Courseware   **Course Info**   **Discussion**   **Wiki**   **Progress**   **Readings**   **Software Guide**

These exercises are a bit more difficult overall than the Course-Catalog XSLT Exercises. We suggest you work those problems first.

In these exercises, you will be working with a small XML data set about world countries. This data is adapted from the Mondial 3.0 database as hosted by the University of Washington, and was originally compiled by the Georg-August University of Goettingen Institute for Informatics. Each country has a name, population, and area (in sq. km). Some countries also list languages (with percentages of the population that speaks each language) and/or cities (with names and populations). The XML data is here.

Instructions: Each problem asks you to write a query in XSLT. When you click "Check Answer" our back-end runs your query against the sample database using Saxon. It displays the result and compares your answer against the correct one. When you're satisfied with your solution for a given problem, click the "Submit" button to check your answer.

You may perform these exercises as many times as you like, so we strongly encourage you to keep working with them until you complete the exercises with full credit.

Q1 (1/1 point)

Return all countries with population between 9 and 10 million. Retain the structure of country elements from the original data.

Your solution should fill in the following stylesheet:

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<xsl:stylesheet version="2.0" xmlns:xsl="http://www.w3.org/1999/XSL/Transform">
    <xsl:template match=...>
        ... template body ...
    </xsl:template>
    ... more templates as needed ...
</xsl:stylesheet>
```

Note: You do not need to use "doc(..)" in your solution. It will be executed on countries.xml.

(XSLT can be quite challenging to get right, and this problem is no exception. Congratulations if you succeed!)

```
1  <?xml version="1.0" encoding="ISO-8859-1"?>
2    <xsl:stylesheet version="2.0" xmlns:xsl="http://www.w3.org/1999/XSL/Transform">
3        <xsl:template match="country[@population &gt; 9000000 and @population &lt; 10000000]">
4            <xsl:copy-of select="."/>
5        </xsl:template>
6        <xsl:template match="text()"/>
7    </xsl:stylesheet>
```

Correct

Correct

Your Query Result:

```
<country area='118480' name='Malawi' population='9452844'/>
<country area='1240000' name='Mali' population='9653261'>
  <language percentage='80'>Bambara</language>
</country>
<country area='1267000' name='Niger' population='9113001'/>
<country area='92080' name='Portugal' population='9865114'>
  <language percentage='100'>Portuguese</language>
</country>
<country area='196190' name='Senegal' population='9092749'>
  <city>
    <name>Dakar</name>
    <population>1382000</population>
  </city>
</country>
<country area='637660' name='Somalia' population='9639151'/>
<country area='163610' name='Tunisia' population='9019687'/>
<country area='752610' name='Zambia' population='9159072'/>
```

Expected Query Result:

```
<country area='118480' name='Malawi' population='9452844'/>
<country area='1240000' name='Mali' population='9653261'>
  <language percentage='80'>Bambara</language>
</country>
<country area='1267000' name='Niger' population='9113001'/>
<country area='92080' name='Portugal' population='9865114'>
  <language percentage='100'>Portuguese</language>
</country>
<country area='196190' name='Senegal' population='9092749'>
  <city>
    <name>Dakar</name>
    <population>1382000</population>
  </city>
</country>
<country area='637660' name='Somalia' population='9639151'/>
<country area='163610' name='Tunisia' population='9019687'/>
<country area='752610' name='Zambia' population='9159072'/>
```

Submit   Reset

Q2 (1/1 point)

Create a table using HTML constructs that lists all countries that have more than 3 languages. Each row should contain the country name in bold, population, area, and number of languages. Sort the rows in descending order of number of languages. No header is needed for the table, but use <table border="1"> to make it format nicely, should you choose to check your result in a browser. (**Hint:** You may find the data-type and order attributes of <xsl:sort> to be useful.)

Your solution should fill in the following stylesheet:

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<xsl:stylesheet version="2.0" xmlns:xsl="http://www.w3.org/1999/XSL/Transform">
    <xsl:template match=...>
        ... template body ...
    </xsl:template>
    ... more templates as needed ...
</xsl:stylesheet>
```

Reminder: To return the value of an attribute *attr*, you must use *data(@attr)*, although just *@attr* may be used in comparisons. You will need to remember this for the next question as well.

Note: You do not need to use "doc(..)" in your solution. It will be executed on countries.xml.

