
Question 1
Consider the following DTDs.

```xml
<!DOCTYPE univ1[
  <!ELEMENT univ1 (student*)>
  <!ELEMENT student (fname, lname, major, classes)>
    <!ATTLIST student id ID #REQUIRED>
  <!ELEMENT classes (course*)>
  <!ELEMENT course (CNO, title, creditHours)>
  <!ELEMENT fname (#PCDATA)>
  <!ELEMENT lname (#PCDATA)>
  <!ELEMENT major (#PCDATA)>
  <!ELEMENT CNO (#PCDATA)>
  <!ELEMENT title (#PCDATA)>
  <!ELEMENT creditHours (#PCDATA)>
]

<!DOCTYPE univ2[
  <!ELEMENT univ2 (course*)>
  <!ELEMENT course (title, creditHours, enrolment)>
    <!ATTLIST course CNO ID #REQUIRED>
  <!ELEMENT enrolment (student*)>
  <!ELEMENT student (id, name, major)>
  <!ELEMENT title (#PCDATA)>
  <!ELEMENT creditHours (#PCDATA)>
  <!ELEMENT id (#PCDATA)>
  <!ELEMENT name (#PCDATA)>
  <!ELEMENT major (#PCDATA)>
]

<!DOCTYPE univ3[
  <!ELEMENT univ3 (courses, students)>
  <!ELEMENT courses (course*)>
  <!ELEMENT students (student*)>
  <!ELEMENT course (title, creditHours)>
    <!ATTLIST course CNO ID #REQUIRED>
      enrolment IDREFS #REQUIRED>
  <!ELEMENT student (name, major)>
    <!ATTLIST student id ID #REQUIRED>
      classes IDREFS #REQUIRED>
  <!ELEMENT title (#PCDATA)>
  <!ELEMENT creditHours (#PCDATA)>
  <!ELEMENT name (#PCDATA)>
  <!ELEMENT major (#PCDATA)>
]
```
Use the student/course/registration data shown in realtional form. Create XML documents for each of the DTDs that hold the same data as the relational representation.

<table>
<thead>
<tr>
<th>id</th>
<th>fname</th>
<th>lname</th>
<th>major</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>Ab</td>
<td>Al</td>
<td>CSC</td>
</tr>
<tr>
<td>200</td>
<td>Jo</td>
<td>Br</td>
<td>MAT</td>
</tr>
<tr>
<td>300</td>
<td>Cr</td>
<td>Da</td>
<td>GEO</td>
</tr>
<tr>
<td>400</td>
<td>Ma</td>
<td>Ge</td>
<td>ENG</td>
</tr>
</tbody>
</table>

Figure 1: students

<table>
<thead>
<tr>
<th>CNO</th>
<th>title</th>
<th>creditHours</th>
</tr>
</thead>
<tbody>
<tr>
<td>529</td>
<td>AI</td>
<td>3</td>
</tr>
<tr>
<td>555</td>
<td>Alg</td>
<td>4</td>
</tr>
<tr>
<td>671</td>
<td>DB</td>
<td>2</td>
</tr>
</tbody>
</table>

Figure 2: courses

<table>
<thead>
<tr>
<th>id</th>
<th>CNO</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>529</td>
</tr>
<tr>
<td>100</td>
<td>555</td>
</tr>
<tr>
<td>200</td>
<td>555</td>
</tr>
<tr>
<td>300</td>
<td>671</td>
</tr>
<tr>
<td>300</td>
<td>555</td>
</tr>
<tr>
<td>400</td>
<td>529</td>
</tr>
<tr>
<td>400</td>
<td>671</td>
</tr>
<tr>
<td>400</td>
<td>555</td>
</tr>
</tbody>
</table>

Figure 3: registration

10% of the assignment mark is for typesetting. Figures and special symbols can be drawn/written by hand.