

**Terna Engineering College
Computer Engineering Department**

Program: Sem V

Course: Web Technology Laboratory (CSL504)

Faculty: Mrs Reshma Koli

LAB Manual

PART A

(PART A: TO BE REFERRED BY STUDENTS)

Experiment No.05

A.1 Aim:

Design your mark sheet using Extensible Mark-up Language (XML) and Extensible stylesheet language (XSL).

A.2 Prerequisite:

1. Knowledge of the World Wide Web (WWW).
2. Knowledge of core concepts of web technology.
3. Knowledge of XML and XSL.

A.3 Outcome:

After successful completion of this experiment students will be able to

- Design static web pages using XML and XSL.
- Understand concepts of web page and web browser.

A.4 Theory:

➤ **XML:**

- stands for Extensible Markup Language.
- is a markup language much like HTML.
- designed to describe data, not to display data.
- tags are not predefined. You must define your own tags.
- designed to be self-descriptive.

➤ **XML and HTML:**

- XML is not a replacement for HTML.
- XML and HTML were designed with different goals:
- XML was designed to describe data, with focus on what data is.
- HTML was designed to display data, with focus on how data looks.
- HTML is about displaying information, while XML is about carrying information.
- XML documents form a tree structure that starts at "the root" and branches to "the leaves".

➤ **XML Syntax Rules are:**

- All XML elements must have a closing tag.
- Tags are case sensitive.
- Elements must be properly nested.
- Documents must have a root element.
- Attributes values must be quoted.
- Xml document should be well formed.

➤ **XML Naming Rules:**

- Names can contain letters, numbers, and other characters.
- Names cannot start with a number or punctuation character.
- Names cannot start with the letters xml (or XML, or Xml, etc).
- Names cannot contain spaces.
- Any name can be used, no words are reserved.

➤ **Display XML Data**

- **HTML Page:**

The XMLHttpRequest object is used to exchange data with a server.

The XMLHttpRequest object is:

- Update a web page without reloading the page.
- Request data from a server after the page has loaded.
- Receive data from a server after the page has loaded.

- Send data to a server in the background.

Syntax: for creating an XMLHttpRequest object:

```
xmlhttp=new XMLHttpRequest();
```

HTML web page used this object with a script to exchange data.

XPATH and XSLT (XML Technology):

➤ XPATH:

- is a syntax for defining parts of an XML document.
- uses path expressions to navigate in XML documents.
- contains a library of standard functions.
- is a major element in XSLT.
- Uses xpath expressions to select nodes or node-sets in an XML document.

➤ XSLT:

- With XSLT you can transform an XML document into HTML.
- XSLT (extensible Stylesheet Language Transformations) is the recommended style sheet language for XML.
- XSLT is far more sophisticated than CSS. With XSLT you can add/remove elements and attributes to or from the output file. You can also rearrange and sort elements, perform tests and make decisions about which elements to hide and display, and a lot more.
- XSLT uses XPath to find information in an XML document.
- References of XSL need to be specified in the XML file to retrieve XML data.

Example: <?xml-stylesheet type="text/xsl" href="simple.xsl" ?>

Example: mark sheet designing using XML.

Course Code	Course Title	Course credit	ESE/PR/OR	IA/TW	OVERALL	Course credit Earned (c)	Grade Points (g)	C X G
FEC201	Applied Maths-2	4 1	C --	C 0	C 0	4 1	7 10	28 0.5
FEC202	Applied Physics-2	3 0.5	P --	C 0	E	3 0.5	5 10	15 5.0
FEC203	Applied Chemistry-2	3 0.5	C --	E 0	C	3 0.5	7 10	21 0.5
FEC204	Engineering Drawing	3 2	D A	C C	D	3 2	6 8	18 16
FEC205	Structure Programming Approach	4 1	A 0	0 0	A	4 1	9 10	36 10
FEC206	Communication Skills	2 1	C --	C 0	C	2 1	7 10	14 10.0
FEC207	Basic workshop-2	2	--	0	0	2	10	20
Total:		27				27	--	208.00

