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TY.BSc (Computer Science)

Semester-VI

Subject- Web Technologies II

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Chapter 2. XML

1. What is XML:

- **Xml** (eXtensible Markup Language) is a mark up language.
- XML is designed to store and transport data.
- Xml was released in late 90's. it was created to provide an easy to use and store self describing data.
- XML became a W3C Recommendation on February 10, 1998.
- XML is not a replacement for HTML.
- XML is designed to be self-descriptive.
- XML is designed to carry data, not to display data.
- XML tags are not predefined. You must define your own tags.
- XML is platform independent and language independent.

2. XML Document Structure

An XML document has a self descriptive structure. It forms a tree structure which is referred as an XML tree. The tree structure makes easy to describe an XML document.

A tree structure contains root element (as parent), child element and so on. It is very easy to traverse all succeeding branches and sub-branches and leaf nodes starting from the root.

```xml
<?xml version="1.0"?>
<college>
 <student>
    <firstname>Tamanna</firstname>
    <lastname>Bhatia</lastname>
    <contact>09990449935</contact>
    <email>tammanabhatia@abc.com</email>
    <address>
       <city>Ghaziabad</city>
       <state>Uttar Pradesh</state>
       <pin>201007</pin>
    </address>
```

</student>
</college>

The tree-structure representation of the above example.
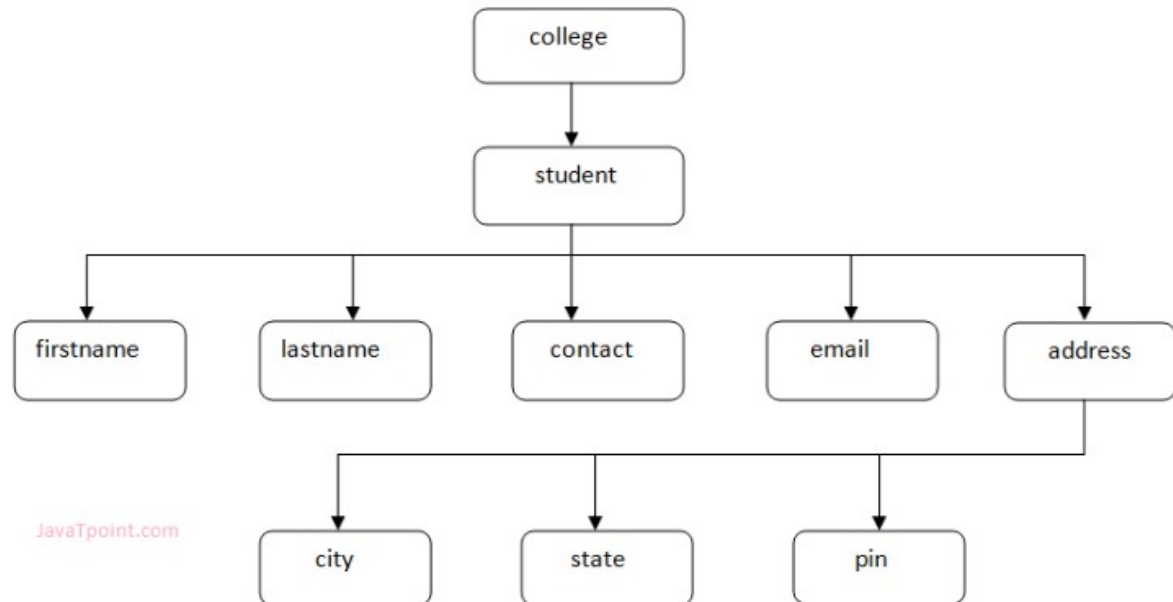
3. PHP and XML

XML is a markup language that looks a lot like HTML. An XML document is plain text and contains tags delimited by < and >.There are two big differences between XML and HTML

- XML doesn't define a specific set of tags you must use.
- XML is extremely picky about document structure.

