$50 daily credit when you stay at participating properties." At the bottom of this overlay is a blue button with the text "BOOK NOW" and a right-pointing chevron symbol. A small blue play button icon is located in the top right corner of the image frame.

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