LONDON METROPOLITAN UNIVERSITY

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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

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Introduction

This task allowed us to create a website for an online music store that should include at least fifteen data points, five attributes, and five optional elements. This course should be prepared using XML, DTD, and Schema, as well as a tree diagram to illustrate the overall structure. The scenario is given in the coursework, and the template should be completed using CSS, with all files validated without any error.

XML

XML is an abbreviation for Extensible Markup Language. It is a text-built markup language based on the Standard Generalized Markup Language (SGML). Unlike HTML tags, which define how to show the data, XML tags describe the data and are used to store and arrange it rather than defining how to display it (tutorialspoint, 2021). XML will not substitute HTML in the immediate term, but it will open up new possibilities by adopting it (tutorialspoint, 2021).

CSS

CSS is an abbreviation for Cascading Style Sheets, which define how items should be represented on screen, paper, or in other media. It is a language that we use to style a Web page (w3schools, 2021). CSS saves a significant amount of time. It has the ability to monitor the structure of several web pages at the same time (w3schools, 2021). CSS files contain all of the external stylesheets.

XSD

The World Wide Web Consortium (W3C) guideline XSD (XML Schema Definition) describes how to formally represent the elements in an Extensible Markup Language (XML) document (Lawton, 2015). XSD can also be used to create XML documents that can be used to create programming artifacts. Furthermore, a number of XML modeling tools can produce human-readable documentation, making it easier to understand complex XML documents (Lawton, 2015).

DTD

The XML Document Type Declaration, abbreviated as DTD, is a method for specifically describing the XML language. DTDs validate the terminology and arrangement of XML documents against the grammatical laws of the relevant XML language (tutorialspoint, 2021). An XML DTD may be defined either within the document or in a different document and then liked separately (tutorialspoint, 2021).

XML Content

Tree Diagram

A tree diagram is the structure of any XML document that consists of root element at the top which is followed by the child elements and the attributes in its nodes. A figure below represents the hierarchy structure of the entire coursework.