(XSLT can be quite challenging to get right, and this problem is no exception. Congratulations if you succeed!)

```
 1 <?xml version="1.0" encoding="ISO-8859-1"?>
 2   <xsl:stylesheet version="2.0" xmlns:xsl="http://www.w3.org/1999/XSL/Transform">
 3     <xsl:template match="countries">
 4       <html>
 5         <table border="1">
 6           <xsl:for-each select="country[count(language) &gt; 3]">
 7             <xsl:sort order="descending" select="count(language)"/>
 8               <tr>
 9                 <td><b><xsl:value-of select="data(@name)"/></b></td>
10                 <td><xsl:value-of select="data(@population)"/></td>
11                 <td><xsl:value-of select="data(@area)"/></td>
12                 <td><xsl:value-of select="count(language)"/></td>
13               </tr>
14           </xsl:for-each>
15         </table>
16       </html>
```

Correct

Correct

Your Query Result:

```
<html>
  <table border='1'>
    <tr>
      <td>
        <b>Pakistan</b>
      </td>
      <td>129275664</td>
      <td>803940</td>
      <td>8</td>
    </tr>
    <tr>
      <td>
        <b>Iran</b>
      </td>
      <td>66094264</td>
      <td>1648000</td>
      <td>7</td>
    </tr>
    <tr>
      <td>
        <b>Georgia</b>
      </td>
      <td>5219810</td>
      <td>69700</td>
      <td>4</td>
    </tr>
    <tr>
      <td>
        <b>Macedonia</b>
      </td>
      <td>2104035</td>
      <td>25333</td>
      <td>4</td>
    </tr>
    <tr>
      <td>
        <b>Switzerland</b>
      </td>
      <td>7207060</td>
      <td>41290</td>
      <td>4</td>
    </tr>
  </table>
</html>
```

Expected Query Result:

```
<html>
  <table border='1'>
    <tr>
      <td>
        <b>Pakistan</b>
      </td>
      <td>129275664</td>
      <td>803940</td>
      <td>8</td>
    </tr>
    <tr>
      <td>
        <b>Iran</b>
      </td>
      <td>66094264</td>
      <td>1648000</td>
      <td>7</td>
    </tr>
    <tr>
      <td>
        <b>Georgia</b>
      </td>
      <td>5219810</td>
      <td>69700</td>
      <td>4</td>
    </tr>
    <tr>
      <td>
        <b>Macedonia</b>
      </td>
      <td>2104035</td>
      <td>25333</td>
      <td>4</td>
    </tr>
    <tr>
      <td>
        <b>Switzerland</b>
      </td>
      <td>7207060</td>
      <td>41290</td>
      <td>4</td>
    </tr>
  </table>
</html>
```

Submit   Reset

Q3 (1/1 point)

Create an alternate version of the countries database: for each country, include its name and population as sublements, and the number of languages and number of cities as attributes (called "languages" and "cities" respectively).

Your solution should fill in the following stylesheet:

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<xsl:stylesheet version="2.0" xmlns:xsl="http://www.w3.org/1999/XSL/Transform">
    <xsl:template match=...>
        ... template body ...
    </xsl:template>
    ... more templates as needed ...
</xsl:stylesheet>
```

Note: You do not need to use "doc(..)" in your solution. It will be executed on countries.xml.

(XSLT can be quite challenging to get right, and this problem is particularly difficult. Extra congratulations if you succeed!)

```
1  <?xml version="1.0" encoding="ISO-8859-1"?>
2      <xsl:stylesheet version="2.0" xmlns:xsl="http://www.w3.org/1999/XSL/Transform">
3          <xsl:template match="*|@*|text()">
4              <xsl:copy>
5                  <xsl:apply-templates select="*|@*|text()"/>
6              </xsl:copy>
7          </xsl:template>
8          <xsl:template match="country">
9              <country languages="{count(language)}" cities="{count(city)}">
10             <name><xsl:value-of select="data(@name)"/></name>
11             <population><xsl:value-of select="data(@population)"/></population>
12             </country>
13         </xsl:template>
14         <xsl:template match="text()"/>
15     </xsl:stylesheet>
```

Correct

Message Too Long. Here is a snapshot:

Correct

Your Query Result:

