WEEK-6

Objective: To learn about the transformation of data from one format to another form and storing of data using XML.

Aim:

Write an XML to store student details which includes student id, student name, phone number, address and cgpa.

DTD rules:

i)While storing student name last name has to be attribute and first name has to be child.

ii)While storing phone number a student can have more than one phonenumber.

XML Schema rules:

i)Student name should not contain any kind of digits and first name, last name must be strings.

ii)Phone number must not contain letters and must be length of 10.

iii)cgpa must be float and should store in range **(0 < cgpa ≤ 10)**.

Program:

#XML

```
<?xml version="1.0" ?>
<StudentInfo>
  <student>
    <sid>1201</sid>
        <sname lname="Doe">John</sname>
    <phnum>9988664422</phnum>
    <addr>
       <area>Dolphin Heights</area>
       <city>Vizianagaram </city>
    </addr>
    <res cgpa="9.0">
            <sgpa>8.9</sgpa>
          </res>
  </student>

  <student>
    <sid>1202</sid>
        <sname lname="jill">jack</sname>
    <phnum>9658743521</phnum>
    <addr>
       <area>Vasanth Vihar</area>
       <city>Vizianagaram </city>
    </addr>
    <res cgpa="9.22">
            <sgpa>9.01</sgpa>
          </res>
```

```xml
      </student>

      <student>
        <sid>1203</sid>
             <sname lname="Vendra">Himaja</sname>
        <phnum>9133663477</phnum>
        <addr>
          <area>MVP colony</area>
          <city>Vishakapatnam</city>
        </addr>
        <res cgpa="8.7">
             <sgpa>8.4</sgpa>
             </res>
      </student>

      <student>
        <sid>1204</sid>
             <sname lname="kandula">Roshini</sname>
        <phnum>9536663407</phnum>
        <addr>
          <area>NAD</area>
          <city>Vishakapatnam</city>
        </addr>
        <res cgpa="8.6">
             <sgpa>7.5</sgpa>
             </res>
      </student>

      <student>
        <sid>1205</sid>
             <sname lname="jasmine">Mary</sname>
        <phnum>6503981272</phnum>
        <addr>
          <area>Gajuwaka</area>
          <city>Vishakapatnam</city>
        </addr>
        <res cgpa="6.5">
             <sgpa>7.0</sgpa>
             </res>
      </student>
</StudentInfo>
```
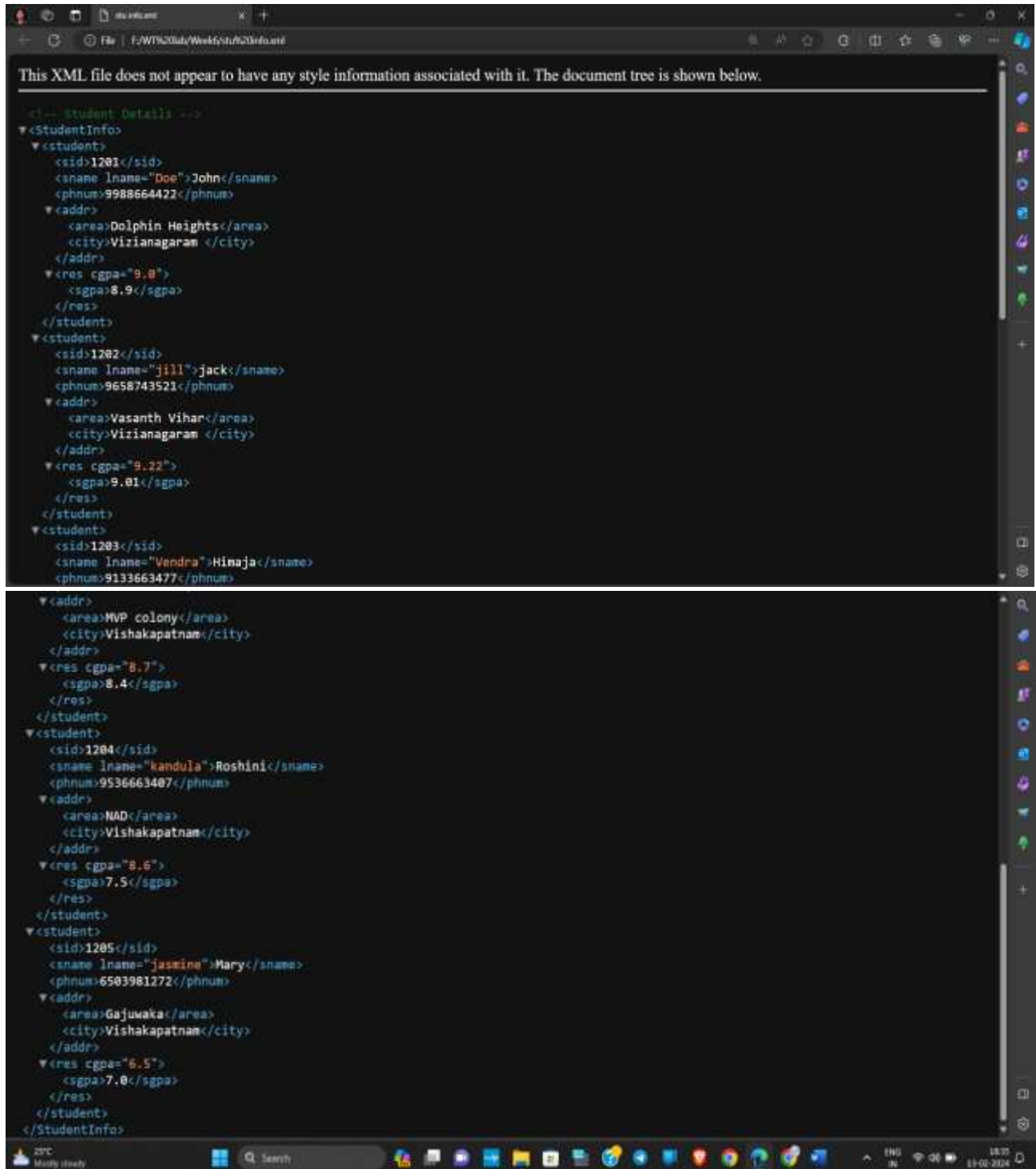
21331A201