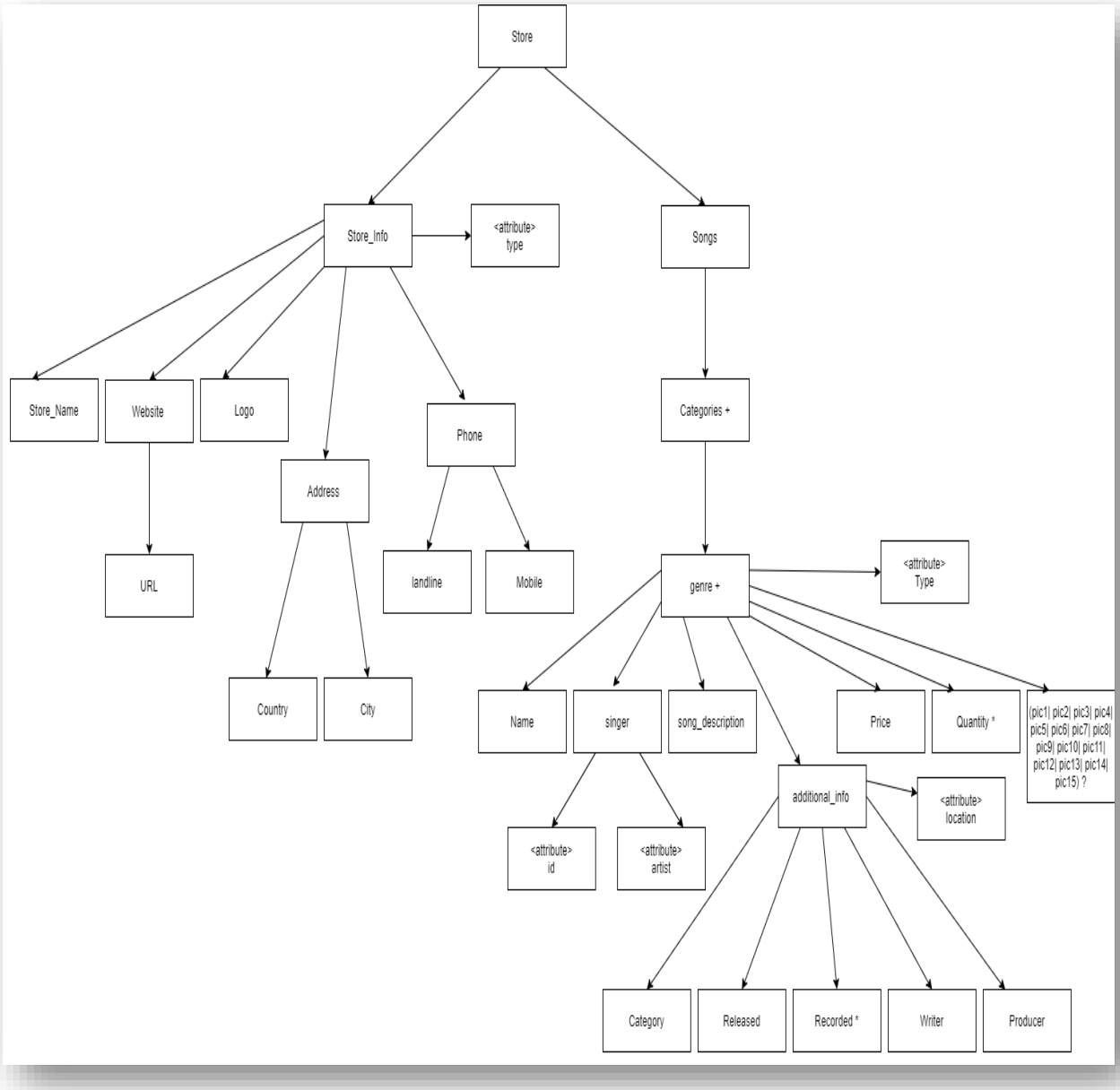

Figure 1: Tree Diagram

XML Content

```
<?xml version="1.0" encoding="UTF-8"?>
<?xml-stylesheet type="text/css" href="Catalog_19031691.css"?> <!--CSS Refrence-->
<!DOCTYPE schema SYSTEM "Catalog_19031691.dtd"> <!-- DTD Refrence-->
<schema xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="Catalog_19031691.xsd"><!-- Schema Refrence-->
```

```
<!--
Author: Siddhartha Ghimire
Date:   May 5, 2021
-->
<Store> <!--Main Section-->
  <Store_Info type="about"> <!--Contains Store Information-->
    <Store_Name>Siddhartha Music Store</Store_Name>
    <Logo></Logo>
    <Address>
      <Country>Nepal</Country>
      <City>Lalitpur</City>
    </Address>
    <Phone>
      <Landline>Landline:(01) 236745</Landline>
          <Mobile>Mobile:(977) 9800818055</Mobile>
        </Phone>
        <Website>
          <URL><![CDATA[www.siddharthamusicstore.com.np]]></URL> <!--      CDATA stores
      every type of characters-->
        </Website>
  </Store_Info>
  <!--End of Store Information-->

  <Songs> <!--Sub Main Section-->
    <Categories> <!--Jazzs music Container-->
      <genre Type="Jazzs Jazz-1"> <!--type1-->
        <Name>Take Five</Name>
            <pic1></pic1>
            <singer id="a1" artist="DBQ">Singer: Dave Brubeck Quartet</singer>
            <song_description>
              <b>Description:</b>
                    <![CDATA["Take Five" is known for its distinctive two-chord piano/bass
                    vamp;infectious, cool-jazz saxophone melodies; innovative, jolting drum solo;and
                    unconventional quintuple time, which Dave Brubeck derived its name from.]]>
            </song_description>
            <Quantity><b>Available:</b> 2</Quantity>
            <Price><b>Price:</b> &#163;20 per album</Price>
            <additional_info location="Jazz-1">
                  <category><b>Genre:</b>Jazz</category>
                  <Released><b>Released Date:</b> May 22, 1961</Released>
                  <Recorded><b>Recorded Date:</b> July 1, 1959</Recorded>
                  <Writer><b>Song Writer:</b> Paul Desmond</Writer>
                  <Producer><b>Song Producer:</b> Teo Macero</Producer>
            </additional_info>
      </genre><!--End of type1-->
          <genre Type="Jazzs Jazz-2"> <!--type2-->
                <Name>So What</Name>
                <pic2></pic2>
                <singer id="a2" artist="MD">Singer: Miles Davis</singer>
                <song_description>
                      <b>Description:</b>
```

```
                    <![CDATA["So What" is the most well-known examples of modal jazz, written in the Dorian mode and consisting of 16 bars of D Dorian, eight bars of E Dorian, and eight more of D Dorian. This AABA arrangement conforms to the thirty- two-bar style of popular songs in the United States.]]>
                </song_description>
                <Price><b>Price:</b> &#163;19 per album - Out of Stock</Price>
                <additional_info location="Jazz-2">
                    <category><b>Genre:</b> Modal Jazz</category>
                    <Released><b>Released Date:</b> August 17, 1959</Released>
                    <Recorded><b>Recorded Date:</b> March 2, 1959</Recorded>
                    <Writer><b>Song Writer:</b> Miles Davis</Writer>
                    <Producer><b>Song Producer:</b> Teo Macero</Producer>
                </additional_info>
            </genre><!--End of type2-->
            <genre Type="Jazzs Jazz-3"> <!--type3-->
                <Name>Round Midnight</Name>
                <pic3></pic3>
                <singer id="a3" artist="TM">Singer: Thelonious Monk</singer>
                <song_description>
                    <b>Description:</b>
                    <![CDATA["Round Midnight" is a 1944 composition by pianist Thelonious Monk that soon became a jazz standard and has been covered by a diverse range of artists. In 1993, a version recorded by Monk's quintet was inducted into the Grammy Hall of Fame. It is one of the most often played jazz standards written by a jazz musician.]]>
                </song_description>
                <Quantity>
                    <b>Available:</b> 3
                </Quantity>
                <Price><b>Price:</b> &#163;21 per album</Price>
                <additional_info location="Jazz-3">
                    <category><b>Genre:</b> Jazz</category>
                    <Released><b>Released Date:</b> 1959</Released>
                    <Recorded><b>Recorded Date:</b>1993</Recorded>
                    <Writer><b>Song Writer:</b> Thelonious Monk</Writer>
                    <Producer><b>Song Producer:</b> Thelonious Monk</Producer>
                </additional_info>
            </genre><!--End of type3-->
            <genre Type="Jazzs Jazz-4"> <!--type4-->
                <Name>A Love Supreme</Name>
                <pic4></pic4>
                <singer id="a4" artist="JC">Singer: John Coltrane</singer>
                <song_description>
                    <b>Description:</b>
                    <![CDATA["A Love Supreme (Acknowledgment)" is one of the greatest songs of all time, as well as one of John Coltrane's best-selling and most critically praised. It is widely regarded as his magnum opus. On the first track, "Acknowledgement," the album starts with the bang of a gong (tam-tam) and cymbal washes.]]>
                </song_description>
                <Quantity><b>Available:</b> 3</Quantity>
```

```
            <Price><b>Price:</b> &#163;22 per album</Price>
            <additional_info location="Jazz-4">
                <category><b>Genre:</b> Modal Jazz</category>
                <Released><b>Released Date:</b> January 1965</Released>
                    <Recorded><b>Recorded Date:</b> December 9, 1964</Recorded>
                    <Writer><b>Song Writer:</b> John Coltrane</Writer>
                <Producer><b>Song Producer:</b> Bob Thiele</Producer>
            </additional_info>
</genre><!--End of type4-->
    <genre Type="Jazzs Jazz-5"> <!--type5-->
            <Name>All Blues</Name>
            <pic5></pic5>
            <singer id="a5" artist="MD" >Singer: Miles Davis</singer>
            <song_description>
                    <b>Description:</b>
                    <![CDATA["All Blues" is a Miles Davis jazz arrangement that first appeared
                    on the influential 1959 album Kind of Blue. Furthermore, there is a
                    harmonically close vamp played by the horns at the start and then (usually)
                    continued by the piano under any solos that occur. Each chorus is usually
                    divided by a four-bar vamp that serves as an introduction to the following
                    solo/chorus.]]>
            </song_description>
            <Quantity><b>Available:</b> 2</Quantity>
            <Price><b>Price:</b> &#163;20 per album</Price>
            <additional_info location="Jazz-5">
                    <category><b>Genre:</b> Modal Jazz</category>
                    <Released><b>Released Date:</b> August 17, 1959</Released>
                    <Recorded><b>Recorded Date:</b> April 22, 1959</Recorded>
                    <Writer><b>Song Writer:</b> Miles Davis</Writer>
                    <Producer><b>Song Producer:</b> Irving Townsend</Producer>
            </additional_info>
</genre><!--End of type5-->
    <genre Type="Jazzs Jazz-6"><!--type6-->
            <Name>Strange Fruit</Name>
            <pic6></pic6>
            <singer id="a6" artist="BH">Singer: Billie Holiday</singer>
            <song_description>
                    <b>Description:</b>
                    <![CDATA["Strange Fruit" is a protest song against lynchings of African-
                    Americans, with lyrics comparing the victims to tree fruit. At the turn of the
                    twentieth century, such lynchings had reached a high in the Southern United
                    States, with the vast majority of victims being black. The song has been
                    described as "a manifesto" and "the start of the civil rights movement.]]>
            </song_description>
                    <Price><b>Price:</b> &#163;20 per album - Out of Stock</Price>
                    <additional_info location="Jazz-6">
                            <category><b>Genre:</b> Blues, Jazz</category>
                            <Released><b>Released Date:</b> 1939</Released>
                            <Recorded><b>Recorded Date:</b> April 10, 1939</Recorded>
                            <Writer><b>Song Writer:</b> Abel Meeropol</Writer>
                            <Producer><b>Song Producer:</b> Milt Gabler</Producer>
```

```
                    </additional_info>
    </genre><!--End of type6-->
  </Categories> <!--End of Container-->
      <Categories> <!--Rocks music Container-->
        <genre Type="Rocks Rock-1"><!--type1-->
              <Name>Purple Haze</Name>
              <pic7></pic7>
               <singer id="a7" artist="JHE">Singer: Jimi Hendrix Experience</singer>
              <song_description>
                    <b>Description:</b>
                    <![CDATA[Jimi's innovative guitar playing is included in this music, which utilizes the signature Hendrix chord and a blend of blues and Eastern modalities influenced by novel sound processing techniques. Due to ambiguity in the lyrics, listeners sometimes read the song as relating to a trance encounter, despite Hendrix's description of it as a love song.]]>
              </song_description>
              <Quantity><b>Available:</b> 2</Quantity>
              <Price><b>Price:</b> &#163;30 per album</Price>
              <additional_info location="Rock-1">
                    <category><b>Genre:</b> Hard Rock</category>
                     <Released><b>Released Date:</b> March 17, 1967</Released>
                    <Recorded><b>Recorded Date:</b> January 11, 1967</Recorded>
                    <Writer><b>Song Writer:</b> Jimi Hendrix</Writer>
                     <Producer><b>Song Producer:</b> Chas Chandler</Producer>
              </additional_info>
    </genre><!--End of type1-->
        <genre Type="Rocks Rock-2"> <!--type2-->
              <Name>Start Me Up</Name>
              <pic8></pic8>
               <singer id="a8" artist="TRS">Singer: The Rolling Stones</singer>
          <song_description>
                    <b>Description:</b>
                    <![CDATA[The Rolling Stones' "Start Me Up" is a single from their 1981 album Tattoo You. It debuted at number one on the Australian Kent Music Report, number two in Canada, number two on the Billboard Hot 100, number seven on the UK Singles Chart, and number ten in a few European countries north of the Alps.]]>
              </song_description>
              <Quantity><b>Available:</b> 3</Quantity>
              <Price><b>Price:</b> &#163;35 per album</Price>
              <additional_info location="Rock-2">
                  <category><b>Genre:</b> Hard Rock</category>
                  <Released><b>Released Date:</b> August 14, 1981</Released>
                  <Recorded><b>Recorded Date:</b> January and March 1978
                      </Recorded>
                  <Writer><b>Song Writer:</b> Jagger/Richards</Writer>
                  <Producer><b>Song Producer:</b> The Glimmer Twins</Producer>
              </additional_info>
    </genre><!--End of type2-->
        <genre Type="Rocks Rock-3"><!--type3-->
              <Name>Whole Lotta Love</Name>
```

```
                <pic9></pic9>
                <singer id="a9" artist="LZ">Singer: Led Zeppelin</singer>
                <song_description>
                    <b>Description:</b>
                        <![CDATA[The English rock band Led Zeppelin wrote the song "Whole Lotta Love." It is the opening track on the band's second album, Led Zeppelin II, and was released as a single in many countries; however, no single was released in the United Kingdom, as with other Led Zeppelin tracks. It was certified gold in the United States and became their first album.]]>
                </song_description>
                <Price><b>Price:</b> &#163;40 per album - Out of Stock</Price>
                <additional_info location="Rock-3">
                        <category><b>Genre:</b> Hard Rock</category>
                        <Released><b>Released Date:</b> November 7, 1969</Released>
                        <Writer><b>Song Writer:</b> John Bonham/Willie Dixon/John Paul Jones/Jimmy Page/Robert Plant</Writer>
                        <Producer><b>Song Producer:</b> Jimmy Page</Producer>
                </additional_info>
        </genre><!--End of type3-->
    </Categories><!--End of Container-->
    <Categories><!--Pops music Container-->
        <genre Type="Pops Pop-1"> <!--type1-->
                <Name>Levitating</Name>
                <pic9></pic9>
                <singer id="a10" artist="DL">Singer: Dua Lipa</singer>
                <song_description>
                        <b>Description:</b>
                        <![CDATA[Dua Lipa's "Levitating" is a song from her second studio album, Future Nostalgia (2020). Lipa, Clarence Coffee Jr., Sarah Hudson, and Stephen Kozmeniuk wrote the song with the image of Mike Myers from Austin Powers in mind. Koz and Stuart Price managed the production, which was inspired by a Roland VP-330 synthesizer sample played by the former.]]>
                </song_description>
                <Quantity><b>Available:</b> 1</Quantity>
                <Price><b>Price:</b> &#163;45 per album</Price>
                <additional_info location="Pop-1">
                        <category><b>Genre:</b> Pop music</category>
                        <Released><b>Released Date:</b> October 1, 2020</Released>
                        <Recorded><b>Recorded Date:</b> August 28, 2018</Recorded>
                        <Writer><b>Song Writer:</b> Dua Lipa/Clarence Coffee Jr./Sarah Hudson/Stephen Kozmeniuk/DaBaby</Writer>
                        <Producer><b>Song Producer:</b> Koz Stuart Price</Producer>
                </additional_info>
        </genre><!--End of type1-->
        <genre Type="Pops Pop-2"> <!--type2-->
                <Name>Dynamite</Name>
                <pic11></pic11>
                <singer id="a11" artist="BTS">Singer: BTS</singer>
                <song_description>
```

```
                    <b>Description:</b>
                    <![CDATA["Dynamite" is an album by South Korean boy band BTS that was released on August 21, 2020 by Big Hit Entertainment and Sony Music Entertainment. It is the band's first entirely released English album. The album, written and composed by David Stewart and Jessica Agombar, is an energetic disco-pop song with elements of blues, soul, and bubblegum pop that draw inspiration from 1970s music.]]>
                </song_description>
                <Quantity><b>Available:</b> 3</Quantity>
                <Price><b>Price:</b> &#163;50 per album</Price>
                <additional_info location="Pop-2">
                    <category><b>Genre:</b> Disco - Pop music</category>
                    <Released><b>Released Date:</b> August 21, 2020</Released>
                    <Recorded><b>Recorded Date:</b> July 2020</Recorded>
                    <Writer><b>Song Writer:</b> David Stewart/Jessica Agombar</Writer>
                    <Producer><b>Song Producer:</b> David Stewart</Producer>
                </additional_info>
            </genre><!--End of type2-->
            <genre Type="Pops Pop-3"> <!--type3-->
                <Name>Blinding Lights</Name>
                    <pic12></pic12>
                    <singer id="a12" artist="TW">Singer: The Weeknd</singer>
                    <song_description>
                        <b>Description:</b>
                        <![CDATA["Blinding Lights" is a song by Canadian singer-songwriter the Weeknd from his fourth studio album After Hours. It was released as the album's second single on November 29, 2019, two days after "Heartless." The Weeknd co-wrote and recorded the album with Max Martin and Oscar Holter, with additional credits going to Belly and Jason Quenneville.]]>
                    </song_description>
                    <Price><b>Price:</b> &#163;52 per album - Out of Stock</Price>
                    <additional_info location="Pop-3">
                        <category><b>Genre:</b> Electro Pop music</category>
                        <Released><b>Released Date:</b> November 29, 2019</Released>
                        <Writer><b>Song Writer:</b> Abel Tesfaye/Ahmad Balshe/Jason Quenneville/Max Martin/Oscar Holter</Writer>
                        <Producer><b>Song Producer:</b> Max Martin/Oscar Holter/The Weeknd</Producer>
                    </additional_info>
            </genre><!--End of type3-->
        </Categories> <!--End of Container-->
        <Categories> <!--Countries music Container-->
            <genre Type="Countries Country-1"> <!--type1-->
                <Name>Welcome to the Future</Name>
                <pic13></pic13>
                <singer id="a13" artist="BP">Singer: Brad Paisley</singer>
                <song_description>
                    <b>Description:</b>
```

```
                    <![CDATA["Welcome to the Future" is a song co-written and produced by
                    American country music singer Brad Paisley that was released as the
                    second single from his album American Saturday Night in July 2009. It is his
                    twenty-fourth chart single. Paisley sang the song at the White House for
                    President Barack Obama and First Lady Michelle Obama in July 2009.
                    Paisley and Chris DuBois wrote the album together.]]>
                </song_description>
                <Quantity><b>Available:</b> 1</Quantity>
                <Price><b>Price:</b> &#163;55 per album</Price>
                <additional_info location="Country-1">
                        <category><b>Genre:</b> Country music</category>
                        <Released><b>Released Date:</b> July 13, 2009</Released>
                        <Writer><b>Song Writer:</b> Chris DuBois/Brad Paisley</Writer>
                        <Producer><b>Song Producer:</b> Frank Rogers</Producer>
                </additional_info>
        </genre><!--End of type1-->
            <genre Type="Countries Country-2"> <!--type2-->
                <Name>Redneck Woman</Name>
                <pic14></pic14>
                <singer id="a14" artist="GW">Singer: Gretchen Wilson</singer>
                <song_description>
                        <b>Description:</b>
                        <![CDATA[Gretchen Wilson is an American country music singer who co-
                        wrote and recorded the album "Redneck Woman." Wilson collaborated with
                        John Rich on this album. It was released as the lead single from her multi-
                        platinum debut album, Here for the Party, in March 2004. (2004). Wilson's
                        first number-one hit on the Billboard Hot Country Singles and Tracks chart
                        in the United States, and it has reached number 22 on the Billboard Hot
                        100.]]>
                </song_description>
                <Quantity><b>Available:</b> 1</Quantity>
                <Price><b>Price:</b> &#163;58 per album</Price>
                <additional_info location="Country-2">
                    <category><b>Genre:</b> Country music</category>
                        <Released><b>Released Date:</b> March 23, 2004</Released>
                        <Recorded><b>Recorded Date:</b> 2004</Recorded>
                        <Writer><b>Song Writer:</b> John Rich/Gretchen Wilson</Writer>
                        <Producer><b>Song Producer:</b> Joe Scaife/Mark Wright</Producer>
                </additional_info>
        </genre><!--End of type2-->
            <genre Type="Countries Country-3"> <!--type3-->
                <Name>Girl Crush</Name>
                <pic15></pic15>
                <singer id="a15" artist="LBT">Singer: Little Big Town</singer>
                <song_description>
                        <b>Description:</b>
                        <![CDATA[Lori McKenna, Hillary Lindsey, and Liz Rose wrote the song "Girl
                        Crush," which was performed by the American country music group Little
                        Big Town. It was released as the second single from their sixth studio album,
                        Pain Killer, on December 15, 2014. The album received generally favorable
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                        reviews from music critics, was nominated for five music awards, including
                        two Grammys, and peaked at number one on US country radio.]]>
                    </song_description>
                    <Quantity><b>Available:</b> 2</Quantity>
                    <Price><b>Price:</b> &#163;60 per album</Price>
                    <additional_info location="Country-3">
                        <category><b>Genre:</b> Country music</category>
                        <Released><b>Released Date:</b> December 15, 2014</Released>
                        <Writer><b>Song Writer:</b> Lori McKenna/Hillary Lindsey/Liz
                        Rose</Writer>
                        <Producer><b>Song Producer:</b> Joy Joyce</Producer>
                    </additional_info>
        </genre><!--End of type3-->
    </Categories> <!--End of Container-->
  </Songs> <!--End of Sub Main Section-->
 </Store> <!--End of Main Section-->
</schema>
```

