

15CSE376 - Net Centric Programming Assignment

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Document 1: Student

```
student.xml x student.dtd x student.xsd x email.xml x email.dtd x email.xsd x tree.xml x
1 <?xml version="1.0" encoding="UTF-8"?>
2 <!DOCTYPE students SYSTEM "students.dtd">
3 <student xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:noNamespaceSchemaLocation='student.xsd'>
4   <firstName>Luca</firstName>
5   <lastName>Rossi</lastName>
6   <id>281283</id>
7   <plan>
8     <courses year="3">
9       <course>
10        <name> Programmazione Orientata agli Oggetti </name>
11        <shortName>POO</shortName>
12        <record>
13          <grade>30</grade>
14          <date>13/06/11</date>
15        </record>
16      </course>
17      <course>
18        <name>Analisi e progettazione del software</name>
19        <shortName>APS</shortName>
20      </course>
21    </courses>
22  </plan>
23 </student>
```

Document 2: Email

```
ent.xml x student.dtd x student.xsd x email.xml x email.dtd x email.xsd x tree.xml x
1 <?xml version="1.0" encoding="UTF-8"?>
2 <!DOCTYPE email SYSTEM "email.dtd">
3 <email xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:noNamespaceSchemaLocation='email.xsd'>
4   <from> luca.rossi.917@gmail.com </from>
5   <to> atzeni@dia.uniroma3.it </to>
6   <content>
7     Dear <person> Paolo </person>,
8     here are some very hard exercises for the upcoming assignment of <course> Basi di Dati 2 </course>:
9     <exercises>
10      <exercise>
11        <topic> DTD </topic>
12        <description> From Instance to DTD </description>
13      </exercise>
14      <exercise>
15        <topic> XPath </topic>
16        <description> Find students with average grade better than 26 </description>
17      </exercise>
18    </exercises>
19    Best Regards,
20    <person> Luca </person>
21  </content>
22 </email>
```

Exercise 1: DTD for Document 1

```
student.xml x student.dtd x student.xsd x email.xml x email.dtd
1 <!DOCTYPE student [
2 <!--ELEMENT student (firstName, lastName, id, plan)-->
3 <!--ELEMENT firstName (#PCDATA)-->
4 <!--ELEMENT lastName (#PCDATA)-->
5 <!--ELEMENT id (#PCDATA)-->
6 <!--ELEMENT plan (courses*)-->
7 <!--ELEMENT courses (course*)-->
8 <!--ATTLIST courses year CDATA #REQUIRED-->
9 <!--ELEMENT course (name, shortName, record?)-->
10 <!--ELEMENT record (grade, date)-->
11 <!--ELEMENT name (#PCDATA)-->
12 <!--ELEMENT shortName (#PCDATA)-->
13 <!--ELEMENT grade (#PCDATA)-->
14 <!--ELEMENT date (#PCDATA)-->
15 ]>
```

Exercise 2: DTD for Document 2

```
student.xml x student.dtd x student.xsd x email.xml x email.dtd x
1 <!DOCTYPE email [
2 <!--ELEMENT email (from, to, content)-->
3 <!--ELEMENT from (#PCDATA)-->
4 <!--ELEMENT to (#PCDATA)-->
5 <!--ELEMENT content (#PCDATA|person|exercises|course)*-->
6 <!--ELEMENT exercises (exercise*)-->
7 <!--ELEMENT exercise (topic, description)-->
8 <!--ELEMENT topic (#PCDATA)-->
9 <!--ELEMENT description (#PCDATA)-->
10 <!--ELEMENT person (#PCDATA)-->
11 <!--ELEMENT course (#PCDATA)-->
12 ]>
```

Exercise 3: XSD for document 1

```
1  <?xml version="1.0" encoding="UTF-8"?>
2  <xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema">
3  <xsd:element name="student">
4      <xsd:complexType>
5          <xsd:sequence>
6              <xsd:element name="firstName" type="xsd:string"/>
7              <xsd:element name="lastName" type="xsd:string"/>
8              <xsd:element name="id" type="xsd:ID"/>
9              <xsd:element ref="plan"/>
10         </xsd:sequence>
11     </xsd:complexType>
12 </xsd:element>
13 <xsd:element name="record">
14     <xsd:complexType>
15         <xsd:sequence>
16             <xsd:element name="grade" type="xsd:string"/>
17             <xsd:element name="date" type="xsd:date"/>
18         </xsd:sequence>
19     </xsd:complexType>
20 </xsd:element>
21 <xsd:element name="course">
22     <xsd:complexType>
23         <xsd:sequence>
24             <xsd:element name="name" type="xsd:string"/>
25             <xsd:element name="shortName" type="xsd:string"/>
26             <xsd:element ref="record" minOccurs="0"/>
27         </xsd:sequence>
28     </xsd:complexType>
29 </xsd:element>
30 <xsd:element name="courses">
31     <xsd:complexType>
32         <xsd:sequence minOccurs="0" maxOccurs="unbounded">
33             <xsd:element ref="course"/>
34         </xsd:sequence>
35         <xsd:attribute name="year" type="xsd:string"/>
36     </xsd:complexType>
37 </xsd:element>
38 <xsd:element name="plan">
39     <xsd:complexType>
40         <xsd:sequence minOccurs="0" maxOccurs="unbounded">
41             <xsd:element ref="courses"/>
42         </xsd:sequence>
43     </xsd:complexType>
44     <xsd:unique name="coursesYear">
45         <xsd:selector xpath="courses"/>
46         <xsd:field xpath="@year"/>
47     </xsd:unique>
48 </xsd:element>
49
```

Exercise 4: XSD for document 2

```
Google Chrome
student.dtd student.xsd email.xml email.dtd email.xsd tree.xml
1 <?xml version="1.0" encoding="UTF-8"?>
2 <xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema">
3   <xsd:element name="email">
4     <xsd:complexType>
5       <xsd:sequence>
6         <xsd:element name="from" type="xsd:string" />
7         <xsd:element name="to" type="xsd:string" />
8         <xsd:element name="content">
9           <xsd:complexType mixed="true">
10            <xsd:sequence>
11              <xsd:element name="person" type="xsd:string"/>
12              <xsd:element name="course" type="xsd:string"/>
13              <xsd:element name="exercises">
14                <xsd:complexType>
15                  <xsd:sequence minOccurs="0" maxOccurs="unbounded">
16                    <xsd:element name="exercise">
17                      <xsd:complexType>
18                        <xsd:sequence>
19                          <xsd:element name="topic" type="xsd:string"/>
20                          <xsd:element name="description" type="xsd:string"/>
21                        </xsd:sequence>
22                      </xsd:complexType>
23                    </xsd:element>
24                  </xsd:sequence>
25                </xsd:complexType>
26              </xsd:element>
27            <xsd:element name="person" type="xsd:string"/>
28          </xsd:sequence>
29        </xsd:complexType>
30      </xsd:element>
31    </xsd:sequence>
32  </xsd:complexType>
33 </xsd:element>
34 </xsd:schema>
```

All the XSDs and DTDs have been validated successfully with the XML document

Exercise 5: XML for the given tree

```
student.xml student.dtd student.xsd email.xml email.dtd email.xsd tree.xml
1 <?xml version="1.0" encoding="UTF-8"?>
2 <stext>
3   <s>
4     <w pos="pron">I</w>
5     <w pos="verb">shall</w>
6     <w pos="verb">hear</w>
7     <w pos="prep">in</w>
8     <w pos="subst">heaven</w>
9     <c>!</c>
10   </s>
11 </stext>
```