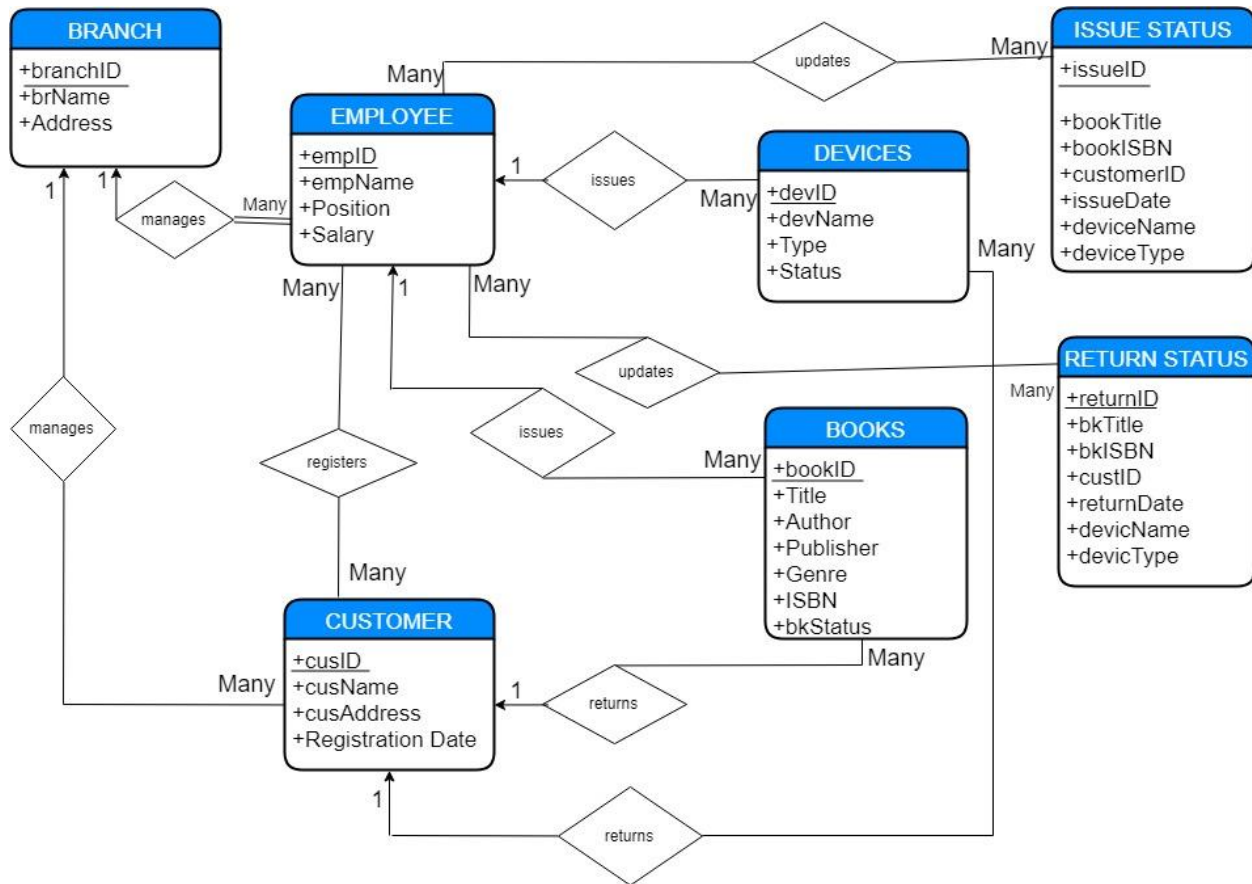


Lab 6



The ER diagram shown above was developed earlier in the course and no changes have been made to make it more suitable for the XML schema design. The entities in the XML schema are the same as the entities shown in the diagram above. In order to establish all the many-to-many relationships shown above in the diagram, three tables were created and therefore are added to the XML schema. The table `EmployeeRegistersCustomer`, establishes the relationship of many-to-many between Employee and Customer, in which the employee registers a new customer in the library. The table consists of the foreign keys 'empID' and 'cusID' which are the primary keys of Employee and Customer respectively. The table `EmployeeUpdatesIssueStatus` establishes the relationship of many-to-many between Employee and Issue Status, in which the employee updates the issue status of the book or device that is borrowed. The table consists of the foreign keys 'empID' and 'issueID' which are the primary keys of Employee and Issue Status respectively. The table `EmployeeUpdatesReturnStatus` establishes the relationship of many-to-many between Employee and Return Status, in which the employee updates the return status of the book or device that has been returned. The table consists of the foreign keys 'empID' and 'returnID' which are the primary keys of Employee and Return Status respectively.

The 5 queries that were designed in XSLT are shown below in natural language:

1. What are the names of the customers using laptops?
2. What books are borrowed?
3. What books have been issued in April?
4. What is the name of the employee who updates return status of returned books or devices?
5. What books have been returned in April?