XSD Content

```
<!--
  Author: Siddhartha Ghimire
  Date:   May 5, 2021
-->

<xs:schema attributeFormDefault="unqualified" elementFormDefault="qualified"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:element name="Country" type="xs:string"/>
  <xs:element name="City" type="xs:string"/>
  <xs:element name="landline" type="xs:string"/>
  <xs:element name="Mobile" type="xs:string"/>
  <xs:element name="URL" type="xs:anyURI"/>
  <xs:element name="Store_Name" type="xs:string"/>
  <xs:element name="Logo" type="xs:string"/>
  <xs:element name="b" type="xs:string"/>
  <xs:element name="Name" type="xs:string"/>
  <xs:element name="singer" type="xs:string"/>
  <xs:element name="pic1" type="xs:string"/>
  <xs:element name="pic2" type="xs:string"/>
  <xs:element name="pic3" type="xs:string"/>
  <xs:element name="pic4" type="xs:string"/>
  <xs:element name="pic5" type="xs:string"/>
  <xs:element name="pic6" type="xs:string"/>
  <xs:element name="pic7" type="xs:string"/>
  <xs:element name="pic8" type="xs:string"/>
  <xs:element name="pic9" type="xs:string"/>
  <xs:element name="pic10" type="xs:string"/>
  <xs:element name="pic11" type="xs:string"/>
```

```
<xs:element name="pic12" type="xs:string"/>
<xs:element name="pic13" type="xs:string"/>
<xs:element name="pic14" type="xs:string"/>
<xs:element name="pic15" type="xs:string"/>

<xs:element name="Address"> <!--Defining element Address from Store_Info section-->
        <xs:complexType>
   <xs:sequence>
    <xs:element ref="Country"/> <!--refrences from  <xs:element name="Country" type="xs:string"/> -->
    <xs:element ref="City"/> <!--refrences from <xs:element name="City" type="xs:string"/> -->
   </xs:sequence>
  </xs:complexType>
</xs:element>

<xs:element name="Phone"> <!--Defining element Phone from Store_Info section-->
  <xs:complexType>
   <xs:sequence>
    <xs:element ref="landline"/> <!--refrences from  <xs:element name="landline" type="xs:string"/> -->
    <xs:element ref="Mobile"/> <!--refrences from  <xs:element name="Mobile" type="xs:string"/> -->
   </xs:sequence>
  </xs:complexType>
</xs:element>

<xs:element name="Website"> <!--Defining element Website from Store_Info section-->
  <xs:complexType>
   <xs:sequence>
    <xs:element ref="URL"/> <!--refrences from <xs:element name="URL" type="xs:string"/> -->
   </xs:sequence>
  </xs:complexType>
</xs:element>

<xs:element name="category"> <!--Defining element category from additional_info section-->
  <xs:complexType mixed="true">
   <xs:sequence>
    <xs:element ref="b" minOccurs="0"/> <!--refrences from <xs:element name="b" type="xs:string"/> -->
   </xs:sequence>
  </xs:complexType>
</xs:element>

<xs:element name="Released"> <!--Defining element Released from additional_info section-->
  <xs:complexType mixed="true">
   <xs:sequence>
    <xs:element ref="b" minOccurs="0"/>
   </xs:sequence>
  </xs:complexType>
</xs:element>

<xs:element name="Recorded"> <!--Defining element Recorded from additional_info section-->
  <xs:complexType mixed="true">
   <xs:sequence>
    <xs:element ref="b" minOccurs="0"/>
```

```
    </xs:sequence>
  </xs:complexType>
</xs:element>

<xs:element name="Writer"> <!--Defining element Writer from additional_info section-->
  <xs:complexType mixed="true">
    <xs:sequence>
      <xs:element ref="b" minOccurs="0"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>

<xs:element name="Producer"> <!--Defining element Producer from additional_info section-->
  <xs:complexType mixed="true">
    <xs:sequence>
      <xs:element ref="b" minOccurs="0"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>

<xs:element name="song_description"> <!--Defining element song_description from genre section-->
  <xs:complexType mixed="true">
    <xs:sequence>
      <xs:element ref="b" minOccurs="0"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>

<xs:element name="Quantity"> <!--Defining element Quantity from genre section-->
  <xs:complexType mixed="true">
    <xs:sequence>
      <xs:element ref="b" minOccurs="0"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>

<xs:element name="Price"> <!--Defining element Price from genre section-->
  <xs:complexType mixed="true">
    <xs:sequence>
      <xs:element ref="b" minOccurs="0"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>

<xs:element name="additional_info"> <!--Defining element additional_info from genre section-->
  <xs:complexType>
    <xs:sequence>
      <xs:element ref="category"/> <!--refrences from <xs:element name="category"> -->
      <xs:element ref="Released"/> <!--refrences from <xs:element name="Released"> -->
      <xs:element ref="Recorded" minOccurs="0"/> <!--refrences from <xs:element name="Recorded"> -->
      <xs:element ref="Writer" minOccurs="0"/> <!--refrences from <xs:element name="Writer"> -->
```

```
      <xs:element ref="Producer" minOccurs="0"/> <!--refrences from <xs:element name="Producer"> -->
    </xs:sequence>
  </xs:complexType>
 </xs:element>

 <xs:element name="genre"> <!--Defining element genre from Categories section-->
          <xs:complexType>
    <xs:sequence>
      <xs:element ref="Name"/> <!--refrences from <xs:element name="Name" type="xs:string"/> -->
      <xs:element ref="pic1" minOccurs="0"/> <!--refrences from <xs:element name="pic1" type="xs:string"/> -
->
      <xs:element ref="pic2" minOccurs="0"/> <!--refrences from <xs:element name="pic2" type="xs:string"/> -
->
      <xs:element ref="pic3" minOccurs="0"/> <!--refrences from <xs:element name="pic3" type="xs:string"/> -
->
      <xs:element ref="pic4" minOccurs="0"/> <!--refrences from <xs:element name="pic4" type="xs:string"/> -
->
      <xs:element ref="pic5" minOccurs="0"/> <!--refrences from <xs:element name="pic5" type="xs:string"/> -
->
      <xs:element ref="pic6" minOccurs="0"/> <!--refrences from <xs:element name="pic6" type="xs:string"/> -
->
      <xs:element ref="pic7" minOccurs="0"/> <!--refrences from <xs:element name="pic7" type="xs:string"/> -
->
      <xs:element ref="pic8" minOccurs="0"/> <!--refrences from <xs:element name="pic8" type="xs:string"/> -
->
      <xs:element ref="pic9" minOccurs="0"/> <!--refrences from <xs:element name="pic9" type="xs:string"/> -
->
      <xs:element ref="pic10" minOccurs="0"/> <!--refrences from <xs:element name="pic10"
type="xs:string"/> -->
      <xs:element ref="pic11" minOccurs="0"/> <!--refrences from <xs:element name="pic11"
type="xs:string"/> -->
      <xs:element ref="pic12" minOccurs="0"/> <!--refrences from <xs:element name="pic12"
type="xs:string"/> -->
      <xs:element ref="pic13" minOccurs="0"/> <!--refrences from <xs:element name="pic13"
type="xs:string"/> -->
      <xs:element ref="pic14" minOccurs="0"/> <!--refrences from <xs:element name="pic14"
type="xs:string"/> -->
      <xs:element ref="pic15" minOccurs="0"/> <!--refrences from <xs:element name="pic15"
type="xs:string"/> -->
      <xs:element ref="singer"/> <!--refrences from <xs:element name="singer" type="xs:string"/> -->
      <xs:element ref="song_description"/> <!--refrences from <xs:element name="song_description"> -->
      <xs:element ref="Quantity" minOccurs="0"/> <!--refrences from <xs:element name="Quantity"> -->
      <xs:element ref="Price"/> <!--refrences from <xs:element name="Price"> -->
      <xs:element ref="additional_info"/> <!--refrences from <xs:element name="additional_info"> -->
    </xs:sequence>
  </xs:complexType>
 </xs:element>

<xs:element name="Categories"> <!--Defining element Categories from songs section-->
  <xs:complexType>
    <xs:sequence>
```

```
      <xs:element ref="genre" maxOccurs="unbounded" minOccurs="0"/> <!--refrences from <xs:element name="genre"> -->
    </xs:sequence>
   </xs:complexType>
  </xs:element>

  <xs:element name="Store_Info"> <!--Defining element Store_Info from Store section-->
   <xs:complexType>
    <xs:sequence>
     <xs:element ref="Store_Name"/> <!--refrences from <xs:element name="Store_Name" type="xs:string"/> -->
     <xs:element ref="Logo"/> <!--refrences from <xs:element name="Logo" type="xs:string"/> -->
     <xs:element ref="Address"/> <!--refrences from <xs:element name="Address"> -->
     <xs:element ref="Phone"/> <!--refrences from <xs:element name="Phone"> -->
     <xs:element ref="Website"/> <!--refrences from <xs:element name="Website"> -->
    </xs:sequence>
   </xs:complexType>
  </xs:element>

  <xs:element name="Songs"> <!--Defining element Songs from Store section-->
   <xs:complexType>
    <xs:sequence>
     <xs:element ref="Categories"/> <!--refrences from <xs:element name="Categories"> -->
    </xs:sequence>
   </xs:complexType>
  </xs:element>

  <xs:element name="Store"> <!--Defining element Songs from schema section-->
   <xs:complexType>
    <xs:sequence>
     <xs:element ref="Store_Info"/> <!--refrences from <xs:element name="Store_Info"> -->
     <xs:element ref="Songs"/> <!--refrences from <xs:element name="Songs"> -->
    </xs:sequence>
   </xs:complexType>
  </xs:element>
</xs:schema>
```