```xml
<countries>
  <country cities='0' languages='3'>
    <name>Afghanistan</name>
    <population>22664136</population>
  </country>
  <country cities='0' languages='0'>
    <name>Albania</name>
    <population>3249136</population>
  </country>
  <country cities='1' languages='0'>
    <name>Algeria</name>
    <population>29183032</population>
  </country>
  <country cities='0' languages='0'>
    <name>American Samoa</name>
    <population>59566</population>
  </country>
  <country cities='0' languages='0'>
    <name>Andorra</name>
    <population>72766</population>
  </country>
  <country cities='0' languages='0'>
    <name>Angola</name>
    <population>10342899</population>
  </country>
  <country cities='0' languages='1'>
    <name>Anguilla</name>
    <population>10424</population>
  </country>
  <country cities='0' languages='1'>
    <name>Antigua and Barbuda</name>
    <population>65647</population>
  </country>
  <country cities='4' languages='0'>
    <name>Argentina</name>
    <population>34672996</population>
  </country>
  <country cities='1' languages='2'>
    <name>Armenia</name>
    <population>3463574</population>
  </country>
  <country cities='0' languages='0'>
    <name>Aruba</name>
    <population>67794</population>
  </country>
  <country cities='5' languages='1'>
    <name>Australia</name>
    <population>18260864</population>
  </country>
  <country cities='1' languages='1'>
    <name>Austria</name>
    <population>8023244</population>
  </country>
  <country cities='1' languages='3'>
    <name>Azerbaijan</name>
    <population>7676953</population>
  </country>
  <country cities='0' languages='0'>
    <name>Bahamas</name>
    <population>259367</population>
  </country>
  <country cities='0' languages='0'>
    <name>Bahrain</name>
    <population>590042</population>
  </country>
  <country cities='2' languages='0'>
```

```
    <name>Bangladesh</name>
    <population>123062800</population>
  </country>
  <country cities='0' languages='1'>
    <name>Barbados</name>
    <population>257030</population>
  </country>
  <country cities='1' languages='0'>
    <name>Belarus</name>
    <population>10415973</population>
  </country>
  <country cities='0' languages='3'>
    <name>Belgium</name>
    <population>10170241</population>
  </country>
  <country cities='0' languages='0'>
    <name>Belize</name>
    <population>219296</population>
  </country>
  <country cities='0' languages='0'>
    <name>Benin</name>
    <population>5709529</population>
  </country>
  <country cities='0' languages='1'>
    <name>Bermuda</name>
    <population>62099</population>
  </country>
  <country cities='0' languages='0'>
    <name>Bhutan</name>
    <population>1822625</population>
  </country>
  <country cities='0' languages='0'>
    <name>Bolivia</name>
    <population>7165257</population>
  </country>
  <country cities='0' languages='1'>
    <name>Bosnia and Herzegovina</name>
    <population>2656240</population>
  </country>
  <country cities='0' languages='0'>
    <name>Botswana</name>
    <population>1477630</population>
  </country>
  <country cities='11' languages='0'>
    <name>Brazil</name>
    <population>162661216</population>
  </country>
  <country cities='0' languages='1'>
    <name>British Virgin Islands</name>
    <population>13195</population>
  </country>
  <country cities='0' languages='0'>
    <name>Brunei</name>
    <population>299939</population>
  </country>
  <country cities='1' languages='1'>
    <name>Bulgaria</name>
    <population>8612757</population>
  </country>
  <country cities='0' languages='0'>
    <name>Burkina Faso</name>
    <population>10623323</population>
  </country>
  <country cities='1' languages='1'>
    <name>Burma</name>
    <population>45975624</population>
  </country>
```

```
<country cities='0' languages='0'>
  <name>Burundi</name>
  <population>5943057</population>
</country>
<country cities='0' languages='0'>
  <name>Cambodia</name>
  <population>10861218</population>
</country>
<country cities='0' languages='0'>
  <name>Cameroon</name>
  <population>14261557</population>
</country>
<country cities='1' languages='0'>
  <name>Canada</name>
  <population>28820672</population>
</country>
<country cities='0' languages='0'>
  <name>Cape Verde</name>
  <population>449066</population>
</country>
<country cities='0' languages='1'>
  <name>Cayman Islands</name>
  <population>34646</population>
</country>
<country cities='0' languages='0'>
  <name>Central African Republic</name>
  <population>3274426</population>
</country>
<country cities='0' languages='0'>
  <name>Chad</name>
  <population>6976845</population>
</country>
<country cities='1' languages='1'>
  <name>Chile</name>
  <population>14333258</population>
</country>
<country cities='41' languages='0'>
  <name>China</name>
  <population>1210004992</population>
</country>
<country cities='0' languages='1'>
  <name>Christmas Island</name>
  <population>813</population>
</country>
<country cities='0' languages='1'>
  <name>Cocos Islands</name>
  <population>609</population>
</country>
<country cities='4' languages='1'>
  <name>Colombia</name>
  <population>36813160</population>
</country>
<country cities='0' languages='0'>
  <name>Comoros</name>
  <population>569237</population>
</country>
<country cities='0' languages='0'>
  <name>Congo</name>
  <population>2527841</population>
</country>
<country cities='0' languages='0'>
  <name>Cook Islands</name>
  <population>19561</population>
</country>
<country cities='0' languages='0'>
  <name>Costa Rica</name>
  <population>3463083</population>
```