Parsing an XML Document

SimpleXML module makes parsing an XML document, well, simple. It turns an XML document into an object that provides structured access to the XML.
To create a SimpleXML object from an XML document stored in a string, pass the string to simplexml_load_string( ). It returns a SimpleXML object.

Example:
```
<html>
  <body>
```

```php
<?php
$note=<<<XML

<note>
  <to>Gopal K Verma</to>
  <from>Sairamkrishna</from>
  <heading>Project submission</heading>
  <body>Please see clearly </body>
</note>

XML;
$xml=simplexml_load_string($note);
print_r($xml);
?>

</body>
</html>
```
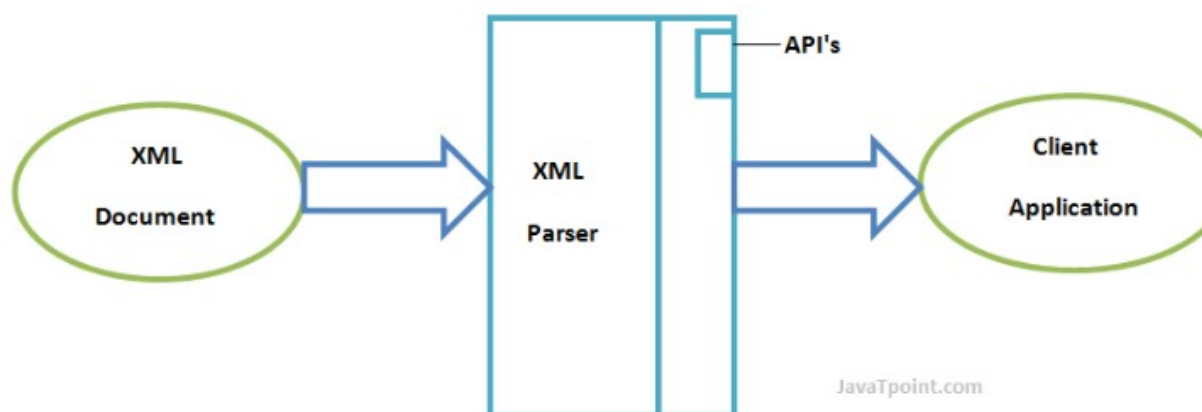
4.XML Parser

An XML parser is a software library or package that provides interfaces for client applications to work with an XML document. The XML Parser is designed to read the XML and create a way for programs to use XML.

XML parser validates the document and check that the document is well formatted
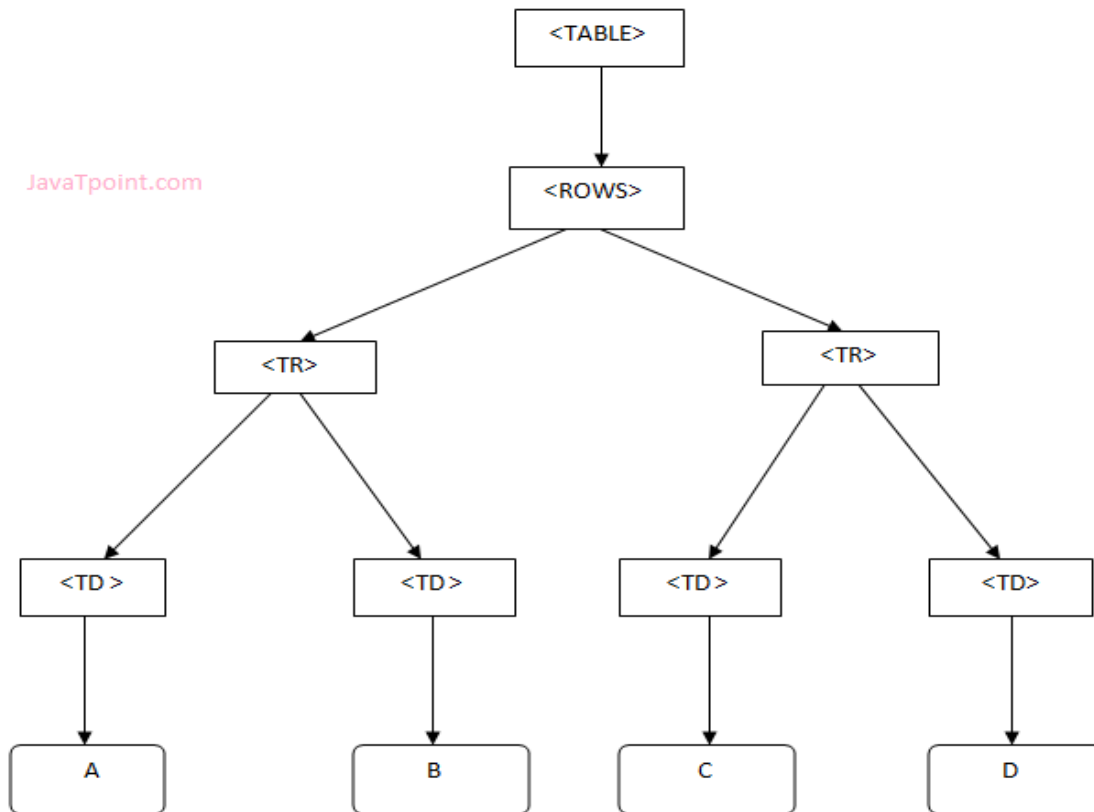

