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# Scripting languages II (LS2)

**Class 11**

# XML

Standing for *eXtensible Markup Language*, XML is a markup language used to store and transport data designed to be both human and machine readable. Although XML became less popular in the last couple of years (being replaced with JSON), it still plays an important role in many different IT systems and it is used in many aspects of web development.

XML doesn't depend on platform nor software nor programming language. This means it is possible to write a program in any language on any platform to send, receive or store data using XML. Mainly, just like PHP includes, for instance, XML is a complement to HTML used to separate data from presentation. You will be surprised to know that XML doesn't actually do anything. The XML tags, wrapped around different contents, are simply used to structure data. The XML file can then be used in a program to display the data.

## XML structure

XML resembles HTML in this sens that it uses opening and endings tags. But, XML using a self-describing syntax, there are no predefined tags in XML and they must be created accordingly to the database needs. Fields are grouped withing entries, and entries are grouped within a table in a child-sibling relationship.

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

**Explanation:**
The root can be viewed as the database itself or a table. The root contains all entries, the children which contain the same subchildren consisting into fields.
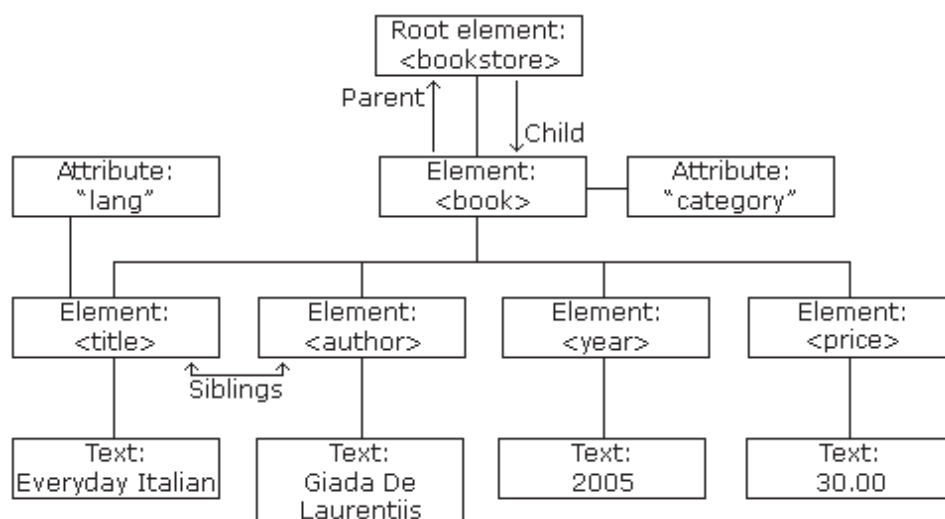


**Example of bookstore's database nodetree.**

```
<?xml version="1.0" encoding="UTF-8"?>          // XML prolog
<booklist>                                      // Table
        <book>                                  // Entry
                <title>Harry Potter</title>     // Field
                <author>J K. Rowling</author>
                <year>2005</year>
                <price>29.99</price>
        </book>
        <book>
                <title>The flowers of evil</title>
                <author>Charles Baudelaire</author>
                <year>1857</year>
                <price>39,95</price>
        </book>
</booklist>
```

**Explanation:**

The first line is called the XML prolog and tells the browers what language is being used, its version number and characters encoding. In XML, there are no predefined tags. In the above example, the database's table (the root) is defined by the tag <booklist>, and the entries are defined by <book> tags containing different fields.

## Viewing XML files

Once an XML document has been created and saved using XML extension, opening it in a browser would look like the example below.

This XML file does not appear to have any style information associated with it. The document tree is shown below.

```
▼<bookstore>
  ▼<book>
     <title>Poèmes Français</title>
     <author>Réjean Thomas</author>
     <year>2006</year>
     <price>14.99</price>
  </book>
  ▼<book>
     <title>Harry Potter</title>
     <author>J K. Rowling</author>
     <year>2005</year>
     <price>29.99</price>
  </book>
  ▼<book>
     <title>Le petit prince</title>
     <author>Antoine de Saint-Exupéry</author>
     <year>1943</year>
     <price>19.99</price>
  </book>
  ▼<book>
     <title>Learning XML</title>
     <author>Erik T. Ray</author>
     <year>2003</year>
     <price>39.95</price>
  </book>
  ▼<book>
     <title>L'avalée des avalés</title>
     <author>Réjean Ducharme</author>
     <year>1966</year>
```

## Styling XML files using CSS

Although this isn't the most proper way to display XML data, it is possible to use a CSS file to style an XML document's content. To do so, it is simply needed to link the XML document to a stylesheet.

**XML file:**

```xml
<?xml version="1.0" encoding="UTF-8"?>
<?xml-stylesheet type="text/css" href="mystyle.css"?>
<booklist>
        <book>
                ...
```

**CSS file:**

```css
bookstore {
        display: block;
        width: 600px;
        margin: auto;
        column-count: 2;
}

book {
        display:block;
        margin-bottom: 20px;
        padding: 10px;
        background-color : rgba(0,0,0,.1);
        break-inside: avoid-column;
        border: solid 1px black;
        box-shadow: 3px 3px 6px rgba(0,0,0,.25);
}

title,author,year,price {display : block;}

 title {
    font-size : 25px;
    font-weight : bold;
}
```

| **Poèmes Français**<br>Réjean Thomas<br>2006<br>14.99 | **Learning XML**<br>Erik T. Ray<br>2003<br>39.95 |
|---|---|
| **Harry Potter**<br>J K. Rowling<br>2005<br>29.99 | **L'avalée des avalés**<br>Réjean Ducharme<br>1966<br>39.95 |