DTD Content

```
<!ELEMENT schema (Store)>
<!ELEMENT Store (Store_Info, Songs)>
<!ELEMENT Store_Info (Store_Name, Logo, Address+, Phone+, Website+)>
<!ELEMENT Store_Name (#PCDATA)>
<!ELEMENT Logo EMPTY>
<!ELEMENT Address (Country, City)>
<!ELEMENT Country (#PCDATA)>
<!ELEMENT City (#PCDATA)>
```

```
<!ELEMENT Phone (Landline, Mobile)>
<!ELEMENT Landline (#PCDATA)>
<!ELEMENT Mobile (#PCDATA)>
<!ELEMENT Website (URL)>
<!ELEMENT URL ANY>
<!ELEMENT Songs (Categories+)>
<!ELEMENT Categories (genre+)>
<!ELEMENT genre (Name, (pic1|pic2|pic3|pic4|pic5|pic6|pic7|pic8|pic9|pic10|pic11|pic12|pic13|pic14|pic15)?,
singer, song_description+, Quantity*, Price, additional_info+)>
<!ELEMENT Name (#PCDATA)>
<!ELEMENT pic1 EMPTY>
<!ELEMENT pic2 EMPTY>
<!ELEMENT pic3 EMPTY>
<!ELEMENT pic4 EMPTY>
<!ELEMENT pic5 EMPTY>
<!ELEMENT pic6 EMPTY>
<!ELEMENT pic7 EMPTY>
<!ELEMENT pic8 EMPTY>
<!ELEMENT pic9 EMPTY>
<!ELEMENT pic10 EMPTY>
<!ELEMENT pic11 EMPTY>
<!ELEMENT pic12 EMPTY>
<!ELEMENT pic13 EMPTY>
<!ELEMENT pic14 EMPTY>
<!ELEMENT pic15 EMPTY>
<!ELEMENT singer (#PCDATA)>
<!ELEMENT song_description (#PCDATA|b)*>
<!ELEMENT b (#PCDATA)>
<!ELEMENT Quantity (#PCDATA|b)*>
<!ELEMENT Price (#PCDATA|b)*>
<!ELEMENT additional_info (category+, Released+, Recorded*, Writer+, Producer+)>
<!ELEMENT category (#PCDATA|b)*>
<!ELEMENT Released (#PCDATA|b)*>
<!ELEMENT Recorded (#PCDATA|b)*>
<!ELEMENT Writer (#PCDATA|b)*>
<!ELEMENT Producer (#PCDATA|b)*>


<!ATTLIST schema xmlns:xsi CDATA #FIXED "http://www.w3.org/2001/XMLSchema-instance">
<!ATTLIST schema xsi:noNamespaceSchemaLocation CDATA #FIXED "Catalog_19031691.xsd">
<!ATTLIST genre Type NMTOKENS #REQUIRED>
<!ATTLIST Store_Info type CDATA #FIXED "about">
<!ATTLIST singer artist CDATA #REQUIRED>
<!ATTLIST singer id ID #REQUIRED>
<!ATTLIST singer artist IDREF #IMPLIED>
<!ATTLIST additional_info location NMTOKEN #REQUIRED>
```

CSS Content

```
Store_Info{
        background-image: url("home.jpg");
        height: 100%;
        background-position: center;
        background-repeat: no-repeat;
        background-size: cover;
        overflow: hidden;
        width: 100%;
        display: block;
        color:black;
        text-align:center;
        font-family: Comic Sans MS;
        font-size:20px;
}

Logo{
        background-image: url("logo.png");
        background-size: cover;
        height:120px;
        width:300px;
        text-align: center;
        display:block;
        margin-left:40%;
        display:block;

}

pic1{
        background-image:url("pic1.jpg");
        height:300px;
        width:250px;
        display:block;
        margin-left:30%;
        margin-top: 1%;
}
pic2{
        background-image:url("pic2.jpg");
        height:300px;
        width:350px;
        display:block;
        margin-left:15%;
        margin-top: 1%;
}
pic3{
        background-image:url("pic3.jpg");
        height:300px;
        width:350px;
        display:block;
```

```
        margin-left:15%;
        margin-top: 1%;
}

pic4{
        background-image:url("pic4.jpg");
        height:300px;
        width:350px;
        display:block;
        margin-left:15%;
        margin-top: 1%;
}
pic5{
        background-image:url("pic5.jpg");
        height:300px;
        width:350px;
        display:block;
        margin-left:15%;
        margin-top: 1%;
}
pic6{
        background-image:url("pic6.jpg");
        height:300px;
        width:350px;
        display:block;
        margin-left:15%;
        margin-top: 1%;
}

pic7{
        background-image:url("pic7.jpg");
        height:300px;
        width:350px;
        display:block;
        margin-left:15%;
        margin-top: 1%;
}
pic8{
        background-image:url("pic8.jpg");
        height:300px;
        width:350px;
        display:block;
        margin-left:15%;
        margin-top: 1%;
}
pic9{
        background-image:url("pic9.jpg");
        height:300px;
        width:350px;
        display:block;
        margin-left:15%;
```

```
        margin-top: 1%;
}
pic10{
        background-image:url("pic10.jpg");
        height:300px;
        width:350px;
        display:block;
        margin-left:15%;
        margin-top: 1%;
}
pic11{
        background-image:url("pic11.png");
        height:300px;
        width:350px;
        display:block;
        margin-left:15%;
        margin-top: 1%;
}
pic12{
        background-image:url("pic12.png");
        height:300px;
        width:350px;
        display:block;
        margin-left:15%;
        margin-top: 1%;
}
pic13{
        background-image:url("pic13.jpg");
        height:300px;
        width:350px;
        display:block;
        margin-left:15%;
        margin-top: 1%;
}
pic14{
        background-image:url("pic14.jpg");
        height:300px;
        width:350px;
        display:block;
        margin-left:15%;
        margin-top: 1%;
}
pic15{
        background-image:url("pic15.jpg");
        height:300px;
        width:350px;
        display:block;
        margin-left:15%;
        margin-top: 1%;
}
Store_Name{
```

```
        display: block;
}

Country{
        display:block;
}

City{
        display:block;
}

Mobile{
        display:block;
}

Landline{
        display:block;
}

Website{
        display:block;
}

Songs{

        color:white;
        text-align:left;
        background-color:black;

}

b{
        color: #ff0000;
        font-size: 20px;
}

Categories{

        display: grid;
        grid-template-columns: repeat(3, 1fr);
        margin-top: 2rem;

}

genre{

        display: inline-block;
        position: relative;
        left: 50%;
        transform: translateX(-50%);
        color:white;
```