5.The XML DOM

DOM is an acronym stands for Document Object Model. It defines a standard way to access and manipulate documents. The Document Object Model (DOM) is a programming API for HTML and XML documents. It defines the logical structure of documents and the way a document is accessed and manipulated.

Document Object Model is to provide a standard programming interface that can be used in a wide variety of environments and applications. The Document Object Model can be used with any programming language.

XML DOM defines a standard way to access and manipulate XML documents.

The XML DOM makes a tree-structure view for an XML document.

```
<TABLE>
<ROWS>
<TR>
<TD>A</TD>
<TD>B</TD>
</TR>
<TR>
<TD>C</TD>
<TD>D</TD>
</TR>
</ROWS>
</TABLE>
```

```
                    ┌─────────┐
                    │ <TABLE> │
                    └────┬────┘
                         │
                         ▼
                    ┌─────────┐
                    │ <ROWS>  │
                    └────┬────┘
               ┌─────────┴─────────┐
               ▼                   ▼
          ┌─────────┐         ┌─────────┐
          │  <TR>   │         │  <TR>   │
          └────┬────┘         └────┬────┘
          ┌────┴────┐         ┌────┴────┐
          ▼         ▼         ▼         ▼
      ┌──────┐  ┌──────┐  ┌──────┐  ┌──────┐
      │ <TD> │  │ <TD> │  │ <TD> │  │ <TD> │
      └───┬──┘  └───┬──┘  └───┬──┘  └───┬──┘
          │         │         │         │
          ▼         ▼         ▼         ▼
      ┌──────┐  ┌──────┐  ┌──────┐  ┌──────┐
      │  A   │  │  B   │  │  C   │  │  D   │
      └──────┘  └──────┘  └──────┘  └──────┘
```

6. Changing Value with SimpleXML

SimpleXML is a PHP extension that allows us to easily manipulate and get XML data SimpleXML is a tree-based parser.

SimpleXML provides an easy way of getting an element's name, attributes and textual content if you know the XML document's structure or layout. SimpleXML turns an XML document into a data structure you can iterate through like a collection of arrays and objects. Compared to DOM or the Expat parser, SimpleXML takes a fewer lines of code to read text data from an element.

The PHP simplexml_load_string() function is used to read XML data from a string.

```
$myXMLData =
"<?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>";
```

```php
<?php
$myXMLData =
"<?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>";

$xml=simplexml_load_string($myXMLData) or die("Error: Cannot create
object");
print_r($xml);
?>
```