



 slington college
(इरिलिङ्टन कलेज)

Module Code & Module Title

CS5004NI Emerging Programming Platforms and Technologies

**Assessment Weightage &
Type 30% Individual
Coursework**

Year and Semester

2019-20 Autumn / 2020-21 Spring

Student Name: Mausam Chamling Rai

London Met ID: 20048922

College ID: np01cp4s210356

Assignment Due Date: May 5

Assignment Submission Date: May 5

Title (Where Required):

Word Count (Where Required): 3465

I confirm that I understand my coursework needs to be submitted online via Google Classroom under the relevant module page before the deadline in order for my assignment to be accepted and marked. I am fully aware that late submissions will be treated as non-submission and a marks of zero will be awarded.

Table of Contents

1. Introduction	5
2. XML Document	6
2.1 List of Data	6
2.1.1 List of Elements	6
2.1.2 List of Attributes	8
2.2 Tree Diagram	9
2.3 XML Code (must be color coded)	11
3. Schema Document (Include schema code – must be color coded)	20
4. Difference between Schema and DTD?	25
5. Testing	27
5.1 To test the XML document is functioning or not against schema	27
5.2 To check schema validation	29
5.3 To test the CSS document is working or not	31
5.4 To check the image hover	33
5.5 To test the XML document without schema	35

6. Coursework Development	37
6.1 Critical analysis.....	37
7. Conclusion	38
References	39
Appendix	40

Table of Figures

Figure 1 Tree Diagram	10
Figure 2 Screenshot of Test1	28
Figure 3 Screenshot of Test2	30
Figure 4 Screenshot of Test3	32
Figure 5 Screenshot of Test4	34
Figure 6 Screenshot of Test4	34
Figure 7 Screenshot of Test5	36

Table of Tables

Table 1 List of elements	8
Table 2 List of attributes	9
Table 3 Difference between Schema and DTD	26
Table 4 Test1-To test the XML document is functioning or not against schema	27
Table 5 Test2-To check schema validation	29
Table 6 Test3-To test the CSS document is working or not	31
Table 7 Test4-To check the image hover	33
Table 8 Test5-To test the XML document without schema	35

1. Introduction

This project is for the "Emerging Programming Platforms and Technologies," in which we, as XML developers, must model a system for the class gift card store. For our coursework we had to prepare the website by using the XML, XSD within the given time. For this, I had to do some research about different things that I was unaware of. We were able to understand the goal and objective of this project and cope with the doubts that arose while doing this coursework, such as how to apply suitable methods for programming, how to make tree diagrams, how to apply CSS code, how to do testing, how to make a better and attractive design for a gift card store, and how to validate the XML, XSD, and DDT, with the help of many relevant researches, studies on books, and websites about the XML programming language.

XML is an independent software and hardware tool which is used for transporting and storing data. XML stands for eXensible Markup Language just like HTML and was designed to be the self-descriptive. XML helps to simplify the data sharing, transport and availability of the data. A schema is a diagrammatic representation of a well-structured framework. With adequate preparation, we may achieve our goals and ambitions more easily. Schema is the outline of our framework that aids us in making our plan more manageable. Schema aids in the interpretation of vast amounts of data in a short amount of time that is available in the environment. Name space is the method to avoid elements name conflict. We must complete all standards for this class, including adding at least fifteen data, five attributes, and five optional items when developing XML, DDT, and Schemas. Similarly, by adding even more CSS attributes to our webpage, we must focus on making it seem appealing and interesting.

2. XML Document

Extensible Markup Language, or XML, is a popular computer language. This language is like HTML, but it has been further developed. XML helps to simplify the data sharing, transport and availability of the data. A XML tree diagram is a diagram that illustrates the XML document's well-defined structure, which includes root elements, child elements, and so on.

2.1 List of Data

2.1.1 List of Elements

List of Elements	Element Type	Element Data	Occurrence
store	Complex Type	Child Elements	Only once
detail	Complex Type	Child Elements	One or More
storeName	Complex Type	Child Elements	Only once
h1	Simple Type	Empty Element	Once
address	Simple Type	Empty Element	Once
teleNumber	Complex Type	Child Elements	Once or more
li	Complex Type	Child Elements	Zero or more
number	Complex Type	Child Elements	Once
URL	Simple Type	Empty Elements	Once
logo	Complex Type	Child Elements	Once

giftcards	Complex Type	Child Elements	Once or more
div	Complex Type	Child Elements	Once or more
title	Simple Type	Empty Element	Once
cards	Complex Type	Child Elements	Once
card	Complex Type	Child Elements	Once
image	Complex Type	Child Elements	Once
type	Simple Type	Empty Elements	Once
enabled	Simple Type	Empty Element	Once
cost	Complex Type	Child Elements	Once
validity	Complex Type	Child Elements	Only Once
issueDate	Complex Type	Child Elements	Zero or once
validPeriod	Complex Type	Child Elements	Only Once
validRegion	Complex Type	Child Elements	Only Once
numberOfUser	Complex Type	Child Elements	Once or more
discount	Simple Type	Empty Element	Only Once
manufacturer	Simple Type	Empty Element	Only Once
quantity	Simple Type	Empty Element	Only Once
popularity	Simple Type	Empty Element	Only Once

region	Simple Type	Empty Element	Only Once
--------	-------------	---------------	-----------

Table 1 List of elements

2.1.2 List of Attributes

List of Attributes	Data type	Default	Fixed	Use
type	string	-	-	required
name	string	-	-	required
currency	string	-	-	required
date	string	-	-	optional
period	string	-	-	required
location	string	-	-	optional

id	integer	-	-	required
row	integer	-	-	required

Table 2 List of attributes

2.2 Tree Diagram

Tree diagram is the diagrammatic figure that represent the hierarchy of the task and sub task which is needed to complete the objective. Tree diagram is use to analyze the processes in detail. Tree diagram is created by using the application Draw.io. Draw.io is a free online diagramming tool that lets users create, draw, share, edit, and alter a variety of diagrams, including entity connection diagrams, flowcharts, org charts, process diagrams, UML, class diagrams, blank diagrams, tree diagrams, and structure diagrams.