Output:

21331A201

#DTD

```
<!DOCTYPE StudentInfo
[
 <!ELEMENT StudentInfo (student)+>
 <!ELEMENT student (sid,sname,phnum,addr,res)>
 <!ELEMENT sid (#PCDATA)>
 <!ELEMENT sname (#PCDATA)>
 <!ELEMENT phnum (#PCDATA)>
 <!ELEMENT addr (area,city)>
 <!ELEMENT area (#PCDATA) >
 <!ELEMENT city (#PCDATA) >
 <!ELEMENT res (sgpa)>
 <!ELEMENT sgpa (#PCDATA)>
 <!ATTLIST sname lname  CDATA  #REQUIRED >
 <!ATTLIST res cgpa CDATA  #REQUIRED >
]>
```

Output:

When more than one student is not specified.

When sid is not declared in internal dtd.

```
1   <?xml version="1.0" ?>
2
3   <!DOCTYPE StudentInfo
4   [
5   <!ELEMENT StudentInfo (student)+>
6   <!ELEMENT student (sname,phnum,addr,res)>
7   <!ELEMENT sid (#PCDATA)>
8   <!ELEMENT sname (#PCDATA)>
9   <!ELEMENT phnum (#PCDATA)>
10  <!ELEMENT addr (area,city)>
11  <!ELEMENT area (#PCDATA) >
12  <!ELEMENT city (#PCDATA) >
13  <!ELEMENT res (sgpa)>
14  <!ELEMENT sgpa (#PCDATA)>
15  <!ATTLIST sname lname  CDATA  #REQUIRED >
16  <!ATTLIST res cgpa CDATA  #REQUIRED >
17  ]>
18
```

▼ Validation result   ×

Syntax wellformed   PASSED

DTD validation   FAILED

Line 21 Element student content does not follow the DTD, expecting (sname , phnum , addr , res), got (sid sname phnum addr res)

Line 34 Element student content does not follow the DTD, expecting (sname , phnum , addr , res), got (sid sname phnum addr res)

Line 47 Element student content does not follow the DTD, expecting (sname , phnum , addr , res), got (sid sname phnum addr res)