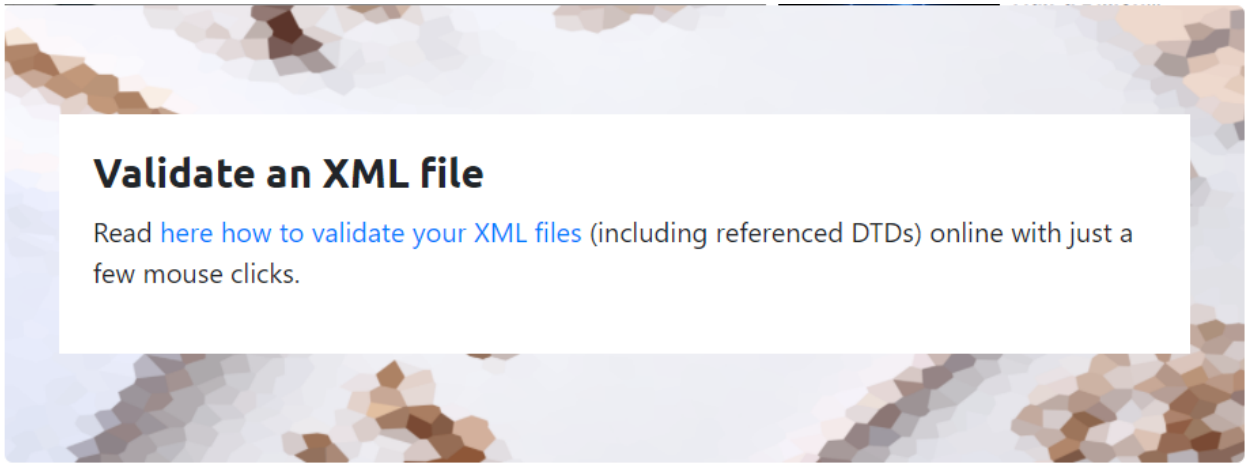
```
		background-color:black;
		border: 1px solid white;

}

additional_info{
		color:white;
		text-align:left;
		background-color:black;
}

Name{
		padding: 1%;
		text-transform: uppercase;
		display:block;
		color:#008000;
		font-family: Berlin Sans FB;
		font-size: 30px;
		border-style: dotted;

}

Recorded{
		display:block;
		margin-left: 1%;
}

singer{
		display:block;
		margin-left:35%;
		margin-top: 1%;
}

category{
		display:block;
		margin-left: 1%;
}

Producer{
		display:block;
		margin-bottom: 1%;
		margin-left: 1%;
}

Writer{
		display:block;
		margin-left: 1%;
}

Released{
		display:block;
```

```
        margin-left: 1%;
}

Quantity{
        display:block;
        margin-left: 1%;
}

Price{
        display:block;
        margin-left: 1%;
}

song_description{
        display:block;
        margin-left: 1%;
}
Quantity, Price, category, Released, Recorded, Writer, Producer{
        display: list-item;
        list-style-type: square;
        margin-left: 20px;
}
```

Testing

Test 1	Testing XML validation
Action	XML file is added to the xmlvalidation.com
Expected Output	No errors were found
Actual Output	No errors were found
Result	Test Successful

Table 1: Test 1



No errors were found

The following files have been uploaded so far:

XML document:

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

Figure 2: Test 1

Test 2	Testing CSS validation
Action	CSS file is added to the https://jigsaw.w3.org/css-validator/
Expected Output	No Error Found
Actual Output	No Errors Found
Result	Test Successful

Table 2: Test 2

Figure 3: Test 2

Test 3	Testing XML and DTD validation
Action	Files were added to the xmlvalidation.com
Expected Output	No errors were found
Actual Output	No errors were found
Result	Test Successful

Table 3: Test 3

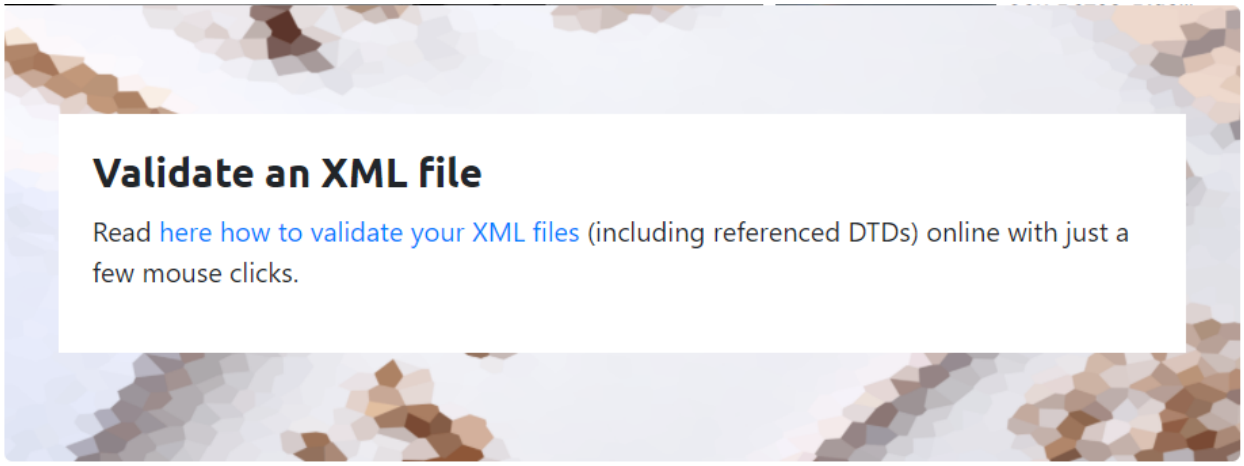


Figure 4: Test 3

Test 4	Testing XML and XSD validation
Action	Files were added to the xmlvalidation.com
Expected Output	No errors were found
Actual Output	No errors were found
Result	Test Successful

Table 4: Test 4

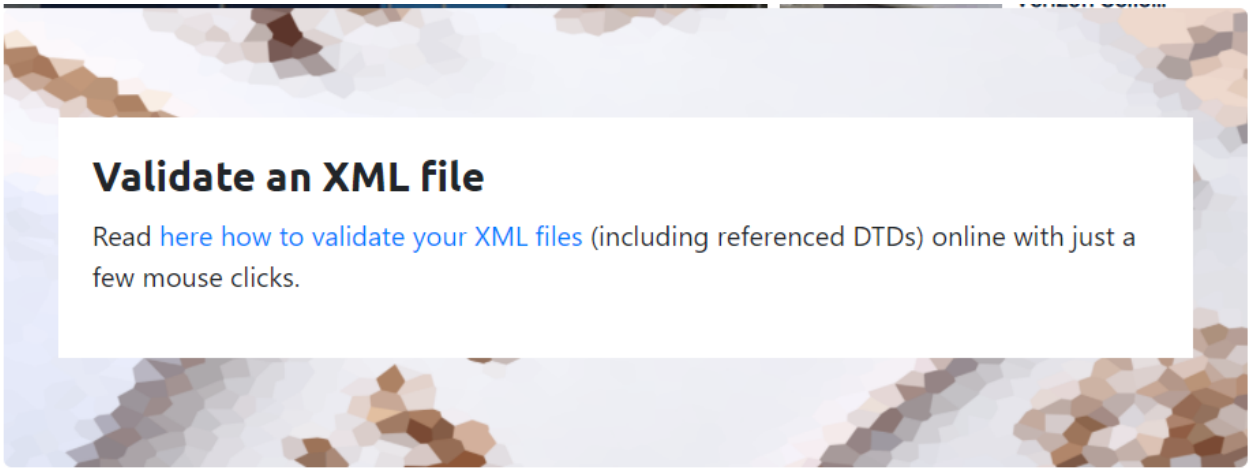


Figure 5: Test 4

Test 5	Testing XML, DTD and XSD validation
Action	All the files were added to the xmlvalidation.com
Expected Output	No errors were found
Actual Output	No errors were found
Result	Test Successful

Table 5: Test 5

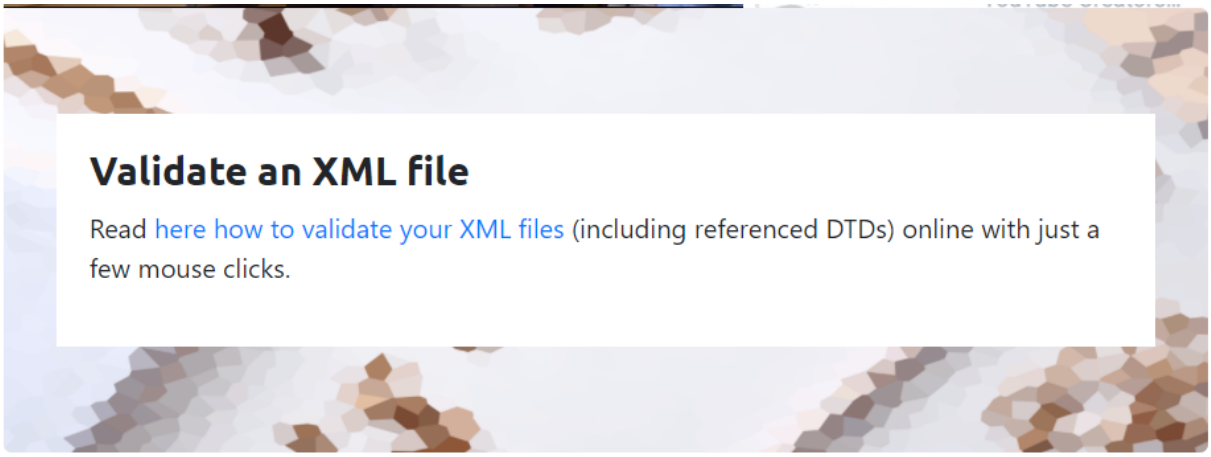


Figure 6: Test 5

Coursework Development

We should generate xml, xsd, dtd, and css with tree diagrams as defined by the question in order to complete this coursework.

First and foremost, the course began with a tree diagram. After all, the draft diagrams were made on scrap paper. To finalize the tree diagram, I used the website draw.io. This website is simple, easy, familiar and free to use. Draw.io is a proprietary tool for creating diagrams and charts. This framework gives us the option of using an automated layout feature or creating a custom layout. They have a wide variety of shapes and hundreds of graphic elements that make each diagram or chart distinctive.