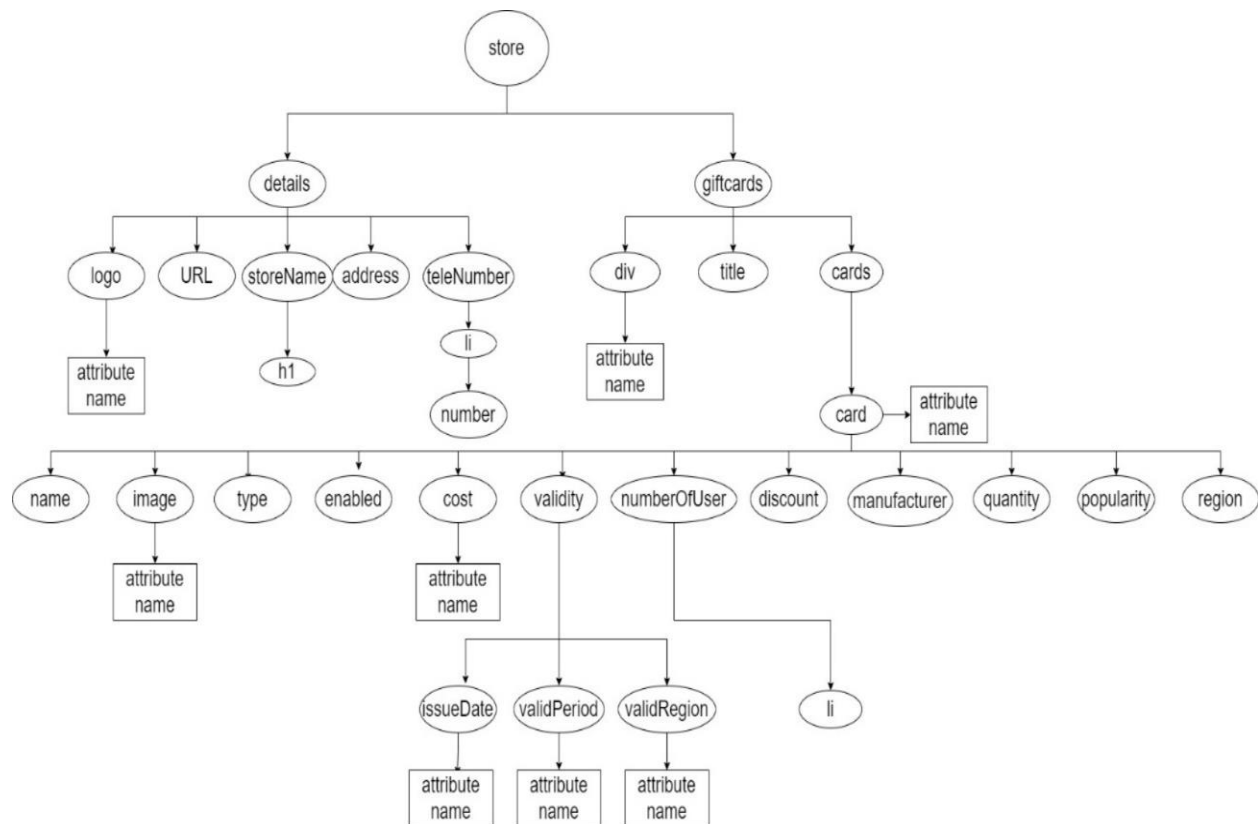


Figure 1 Tree Diagram

2.3 XML Code (must be color coded)

```
<?xml version="1.0" encoding="UTF-8"?>
<?xml-stylesheet href="catalog_20048922.css" type="text/css"?>
<?xml-model href="catalog_20048922.xsd" type="application/xml"
schematypens="http://www.w3.org/2001/XMLSchema"?>
<store>
  <details>
    <storeName>
      <h1>S A M</h1>
      Store</storeName>
    <address>Lalitpur, Kathmandu</address>
    <teleNumber>
      <li><number type="telephone">01-4456543</number></li>
      <li><number type="mobile">9843567232</number></li>
    </teleNumber>
    <URL>www.store.com</URL>
    <logo name="storeLogo"></logo>
  </details>

  <giftcards>
    <div row="1">
      <title>Gaming</title>
      <cards>
        <card id="1">
          <name>GooglePlay</name>
          <image name="Google"></image>
          <type>Physical Card</type>
          <enabled>Status: Usable</enabled>
          <cost currency="Rupees">Rs2000</cost>
          <validity>
            <issueDate date="AD"> Issued:16/06/2020</issueDate>
            <validPeriod period="years">validyear:5</validPeriod>
            <validRegion location="country">Region:USA</validRegion>
          </validity>
          <numberOfUsers>
            <li>Card Owner</li>
            <li>Card Holder</li>
          </numberOfUsers>
          <discount>Discount:5%</discount>
          <manufacturer>Manufacture:Google Arizona LLC</manufacturer>
        </card>
      </cards>
    </div>
  </giftcards>
</store>
```

```
<quantity>Quantity:50</quantity>
<popularity>Rating:9/10</popularity>
<region>Region:world-wide</region>
</card>

<card id="2">
  <name>XBOX</name>
  <image name="XBOX"></image>
  <type>Physical Card</type>
  <enabled>Status: Usable</enabled>
  <cost currency="Rupees">Rs20000</cost>
  <validity>
    <issueDate date="AD">Issued:1/05/2020</issueDate>
    <validPeriod period="years">Validyear:3</validPeriod>
    <validRegion location="country">Region:USA</validRegion>
  </validity>
  <numberOfUsers>
    <li>Card Owner</li>
    <li>Card Holder</li>
  </numberOfUsers>
  <discount>Discount:9%</discount>
  <manufacturer>manufactured:Seamus Blackley</manufacturer>
  <quantity>Quantity:25</quantity>
  <popularity>Rating:8/10</popularity>
</card>

<card id="3">
  <name>PlayStation</name>
  <image name="PlayStation"></image>

  <type>Physical Card</type>
  <enabled>Status: Usable</enabled>
  <cost currency="Rupees">Rs25000</cost>
  <validity>
    <issueDate date="AD">Issued:16/05/2020</issueDate>
    <validPeriod period="years">year:6year</validPeriod>
    <validRegion location="country">Region:America</validRegion>
  </validity>
  <numberOfUsers>
    <li>Card Owner</li>
    <li>Card Holder</li>
  </numberOfUsers>
  <discount>Discount:10%</discount>
```

```

        <manufacturer>manufactured:Sony Computer
Entertainment.</manufacturer>
        <quantity>Quantity:25</quantity>
        <popularity>Rating:9/10</popularity>
    </card>
    <card id="4">
        <name>Steam</name>
        <image name="Steam"></image>

        <type>Physical Card</type>
        <enabled>Status: Usable</enabled>
        <cost currency="Rupees">Rs20000</cost>
        <validity>
            <issueDate date="AD">Issued:16/07/2020</issueDate>
            <validPeriod period="years">Validperiod:4year</validPeriod>
            <validRegion location="country">Region:Germany</validRegion>
        </validity>
        <numberOfUsers>
            <li>Card Owner</li>
            <li>Card Holder</li>
        </numberOfUsers>
        <discount>Discount:7%</discount>
        <manufacturer>manufactured:Gabe Logan Newell</manufacturer>
        <quantity>Quantity:100</quantity>
        <popularity>Rating:9/10</popularity>
    </card>
</cards>
</div>

<div row="2">
    <title>Shopping</title>
    <cards>
    <card id="5">
        <name>Amazon</name>
        <image name="amazon"></image>
        <type>Physical Card</type>
        <enabled>Status: Usable</enabled>
        <cost currency="Rupees">Rs20000</cost>
        <validity>
            <issueDate date="AD">Issued:14/06/2020</issueDate>
            <validPeriod period="years">Validyear:3year</validPeriod>
            <validRegion location="country">Region:UK</validRegion>
        </validity>
    </card>
    </cards>
</div>

