HW4

Topics: XML
Course: SEII
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1.

a)

```
<!DOCTYPE Products[
        <!ELEMENT Products(Product*)>
        <!ELEMENT Product (Name,Price,Description,Store*,Sells*)>
        <!ATTLIST Product pid ID #REQUIRED>
        <!ELEMENT Name (#PCDATA)>
        <!ELEMENT Price (#PCDATA)>
        <!ELEMENT Description (#PCDATA)>
        <!ELEMENT Store (Name,Phone,Markup)>
        <!ATTLIST Store sid ID #REQUIRED>
        <!ELEMENT Name (#PCDATA)>
        <!ELEMENT Phone (#PCDATA)>
        <!ELEMENT Markup (#PCDATA)>
        <!ELEMENT Sells (sid,pid,Markup)>
        <!ELEMENT pid EMPTY>
        <!ATTLIST pid IDREF #REQUIRED>
        <!ELEMENT sid EMPTY>
        <!ATTLIST sid idref IDREF #REQUIRED>
]>
```

b)

```
<db>
for $p in document("Products.xml")//Product/row
for $s in document("Products.xml")//Store/row
for $x in document("Prodcuts.xml")//Sells/row
where $p/pid=$x/pid and $s/sid=$x/sid
return
      <products>
                  <row>
                  {$p/pid,$p/Name,$p/Price,$p/Description}
                  </row>
      </products>
      <stores>
                   <row>
                  {$s/sid,$s/Name,$s/Phone}
                  </row>
       </stores>
      <sells>
                 <row>
                  {$x/sid,$x/pid,$x/Markup}
```

```
                    </row>
            </sells>
      </db>
```

c)

```
for $p in document("Products.xml")//Product/row
for $x in document("Products.xml")//Sells[Markup="25%"][pid=$p/pid]
/row
for $s in document("Products.xml")//Store[sid=$x/sid]/row
return
        <product>
                {$p/Name,$p/Price}
        </product>
```

d)

```
SELECT P.name, P.price
FROM Products P, Stores St, Sells Se
WHERE P.pid = Se.pid AND Se.sid=St.sid AND Se.Markup = 25
GROUP BY P.pid P.Name
```

2.

a)
```
<broadway>
for $b in document("broadway.xml")/broadway
let $t:=  in $b/theater/title
let $c:= in $b/concert/title
let $o:= in $b/opera/title
return
        <theater> {$t/title} </theater>
        <concert> {$c/title} </concert>
        <opera> {$o/title} </opera>
</broadway>
```

b)
```
<broadway>
for $t in document("broadway.xml")/broadway/theater[date =
"11/9/2008"]
where $t/price < 35
return <theater>
                {$x/title,$x/address}
        </theater>
</broadway>
```

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

d)
```
<groupByDate>
for $b in document("broadway.xml")/broadway
for $t in distinct-value($b//date/text())
for $d in $b/concert[date=$t]/row
for $e in $b/opera[date=$t]/row
for $f in $b/theater[date=$t]/row
return
        <day>
                <date> {$t} </date>
                <show>
                        <concert>
                                {$d/price, $d/title}
                        </concert>
                        <opera>
                                {$e/price, $e/title}
                        </opera>
                        <theater>
                                {$f/price, $f/title}
                        </theater>
                </show>
        </day>
  </groupByDate>
```

3.

1) **For XML file,**

divide the element <author> into two sub-elements: <firstname> and <lastname>.

For DTD file,

add the elements <!ELEMENT author (firstname ,lastname) > , <!ELEMENT firstname (#PCDATA)>,<!ELEMENT lastname (#PCDATA)>.

For XSL file,

There are some minors changes which are marked as red in xml code.

XML code

```
<?xml version="1.0" encoding="ISO-8859-1" ?>
<?xml-stylesheet type="text/xsl" href="bib.xsl"?>
<!DOCTYPE bib SYSTEM "bib.dtd">
<bib>
<book>
<author><firstname>Leslie</firstname>
        <lastname>Lamport</lastname>
 </author>
<title>Latex: A Document Preparation System </title>
<year>1986</year>
<publisher>Addison-Wesley</publisher>
</book>
<article>
<author><firstname>David</firstname>
        <lastname>Marr</lastname>
</author>
<title>Visual information processing</title>
<year>1980</year>
<volume>290</volume>
<page>
<from>199</from>
<to>218</to>
</page>
<journal>Phil. Trans. Roy. Soc. B</journal>
</article>
<article>
<author><firstname>Clifton</firstname>
         <lastname>R. K.</lastname>
</author>
<title>Breakdown of echo suppression in the precedence
effect</title>
<year>1987</year>
<volume>82</volume>
<page>
<from>1834</from>
<to>1835</to>
</page>
<journal>J. Acoust. Soc. Am. </journal>
</article>
<book>
<author><firstname>David</firstname>
         <lastname>Marr</lastname>
```

```
</author>
<title>Vision</title>
<year>1982</year>
<address> NY </address>
<publisher>Freeman</publisher>
</book>
<article>
<author><firstname>David</firstname>
        <lastname>Marr</lastname>
</author>
<title>Visual information processing</title>
<year>1980</year>
<volume>290</volume>
<page>
<from>199</from>
<to>218</to>
</page>
<journal> Phil. Trans. Roy. Soc. B</journal>
</article>
</bib>
```