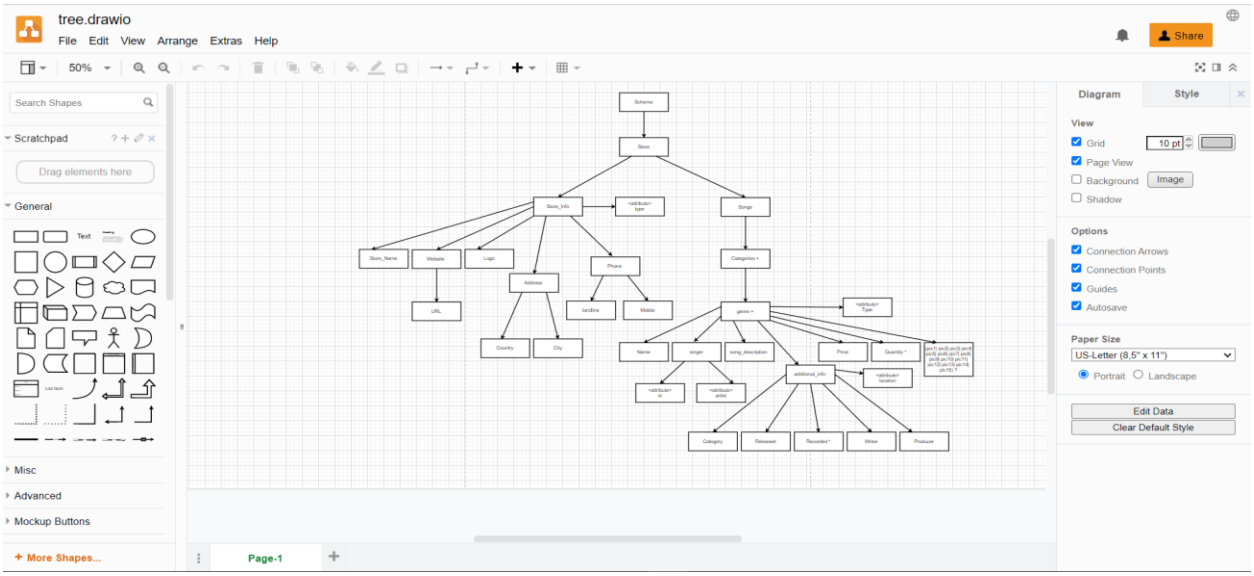


Figure 7: Draw.io

For the XML, XSD, DTD and CSS development I use the software called Sublime Text 3. The auto indentation of code in this software is the best version I liked. Besides that, Sublime Text is a sophisticated text editor that is common among developers. It has many features that make dealing with code easier, such as syntax highlight, auto indentation, file type recognition, sidebar, macros, plug-ins, and packages.

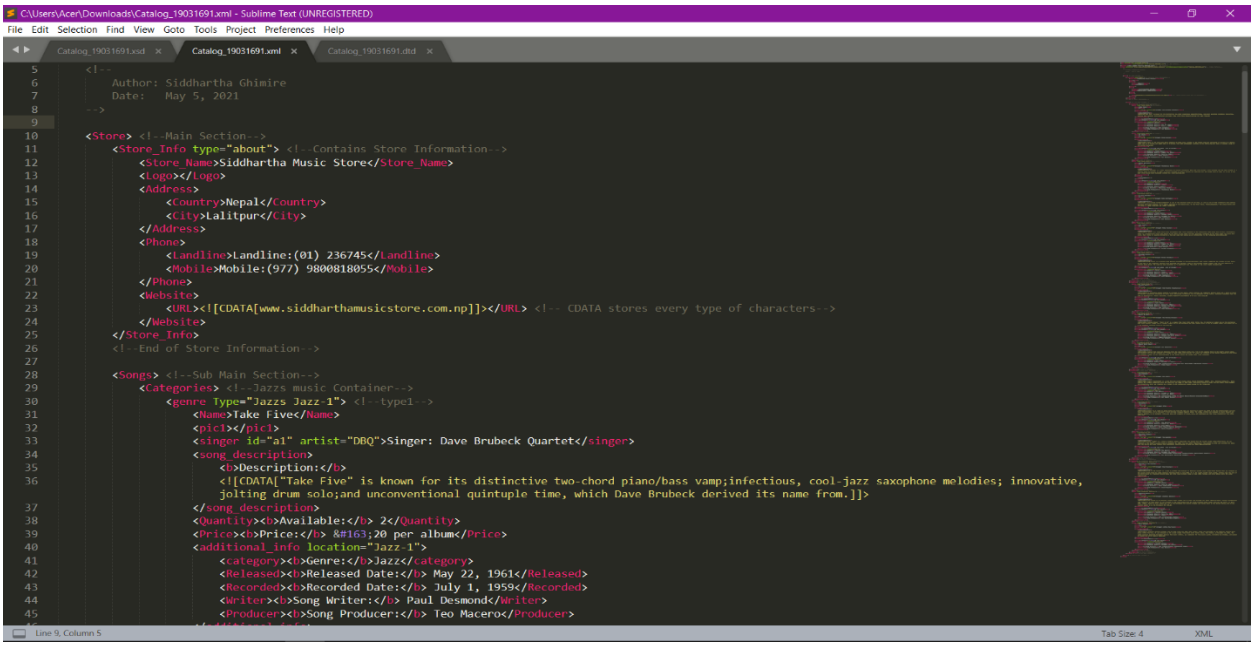


Figure 8: Sublime Text 3

I used the Google Chrome Browser to build and test the code. Chrome browser is one of the most advanced methods for minimizing basic errors and performing without any types of lags. Chrome browsers renders the design according to the CSS built. Recently Chrome has patched the bug and introduced support for explicitly browsing XML in the browser. From my point of view Chrome is one of the best browser to display .xml extension files.

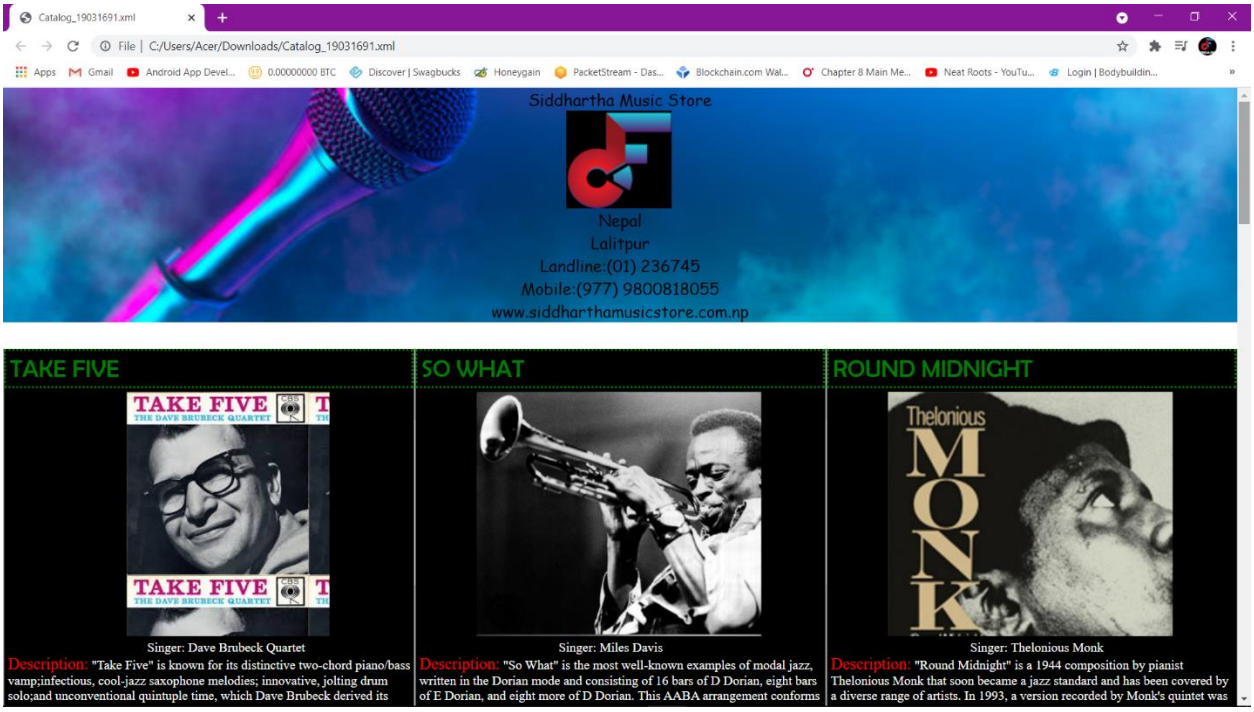


Figure 9: Google Chrome

Difference between Schema and DTD

DTD stands for Document Type Definition which are derived from SGML syntax. It does not support datatypes, namespace and is not extensible (JavaTpoint, 2018).

XSD stands for XML Schema Definition which are written in XML. It supports datatypes for element and attributes, namespace and is extensible (JavaTpoint, 2018).

There are various differences between DTD and Schema. Some of them are mentioned below in the table.

DTD	XSD
i. DTD doesnot define order for child elements (JavaTpoint, 2018).	XSD defines order for child elements (JavaTpoint, 2018).
ii. DTD doesnot gives as much control on structure of XML document (GeeksForGeeks, 2020).	XSD gives more control on structure of XML document (GeeksForGeeks, 2020).
iii. It is used to describe XML attributes and elements precisely.	It is used to defines the rules for XML attributes and elements.
iv. DTDs are not written in XML (Joan, 2011).	XML Schemas are written in XML (Joan, 2011).
v. DTD does allow inline definitions (Joan, 2011).	XSD does not allow inline definitions (Joan, 2011).
vi. In simplicity DTD is harder then XSD (Mandula, 2018).	XSD is simple then DTD (Mandula, 2018).
vii. DTD cannot set constraints (Shaddy, 2021).	XSD can set constraints like length of data (Shaddy, 2021).

Table 6: DTD vs XSD

Critical Analysis

I have never heard of the word xml before. I was able to understand and build various types of xml websites during the semester. It made it much easier for me to become acquainted with xml, but it was not easy to create this coursework. This coursework should be created based on a requirement review. I encountered and resolved various kinds of defects, glitches, and so on. The first error I faced was the tag mismatch.