```

```
<numberOfUsers>
  <li>Card Owner</li>
  <li>Card Holder</li>
</numberOfUsers>
<discount>Discount:5%</discount>
<manufacturer>Owner:Jeff Bezos</manufacturer>
<quantity>Quantity:200</quantity>
<popularity>Rating:8/10</popularity>
</card>
<card id="6">
  <name>Apple</name>
  <image name="Apple"></image>
  <type>Physical Card</type>
  <enabled>Status: Usable</enabled>
  <cost currency="Rupees">RS30000</cost>
  <validity>
    <issueDate date="AD">Issued:10/09/2020</issueDate>
    <validPeriod period="years">Issuedyear:5year</validPeriod>
    <validRegion location="country">Region:canada</validRegion>
  </validity>
  <numberOfUsers>
    <li>Card Owner</li>
    <li>Card Holder</li>
  </numberOfUsers>
  <discount>Discount:8%</discount>
  <manufacturer>Manufacturer:Steve Jobs</manufacturer>
  <quantity>Quantity:50</quantity>
  <popularity>Rating:9/10</popularity>
</card>
<card id="7">
  <name>Ebay</name>
  <image name="Ebay"></image>
  <type>Physical Card</type>
  <enabled>Status: Usable</enabled>
  <cost currency="Rupees">RS15000</cost>
  <validity>
    <issueDate date="AD">Issued:03/08/2020</issueDate>
    <validPeriod period="years">Validyear:4</validPeriod>
    <validRegion location="country">Region:Bali</validRegion>
  </validity>
  <numberOfUsers>
    <li>Card Owner</li>
    <li>Card Holder</li>
```

```

        </numberOfUsers>
        <discount>Discount:9%</discount>
        <manufacturer>Manufacturer: Pierre Omidyar</manufacturer>
        <quantity>Quantity:204</quantity>
        <popularity>Rating:8/10</popularity>
    </card>
    <card id="8">
        <name>Gucci</name>
        <image name="Gucci"></image>
        <type>Physical Card</type>
        <enabled>Status: Usable</enabled>
        <cost currency="Rupees">RS50000</cost>
        <validity>
            <issueDate date="AD">Issued:22/11/2020</issueDate>
            <validPeriod period="years">Validyear:5</validPeriod>
            <validRegion location="country"></validRegion>
        </validity>
        <numberOfUsers>
            <li>Card Owner</li>
            <li>Card Holder</li>
        </numberOfUsers>
        <discount>Discount:10%</discount>
        <manufacturer>Founder:Guccio Gucci</manufacturer>
        <quantity>Quantity:400</quantity>
        <popularity>Rating:9/10</popularity>
    </card>
</cards>

</div>
<div row="3">
    <title>Entertainment</title>
    <cards>
    <card id="9">
        <name>iTune</name>
        <image name="iTune"></image>
        <type>Physical Card</type>
        <enabled>Status: Usable</enabled>
        <cost currency="Rupees">RS9000</cost>
        <validity>
            <issueDate date="AD">Issued:24/10/2020</issueDate>
            <validPeriod period="years">Validyear:4</validPeriod>
            <validRegion location="country">Region:Brazil</validRegion>
        </validity>
    </card>
    </cards>
</div>

