SOFTWARE ENGINEERING FOR WEB APPLICATIONS

HOMEWORK – 4

1.
a)

```
<!DOCTYPE products[
<!ELEMENT products(product*)>
<!ELEMENT product(name, price, description, store*, sells*)>
<!ATTLIST product
        pid ID #REQUIRED
>
<!ELEMENT name(#PCDATA)>
<!ELEMENT phone(#PCDATA)>
<!ELEMENT description(#PCDATA)>
<!ELEMENT stores(name, phone, markup)>
<!ATTLIST stores
sid ID #REQUIRED
>
<!ELEMENT name(#PCDATA)>
<!ELEMENT phone(#PCDATA)>
<!ELEMENT markup(#PCDATA)>
<!ATTLIST markup pid IDREF #REQUIRED>
<!ATTLIST markup sid IDREF #REQUIRED>
]>
```

b)
```
for $x in doc("db.xml")/db/products/row
$y in doc("db.xml")/db/stores/row
$z in doc("db.xml")/db/sells/row
where $x/pid=$z/pid and $y/pid=$z/pid
return
<row>
<product>{$x/name, $x/price, $x/description}</product>
<store>{$y/name, $y/phone, $y/markup}</store>
<sell>{$z/markup}</sell>
</row>
```

c)
```
for $x in doc("db.xml")/db/products/row
$y in doc("db.xml")/db/sells/row
where $x/pid = $y/pid and $y/markup = 25%
return
<product>
<name>{$x/name}</name>
<price>{$x/price}</price>
</product>
```

d)
```
SELECT P.name, P.price
FROM Products P, Sells P
WHERE P.pid = S.pid AND S.markup = 25
GROUP BY P.pid P.pname
```

2.
a)
```
for $x in doc("broadway.xml")/broadway
let $a in $x/theater/title
let $b in $x/concert/title
let $c in $x/opera/title
return <theater> {$a/title} </theater>
<concert> {$b/title} </concert>
<opera> {$c/title} </opera>
```

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

c)
```
for $x in doc("broadway.xml")/broadway/concert[type = "chamber orchestra"]
where avg($x/price) >= 50
return $x/title
```

d)
```
for $x in doc("broadway.xml")/broadway/*
return
<groupedByDate>
<day>
<date> {$x/date} </date>
```

```
<show>
                <title>{$x/title}</title>
            <price>{$x/price}</price>
        </show>
    </day>
 </groupByDate>


3.
1)
For XML file, <firstname> and <lastname> .


XML:
    <?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>
```

```xml
<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>
```

For DTD file I have made changes with author's (Firstname, Lastname) with <!ELEMENT with definition of firstname and lastname.

```
<?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)>
```

For xsl, I have added a () for the book part and date and publisher will appear within the (). And for article, the publisher and date appear in bold.

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

```xml
<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>
```

```xml
<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> Christopher </firstname>
<lastname>Bishop</lastname>
</author>
<title> Pattern Recognition and Machine Learning </title>
<year>2006</year>
<address> UK </address>
<publisher>M Jordan</publisher>
</book>
```

```xml
<article>
<author>
<firstname>Ramkrishnan</firstname>
<lastname>Raghu</lastname>
</author>
<title>Database Management Systems (XML)</title>
<year>2003</year>
<volume>1098</volume>
<page>
<from>1</from>
<to>322</to>
</page>
<journal> Buffer management in DBMS versus OS</journal>
</article>
<book>
<author>
<firstname>Christopher</firstname>
<lastname>Bishop</lastname>
</author>
<title>Pattern Recognition and Machine Learning</title>
<year>2006</year>
</book>
<article>
<author>
<firstname>Ramkrishnan </firstname>
<lastname>Raghu</lastname>
</author>
<title> Database Management Systems </title>
<year>2003</year>
<volume>1098</volume>
</article>
</bib>
```

3.
XSL
```xml
<?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><em><xsl:value-of select="journal"/></em>,
<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="Chapter"/>,
```

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

DTD:-
```
<?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, Edition, language, Chapter) >
<!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)>
```

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

```xml
<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>
```

```xml
</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> Robert </firstname>
<lastname> Sedgewick</lastname>
</author>
<title>Algorithms</title>
<year>1983</year>
```

```xml
<address> US</address>
<publisher> Addison-Wesley Professional </publisher>
</book>
<article>
<author>
<firstname>Yashavant</firstname>
<lastname>Kanetkar</lastname>
</author>
<title>Let US C++</title>
<year>1709</year>
<volume>1098</volume>
<page>
<from>1</from>
<to>250</to>
</page>
<journal> Buffer management in DBMS versus OS</journal>
</article>
<book>
<author>
<firstname>Robert</firstname>
<lastname>Sedgewick</lastname>
</author>
<title> Algorithms</title>
<year>1983</year>
</book>
<article>
<author>
<firstname>Yashavant</firstname>
<lastname>Kanetkar</lastname>
</author>
<title>Let Us C++</title>
<year>1709</year>
<volume>1098</volume>
</article>
```

```xml
<PhD-theses>
<author>
<firstname>Robert</firstname>
<lastname>Sedgewick</lastname>
</author>
<title>Left-Leaning Red Black Trees </title>
<year>2008</year>
<Edition> Second</Edition>
<language> English</language>
</PhD-theses>
<PhD-theses>
<author>
<firstname>Robert</firstname>
<lastname>Sedgewick</lastname>
</author>
<title>Quicksort</title>
<year>1980</year>
<language> English</language>
</PhD-theses>
</bib>
```