Assignment – 11

XML Lab

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A schema is an XML document that describes the structure of another XML document. A schema can be used to check that an XML document has the required structure.

Exercise 1

Create a schema to describe the following XML document

```
<orders>
<orderItem>
<item>washer</item>
<code>4352</code>
<quantity>100</quantity>
<cost>23.6</cost>
</orderItem>
<orderItem>
<item>nut</item>
<code>43
72</code>
<quantity>100</quantity>
<cost>55.6</cost>
</orderItem>
<customer>Acme Engineering</customer>
```

```
<totalCost>79.12</totalCost>
</orders>
```

The XML schema for the above XML file will be

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema attributeFormDefault="unqualified" elementFormDefault="qualified"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:element name="orders">
    <xs:complexType>
      <xs:sequence>
        <xs:element maxOccurs="unbounded" name="orderItem">
          <xs:complexType>
            <xs:sequence>
              <xs:element name="item" type="xs:string" />
              <xs:element name="code" type="xs:unsignedShort" />
              <xs:element name="quantity" type="xs:unsignedByte" />
              <xs:element name="cost" type="xs:decimal" />
            </xs:sequence>
          </xs:complexType>
        </xs:element>
        <xs:element name="customer" type="xs:string" />
        <xs:element name="totalCost" type="xs:decimal" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
</xs:schema>
```

Exercise-2

Create a schema to describe both of the following XML documents.

<addresses>

<address>

<houseNo>Usher</houseNo>

<street>High</street>

<city>Hull</city>

</address>

</addresses>

<addresses>

<address>

<street>High</street>

<city>Hull</city>

</address>

<address>

<street>High</street>

<city>Hull</city> <postCode>HU1 2ER</postCode>

</address>

</addresses>

The XML schema for the above XML document will be

<?xml version="1.0" encoding="utf-8"?>

<xs:schema attributeFormDefault="unqualified" elementFormDefault="qualified" xmlns:xs="http://www.w3.org/2001/XMLSchema">

```
 <xs:element name="addresses">
  <xs:complexType>
   <xs:sequence>
    <xs:element name="address">
     <xs:complexType>
      <xs:sequence>
       <xs:element name="houseNo" type="xs:string" />
       <xs:element name="street" type="xs:string" />
       <xs:element name="city" type="xs:string" />
      </xs:sequence>
     </xs:complexType>
    </xs:element>
   </xs:sequence>
  </xs:complexType>
 </xs:element>
</xs:schema>
```

Exercise 3

Create a schema to describe three of the following XML documents.

<addresses>

<address>

<city>Hull</city>

<street>Low</street>

<postCode>HU6 7RX</postCode>

</address>

</addresses>

<addresses>

<address>

<city>Hull</city>

<street

>Low</street>

<postCode>HU6 7RX</postCode>

</address>

<address>

<street>High</street>

<city>Hull</city>

<postCode>HU1 2ER</postCode>

</address>

</addresses>

The XML schema for the above XML file will be

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema attributeFormDefault="unqualified" elementFormDefault="qualified"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:element name="addresses">
    <xs:complexType>
      <xs:sequence>
        <xs:element name="address">
          <xs:complexType>
            <xs:sequence>
              <xs:element name="city" type="xs:string" />
              <xs:element name="street" type="xs:string" />
              <xs:element name="postCode" type="xs:string" />
            </xs:sequence>
          </xs:complexType>
        </xs:element>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
</xs:schema>
```

Exercise 4

Given the following XML schema for an invoice, create a valid XML document

```
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema">
<xs:element name="invoice">
<xs:complexType>
<xs:sequence>
<xs:element maxOccurs="unbounded" minOccurs="1" name="dept"
type="deptType"/>
</xs:sequence>
</xs:complexType>
</xs:element>
<xs:complexType name="deptType">

<xs:sequence>
<xs:element name="deptnum" type="xs:string"/>
<xs:element name="deptname" type="xs:string"/>
<xs:element name="deptaddress" type="xs:string"/>
<xs:element name="deptlimit" type="xs:integer"/>
<xs:element maxOccurs="unbounded" minOccurs="1" name="deptstatement"
type="accountType"/> </xs:sequence>
</xs:complexType>
<xs:complexType name="accountType">
<xs:sequence>
<xs:element name="accountid" type="xs:integer"/>
<xs:element name="accountdate" type="xs:date"/>
<xs:element maxOccurs="unbounded" minOccurs="0" name="accountcharge" type="chargeType"/>
</xs:sequence>
```

```
</xs:complexType>
<xs:complexType name="chargeType">
<xs:sequence>
<xs:element name="chargeid" type="xs:string"/>
<xs:element name="chargeamount" type="xs:decimal"/>
<xs:element name="chargedate" type="xs:date"/>
</xs:sequence>
</xs:complexType>
</xs:schema>
```

The XML file for the above XML schema will be

```
<?xml version="1.0" encoding="utf-8"?>
<invoice>
  <dept>
    <deptnum>str1234</deptnum>
    <deptname>str1234</deptname>
    <deptaddress>str1234</deptaddress>
    <deptlimit>1234</deptlimit>
    <deptstatement>
      <accountid>1234</accountid>
      <accountdate>2012-12-13</accountdate>
      <accountcharge>
        <chargeid>str1234</chargeid>
        <chargeamount>123.45</chargeamount>
        <chargedate>2012-12-13</chargedate>
      </accountcharge>
    </deptstatement>
  </dept>
</invoice>
```

Exercise 5

Given the following XML schema for a statement, create two valid XML documents.

```
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema">
<xs:element name="statement">
<xs:complexType>
<xs:sequence>

<xs:element maxOccurs="unbounded" minOccurs="1" name="dept"
type="deptType"/>
</xs:sequence>
</xs:complexType>
</xs:element>
<xs:complexType name="deptType">
<xs:sequence>
<xs:element name="deptID" type="xs:string"/>
<xs:element name="deptname" type="xs:string"/>
<xs:element name="deptlimit" type="limitType"/>
<xs:element maxOccurs="unbounded" minOccurs="1" name="deptstatement"
type="transType"/> </xs:sequence>
</xs:complexType>
<xs:element name="limit" type="limitType" />
<xs:simpleType name="limitType">
```

<xs:restriction base="xs:integer">

<xs:minInclusive value="0"/>

<xs:maxInclusive value="100"/>

</xs:restriction>

</xs:simpleType>

<xs:complexType name="transType">

<xs:sequence>

<xs:element name="item" type="xs:integer"/>

<xs:element name="date" type="xs:date"/>

<xs:element maxOccurs="unbounded" minOccurs="2" name="charge"

type="xs:decimal"/> </xs:sequence>

<

/xs:complexType>

</xs:schema>

The XML file for the given XML Schema is

```
<?xml version="1.0" encoding="utf-8"?>
<statement>
  <dept>
    <deptID>str1234</deptID>
    <deptname>str1234</deptname>
    <deptlimit>1234</deptlimit>
    <deptstatement>
      <item>1234</item>
      <date>2012-12-13</date>
      <charge>123.45</charge>
      <charge>123.45</charge>
    </deptstatement>
  </dept>
</statement>
```