

Homework IV

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Course: Sp.20 Software Engineering Web Application

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Problem 1

(a) Source code:

XML –

```
<?xml version="1.0" encoding="UTF-8" ?>
<!DOCTYPE products SYSTEM "P1QA_DTD">
<products>
  <product pid="p123">
    <name>gizmo</name>
    <price>22.99</price>
    <description>great</description>
    <store sid="323">
      <name>Wiz</name>
      <phones>555-1234</phones>
      <markup>25%</markup>
    </store>
    <store sid="323">
      <name>Wiz</name>
      <phones>555-1234</phones>
      <markup>15%</markup>
    </store>
  </product>
  <product pid="p231">
    <name>gizmo plus</name>
    <price>99.99</price>
    <description>more features</description>
    <store sid="s323">
      <name>Wiz</name>
      <phones>555-1234</phones>
```

```

        <markup>10%</markup>
    </store>
</product>
<product pid="s312">
    <name>gadget</name>
    <price>59.99</price>
    <description>good value</description>
</product>
</products>

```

DTD-

```

<?xml version="1.0" encoding="UTF-8" ?>
<!ELEMENT products (product+)>
<!ELEMENT product (name,price,description,store+)>
<!ELEMENT name (#PCDATA)>
<!ELEMENT price (#PCDATA)>
<!ELEMENT description (#PCDATA)>
<!ELEMENT store (name,phones,markup)>
<!ELEMENT phones (#PCDATA)>
<!ELEMENT markup (#PCDATA)>
<!ATTLIST product pid CDATA #REQUIRED>
<!ATTLIST store sid CDATA #REQUIRED>

```

(b) XML-

```

<?xml version="1.0" encoding="UTF-8"?>
<db>
    <products>
        <row>
            <pid>p123</pid>
            <name>gizmo</name>
            <price>22.99</price>
            <description>great</description>
        </row>
        <row>
            <pid>p231</pid>
            <name>gizmoPlus</name>
            <price>99.99</price>
            <description>more features</description>
        </row>
        <row>
            <pid>p312</pid>

```

```

        <name>gadget</name>
        <price>59.99</price>
        <description>good value</description>
    </row>
</products>
<stores>
    <row>
        <sid>s323</sid>
        <name>Wiz</name>
        <phones>555-1234</phones>
    </row>
    <row>
        <sid>s521</sid>
        <name>Econo-Wiz</name>
        <phones>555-6543</phones>
    </row>
</stores>
<sells>
    <row>
        <sid>s323</sid>
        <pid>p231</pid>
        <markup>10%</markup>
    </row>
    <row>
        <sid>s323</sid>
        <pid>p123</pid>
        <markup>25%</markup>
    </row>
    <row>
        <sid>s323</sid>
        <pid>p123</pid>
        <markup>15%</markup>
    </row>
</sells>
</db>

```

XQuery-

```

<products>
{
    for $product in document("P1QB.xml")/db/products/row
    return

```

```

    <product pid="{ $product/pid}">
      { $product/name}{ $product/price}{ $product/description}
      {
        for $store in document("P1QB.xml")/db/stores/row
        for $sell in document("P1QB.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) XQuery-

```

for $product in document("P1QA.xml")/products/product
where $product/store/markup = "25%"
return
  <product>
    { $product/name} { $product/price}
  </product>

```

(d) SQL-

```

select name,price from products,sells
(where products.pid = sell.pid
AND sell.markup = "25%"
)

```

Problem 2

(a) Source code

XQuery-

```

for $title in document("P2.xml")/broadway//title
return
<result>
  { $title}
</result>

```

(b) XQuery-

```
for $a in document ("P2.xml")/broadway/theater[date="11/9/2008"]
where data($a/price) < 35
return
<result>
  {$a/title}{$a/address}
</result>
```

(c) XQuery-

```
for $title in document("P2.xml")/broadway/concert[type="chamber orchestra"]
where avg(data($title/price)) >= 50
return
<result>
  {$title/title}
</result>
```

(d) XQuery-

```
<groupedByDate>
  for $a in distinct-value(document("P2.xml")//date)
  for $b in //theater[date=$a] | //concert[date=$a] | //opera[date=$a]
  return
  <day>
    {$a}
    <show>
      <title>
        {$b/title}
      </title>
      <price>
        {$b/price}
      </price>
    </show>
  </day>
</groupedByDate>
```

Problem 3

(a) Source code

XSL-

```
<?xml version="1.0"?>
<xsl:stylesheet xmlns:xsl="http://www.w3.org/TR/WD-xsl"
  result-ns="http://www.w3.org/TR/REC-html">
  <xsl:template match="/">
```