```



```
<numberOfUsers>
  <li>Card Owner</li>
  <li>Card Holder</li>
</numberOfUsers>
<discount>Discount:5%</discount>
<manufacturer>Manufacturer:Apple</manufacturer>
<quantity>Quantity:500</quantity>
<popularity>Rating:8/10</popularity>
</card>
<card id="10">
  <name>Spotify</name>
  <image name="Spotify"></image>
  <type>Physical Card</type>
  <enabled>Status: Usable</enabled>
  <cost currency="Rupees">RS8000</cost>
  <validity>
    <issueDate date="AD">Issued:26/09/2020</issueDate>
    <validPeriod period="years">Validyear:5</validPeriod>
    <validRegion location="country">Region:UK</validRegion>
  </validity>
  <numberOfUsers>
    <li>Card Owner</li>
    <li>Card Holder</li>
  </numberOfUsers>
  <discount>Discount:5%</discount>
  <manufacturer> Founder:Daniel Ek and Martin Lorentzon</manufacturer>
  <quantity>400</quantity>
  <popularity>9/10</popularity>
</card>
<card id="11">
  <name>Netflix</name>
  <image name="Netflix"></image>
  <type>Physical Card</type>
  <enabled>Status: Usable</enabled>
  <cost currency="Rupees">RS7000</cost>
  <validity>
    <issueDate date="AD">Issued:28/12/2020</issueDate>
    <validPeriod period="years">Validyear:7</validPeriod>
    <validRegion location="country">Region:Argintina</validRegion>
  </validity>
  <numberOfUsers>
    <li>Card Owner</li>
    <li>Card Holder</li>
```

```

        </numberOfUsers>
        <discount>Discount:7%</discount>
        <manufacturer>Founder:Reed Hastings and Marc Randolph</manufacturer>
        <quantity>400</quantity>
        <popularity>8/10</popularity>
    </card>
    <card id="12">
        <name>Disney</name>
        <image name="Disney"></image>
        <type>Physical Card</type>
        <enabled>Status: Usable</enabled>
        <cost currency="Rupees">RS16000</cost>
        <validity>
            <issueDate date="AD">Issued:01/12/2020</issueDate>
            <validPeriod period="years">Validyear:5</validPeriod>
            <validRegion location="country">Region:USA</validRegion>
        </validity>
        <numberOfUsers>
            <li>Card Owner</li>
            <li>Card Holder</li>
        </numberOfUsers>
        <discount>Discount:5%</discount>
        <manufacturer>Manufacturer:The Walt Disney Company</manufacturer>
        <quantity>Quantity:150</quantity>
        <popularity>Rating:9/10</popularity>
    </card>
</cards>
</div>
<div row="4">
    <title>Bank</title>
    <cards>
        <card id="13">
            <name>MasterCard</name>
            <image name="MasterCard"></image>
            <type>Physical Card</type>
            <enabled>Status: Usable</enabled>
            <cost currency="Rupees">RS100000</cost>
            <validity>
                <issueDate date="AD">Issued:16/07/2020</issueDate>
                <validPeriod period="years">Validyear:8</validPeriod>
                <validRegion location="country">Region:Brzil</validRegion>
            </validity>
            <numberOfUsers>

```

```
<li>Card Owner</li>
<li>Card Holder</li>
</numberOfUsers>
<discount>Discount:5%</discount>
<manufacturer>Founder:Ajay Banga</manufacturer>
<quantity>Quantity:100</quantity>
<popularity>Rating:8/10</popularity>
</card>
<card id="14">
  <name>PayPal</name>
  <image name="PayPal"></image>
  <type>Physical Card</type>
  <enabled>Status: Usable</enabled>
  <cost currency="Rupees">RS200000</cost>
  <validity>
    <issueDate date="AD">Issued:21/06/2020</issueDate>
    <validPeriod period="years">Validyear:6</validPeriod>
    <validRegion location="country">Region:UK</validRegion>
  </validity>
  <numberOfUsers>
    <li>Card Owner</li>
    <li>Card Holder</li>
  </numberOfUsers>
  <discount>Discount:8%</discount>
  <manufacturer>Owner:John Donahoe</manufacturer>
  <quantity>Quantity:300</quantity>
  <popularity>Rating:9/10</popularity>
</card>
<card id="15">
  <name>AmericanExpress</name>
  <image name="AmericanExpress"></image>
  <type>Physical Card</type>
  <enabled>Status: Usable</enabled>
  <cost currency="Rupees">RS400000</cost>
  <validity>
    <issueDate date="AD">Issued:23/10/2020</issueDate>
    <validPeriod period="years">Validyear:6</validPeriod>
    <validRegion location="country">Region:Argentina</validRegion>
  </validity>
  <numberOfUsers>
    <li>Card Owner</li>
    <li>Card Holder</li>
  </numberOfUsers>
```

```
        <discount>Discount:5%</discount>
        <manufacturer>Founder:Stephen J. Squeri, Jeffrey C.
Campbell</manufacturer>
        <quantity>Quantity:250</quantity>
        <popularity>Rating:8/10</popularity>
    </card>
    <card id="16">
        <name>VISA</name>
        <image name="visa"></image>
        <type>Physical Card</type>
        <enabled>Status: Usable</enabled>
        <cost currency="Rupees">RS300000</cost>
        <validity>
            <issueDate date="AD">Issued:26/10/2020</issueDate>
            <validPeriod period="years">Validyear:6</validPeriod>
            <validRegion location="country">Region:USA</validRegion>
        </validity>
        <numberOfUsers>
            <li>Card Owner</li>
            <li>Card Holder</li>
        </numberOfUsers>
        <discount>Discount:10%</discount>
        <manufacturer>Founder:Dee Hock </manufacturer>
        <quantity>Quantity:400</quantity>
        <popularity>Rating:9/10</popularity>
    </card>
</cards>
</div>
</giftcards>
</store>
```