Line 60 Element student content does not follow the DTD, expecting (sname , phnum , addr , res), got (sid sname phnum addr res)

Line 73 Element student content does not follow the DTD, expecting (sname , phnum , addr , res), got (sid sname phnum addr res)

Upload...   Load url   Actions ▼   Validate

When the sequence of elements changed in xml

```
8   <!ELEMENT sname (#PCDATA)>
9   <!ELEMENT phnum (#PCDATA)>
10  <!ELEMENT addr (area,city)>
11  <!ELEMENT area (#PCDATA) >
12  <!ELEMENT city (#PCDATA) >
13  <!ELEMENT res (sgpa)>
14  <!ELEMENT sgpa (#PCDATA)>
15  <!ATTLIST sname lname  CDATA  #REQUIRED >
16  <!ATTLIST res cgpa CDATA  #REQUIRED >
17  ]>
18
19  <!--Student Details-->
20  <StudentInfo>
21    <student>
22      <sid>1201</sid>
23      <phnum>9988664422</phnum>
24      <sname lname="Doe">John</sname>
25
```

▼ Validation result   ×

Syntax wellformed   PASSED

DTD validation   FAILED

Line 21 Element student content does not follow the DTD, expecting (sid , sname , phnum , addr , res), got (sid phnum sname addr res)

XSD validation   OMITTED

No schema reference provided using either xsi:schemaLocation or xsi:noNamespaceSchemaLocation attribute.

Want to cover various integrity and conditional requirements as well? Check video tutorials to setup test profiles for professional use cases. Sign up now »

Upload...   Load url   Actions ▼   Validate

```
1   <?xml version="1.0" ?>
2
3   <!DOCTYPE Studentinfo
4   [
5   <!ELEMENT StudentInfo (student)+>
6   <!ELEMENT student (sid,sname,phnum,addr,res)>
7   <!ELEMENT sid (#PCDATA)>
8   <!ELEMENT sname (#PCDATA)>
9   <!ELEMENT phnum (#PCDATA)>
10  <!ELEMENT addr (area,city)>
11  <!ELEMENT area (#PCDATA) >
12  <!ELEMENT city (#PCDATA) >
13  <!ELEMENT res (sgpa)>
14  <!ELEMENT sgpa (#PCDATA)>
15  <!ATTLIST sname lname  CDATA  #REQUIRED >
16  <!ATTLIST res cgpa CDATA  #REQUIRED >
17  ]>
18
```

▼ Validation result ✕

Syntax wellformed	PASSED
DTD validation	PASSED
XSD validation	OMITTED

No schema reference provided using either xsi:schemaLocation or xsi:noNamespaceSchemaLocation attribute.

Want to cover various integrity and conditional requirements as well?
Check video tutorials to setup test profiles for professional use cases.
Sign up now »

Upload...   Load url   Actions ▼   Validate

#XML Schema

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema">
<xs:element name="StudentInfo">
<xs:complexType>
<xs:sequence>
  <xs:element name="student" minOccurs="1" maxOccurs="unbounded" >
    <xs:complexType>
      <xs:sequence>
            <xs:element name="sid" type="xs:integer"/>
            <xs:element name="sname">
               <xs:complexType>
                  <xs:simpleContent>
                      <xs:extension base="xs:string">
                        <xs:attribute name="lname" type="xs:string"/>
                      </xs:extension>
                  </xs:simpleContent>
               </xs:complexType>
            </xs:element>
            <xs:element name="phnum" minOccurs="1" maxOccurs="unbounded">
               <xs:simpleType>
                 <xs:restriction base="xs:integer">
                   <xs:pattern value="[0-9]{10}"/>
                 </xs:restriction>
               </xs:simpleType>
             </xs:element>
             <xs:element name="addr">
                <xs:complexType>
                   <xs:sequence>
                      <xs:element name="area" type="xs:string"/>
                      <xs:element name="city" type="xs:string"/>
                   </xs:sequence>
                </xs:complexType>
             </xs:element>
             <xs:element name="res">
                <xs:complexType>
                 <xs:sequence>
                    <xs:element name="sgpa"  type="xs:decimal"/>
                 </xs:sequence>
                 <xs:attribute name="cgpa">
                     <xs:simpleType>
                     <xs:restriction base="xs:decimal">
                          <xs:minInclusive value="1"/>
                          <xs:maxInclusive value="10"/>
                     </xs:restriction>
                     </xs:simpleType>
                 </xs:attribute>
               </xs:complexType>
            </xs:element>
         </xs:sequence>
       </xs:complexType>
      </xs:element>
```

21331A201