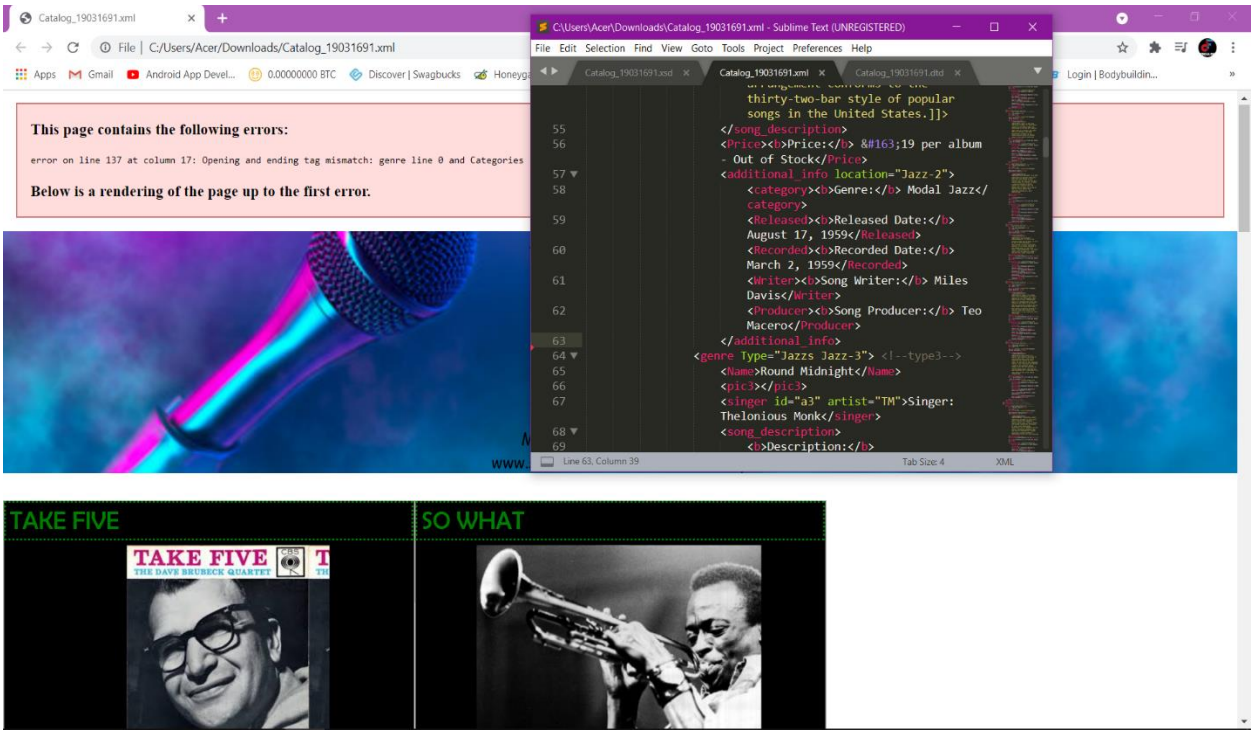


Figure 10: Error: Tag mismatch

The browser displays the error on line 137, but after inspecting the whole code, the error was discovered on line 64, which was lacking the genre's closing tag. The problem was fixed by inserting the genre closing tag on line 64.

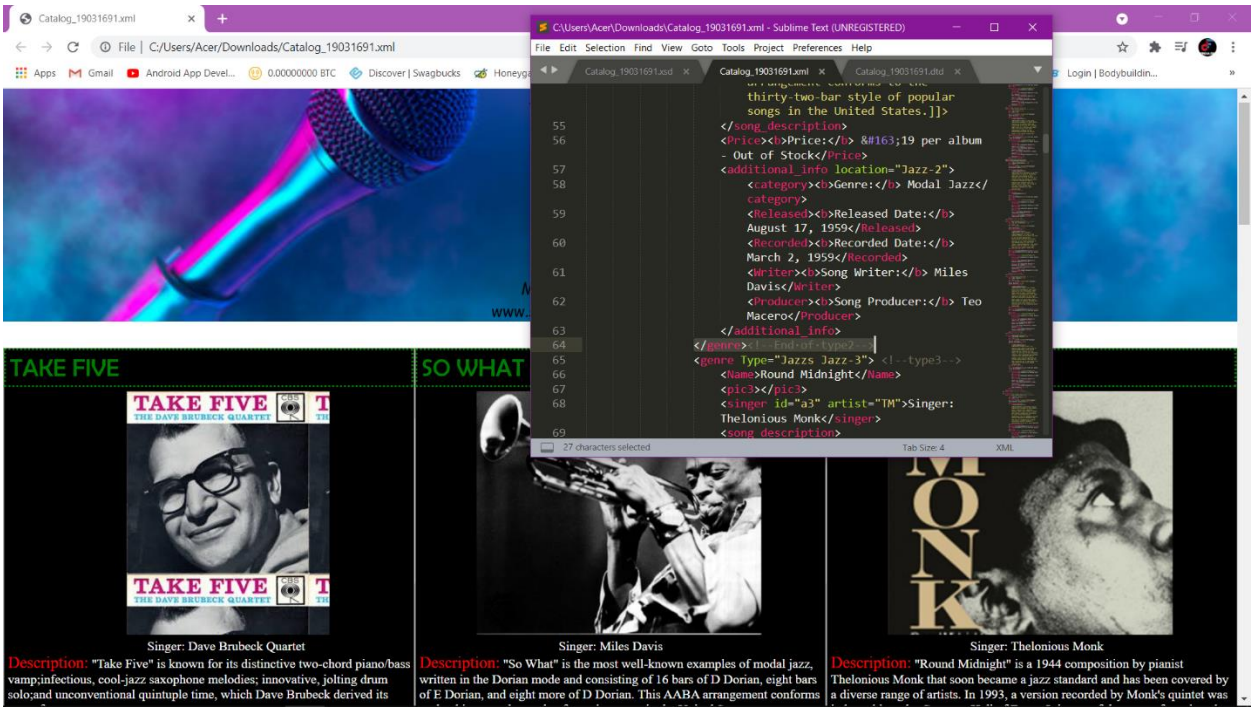


Figure 11: Solution for Tag mismatch

The next error caught on the development of the coursework was on the validating dtd file. The error was on the declaration of element type genre.

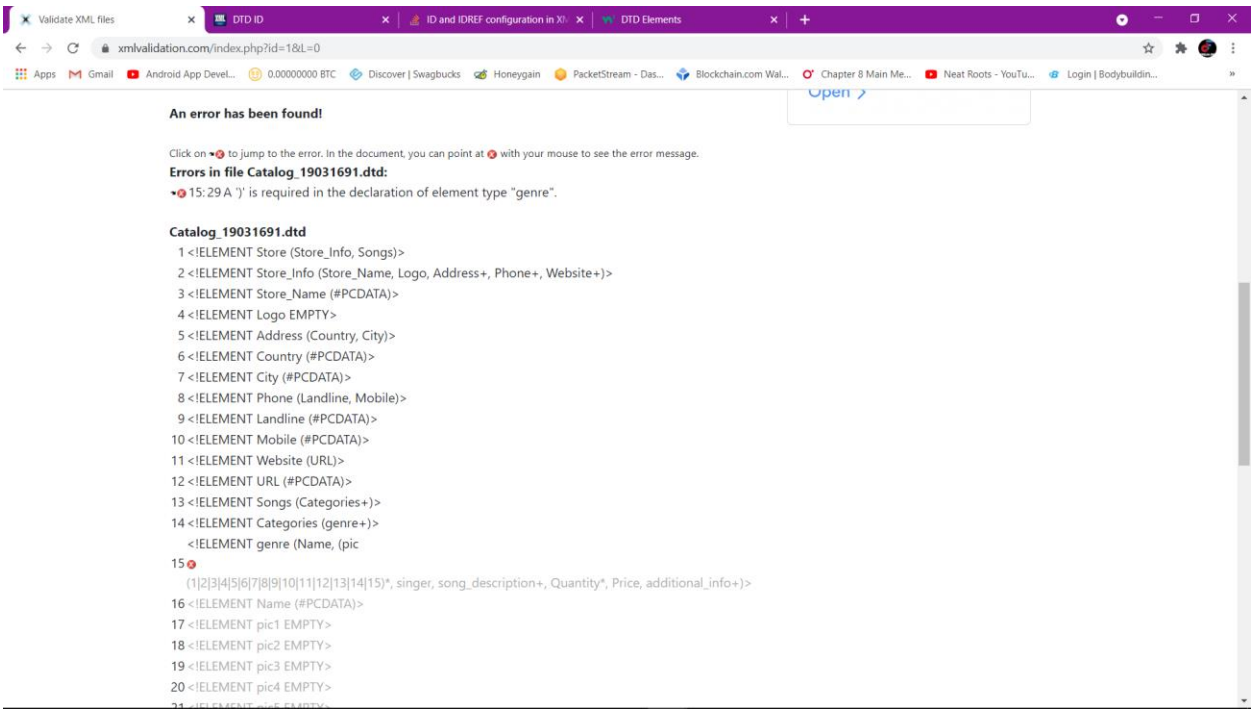
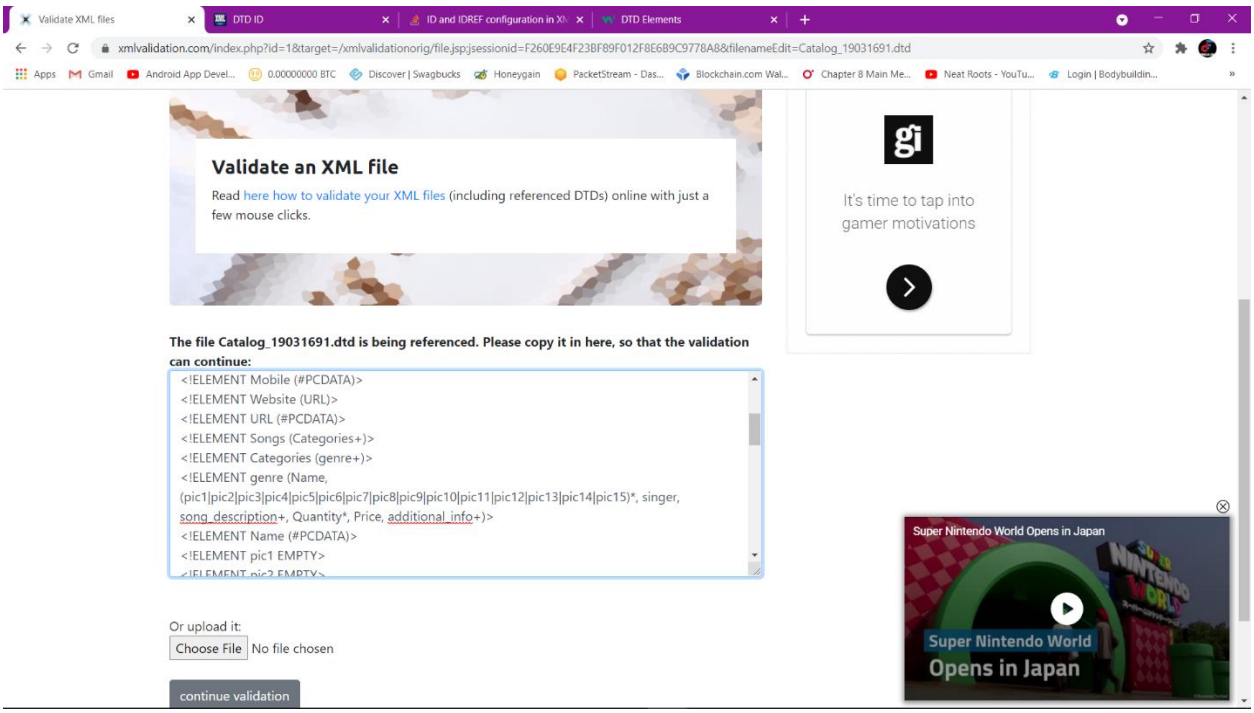


Figure 12: Error: Declaration of Element Type

The error was in identifying pic, despite the fact that there were 15 pic in the genre segment. Each segment has one picture representing it as pic1 and the next as pic2. I must declare 0 or more than one pic from a genre segment of 15 pic. So, I did as seen in the figure above “pic (1 | 2 | 3 |...)*” before an error occurred. This error was fixed by (pic1|pic2|pic3...)* which is shown in the figure below.



