Late Reverend Father Shri. Maskuji Biruji Burungale Education Society, Shegaon's

SHRI DNYANESHWAR MASKUJI BURUNGALE SCIENCE & ARTS COLLEGE, SHEGAON

DEPARTMENT OF COMPUTER SCIENCE

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UNIT-VI

DTD and XML Schema

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Introduction

XML

- eXtensible Markup Language
- Describe the data
- Exchange, share, and store data
- Free and user-define tags
- Plate-form independant

Sample XML document

```
<?xml version="1.0"?>
<Address>
    <fName> Baby Altamash </fName>
    <sName> Mohd. Sabir </sName>
    <City> Shegaon </City>
    <State> Maharashtra </State>
</Address>
```

Valid XML document

- A document must be Well-formed.
- The document must have a DTD or XML Schema, which declares every element, attributes and entities used in the document.
- The document must follow the grammer established by DTD.

DTD
Document Type Definition

- DTD is a way to specify the structure of an XML document.
- To help in eliminating errors while creating and editing xml document.
- To specify a grammer of an XML document.
- Define and provide name of the element, attribute, child element.
- Content, used in a XML document.

DTD : Example

```
<?xml version="1.0"?>

<!DOCTYPE  Address [
  <!ELEMENT  Address(fName, sName, City, State)>
  <!ELEMENT  fName(#PCDATA)>
  <!ELEMENT  sName(#PCDATA)>
  <!ELEMENT  City(#PCDATA)>
  <!ELEMENT  State(#PCDATA)>
]>

<Address>
     <fName>  Baby  Altamash </fName>
     <sName>  Mullagi </sName>
     <City>   Shegaon  </City>
     <State>  Maharashtra </State>
</Address>
```

Limitations of DTD

- Not written in XML syntax.
- No support for namespaces.
- Support a very limited capability for specifying datatypes.
- DTD supports only10 datatypes.
- Cann't create userdefine data type.

To shortcome the limitation of DTD, XML schema is used.

XML Schema

- Describe structure of the document.
- Define and provide elements, attributes.
- Sequence and number of child elements.
- Define whether element is empty or include any text.
- Define data-types for elements and attributes.

Features of XML Schema

- Text content
- Typed data
- Text patterns
- Complex content models
- Derived type
- Namespaces

Advantages of XML Schema

- Enhanced datatypes 37+.
- Can create own datatypes
- Schema written in XML.
- Child element may occur in any order.
- Define element with null content.
- Define multiple element with the same name but different content.
- Supports namespaces.

DTD vs. XML Schema

DTD	XML SCHEMA
DTD based on specialized syntax.	XML schema based on XML.
DTD supports only one data type which is string.	It supports variety of data types such as int, char, float.
It doesn’t support namespaces.	It supports namespaces.
DTD’s are compact.	XML schema are not compact.
In DTD #PCDATA is used to declare an element for parsing the character data.	In XML schema data content and data types of the element are used.

Example

An XML document:

```
<?xml version="1.0"?>
<Notebook line="double">
     <pages> 200  </pages>
     <price> 35  </price>
</Notebook>
```

A DTD for the above XML document:

```
<!ELEMENT Notebook(pages, price)>
<!ELEMENT pages(#PCDATA)>
<!ELEMENT price(#PCDATA)>
<!ATTLIST Notebook line CDATA #REQUIRED>
```

Contd ...

Example *Contd ...*

An xml schema for previous XML Document:

```
<xml version="1.0"?>
<xsd:schema
      xmlns:xsd=http://www.w3.org/2001/XMLSchema">
  <xsd:element name="Notebook">
    <xsd:complexType>
      <xsd:sequence>
        <xsd:element name="pages" type="xsd:integer"/>
        <xsd:element name="price" type="xsd:integer"/>
      </xsd:sequence>
      <xsd:attribute name="line" type="xsd:string"/>
    </xsd:complexType>
  </xsd:element>
</xsd:schema>
```

Questions

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Thank you