3. Schema Document (Include schema code – must be color coded)

```
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:element name="store">
    <xs:complexType>
      <xs:all>
        <xs:element ref="details" /></xs:element>
        <xs:element ref="giftcards"/></xs:element>
      </xs:all>
    </xs:complexType>
  </xs:element>
  <xs:element name="details">
    <xs:complexType>
      <xs:all>
        <xs:element ref="storeName"/></xs:element>
        <xs:element ref="address"/></xs:element>
        <xs:element ref="teleNumber"/></xs:element>
        <xs:element ref="URL"/></xs:element>
        <xs:element ref="logo"/></xs:element>
      </xs:all>
    </xs:complexType>
  </xs:element>
  <xs:element name="storeName">
    <xs:complexType mixed="true">
      <xs:all>
        <xs:element ref="h1"/></xs:element>
      </xs:all>
    </xs:complexType>
  </xs:element>
  <xs:element name="h1" type="xs:string"/></xs:element>
  <xs:element name="address" type="xs:string"/></xs:element>
  <xs:element name="teleNumber">
    <xs:complexType>
      <xs:sequence>
        <xs:element ref="li" minOccurs="1" maxOccurs="2"/></xs:element>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
```

```
<xs:element name="li">
  <xs:complexType mixed="true">
    <xs:sequence>
      <xs:element ref="number" minOccurs="0"
maxOccurs="1"/></xs:element>
    </xs:sequence>
  </xs:complexType>
</xs:element>
<xs:element name="number">
  <xs:complexType>
    <xs:simpleContent>
      <xs:extension base="xs:string">
        <xs:attribute ref="type" use="required"/></xs:attribute>
      </xs:extension>
    </xs:simpleContent>
  </xs:complexType>
</xs:element>
<xs:attribute name="type" >
  <xs:simpleType>
    <xs:restriction base="xs:string">
      <xs:enumeration value="mobile"/></xs:enumeration>
      <xs:enumeration value="telephone"/></xs:enumeration>
    </xs:restriction>
  </xs:simpleType>
</xs:attribute>

<xs:element name="URL" type="xs:string"/></xs:element>
<xs:element name="logo">
  <xs:complexType>
    <xs:simpleContent>
      <xs:extension base="xs:string">
        <xs:attribute ref="name" use="required"/></xs:attribute>
      </xs:extension>
    </xs:simpleContent>
  </xs:complexType>
</xs:element>
<xs:attribute name="name" type="xs:string"/></xs:attribute>

<xs:element name="giftcards">
  <xs:complexType>
    <xs:sequence>
```

```

        <xs:element ref="div" minOccurs="1"
maxOccurs="unbounded"></xs:element>
    </xs:sequence>
</xs:complexType>
</xs:element>
<xs:element name="div">
    <xs:complexType>
        <xs:sequence>
            <xs:element ref="title"></xs:element>
            <xs:element ref="cards"></xs:element>
        </xs:sequence>
        <xs:attribute ref="row" use="required"></xs:attribute>
    </xs:complexType>
</xs:element>
<xs:element name="title" type="xs:string"></xs:element>
<xs:element name="cards">
    <xs:complexType>
        <xs:sequence>
            <xs:element ref="card" minOccurs="1" maxOccurs="4"></xs:element>
        </xs:sequence>
    </xs:complexType>
</xs:element>

<xs:element name="card">
    <xs:complexType>
        <xs:sequence>
            <xs:element ref="name"></xs:element>
            <xs:element ref="image"></xs:element>
            <xs:element ref="type"></xs:element>
            <xs:element ref="enabled"></xs:element>
            <xs:element ref="cost"></xs:element>
            <xs:element ref="validity" minOccurs="0"
maxOccurs="1"></xs:element>
            <xs:element ref="numberOfUsers" minOccurs="0"
maxOccurs="1"></xs:element>
            <xs:element ref="discount" minOccurs="0"
maxOccurs="1"></xs:element>
            <xs:element ref="manufacturer"></xs:element>
            <xs:element ref="quantity" minOccurs="0"
maxOccurs="1"></xs:element>
            <xs:element ref="popularity"></xs:element>
            <xs:element ref="region" minOccurs="0"
maxOccurs="1"></xs:element>

```

```

        </xs:sequence>
        <xs:attribute ref="id" use="required"></xs:attribute>
    </xs:complexType>
</xs:element>
<xs:element name="name" type="xs:string"></xs:element>
<xs:element name="image">
    <xs:complexType>
        <xs:simpleContent>
            <xs:extension base="xs:string">
                <xs:attribute ref="name"></xs:attribute>
            </xs:extension>
        </xs:simpleContent>
    </xs:complexType>
</xs:element>
<xs:element name="type" type="xs:string"></xs:element>
<xs:element name="enabled" type="xs:string"></xs:element>
<xs:element name="cost">
    <xs:complexType>
        <xs:simpleContent><xs:extension base="xs:string">
            <xs:attribute ref="currency" use="required"></xs:attribute>
        </xs:extension></xs:simpleContent>
    </xs:complexType>
</xs:element>
<xs:attribute name="currency" type="xs:string"></xs:attribute>
<xs:element name="validity">
    <xs:complexType>
        <xs:all>
            <xs:element ref="issueDate"></xs:element>
            <xs:element ref="validPeriod"></xs:element>
            <xs:element ref="validRegion"></xs:element>

        </xs:all>
    </xs:complexType>
</xs:element>
<xs:element name="issueDate">
    <xs:complexType>
        <xs:simpleContent><xs:extension base="xs:string">
            <xs:attribute ref="date" use="optional"></xs:attribute>
        </xs:extension></xs:simpleContent>
    </xs:complexType>
</xs:element>
<xs:attribute name="date">

```



```
<xs:simpleType>
  <xs:restriction base="xs:string">
    <xs:enumeration value="AD"></xs:enumeration>
    <xs:enumeration value="BS"></xs:enumeration>

  </xs:restriction>
</xs:simpleType>
</xs:attribute>
<xs:element name="validPeriod">
  <xs:complexType>
    <xs:simpleContent><xs:extension base="xs:string">
      <xs:attribute ref="period" use="required"></xs:attribute>
    </xs:extension></xs:simpleContent>
  </xs:complexType>
</xs:element>
<xs:attribute name="period" type="xs:string">
</xs:attribute>
<xs:element name="validRegion">
  <xs:complexType>
    <xs:simpleContent><xs:extension base="xs:string">
      <xs:attribute ref="location" use="optional"></xs:attribute>
    </xs:extension></xs:simpleContent>
  </xs:complexType>
</xs:element>
<xs:attribute name="location" type="xs:string">
</xs:attribute>
<xs:element name="numberOfUsers">
  <xs:complexType>
<xs:sequence>
  <xs:element ref="li" minOccurs="1" maxOccurs="2"></xs:element>
</xs:sequence>
  </xs:complexType>
</xs:element>
<xs:element name="discount" type="xs:string"></xs:element>
<xs:element name="manufacturer" type="xs:string"></xs:element>
<xs:element name="quantity" type="xs:string"></xs:element>
<xs:element name="popularity" type="xs:string"></xs:element>
<xs:element name="region" type="xs:string"></xs:element>

  <xs:attribute name="id" type="xs:integer"></xs:attribute>
<xs:attribute name="row" type="xs:integer"></xs:attribute>
</xs:schema>
```

4. Difference between Schema and DTD?

Schema

A schema is a diagrammatic representation of a framework that is well-structured. It makes our plans and objective easier to achieve with proper planning. Schema is the outlining of our framework which helps us to make our plan easier. Schema helps to interpret the large amount of information in the short period of time which are available in the environment.

DTD

DTD which stands for Document Type Definition which explains the tree format of the documents and its data. DTD helps to explain the type of documents for the SGML family like, GML, SGML, HTML. DTD can be inline which is explained inside an XML document. DTD helps how to validate the XML document as it provides the validating parsers with the maps.