Remark: Successful
Result Declared on: JULY 26, 2013
Received Rs: 50/-

SGPI: 7.70
CGPI:

Example Source Code:

➤ Marksheet.xml

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

```
<?xml-stylesheet type="text/xsl" href="simple.xsl" ?>
```

```
<GRADE_CARD>
```

```
<grade>
```

```
<Name>Arjun Patil</Name>
```

```
<Examination>FIRST YEAR ENGINEERING SEMESTER 2(CBGS)</Examination>
```

```
<Held_in>May 2013</Held_in>
```

```
<Seat_no>4587</Seat_no>
```

```

<Course>

    <Code>FEC201</Code><Title>Applied Maths-2</Title><c_Credit>4 1</c_Credit>

<PR_OR>C  --</PR_OR><TW>C  0</TW><Overall>C  0</Overall><Gp>7 10</Gp><c>4
1</c><cxg>28 0.5</cxg>

</Course>

```

➤ Simple.xsl

```

<?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>

<body bgcolor="#F5F5DC">

<center><h1>UNIVERSITY OF MUMBAI</h1></center>

<center><h2>GRADE CARD</h2></center>

<pre>

<xsl:for-each select="GRADE_CARD/grade">

    Name:      <xsl:value-of select="Name"/>

    Exam:      <xsl:value-of select="Examination"/>

    Held in: <xsl:value-of select="Held_in"/>

    Seat no: <xsl:value-of select="Seat_no"/>

</xsl:for-each>

```

PART B

(PART B: TO BE COMPLETED BY STUDENTS)

(Students must submit the soft copy as per following segments within two hours of the practical. The soft copy must be uploaded on the Blackboard or emailed to the concerned lab in charge faculties at the end of the practical in case the there is no Blackboard access available)

Roll No. 50	Name: Amey Thakur
Class: TE-Comps B	Batch: B3
Date of Experiment: 20/08/2020	Date of Submission: 20/08/2020
Grade :	

B.1 Web page Snapshot: (Add all snapshots of output.)

- MARKSHEET

UNIVERSITY OF MUMBAI

GRADE CARD

NAME : THAKUR AMEY MAHENDRA MRUNALINI
EXAMINATION : FIRST YEAR ENGINEERING SEMESTER - I (CHOICE BASED CREDIT AND GRADING SYSTEM)
HELD IN : MAY 2019
SEAT NUMBER : 3087200 PRN: 2018016402517845

COURSE CODE	COURSE TITLE	COURSE CREDITS	GRADE			CREDIT EARNED (C)	GRADE POINTS (G)	C X G
			ESE/PR/OR	LA/TW	OVERALL			
FEC101	APPLIED MATHEMATICS - I	4	D	P	E	4	5	20
FEC102	APPLIED PHYSICS - I	3	C	C	C	3	7	21
FEC103	APPLIED CHEMISTRY - I	3	P	D	E	3	5	15
FEC104	ENGINEERING MECHANICS	5	E	C	E	5	5	25
FEC105	BASIC ELECTRICAL ENGINEERING	4	E	D	E	4	5	20
FEC106	ENVIRONMENTAL STUDIES (EVS)	2	D	C	D	2	6	12
FEL101	BASIC WORKSHOP AND PRACTICE - I	2	--	O	O	2	10	20
TOTAL		27				27	--	169.00

REMARK : Successful
RESULT DECLARED ON : JULY 13, 2019 SGPI : 6.26 CGPI:

DIRECTOR

BOARD OF EXAMINATIONS AND EVALUATION

Amey Thakur B-50

B.2 Web page source code:

- Filly.xml

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

<?xml-stylesheet type="text/xsl" href="filly.xsl"?>

<marksheet>

<student>

<name>THAKUR AMEY MAHENDRA MRUNALINI</name>

<exam>FIRST YEAR ENGINEERING SEMESTER - I (CHOICE BASED CREDIT AND GRADING SYSTEM)</exam>

<heldin>MAY 2019</heldin>

[illegible]