DTD code

```
<?xml version="1.0" ?>
<!ELEMENT bib ( (book | article)+)>
<!ELEMENT book ( author, title, year, (address)?, publisher )>
<!ELEMENT article ( author, title, year, volume, page, journal) >
<!ELEMENT author ( firstname, lastname)>
<!ELEMENT page (from, to)>
<!ELEMENT title (#PCDATA)>
<!ELEMENT year (#PCDATA)>
<!ELEMENT address (#PCDATA)>
<!ELEMENT publisher (#PCDATA)>
<!ELEMENT firstname (#PCDATA)>
<!ELEMENT lastname (#PCDATA)>
<!ELEMENT from (#PCDATA)>
<!ELEMENT to (#PCDATA)>
<!ELEMENT journal (#PCDATA)>
<!ELEMENT volume (#PCDATA)>
```

XSL code

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<xsl:stylesheet version="1.0"
xmlns:xsl="http://www.w3.org/1999/XSL/Transform">
<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/lastname"/>,
<xsl:value-of select="author/firstname"/>.
<b><xsl:value-of select="title"/></b>
(<xsl:value-of select="publisher"/>
<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/lastname"/>,
<xsl:value-of select="author/firstname"/>.
<xsl:value-of select="title"/>,
<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>
```

2) Add two books and two articles. The first added book in blue and article in purple are complete. The second added book in green and article in red miss some information.

XSL code

```
<?xml version="1.0" encoding="ISO-8859-1" ?>
<?xml-stylesheet type="text/xsl" href="bib.xsl"?>
<!DOCTYPE bib SYSTEM "bib.dtd">
<bib>
<book>
```

<author><firstname>Leslie</firstname>
<lastname>Lamport</lastname>
</author>
<title>Latex: A Document Preparation System </title>
<year>1986</year>
<publisher>Addison-Wesley</publisher>
</book>
<article>
<author><firstname>David</firstname>
<lastname>Marr</lastname>
</author>
<title>Visual information processing</title>
<year>1980</year>
<volume>290</volume>
<page>
<from>199</from>
<to>218</to>
</page>
<journal>Phil. Trans. Roy. Soc. B</journal>
</article>
<article>
<author><firstname>Clifton</firstname>
<lastname>R. K.</lastname>
</author>
<title>Breakdown of echo suppression in the precedence
effect</title>
<year>1987</year>
<volume>82</volume>
<page>
<from>1834</from>
<to>1835</to>
</page>
<journal>J. Acoust. Soc. Am. </journal>
</article>
<book>
<author><firstname>David</firstname>
<lastname>Marr</lastname>
</author>
<title>Vision information processing</title>
<year>1982</year>
<address> NY </address>
<publisher>Freeman</publisher>
</book>
<article>
<author><firstname>David</firstname>
<lastname>Marr</lastname>

```
</author>
<title>Visual information processing</title>
<year>1980</year>
<volume>290</volume>
<page>
<from>199</from>
<to>218</to>
</page>
<journal> Phil. Trans. Roy. Soc. B</journal>
</article>
<book>
<author><firstname>Sierra</firstname>
        <lastname>Bates</lastname>
</author>
<title>Head First Java</title>
<year>2007</year>
<address> NJ </address>
<publisher>EdieFreeman</publisher>
</book>
<article>
<author><firstname>Tim</firstname>
        <lastname>Bray</lastname>
</author>
<title>Extensible Markup language(XML)</title>
<year>2006</year>
<volume>5307</volume>
<page>
<from>1</from>
<to>50</to>
</page>
<journal> W3C Recommendation 16 August 2006</journal>
</article>
<book>
<author><firstname>Sierra</firstname>
        <lastname>Bates</lastname>
</author>
<title>Algorithm Fourth Edition</title>
<year>2012</year>
</book>
<article>
<author><firstname>James</firstname>
        <lastname>Clark</lastname>
</author>
<title>XML Path Language(XPath)</title>
<year>1999</year>
<volume>2447</volume>
```