Schema is preferable than the DTD as schema support the datatype whereas DTD does not also, namespace can be used or supported in the schema but not in DTD. DTD doesn't define the number and order of the child elements but schema support that system, so schema is more useful than DTD.

Following are the differences between schema and DTD;

Schema	DTD
1 Schema's full name is XML Schema, however it's commonly known as XSD (XML Schema Definition).	1 DTD is the Data Type Definition.
2 Schemas support datatypes such as string, decimal, float, and Boolean.	2 In an XML document, the DTD does not define datatypes. It only has the datatype #PCDATA (string datatype).
3 In an XML document, Schema describes the elements.	3 DTD declarations determine the kind of document for SGML.
4 In comparison to DDT, constructing Schema in XML documents is simple.	4 Constructing DTD in XML document is comparatively harder than Schema.
5 We can specify data restrictions in XSD. For instance, the age>..../age> tag.	5 We can't declare data restrictions in DTD because there's just one type of data, #PCDATA.
6 Schema is utilized in massive XML data and is strongly typed (type checking).	6 It is loosely typed (no type checking) and better suited to tiny XML documents.
7 Inline definition is not allowed in XML Schema.	7 Inline definitions are included in the DTD (XML and DTD in same file).
8 Because XML Schema is written in an XML document, it is extendable.	8 DDT is not extensible because DTD was created to aid XML extensibility.

Table 3 Difference between Schema and DTD

5. Testing


5.1 To test the XML document is functioning or not against schema.

Test No.	1
Title	To test the XML document is valid or not with respect to the Schema file.
Action	First XML document is inserted in the online validator to check if it is valid. After that, the schema is copied and pasted in the online validator.
Expected Result	The website should confirm the validation of the xml against schema without any errors.
Actual Result	The website confirmed the validation of xml against the schema.
Result	The test was successful.

Table 4 Test1-To test the XML document is functioning or not against schema

No errors were found

The following files have been uploaded so far:

XML document: 

XML schema: 

Click on any file name if you want to edit the file.

Figure 2 Screenshot of Test1

5.2 To check schema validation

Test No.	2
Title	XML with schema validation
Action	Online website, www.schema.validator.com was visited. The schema file was copied and then pasted in the website.
Expected Result	The website should confirm that no errors should be present in the schema file.
Actual Result	Website confirmed that no errors were present.
Result	The test was successful.

Table 5 Test2-To check schema validation

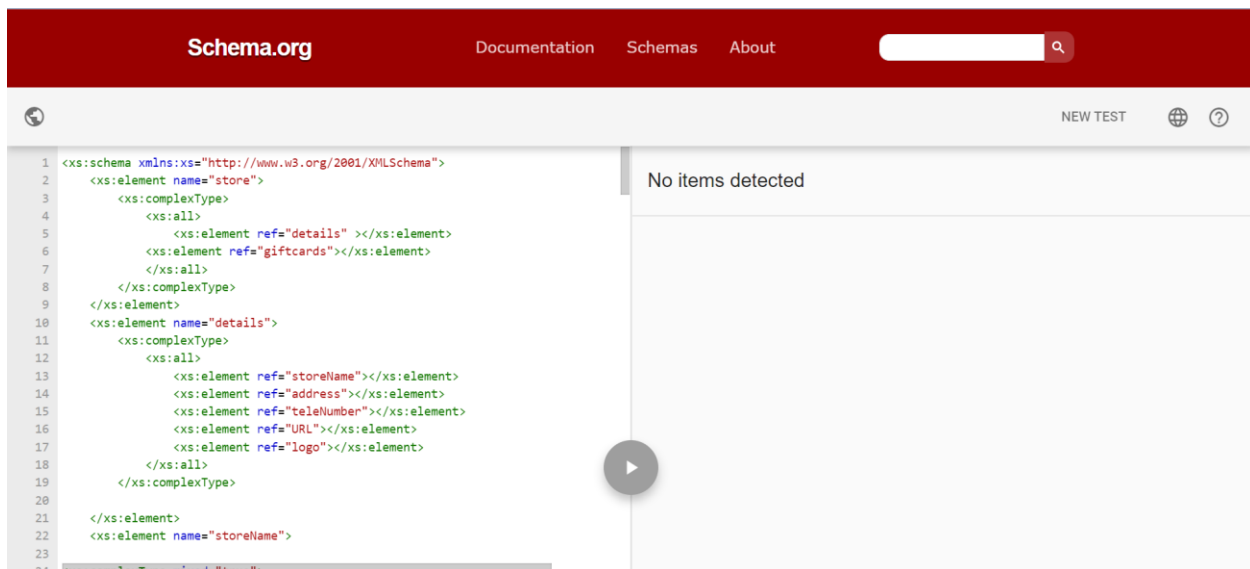


Figure 3 Screenshot of Test2

5.3 To test the CSS document is working or not

Test No.	3
Test	To test the CSS document is working or not.
Action	To test whether the CSS is working, the XML file is opened with a live server.
Expected Result	The CSS document must run, and all applicable styling must be applied correctly.
Actual Result	The CSS file was successful, and the webpage was successfully executed by the browser.
Result	The test was successful.

Table 6 Test3-To test the CSS document is working or not



Figure 4 Screenshot of Test3

5.4 To check the image hover

Test No.	4
Title	To check the image hover
Action	At first, the mouse crosser is pointed at the image. And then removed from the image.
Expected Result	After pointing at the image the size of the image should maximize and should again resize after removal.
Actual Result	The effective hover was observed.
Result	The test was successful.