</student>

<course>

```
<code>FEC101</code>
```

<title>APPLIED MATHEMATICS - I</title>

<cr>4</cr>

<or>D</or>

<ia>P</ia>

<ovrl>E</ovrl>

<ce>4</ce>

<gp>5</gp>

<cxg>20</cxg>

</course>

<course>

<code>FEC102</code>

<title>APPLIED PHYSICS - I</title>

<cr>3</cr>

<or>C</or>

<ia>C</ia>

<ovrl>C</ovrl>

<ce>3</ce>

<gp>7</gp>

<cxg>21</cxg>

</course>

<course>

<code>FEC103</code>

<title>APPLIED CHEMISTRY - I</title>

<cr>3</cr>

<or>P</or>

<ia>D</ia>

<ovrl>E</ovrl>

<ce>3</ce>

<gp>5</gp>

<cxg>15</cxg>

</course>

<course>

<code>FEC104</code>

<title>ENGINEERING MECHANICS</title>

<cr>5</cr>

<or>E</or>

<ia>C</ia>

<ovrl>E</ovrl>

<ce>5</ce>

<gp>5</gp>

<cxg>25</cxg>

</course>

<course>

<code>FEC105</code>

<title>BASIC ELECTRICAL ENGINEERING</title>

<cr>4</cr>

<or>E</or>

<ia>D</ia>

<ovrl>E</ovrl>

<ce>4</ce>

<gp>5</gp>

<cxg>20</cxg>

</course>

<course>

<code>FEC106</code>

<title>ENVIRONMENTAL STUDIES (EVS)</title>

<cr>2</cr>

<or>D</or>

<ia>C</ia>

<ovrl>D</ovrl>

<ce>2</ce>

<gp>6</gp>

<cxg>12</cxg>

</course>

<course>

<code>FEL101</code>

<title>BASIC WORKSHOP AND PRACTICE - I </title>

<cr>2</cr>

<or>--</or>

<ia>O</ia>

<ovrl>O</ovrl>

<ce>2</ce>

<gp>10</gp>

<cxg>20</cxg>

</course>

</marksheet>

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

<xsl:transform version="1.0"

```
xmlns:xsl="http://www.w3.org/1999/XSL/Transform">
```

```
<xsl:template match="/">
```

<html

xmlns="http://www.w3.org/1999/xhtml">

<head>

<title>MU RESULTS</title>

</head>

```
<body bgcolor="#dbdbdb">
```

<center>

UNIVERSITY OF MUMBAI

GRADE CARD

</center>

<xsl:for-each select="/marksheet/student">

[illegible]

<xsl:value-of select="name"/>

[illegible]

```
<table border="0" bgcolor="#000000" align="center" cellspacing= "20">

    <tr style="color:#ff0000">
```

```

<th rowspan="2">COURSE <BR/> CODE</th>
<th rowspan="2">COURSE TITLE</th >
<th rowspan="2">COURSE <BR/> CREDITS </th >
<th colspan="3">GRADE</th>
<th rowspan="2">CREDIT<BR/> EARNED<BR/> (C)</th>
<th rowspan="2">GRADE <BR/> POINTS <BR/> (G)</th>
<th rowspan="2">C X G</th>
</tr>
<tr style="color:#ff0000">
    <th>ESE/PR/OR</th>
    <th>IA/TW</th>
    <th>OVERALL</th>
</tr>
<xsl:for-each select="/marksheet/course">
<tr style="color:#FFFFFF">
    <td align="center"><xsl:value-of select="code"/></td>
    <td><xsl:value-of select="title"/></td>
    <td align="center"> <xsl:value-of select="cr"/></td>
    <td align="center"> <xsl:value-of select="or"/></td>
    <td align="center"> <xsl:value-of select="ia"/></td>
    <td align="center"> <xsl:value-of select="ovrl"/></td>
    <td align="center"> <xsl:value-of select="ce"/></td>
    <td align="center"> <xsl:value-of select="gp"/></td>
    <td align="center"> <xsl:value-of select="cxg"/></td>