The corresponding XSLT queries are shown below:

1. What are the names of the customers using laptops?

```
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet version="1.0" xmlns:xsl="http://www.w3.org/1999/XSL/Transform">
<xsl:template match="/">
<html>
<body>
<h2>Customers Using Laptops</h2>
<table border="1">
<tr bgcolor="#9acd32">
<th style="text-align:left">cusName</th>
</tr>
<xsl:for-each select="library/Customer">
<tr>
<xsl:variable name="NameOfCust" select="cusName"/>
<xsl:variable name="CustomerID" select="cusID"/>
<xsl:variable name="deviceInfo" select="//library/Devices[devName='Laptop' and Status='In
Use' and cusID=$CustomerID]"/>
<xsl:if test="$deviceInfo/devName">
<td><xsl:value-of select="cusName"/></td>
</xsl:if>
</tr>
</xsl:for-each>
</table>
</body>
</html>
</xsl:template>
</xsl:stylesheet>
```

2. What books are borrowed?

```
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet version="1.0" xmlns:xsl="http://www.w3.org/1999/XSL/Transform">
<xsl:template match="/">
<html>
<body>
```

Shireen Taha
#500581584

```
<h2>Borrowed Books</h2>
<table border="1">
  <tr bgcolor="#9acd32">
    <th style="text-align:left">Title</th>
  </tr>
  <xsl:for-each select="library/Books">
    <tr>
      <xsl:variable name="borrowedStatus" select="bkStatus" />
      <xsl:variable name="bookStatus" select="//library/Books[bkStatus=$borrowedStatus]"/>
      <xsl:if test="$bookStatus/bkStatus='Borrowed'">
        <td><xsl:value-of select="Title"/></td>
      </xsl:if>
    </tr>
  </xsl:for-each>
</table>
</body>
</html>
</xsl:template>
</xsl:stylesheet>
```

3. What books have been issued in April?

```
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet version="1.0" xmlns:xsl="http://www.w3.org/1999/XSL/Transform">
<xsl:template match="/">
  <html>
    <body>
      <h2>Books Issued In March</h2>
      <table border="1">
        <tr bgcolor="#9acd32">
          <th style="text-align:left">Title</th>
        </tr>
        <xsl:for-each select="library/IssueStatus">
          <tr>
            <xsl:variable name="issuedDate" select="issueDate" />
            <xsl:variable name="issueDateInfo" select="//library/IssueStatus[issueDate=$issuedDate]"/>
            <xsl:if test="$issueDateInfo/issueDate='April'">
              <td><xsl:value-of select="bookTitle"/></td>
            </xsl:if>
          </tr>
        </xsl:for-each>
      </table>
    </body>
  </html>
</xsl:template>
</xsl:stylesheet>
```

4. What is the name of the employee who updates return status of returned books or devices?

```
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet version="1.0" xmlns:xsl="http://www.w3.org/1999/XSL/Transform">
<xsl:template match="/">
<html>
<body>
<h2>Employee That Updates Return Status of Books or Devices</h2>
<table border="1">
<tr bgcolor="#9acd32">
<th style="text-align:left">empName</th>
</tr>
<xsl:for-each select="library/Employee">
<tr>
<xsl:variable name="NameOfEmp" select="empName"/>
<xsl:variable name="EmployeeID" select="empID"/>
<xsl:variable name="returnStatusInfo"
select="//library/EmployeeUpdatesReturnStatus[empID=$EmployeeID]"/>
<xsl:if test="$returnStatusInfo/empID">
<td><xsl:value-of select="empName"/></td>
</xsl:if>
</tr>
</xsl:for-each>
</table>
</body>
</html>
</xsl:template>
</xsl:stylesheet>
```

5. What books have been returned in April?

```
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet version="1.0" xmlns:xsl="http://www.w3.org/1999/XSL/Transform">
<xsl:template match="/">
<html>
<body>
<h2>Books Returned In April</h2>
<table border="1">
<tr bgcolor="#9acd32">
<th style="text-align:left">Title</th>
</tr>
<xsl:for-each select="library/ReturnStatus">
<tr>
<xsl:variable name="returnedDate" select="returnDate" />
```

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```
<xsl:variable name="returnDateInfo"
select="//library/ReturnStatus[returnDate=$returnedDate]"/>
<xsl:if test="$returnDateInfo/returnDate='April'">
  <td><xsl:value-of select="bkTitle"/></td>
</xsl:if>
</tr>
</xsl:for-each>
</table>
</body>
</html>
</xsl:template>
</xsl:stylesheet>
```

The screenshots of the result generated for each query can be seen below.

Screenshot 1: What are the names of the customers using laptops?

XML Code:

```
<branchID>1</branchID>
<fineFee>3.0</fineFee>
</Customer>

<Customer>
  <cusID>5</cusID>
  <cusName>Veronica Page</cusName>
  <cusAddress>26 Goodwood Park, Toronto, ON</cusAddress>
  <RegistrationDate>January 5, 2018</RegistrationDate>
  <branchID>1</branchID>
  <fineFee>4.0</fineFee>
</Customer>

</library>
```

XSLT Code:

```
<xsl:variable name="NameOfCust" select="cusName"/>
<xsl:variable name="CustomerID" select="cusID"/>
<xsl:variable name="deviceInfo" select="//library/Devices[devName='Laptop'
and Status='In Use' and cusID=$CustomerID]"/>
<xsl:if test="$deviceInfo/devName">
  <td><xsl:value-of select="cusName"/></td>
</xsl:if>
</tr>
</xsl:for-each>
</table>
</body>
</html>
</xsl:template>
</xsl:stylesheet>
```

Edit the XML or XSLT code above and Click Me »

Customers Using Laptops

cusName
Peter Randall

Shireen Taha
#500581584

Screenshot 2: What books are borrowed?

XML Code:

```
<branchID>1</branchID>
<fineFee>3.0</fineFee>
</Customer>

<Customer>
  <cusID>5</cusID>
  <cusName>Veronica Page</cusName>
  <cusAddress>26 Goodwood Park, Toronto, ON</cusAddress>
  <RegistrationDate>January 5, 2018</RegistrationDate>
  <branchID>1</branchID>
  <fineFee>4.0</fineFee>
</Customer>

</library>
```

XSLT Code:

```
<xsl:variable name="borrowedStatus" select="bkStatus" />
<xsl:variable name="bookStatus"
select="//library/Books[bkStatus=$borrowedStatus]"/>
<xsl:if test="$bookStatus/bkStatus='Borrowed'">
  <td><xsl:value-of select="Title"/></td>
</xsl:if>
</tr>
</xsl:for-each>
</table>
</body>
</html>
</xsl:template>
</xsl:stylesheet>
```

Edit the XML or XSLT code above and Click Me »

Borrowed Books

Title
Killers of the Flower Moon
The Fault in Our Stars
City of Bones

Screenshot 3: What books have been issued in April?

XML Code:

```
<branchID>1</branchID>
<fineFee>3.0</fineFee>
</Customer>

<Customer>
  <cusID>5</cusID>
  <cusName>Veronica Page</cusName>
  <cusAddress>26 Goodwood Park, Toronto, ON</cusAddress>
  <RegistrationDate>January 5, 2018</RegistrationDate>
  <branchID>1</branchID>
  <fineFee>4.0</fineFee>
</Customer>

</library>
```

XSLT Code:

```
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet version="1.0"
xmlns:xsl="http://www.w3.org/1999/XSL/Transform">
  <xsl:template match="/">
    <html>
      <body>
        <h2>Books Issued In April</h2>
        <table border="1">
          <tr bgcolor="#9acd32">
            <th style="text-align:left">Title</th>
          </tr>
          <xsl:for-each select="library/IssueStatus">
            <tr>
              <xsl:variable name="issuedDate" select="issueDate" />
```

Edit the XML or XSLT code above and Click Me »

Books Issued In April

Title
The Maze Runner

Shireen Taha
#500581584

Screenshot 4: What is the name of the employee who updates return status of returned books or devices?

XML Code:

```
<branchID>1</branchID>
<fineFee>3.0</fineFee>
</Customer>

<Customer>
  <cusID>5</cusID>
  <cusName>Veronica Page</cusName>
  <cusAddress>26 Goodwood Park, Toronto, ON</cusAddress>
  <RegistrationDate>January 5, 2018</RegistrationDate>
  <branchID>1</branchID>
  <fineFee>4.0</fineFee>
</Customer>

</library>
```

XSLT Code:

```
<xsl:variable name="NameOfEmp" select="empName"/>
<xsl:variable name="EmployeeID" select="empID"/>
<xsl:variable name="returnStatusInfo"
select="//library/EmployeeUpdatesReturnStatus[empID=$EmployeeID]"/>
  <xsl:if test="$returnStatusInfo/empID">
    <td><xsl:value-of select="empName"/></td>
  </xsl:if>
</tr>
</xsl:for-each>
</table>
</body>
</html>
</xsl:template>
</xsl:stylesheet>
```

Edit the XML or XSLT code above and Click Me »

Employee That Updates Return Status of Books or Devices

empName
Fatima Hasan

Screenshot 5: What books have been returned in April?

XML Code:

```
<branchID>1</branchID>
<fineFee>3.0</fineFee>
</Customer>

<Customer>
  <cusID>5</cusID>
  <cusName>Veronica Page</cusName>
  <cusAddress>26 Goodwood Park, Toronto, ON</cusAddress>
  <RegistrationDate>January 5, 2018</RegistrationDate>
  <branchID>1</branchID>
  <fineFee>4.0</fineFee>
</Customer>

</library>
```

XSLT Code:

```
<tr>
  <xsl:variable name="returnedDate" select="returnDate" />
  <xsl:variable name="returnDateInfo"
select="//library/ReturnStatus[returnDate=$returnedDate]"/>
  <xsl:if test="$returnDateInfo/returnDate='April'">
    <td><xsl:value-of select="bkTitle"/></td>
  </xsl:if>
</tr>
</xsl:for-each>
</table>
</body>
</html>
</xsl:template>
</xsl:stylesheet>
```

Edit the XML or XSLT code above and Click Me »

Books Returned In April

Title
The Ministry of Utmost Happiness
Divergent
Delirium
Speak
Matched