```
    </xs:sequence>
  </xs:complexType>
 </xs:element>
</xs:schema>
```

Output:

XML schema (XSD) data

```
1  <?xml version="1.0" encoding="UTF-8"?>
2  <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema">
3  <xs:element name="StudentInfo">
4  <xs:complexType>
5  <xs:sequence>
6    <xs:element name="student" minOccurs="1"  >
7      <xs:complexType>
8      <xs:sequence>
9          <xs:element name="sid" type="xs:integer"/>
10             <xs:element name="sname">
11                 <xs:complexType>
12                     <xs:simpleContent>
13                         <xs:extension base="xs:string">
```

Validate

Errors

Severity	Location	Filename	Message
❌	16:13	sample.xml	cvc-complex-type.2.4.d: Invalid content was found starting with element 'student'. No child element is expected at this point.

XML schema (XSD) data

```
13                         <xs:extension base="xs:string">
14                             <xs:attribute name="lname" type="xs:string"/>
15                         </xs:extension>
16                     </xs:simpleContent>
17                 </xs:complexType>
18             </xs:element>
19         <xs:element name="phnum" minOccurs="1" maxOccurs="unbounded">
20             <xs:simpleType>
21                 <xs:restriction base="xs:integer">
22                 <xs:pattern value="[0-9]"/>
23                 </xs:restriction>
24             </xs:simpleType>
25         </xs:element>
```

alidate

Errors

Severity	Location	Filename	Message
❌	6:32	sample.xml	cvc-pattern-valid: Value '9988664422' is not facet-valid with respect to pattern '[0-9]' for type '#AnonType_phnumstudentStudentInfo'.

107

21331A201

XML schema (XSD) data

```
1  <?xml version="1.0" encoding="UTF-8"?>
2  <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema">
3  <xs:element name="StudentInfo">
4  <xs:complexType>
5  <xs:sequence>
6    <xs:element name="student" minOccurs="1" maxOccurs="unbounded" >
7      <xs:complexType>
8      <xs:sequence>
9          <xs:element name="sid" type="xs:integer"/>
10             <xs:element name="sname">
11                 <xs:complexType>
12                     <xs:simpleContent>
13                         <xs:extension base="xs:string">
```

[Validate]

Document Valid

#XSLT

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet version="1.0"
xmlns:xsl="http://www.w3.org/1999/XSL/Transform">
  <xsl:template match="/">
    <html>
      <head>
        <style>
          table {
            border-collapse: collapse;
            width: 100%;
          }
          th, td {
            border: 1px solid black;
            text-align: center;
                    padding:2px;
          }

        </style>
      </head>
      <body>
        <h2>Student Information</h2>
        <table>
          <tr>
            <th rowspan="2">Student Id</th>
            <th colspan="2">Student Name</th>
            <th rowspan="2">Phone Number</th>
            <th colspan="2">Address</th>
            <th colspan="2">Result</th>
          </tr>
          <tr>
            <th>First name</th>
            <th>Last name</th>
            <th>Area</th>
            <th>City</th>
            <th>CGPA</th>
            <th>SGPA</th>
          </tr>
          <xsl:apply-templates select="StudentInfo/student"/>
        </table>
      </body>
    </html>
  </xsl:template>
  <xsl:template match="student">
    <tr>
      <td><xsl:value-of select="sid"/></td>
      <td><xsl:value-of select="sname"/></td>
      <td><xsl:value-of select="sname/@lname"/></td>
      <td><xsl:value-of select="phnum"/></td>
      <td><xsl:value-of select="addr/area"/></td>
      <td><xsl:value-of select="addr/city"/></td>
      <td><xsl:value-of select="res/@cgpa"/></td>
      <td><xsl:value-of select="res/sgpa"/></td>
```

21331A201

```
        </tr>
    </xsl:template>
</xsl:stylesheet>
```

Output: