Lab Sheet 03 – XML

Part 2: Creating Your First XML Document

books.xml

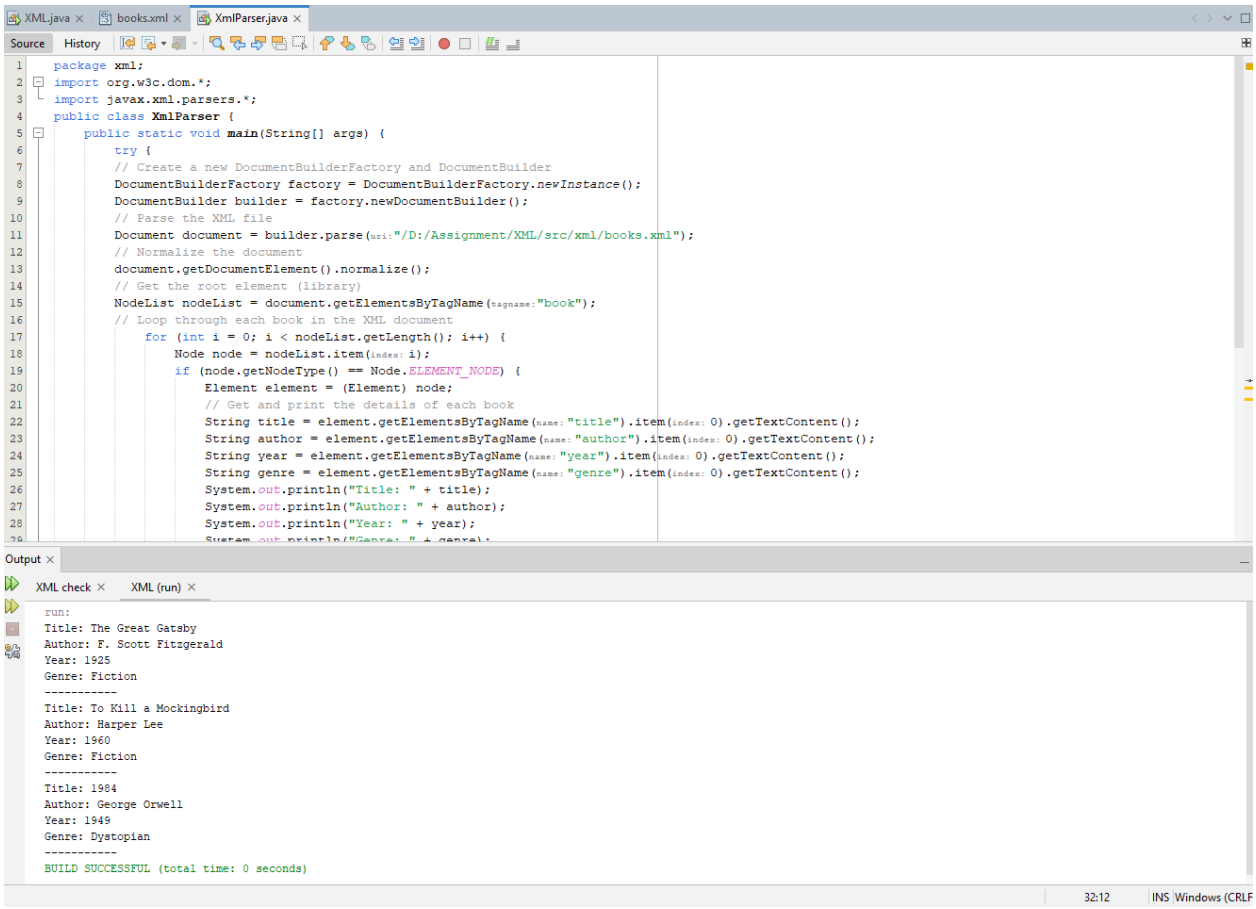
```
<?xml version="1.0" encoding="UTF-8"?>
<library>
  <book>
    <title>The Great Gatsby</title>
    <author>F. Scott Fitzgerald</author>
    <year>1925</year>
    <genre>Fiction</genre>
  </book>
  <book>
    <title>To Kill a Mockingbird</title>
    <author>Harper Lee</author>
    <year>1960</year>
    <genre>Fiction</genre>
  </book>
  <book>
    <title>1984</title>
    <author>George Orwell</author>
    <year>1949</year>
    <genre>Dystopian</genre>
  </book>
</library>
```