Table 7 Test4-To check the image hover



Figure 5 Screenshot of Test4

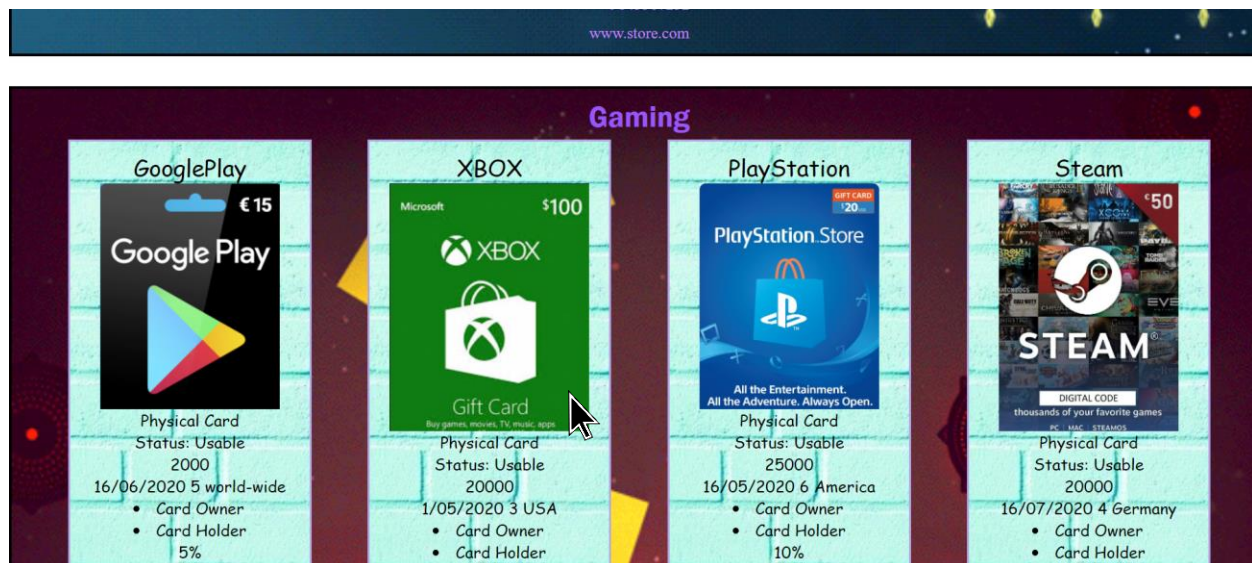
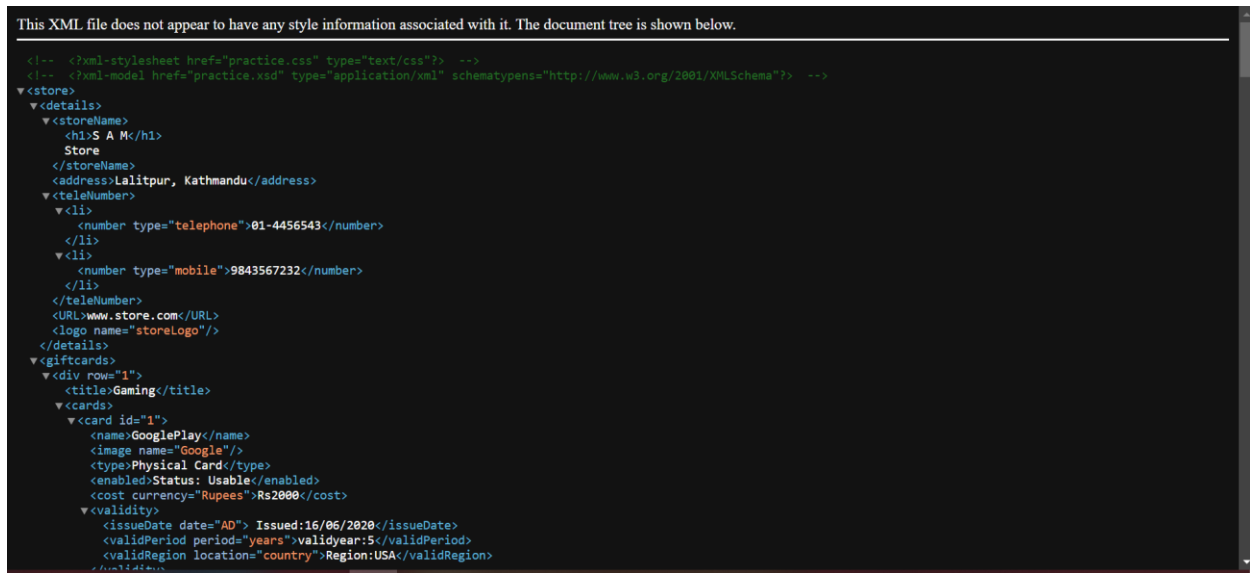


Figure 6 Screenshot of Test4

5.5 To test the XML document without schema

Test No.	5
Title	To test the XML document without schema.
Action	Both the links that connected CSS and XML Schema with XML file was removed. Then, the live server was opened.
Expected Result	The code of the XML file should be displayed along with the message of no errors found.
Actual Result	Code of the XML file was displayed in the live browser along with the no error message.
Result	The test was successful.

Table 8 Test5-To test the XML document without schema

*Figure 7 Screenshot of Test5*

6. Coursework Development

6.1 Critical analysis

During the coursework it was quite hard and I couldn't understand the work I had to do. But I somehow managed to start my coursework with the help from my friends and module teachers. For accomplishing the coursework I had to interact with the module teacher daily and research daily. And after watching all the lecture slides and tutorial video I could understand some question and I started to begin my coursework.

The most challenging part of this coursework for me is constructing the XSD and DTD files because this was a whole new experience for me. To create these document files, a lot of syntax must be followed. Because XML is case-sensitive and we had to focus on namespaces, I was constantly dealing with little mistakes and errors, but Visual Studio Code helps to discover and debug these errors automatically. While doing the XML we also had to find data, images, maintaining the color, font-family border making the logo was also one of the most difficult part of the coursework. Another challenging part was time management, which was made more difficult by the fact that we were also given extra schoolwork. So, in order to finish this coursework by the deadline, we only have a limited amount of time to create an XML document, as well as a DTD and schemas file. Because of such hectic coursework deadline, I had to pull all-nighter for 2-3 days to finish my coursework.

However, I was able to understand about the XML programming language because of the regularly learning lecture and tutorial lessons. This coursework is mostly concerned with how we apply our knowledge of the XML programming language to this assignment. We eventually overcame all of these challenges and achieved our goal of modeling a system for a music store as an XML developer, which was also quite interesting.

7. Conclusion

For this project, I created a structure for a card store that included information about the store as well as information about the cards available in the store. I made an XML report that contained information components and characteristics. Depending on the format at that point. I created a DTD and pattern record for our XML archive. I've been doing it since then. For our XML data document to be supplied in, we created a CSS record from scratch.

