University of Miskolc
Faculty of Mechanical Engineering and Informatics

Assignment Report

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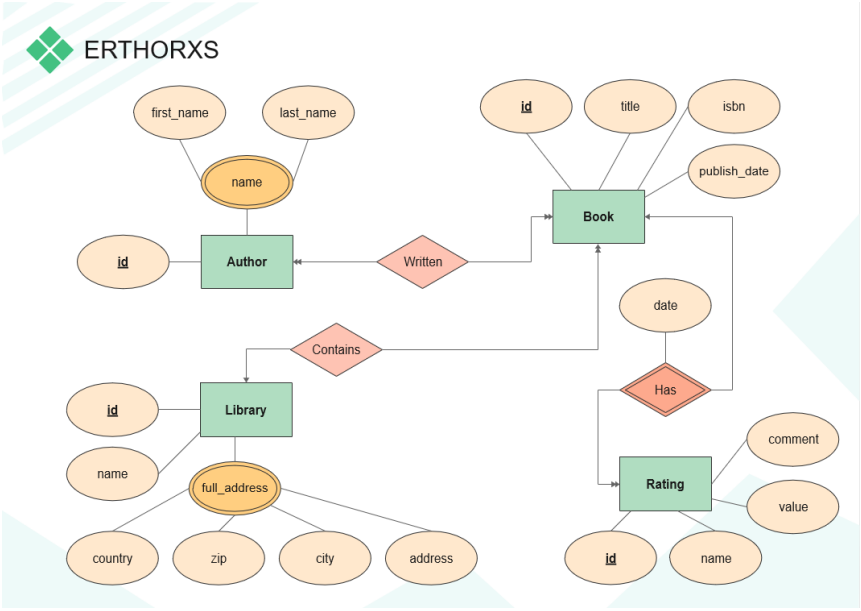
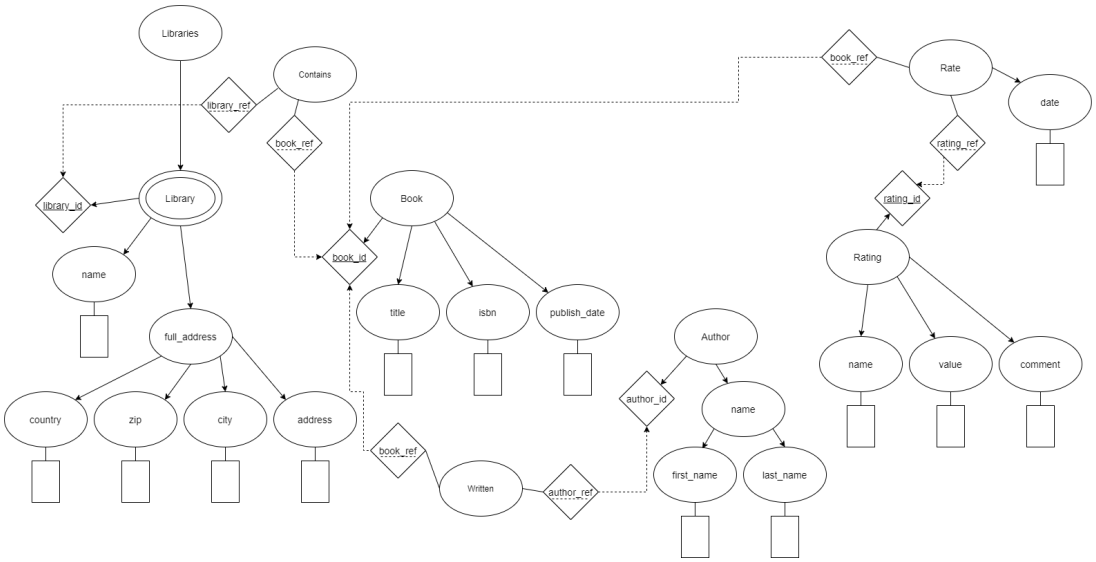
1 Assignment Description

The assignment for this course was to design and implement an XML-based database in a chosen topic. My database includes data about libraries, books, authors and, book reviews with the correct relation between them.

Github link for the project:
`https://github.com/Asszi/THORXS_XMLGyak/tree/main/XMLTaskTHORXS`



The ER model of the database



The XDM model of the database

2 XML Reading

```
System.out.println("Select the first library:");
String first = "/database/libraries/library[1]";
printNodeList(xmlDocument, first);
```

```
Select the first library:

            Test Library

                Hungary
                3980
                Satoraljaujhely
                Petofi ut. 4.
```

Select the first library

```
System.out.println("Select the last author in the database:");
String second = "/database/authors/author[last()]";
printNodeList(xmlDocument, second);
```

```
Select the last author in the database:

                Alan
                Poe
```

Select the last author in the database

```
System.out.println("Select all books:");
String third = "/database/books/book";
printNodeList(xmlDocument, third);
```

```
Select all books:
0.

            The Book
            1254386759283
            2020-05-01




1.

            Another Book
            1254336759583
            2021-05-01
```

Select all books

3 XML Modification

```
// Add
Node first = xmlDocument.createElement( tagName: "language");
first.appendChild(xmlDocument.createTextNode( data: "english"));
addElement(xmlDocument,  expression: "/database/books/book", first);

// Remove
removeElement(xmlDocument,  expression: "/database/books/book",  elementName: "isbn");

// Modify
Node third = xmlDocument.createElement( tagName: "name");
Node fName = xmlDocument.createElement( tagName: "first_name");
fName.appendChild(xmlDocument.createTextNode( data: "Elek"));
Node mName = xmlDocument.createElement( tagName: "middle_name");
mName.appendChild(xmlDocument.createTextNode( data: "MODIFIED"));
Node lName = xmlDocument.createElement( tagName: "last_name");
lName.appendChild(xmlDocument.createTextNode( data: "Teszt"));
third.appendChild(fName);
third.appendChild(mName);
third.appendChild(lName);
modifyElement(xmlDocument,  expression: "/database/authors/author[1]", third);
```

The source code of the modifications

```
<books>
    <book id="1">
        <title>The Book</title>

        <publish_date>2020-05-01</publish_date>
        <authors>
            <author idref="1"/>
        </authors>
        <ratings>
            <rating idref="1"/>
        </ratings>
        <language>english</language>
    </book>
    <book id="2">
        <title>Another Book</title>

        <publish_date>2021-05-01</publish_date>
        <authors>
            <author idref="2"/>
            <author idref="3"/>
        </authors>
        <ratings>
            <rating idref="2"/>
            <rating idref="3"/>
        </ratings>
        <language>english</language>
    </book>
</books>
```

The modified XML file

```xml
<author id="1">
    <name>
        <first_name>Elek</first_name>
        <middle_name>MODIFIED</middle_name>
        <last_name>Teszt</last_name>
    </name>
</author>
```

The modified XML file