```
    </country>
    <country cities='0' languages='0'>
      <name>Cote dIvoire</name>
      <population>14762445</population>
    </country>
    <country cities='0' languages='1'>
      <name>Croatia</name>
      <population>5004112</population>
    </country>
    <country cities='1' languages='1'>
      <name>Cuba</name>
      <population>10951334</population>
    </country>
    <country cities='0' languages='0'>
      <name>Cyprus</name>
      <population>744609</population>
    </country>
    <country cities='1' languages='0'>
      <name>Czech Republic</name>
      <population>10321120</population>
    </country>
    <country cities='1' languages='0'>
      <name>Denmark</name>
      <population>5249632</population>
    </country>
    <country cities='0' languages='0'>
      <name>Djibouti</name>
      <population>427642</population>
    </country>
    <country cities='0' languages='0'>
      <name>Dominica</name>
      <population>82926</population>
    </country>
    <country cities='1' languages='1'>
      <name>Dominican Republic</name>
      <population>8088881</population>
    </country>
    <country cities='2' languages='0'>
      <name>Ecuador</name>
      <population>11466291</population>
    </country>
    <country cities='3' languages='0'>
      <name>Egypt</name>
      <population>63575108</population>
    </country>
    <country cities='0' languages='0'>
      <name>El Salvador</name>
      <population>5828987</population>
    </country>
    <country cities='0' languages='0'>
      <name>Equatorial Guinea</name>
      <population>431282</population>
    </country>
    <country cities='0' languages='0'>
      <name>Eritrea</name>
      <population>3427883</population>
    </country>
    <country cities='0' languages='0'>
      <name>Estonia</name>
      <population>1459428</population>
    </country>
    <country cities='1' languages='0'>
      <name>Ethiopia</name>
      <population>57171664</population>
    </country>
    <country cities='0' languages='1'>
      <name>Falkland Islands</name>
```

```
    <population>2374</population>
  </country>
  <country cities='0' languages='0'>
    <name>Faroe Islands</name>
    <population>43857</population>
  </country>
  <country cities='0' languages='0'>
    <name>Fiji</name>
    <population>782381</population>
  </country>
  <country cities='0' languages='2'>
    <name>Finland</name>
    <population>5105230</population>
  </country>
  <country cities='1' languages='1'>
    <name>France</name>
    <population>58317448</population>
  </country>
  <country cities='0' languages='1'>
    <name>French Guiana</name>
    <population>151187</population>
  </country>
  <country cities='0' languages='0'>
    <name>French Polynesia</name>
    <population>224911</population>
  </country>
  <country cities='0' languages='0'>
    <name>Gabon</name>
    <population>1172798</population>
  </country>
  <country cities='0' languages='0'>
    <name>Gambia</name>
    <population>1204984</population>
  </country>
  <country cities='1' languages='4'>
    <name>Georgia</name>
    <population>5219810</population>
  </country>
  <country cities='4' languages='1'>
    <name>Germany</name>
    <population>83536112</population>
  </country>
  <country cities='0' languages='0'>
    <name>Ghana</name>
    <population>17698272</population>
  </country>
  <country cities='0' languages='0'>
    <name>Gibraltar</name>
    <population>28765</population>
  </country>
  <country cities='0' languages='0'>
    <name>Greece</name>
    <population>10538594</population>
  </country>
  <country cities='0' languages='0'>
    <name>Greenland</name>
    <population>58203</population>
  </country>
  <country cities='0' languages='0'>
    <name>Grenada</name>
    <population>94961</population>
  </country>
  <country cities='0' languages='1'>
    <name>Guadeloupe</name>
    <population>407768</population>
  </country>
  <country cities='0' languages='0'>
```

```
    <name>Guam</name>
    <population>156974</population>
  </country>
  <country cities='0' languages='2'>
    <name>Guatemala</name>
    <population>11277614</population>
  </country>
  <country cities='0' languages='0'>
    <name>Guernsey</name>
    <population>62920</population>
  </country>
  <country cities='0' languages='1'>
    <name>Guinea</name>
    <population>7411981</population>
  </country>
  <country cities='0' languages='0'>
    <name>Guinea-Bissau</name>
    <population>1151330</population>
  </country>
  <country cities='0' languages='0'>
    <name>Guyana</name>
    <population>712091</population>
  </country>
  <country cities='0' languages='1'>
    <name>Haiti</name>
    <population>6731539</population>
  </country>
  <country cities='0' languages='0'>
    <name>Holy See</name>
```

Submit   Reset

‹ Previous   Next ›