Part 3: Parsing XML in Java

XmlParser.java

```
package xml;

import org.w3c.dom.*;

import javax.xml.parsers.*;

public class XmlParser {

    public static void main(String[] args) {

        try {

        // Create a new DocumentBuilderFactory and DocumentBuilder

        DocumentBuilderFactory factory = DocumentBuilderFactory.newInstance();

        DocumentBuilder builder = factory.newDocumentBuilder();

        // Parse the XML file

        Document document =
builder.parse("C:\\Users\\student\\Desktop\\EA\\XML\\src\\xml\\books.xml");

        // Normalize the document

        document.getDocumentElement().normalize();

        // Get the root element (library)

        NodeList nodeList = document.getElementsByTagName("book");

        // Loop through each book in the XML document

            for (int i = 0; i < nodeList.getLength(); i++) {

                Node node = nodeList.item(i);

                if (node.getNodeType() == Node.ELEMENT_NODE) {

                    Element element = (Element) node;

                    // Get and print the details of each book

                    String title = element.getElementsByTagName("title").item(0).getTextContent();

                    String author = element.getElementsByTagName("author").item(0).getTextContent();
```

```
            String year = element.getElementsByTagName("year").item(0).getTextContent();
            String genre = element.getElementsByTagName("genre").item(0).getTextContent();
            System.out.println("Title: " + title);
            System.out.println("Author: " + author);
            System.out.println("Year: " + year);
            System.out.println("Genre: " + genre);
            System.out.println("-----------");
        }
    }
} catch (Exception e) {
        e.printStackTrace();
}
```



Part 4: Modifying XML Data

XmlParser.java

```
package xml;

import java.io.File;

import org.w3c.dom.*;

import javax.xml.parsers.*;

import javax.xml.transform.Transformer;

import javax.xml.transform.TransformerFactory;

import javax.xml.transform.dom.DOMSource;

import javax.xml.transform.stream.StreamResult;

public class XmlParser {

    public static void main(String[] args) {

        try {

        // Create a new DocumentBuilderFactory and DocumentBuilder

        DocumentBuilderFactory factory = DocumentBuilderFactory.newInstance();

        DocumentBuilder builder = factory.newDocumentBuilder();

        // Parse the XML file

        Document document =
builder.parse("C:\\Users\\student\\Desktop\\EA\\XML\\src\\xml\\books.xml");

        // Normalize the document

        document.getDocumentElement().normalize();

        // Get the root element (library)

        NodeList nodeList = document.getElementsByTagName("book");

        // Modify the year of the first book

        Element firstBook = (Element) nodeList.item(0);

        firstBook.getElementsByTagName("year").item(0).setTextContent("2023");
```

```
        // Save the modified document
        TransformerFactory transformerFactory = TransformerFactory.newInstance();
        Transformer transformer = transformerFactory.newTransformer();
        DOMSource source = new DOMSource(document);
        StreamResult result = new StreamResult(new
File("C:\\Users\\student\\Desktop\\EA\\XML\\src\\xml\\updated_books.xml"));
        transformer.transform(source, result);
        } catch (Exception e) {
            e.printStackTrace();
        }
    }
```

updated_books.xml

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?><library>
    <book>
        <title>The Great Gatsby</title>
        <author>F. Scott Fitzgerald</author>
        <year>2023</year>
        <genre>Fiction</genre>
    </book>
    <book>
        <title>To Kill a Mockingbird</title>
        <author>Harper Lee</author>
        <year>1960</year>
        <genre>Fiction</genre>
    </book>
```

```
    <book>
        <title>1984</title>
        <author>George Orwell</author>
        <year>1949</year>
        <genre>Dystopian</genre>
    </book>
</library>
```