Basically, this coursework took a lot of time to be complete and took a lot of effort. However, it helped me to face the real-world problems or made me feel like it's the real-world challenges so that I had to complete it within the given time and put all my efforts. Mostly I want to thank all my friends and teachers for helping me to complete this coursework in time. After the completion of the coursework our XML and CSS skill got improved drastically. To finish the coursework as asked I had to face a lot of problem and had to face all of them simultaneously. This coursework required a lot of research and investigation to be done in professional way.

To summarize, I have received a great deal of knowledge and thoughts regarding the XML programming language. I am grateful to my module teacher for assisting me greatly in dealing with the issues that arose during this project.

References

Anon., n.d. *Draw.io*. [Online]

Available at: <https://app.diagrams.net/>

[Accessed 4 4 2022].

Anon., n.d. *GeekforGeeks*. [Online]

Available at: <https://www.geeksforgeeks.org/>

[Accessed 5 4 2022].

Anon., n.d. *www.w3school.com*. [Online]

Available at: <https://www.w3schools.com/>

Thivent, p., 2009,oct10. *What is difference between XML Schema and DTD?*. [Online]

Available at: [https://stackoverflow.com/questions/1544200/what-is-difference-between-xml-schema-and-](https://stackoverflow.com/questions/1544200/what-is-difference-between-xml-schema-and-dtd#:~:text=XML%20schemas%20are%20written%20in,elements%2C%20while%20DTD%20does%20not.)

[dtd#:~:text=XML%20schemas%20are%20written%20in,elements%2C%20while%20DTD%20does%20not.](https://stackoverflow.com/questions/1544200/what-is-difference-between-xml-schema-and-dtd#:~:text=XML%20schemas%20are%20written%20in,elements%2C%20while%20DTD%20does%20not.)

[Accessed 30 04 2022].

Appendix

CSS

```
store{
  background-repeat: no-repeat;
  background-size: cover;
}

details
{
  background-image: url(./images/storenamebg.gif);
  height: 200px;
  width: inherit;
  display: flex;
  background-repeat: no-repeat;
  background-size: 100%;
  flex-direction: column;
  justify-content: space-evenly;
  text-align: center;
```

```
    color: rgb(201, 129, 249);
    border: 3px solid black;
}

storeName{
    display: block;
    font-size: 24px;
    font-weight: bold;
    background-size: contain;
    color: rgb(201, 129, 249);
}

h1{
    display: block;
    font-size: 40px;
    font-family: 'Franklin Gothic Medium', 'Arial Narrow', Arial, sans-serif;
}

div{
    display: flex;
    flex-direction: column;
}

div[row="1"]
{
    font-family: cursive;
    background-image: url(./images/div1.gif);
    background-repeat: no-repeat;
    background-size: cover;
    border: 3px solid black;
}

div[row="2"]
{
    font-family: cursive;
    background-image: url(./images/div2.gif);
    background-repeat: no-repeat;
    background-size: cover;
    border: 3px solid black;
}

div[row="3"]
{

```

```
font-family: cursive;
background-image: url(./images/div3.gif);
background-repeat: no-repeat;
background-size: cover;
border: 3px solid black;
}

div[row="4"]
{
  font-family: cursive;
  background-image: url(./images/div4.gif);
  background-repeat: no-repeat;
  background-size: cover;
  border: 3px solid black;
}

giftcards
{
  background-image: url(./images/DivImag.gif);
  background-size: cover;
}

cards
{
  display: flex;
  flex-direction: row;
  justify-content: space-evenly;
}

card
{
  background-image: url(./images/Wallpaper.jpg);
  display: flex;
  flex-direction: column;
  border: 2px solid rgb(182, 166, 231);
  padding: 10px;
  height: 550px;
  width: 220px;
  align-items: center;
  text-align: center;
}
```

```
name
{
  text-align: center;
  font-size: 23px;
}

image
{
  display: flex;
  height: 250px;
  width: 180px;
}

image:hover{
  width: 200px;
  height: 300px;
}

image[name="Google"]
{
  background-image: url(./images/google.png);
  background-size: cover;
}

image[name="XBOX"]
{
  background-image: url(./images/Xbox.png);
  background-size: cover;
}

image[name="PlayStation"]
{
  background-image: url(./images/PlayStation.jpg);
  background-size: cover;
}

image[name="Steam"]
{
  background-image: url(./images/Steam.jpeg);
  background-size: cover;
}

image[name="Apple"]
```

```
{
  background-image: url(./images/apple.png);
  background-size: cover;
}

image[name="iTune"]
{
  background-image: url(./images/Itune.jpeg);
  background-size: cover;
}

image[name="Spotify"]
{
  background-image: url(./images/Spotify1.png);
  background-size: cover;
}

image[name="Netflix"]
{
  background-image: url(./images/Netflix.jpeg);
  background-size: cover;
}

image[name="Disney"]
{
  background-image: url(./images/Disney.png);
  background-size: cover;
}

image[name="amazon"]
{
  background-image: url(./images/amazon.jpg);
  background-size: cover;
}

image[name="Ebay"]
{
  background-image: url(./images/Ebay.png);
  background-size: cover;
}

image[name="Gucci"]
```

```
{
  background-image: url(./images/Gucci.jpg);
  background-size: cover;
}

image[name="MasterCard"]
{
  background-image: url(./images/MasterCard.png);
  background-size: cover;
}

image[name="PayPal"]
{
  background-image: url(./images/PayPal.png);
  background-size: cover;
}

image[name="AmericanExpress"]
{
  background-image: url(./images/AmericanExpress.png);
  background-size: cover;
}

image[name="visa"]
{
  background-image: url(./images/visa2.png);
  background-size: cover;
}

title
{
  width: inherit;
  text-align: center;
  font-family: 'Franklin Gothic Medium', 'Arial Narrow', Arial, sans-serif;
  font-size: 30px;
  margin: 10px;
  height: 30px;
  color: rgb(154, 87, 248);
}

title:hover
```

```
{
  font-size: 26px;
}

li{
  display: list-item;
  list-style: circle;
  list-style: inside;
}

logo {
  background-size:50%;
  background-color:transparent;
  background-repeat: no-repeat;
  display: block;
  position:absolute;
  height: 30%;
  width: 25%;
  left:10px;
  top:0px;
}
```