```

<html>
<head>
<title>Bibliography</title>
</head>
<body background="antiquewhite">
<center><h2>Bibliography</h2><hr width="90%"/></center>
<ul>
<xsl:for-each select="bib/book">
<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="publisher"/>
    <xsl:text> </xsl:text>
<xsl:value-of select="address"/>
    <xsl:text> </xsl:text>
<xsl:value-of select="year"/>).
</li>
</xsl:for-each>
<xsl:for-each select="bib/article">
<p/><li>
<xsl:value-of select="author"/>,
<b><xsl:value-of select="title"/></b>,
<b><xsl:value-of select="journal"/>,
    <xsl:value-of select="volume"/></b>,
pp.<xsl:apply-templates select="page"/>
<xsl:value-of select="year"/>.
</li>
</xsl:for-each>
</ul>
</body>
</html>
</xsl:template>
<xsl:template match="page">
<xsl:value-of select="from"/>-<xsl:value-of select="to"/>,
</xsl:template>
</xsl:stylesheet>

```

XML-

```

<!-- Adding two sub-elements to author -->
<author>
    <first_name>Leslie</first_name>

```

```
<last_name>Lamport</last_name>  
</author>
```

(b) XML-

```
<book>  
  <author>Frank McCourt</author>  
  <title>Angela's Ashes</title>  
  <year>1996</year>  
  <publisher>Charles Scribner's Sons</publisher>  
</book>  
  
<book>  
  <author>Mary Karr</author>  
  <title>The Liars' Club</title>  
  <!-- missed year information -->  
  <publisher>Viking Press</publisher>  
</book>  
  
<article>  
  <author>Ruha Benjamin</author>  
  <title>Informed Refusal: Toward a Justicebased Bioethics</title>  
  <year>2016</year>  
  <volume>41</volume>  
  <page>  
    <from>967</from>  
    <to>990</to>  
  </page>  
  <journal>Science, Technology, & Human Values</journal>  
</article>  
  
<article>  
  <author>Lindsay Adams Smith</author>  
  <title>Identifying Democracy: Citizenship, DNA, and Identity in Postdictatorship Argentina</title>  
  <year>2016</year>  
  <volume>41</volume>  
  <page>  
    <from>1037</from>  
    <to>1062</to>  
  </page>  
  <!-- missed journal information -->  
</article>
```

(c) XSL-

```
<?xml version="1.0"?>

<xsl:stylesheet xmlns:xsl="http://www.w3.org/TR/WD-xsl"
  result-ns="http://www.w3.org/TR/REC-html">

<xsl:template match="/">

  <html>
  <head>
    <title>Bibliography</title>
  </head>
  <body background="antiquewhite">
    <center><h2>Bibliography</h2><hr width="90%"/></center>
    <ul>
<xsl:for-each select="bib/PhD_theses">
      <p/><li>
        <xsl:value-of select="author"/>,
        <b><xsl:value-of select="title"/></b>,
        <em><xsl:value-of select="university"/></em>,
        <xsl:value-of select="instructor"/>
        <xsl:value-of select="year"/>.
      </li>
</xsl:for-each>
    </ul>
  </body>
</html>
</xsl:template>

<xsl:template match="page">
  <xsl:value-of select="from"/>-<xsl:value-of select="to"/>,
</xsl:template>
</xsl:stylesheet>
```

XML-

```
<PhD_theses>
  <author>Janice Wynn Guikema</author>
  <title>SCANNING HALL PROBE MICROSCOPY OF MAGNETIC VORTICES IN VERY UNDERDOPED YTTRIUM-BARIUM-COPPER-
OXIDE</title>
  <university>Stanford University</university>
  <instructor>Kathryn A. Moler</instructor>
  <year>2004</year>
</PhD_theses>

<PhD_theses>
```



```
<author>William Gourley</author>

<title>CONCEPTUALISING THE INTERFACE BETWEEN ENGLISH FURTHER AND HIGHER EDUCATION</title>

<university>University of Sheffield</university>

<year>2009</year>

</PhD_theses>
```

DTD-

```
<?xml version="1.0" encoding="UTF-8" ?>

<!ELEMENT PhD_theses (author,title,university,instructor?,year)>

<!ELEMENT author (#PCDATA)>

<!ELEMENT title (#PCDATA)>

<!ELEMENT university (#PCDATA)>

<!ELEMENT instructor (#PCDATA)>

<!ELEMENT year (#PCDATA)>
```