```

[illegible]

[illegible]

<center style="color:#ff0000"><xsl:text>DIRECTOR</xsl:text></center>

BOARD OF EXAMINATIONS AND EVALUATION

<footer>

<center>

Amey Thakur B-50

</center>

</footer>

</body>

</html>

</xsl:template>

</xsl:transform>

B.3 Questions:

1. What are the features of XML?

Ans:

Features of XML:

1. XML focuses on data rather than how it looks
 - One of the reasons XML is popular because it focuses on data rather than data presentation. The other markup language such as HTML is used for data presentation. This separates the data and its presentation part and gives us the freedom to present the data, the way we want, once we receive it using XML.
 - Two or more systems can receive the same data from the same XML and present it in a different way using other markup language such as HTML.
2. Easy and efficient data sharing
 - Since XML is software and hardware independent, it is easier to share data between different systems with different hardware and software configuration. Any system with any programming language can read and process a XML document.
3. Compatibility with other markup language HTML
 - It is so much easier to read the data from XML and display it on a GUI (graphical user interface) using HTML markup language.
 - When the data changes over time, we need not to make any changes in the HTML.
4. Supports platform transition
 - The main reason why changing to new systems and platforms is challenging, because it involves the headache of data conversion between incompatible formats which often results in data loss. XML simplifies this process as the data is transported on new upgraded systems without any data loss.
5. Allows XML validation
 - A XML document can be validated using DTD or XML schema. This ensures that the XML document is syntactically correct and avoids any issues that may arise due to the incorrect XML.
6. Adapts technology advancements
 - The reason why XML is popular and being used for a very long time is because it can adapt to the new technologies because of its platform-independent nature.

7. XML supports Unicode

→ XML supports Unicode that allows it to communicate almost any information in any written human language.

2. Differentiate between XML and HTML.

Ans:

HTML	XML
HTML stands for Hyper Text Markup Language.	XML stands for eXtensible Markup Language.
HTML is static.	XML is dynamic.
HTML is a markup language.	XML provides a framework to define markup languages.
HTML can ignore small errors.	XML does not allow errors.
HTML is not Case sensitive.	XML is Case sensitive.
HTML tags are predefined tags.	XML tags are user defined tags.
There are a limited number of tags in HTML.	XML tags are extensible.
HTML does not preserve white spaces.	White space can be preserved in XML.
HTML tags are used for displaying the data.	XML tags are used for describing the data not for displaying.
In HTML, closing tags are not necessary.	In XML, closing tags are necessary.

3. Explain XSL in detail.

Ans:

- XSL is a language for expressing style sheets. An XSL style sheet is, like with CSS, a file that describes how to display an XML document of a given type. XSL shares the functionality and is compatible with CSS2 (although it uses a different syntax).
- It also adds:
 1. A transformation language for XML documents: XSLT. Originally intended to perform complex styling operations, like the generation of tables of contents and indexes, it is now used as a general purpose XML processing language. XSLT is thus widely used for purposes other than XSL, like generating HTML web pages from XML data.
 2. Advanced styling features, expressed by an XML document type which defines a set of elements called Formatting Objects, and attributes (in part borrowed from CSS2 properties and adding more complex ones).

B.4 Conclusion

From this experiment, we have understood -

- XSL (Extensible Stylesheet Language), formerly called Extensible Style Language, is a language for creating a style sheet that describes how data sent over the Web using the Extensible Markup Language (XML) is to be presented to the user.
- XSL is a powerful language for applying styles to XML documents.
- how to Design mark sheets using Extensible Mark-up Language (XML) and Extensible stylesheet language (XSL).