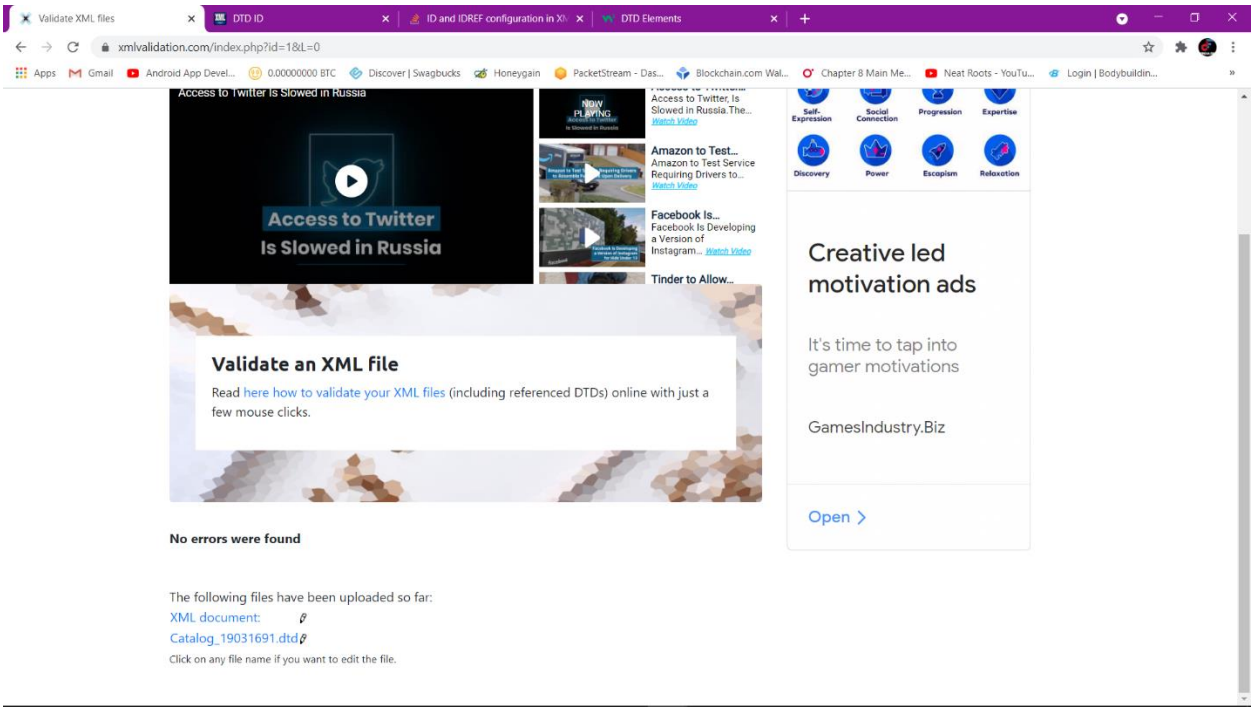


Figure 13: Solution for Declaration of Element Type

The next error caught on the development of coursework was the xml attribute and the DTD ID validation error.

```
<singer id="1" artist="DBQ">Singer: Dave Brubeck Quartet</singer>
```

```
51  <!ATTLIST singer id ID #REQUIRED>
```

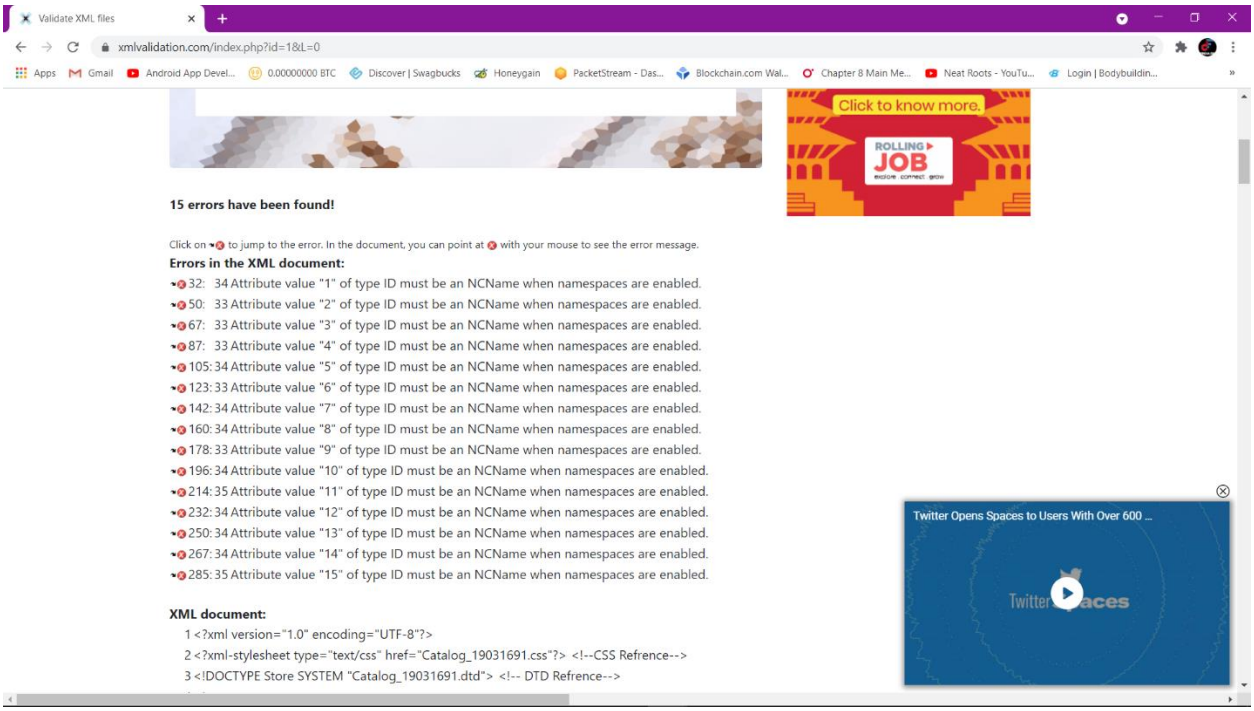


Figure 14: Error: ID

Since the xml attribute for the singer class is an integer and is specified as ID on the DTD. As a result, the error “Must be an NCName when namespaces are enabled” in the figure above occurred. To fix this error, I used string values instead of integers in the element singer of the attribute type.

```
<singer id="a1" artist="DBQ">Singer: Dave Brubeck Quartet</singer>
```

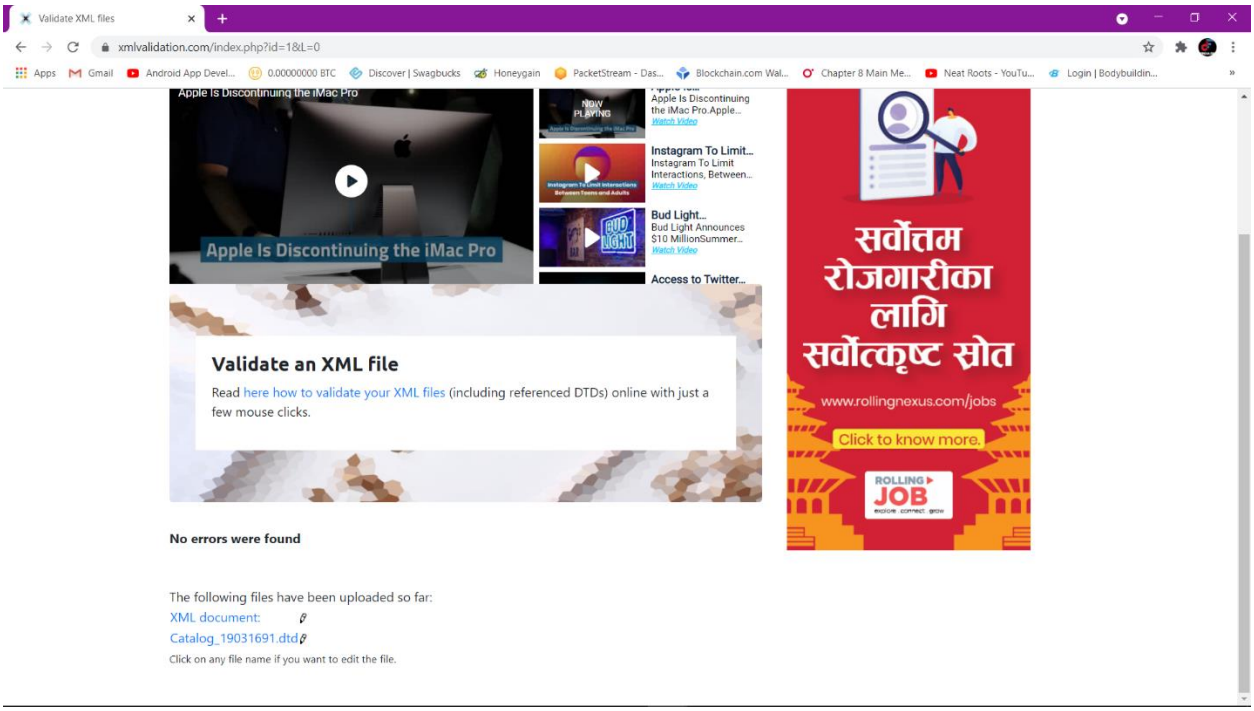


Figure 15: Solution: For Error ID

Conclusion

The coursework which is been implemented in this report is all about the Music Store Information website built using XML that can now able to display all the list of 15 different songs with their details. This report is been finalized after the great research, consulting with the instructor (Mr. Prithivi Maharajan) time to time, patience and hard work. Implementing the concepts of XML, Schema, DTD and CSS was quite fun and thrilling. Without the proper tree diagram the above coursework would not get completed, so above-mentioned tree diagram makes me easier and familiar to work with the remaining parts. And finally, this report has been completed after getting the concepts of scenario provided from the coursework and the given task are completed and are saved in the files named as catalog_19031691.xml, catalog_19031691.xsd, catalog_19031691.dtd, catalog_19031691.css.

References

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