

ECE568 Software Engineering II - Web Application HW4

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Q1

The XML file generated by (b) is Q1/q1a.xml.

(a) Please check Q1/q1a.dtd

```
<?xml version="1.0" encoding="UTF-8"?>
<!ELEMENT products (product*)>
<!ELEMENT product (name, price, description, store*)>
<!ELEMENT store (name, phones, markup)>

<!ELEMENT name (#PCDATA)>
<!ELEMENT price (#PCDATA)>
<!ELEMENT description (#PCDATA)>
<!ELEMENT phones (#PCDATA)>
<!ELEMENT markup (#PCDATA)>

<!-- if pid and sid are ID, an error will happen in IDE -->
<!ATTLIST product pid CDATA #REQUIRED>
<!ATTLIST store sid CDATA #REQUIRED>
```

(b) Please check Q1/q1b.xquery. It's result is Q1/q1a.xml.

```
<products>
{
  for $product in doc("q1b.xml")/db/products/row
  return
    <product pid="{ $product/pid }">
      { $product/name } { $product/price } { $product/descript
ion }
      {
        for $store in doc("q1b.xml")/db/stores/row
        for $sell in doc("q1b.xml")/db/sells/row
        where $product/pid = $sell/pid and $store/sid
= $sell/sid
        return
          <store sid="{ $store/sid }">
            { $store/name } { $store/phones } { $sell/markup
}
          </store>
      }
    </product>
}
</products>
```

(c) Please check Q1/q1c.xquery

```

<products>
{
  for $product in doc("q1a.xml")/products/product
  where $product/store/markup = "25%"
  return
    <product>
      {$product/name} {$product/price}
    </product>
}
</products>

```

(d)

```

SELECT P.name, P.price
FROM product P, sell S
WHERE P.pid = S.pid
      AND S.markup = "25%"
GROUP BY P.name

```

Q2

(a)

```

for $x in doc("q2.xml")/broadway//title
return
  <result>

```

```
    {$x}  
  </result>
```

(b)

```
for $x in doc("q2.xml")/broadway/theater[date = "11/9/2008"]  
  where some $b in $x/price satisfies data($b) < 35  
  return  
    <theater>  
      {$x/title}{$x/address}  
    </theater>
```

(c)

```
for $x in doc("q2.xml")/broadway/concert[type = "chamber orch  
estra"]  
  where avg(data($x/price))>=50  
  return  
    <result>  
      {$x/title}  
    </result>
```

(d)

```
for $d in distinct-values(doc("q2.xml")//date)  
  for $x in //theater[date = $d] | //concert[date = $d] | //o
```

```
pera[date=$d]
  return
    <groupByDate>
      <day>
        {$d}
        <show>
          {$x/title}
          {$x/price}
        </show>
      </day>
    </groupByDate>
```

Q3

Please check the Q3 folder for complete XML, XST and DTD files.

1.

modified XSL:

```
<!--
  Change the sentence below both in bib/book and bib/article
  <xsl:value-of select="author"/>,
-->

<xsl:value-of select="author/last_name"/>,
<xsl:value-of select="author/first_name"/>.
```

```
<!--
```

```
    Under bib/book, change the things of publisher, address and  
    year like this
```

```
-->
```

```
<!-- add brackets and spaces -->
```

```
(<xsl:value-of select="publisher"/>
```

```
<xsl:text> </xsl:text>
```

```
<xsl:value-of select="address"/>
```

```
<xsl:text> </xsl:text>
```

```
<xsl:value-of select="year"/>).
```

```
<!--
```

```
    Under bib/article, change the things of journal, volume and  
    page like this
```

```
-->
```

```
<b><xsl:value-of select="journal"/>,</b>
```

```
    <xsl:value-of select="volume"/></b>,</b>
```

```
pp.<xsl:apply-templates select="page"/>
```

modified XML:

```
<!--
```

```
    Change all the <author> labels from <author></author> to  
    <author>
```

```
        <first_name></first_name>
```

```
        <last_name></last_name>
```

```
</author>
```

For example,

```
-->
```

```
<author>  
  <first_name>Leslie</first_name>  
  <last_name>Lamport</last_name>  
</author>
```

The corresponding dtd file need to be changed as well:

```
<!ELEMENT author (first_name, last_name)>  
<!ELEMENT first_name (#PCDATA) >  
<!ELEMENT last_name (#PCDATA) >
```

(2)

```
<book>  
  <author>  
    <first_name>Robert</first_name>  
    <last_name>Kuhn</last_name>  
  </author>  
  <title>The Man Who Changed China: The Life and Legacy of  
Jiang Zemin</title>  
  <year>2005</year>  
  <address>China</address>  
  <publisher>New York: Crown Publishers</publisher>
```

```
</book>
```

```
<book>
```

```
  <author>
```

```
    <first_name>Cixin</first_name>
```

```
    <last_name>Liu</last_name>
```

```
  </author>
```

```
  <title>The Three-Body Problem</title>
```

```
  <year>2008</year>
```

```
  <!-- publisher missed -->
```

```
</book>
```

```
<article>
```

```
  <author>
```

```
    <first_name>Khaled</first_name>
```

```
    <last_name>Almakadmeh</last_name>
```

```
  </author>
```

```
  <title>Towards a Reference Model of Software Resources Quality</title>
```

```
  <year>2018</year>
```

```
  <volume>14</volume>
```

```
  <page>
```

```
    <from>182</from>
```

```
    <to>198</to>
```

```
  </page>
```

```
  <journal>Journal of Computer Science</journal>
```

```
</article>
```



```

<article>
  <author>
    <first_name>Tao</first_name>
    <last_name>Xie</last_name>
  </author>
  <title>Preface</title>
  <year>2017</year>
  <!-- volume missed -->
  <page>
    <from>1057</from>
    <to>1059</to>
  </page>
  <journal>Journal of Computer Science and Technology</journal>
</article>

```

(3)

Added in XSL:

```

<!--
  before
  </ul>
</body>
-->
<xsl:for-each select="bib/phd_theses"> <p/>

```

```

<li>
  <xsl:value-of select="author/last_name"/>,
  <xsl:value-of select="author/first_name"/>.
  <b><xsl:value-of select="title"/></b>,
  <xsl:value-of select="year"/>,
  <em><xsl:value-of select="university"/></em>.
</li>
</xsl:for-each>

```

Added in XML:

```

<phd_theses>
  <author>
    <first_name>Thomas</first_name>
    <last_name>Dimiduk</last_name>
  </author>
  <title>Holographic Microscopy for Soft Matter and Biophysics</title>
  <year>2017</year>
  <university>Harvard University</university>
</phd_theses>

<phd_theses>
  <author>
    <first_name>Tim Allan</first_name>
    <last_name>Wheeler</last_name>
  </author>

```

```
<title>Automotive safety validation in simulation</title>  
<year>2018</year>  
<university>Stanford University</university>  
</phd_theses>
```

Modified in DTD:

```
<!ELEMENT bib ( (book | article | phd_theses)+)>
```

Added in DTD:

```
<!ELEMENT phd_theses (author, title, year, university) >  
<!ELEMENT university (#PCDATA)>
```