```
</article>
</bib>
```

3) Define a new type of bibliography item for PhD theses in XSL and changes in codes are in red color. Add two such items to the XML file and changes in codes are in red and green colors. Add the appropriate declarations to the DTD code and changes in codes are in red.

XSL code

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<xsl:stylesheet version="1.0"
xmlns:xsl="http://www.w3.org/1999/XSL/Transform">
<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/lastname"/>,
<xsl:value-of select="author/firstname"/>.
<b><xsl:value-of select="title"/></b>
(<xsl:value-of select="publisher"/>
<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/lastname"/>,
<xsl:value-of select="author/firstname"/>.
<xsl:value-of select="title"/>,
<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>
<xsl:for-each select="bib/PhD-theses">
<p/><li>
<xsl:value-of select="author/lastname"/>,
```

```
<xsl:value-of select="author/firstname"/>.
<xsl:value-of select="title"/>,
<b><xsl:value-of select="subject"/>,
<xsl:value-of select="ISSN"/></b>,
<xsl:apply-templates select="Language"/>
<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 code

```
<?xml version="1.0" encoding="ISO-8859-1" ?>
<?xml-stylesheet type="text/xsl" href="bib.xsl"?>
<!DOCTYPE bib SYSTEM "bib.dtd">
<bib>
<book>
<author><firstname>Leslie</firstname>
      <lastname>Lamport</lastname>
 </author>
<title>Latex: A Document Preparation System </title>
<year>1986</year>
<publisher>Addison-Wesley</publisher>
</book>
<article>
<author><firstname>David</firstname>
      <lastname>Marr</lastname>
</author>
<title>Visual information processing</title>
<year>1980</year>
<volume>290</volume>
<page>
<from>199</from>
<to>218</to>
</page>
<journal>Phil. Trans. Roy. Soc. B</journal>
</article>
<article>
<author><firstname>Clifton</firstname>
      <lastname>R. K.</lastname>
```

</author>
<title>Breakdown of echo suppression in the precedence
effect</title>
<year>1987</year>
<volume>82</volume>
<page>
<from>1834</from>
<to>1835</to>
</page>
<journal>J. Acoust. Soc. Am. </journal>
</article>
<book>
<author><firstname>David</firstname>
<lastname>Marr</lastname>
</author>
<title>Vision information processing</title>
<year>1982</year>
<address> NY </address>
<publisher>Freeman</publisher>
</book>
<article>
<author><firstname>David</firstname>
<lastname>Marr</lastname>
</author>
<title>Visual information processing</title>
<year>1980</year>
<volume>290</volume>
<page>
<from>199</from>
<to>218</to>
</page>
<journal> Phil. Trans. Roy. Soc. B</journal>
</article>
<book>
<author><firstname>Sierra</firstname>
<lastname>Bates</lastname>
</author>
<title>Head First Java</title>
<year>2007</year>
<address> NJ </address>
<publisher>EdieFreeman</publisher>
</book>
<article>
<author><firstname>Tim</firstname>
<lastname>Bray</lastname>
</author>

<title>Extensible Markup language(XML)</title>
<year>2006</year>
<volume>5307</volume>
<page>
<from>1</from>
<to>50</to>
</page>
<journal> W3C Recommendation 16 August 2006</journal>
</article>
<book>
<author><firstname>Sierra</firstname>
<lastname>Bates</lastname>
</author>
<title>Algorithm Fourth Edition</title>
<year>2012</year>
</book>
<article>
<author><firstname>James</firstname>
<lastname>Clark</lastname>
</author>
<title>XML Path Language(XPath)</title>
<year>1999</year>
<volume>2447</volume>
</article>
<PhD-theses>
<author><firstname>Andersson</firstname>
<lastname>Mats</lastname>
</author>
<title>Object-Oriented Modeling and Simulation of Hybrid Systems</title>
<year>1994</year>
<ISSN> 0280-5315</ISSN>
<language> English</language>
<subject> Control Engineering</subject>
</PhD-theses>
<PhD-theses>
<author><firstname>Olsson</firstname>
<lastname>Henrik</lastname>
</author>
<title>Control Systems with Friction</title>
<year>1996</year>
<ISSN> 0280-5316</ISSN>
<language> English</language>
<subject> Control Engineering</subject>
</PhD-theses>
</bib>

DTD code

```
<?xml version="1.0" ?>
<!ELEMENT bib ( (book | article)+)>
<!ELEMENT book ( author, title, year, (address)?, publisher )>
<!ELEMENT article ( author, title, year, volume, page, journal) >
<!ELEMENT PhD-theses ( author, title, year, ISSN, language,subject) >
<!ELEMENT author ( firstname, lastname)>
<!ELEMENT page (from, to)>
<!ELEMENT title (#PCDATA)>
<!ELEMENT year (#PCDATA)>
<!ELEMENT address (#PCDATA)>
<!ELEMENT publisher (#PCDATA)>
<!ELEMENT firstname (#PCDATA)>
<!ELEMENT lastname (#PCDATA)>
<!ELEMENT from (#PCDATA)>
<!ELEMENT to (#PCDATA)>
<!ELEMENT journal (#PCDATA)>
<!ELEMENT volume (#PCDATA)>
<!ELEMENT ISSN (#PCDATA)>
<!ELEMENT subject (#PCDATA)>
<!ELEMENT language (#PCDATA)>
```