

Lab Sheet 03

Task 01 - 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>
```

Task 02 - 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");

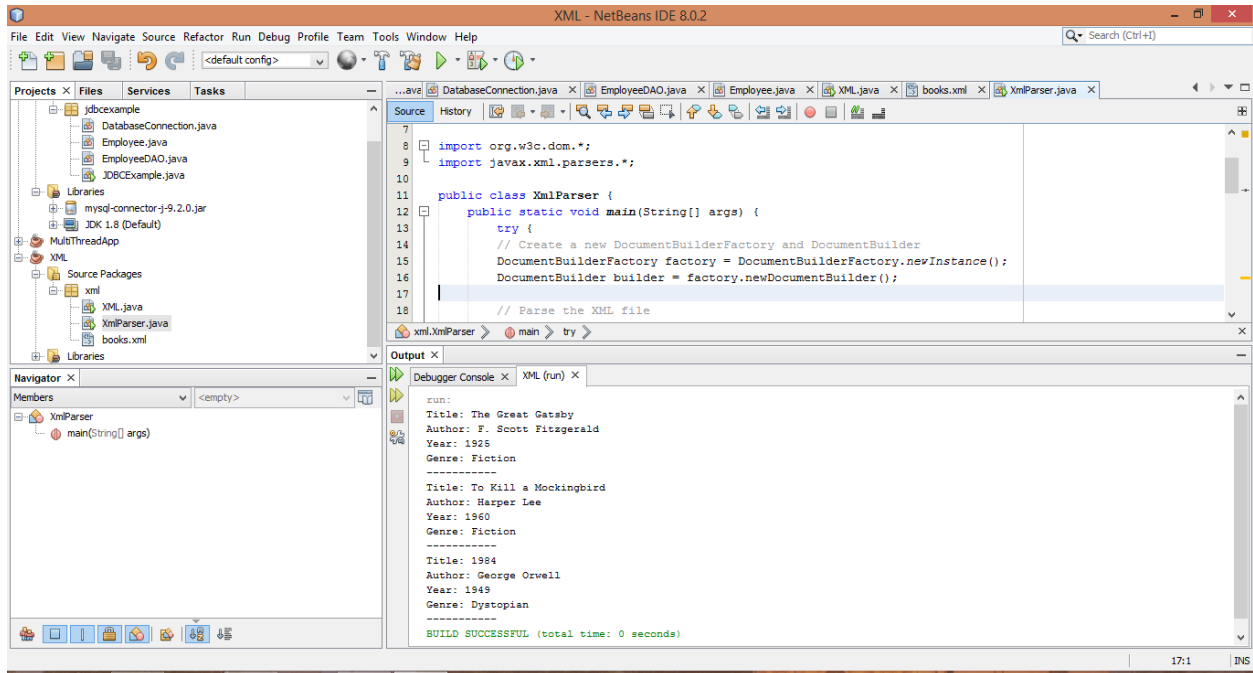
            // Loop through each book in the XML document
            for (int i = 0; i < nodeList.getLength(); i++) {
                Node node = nodeList.item(i);
                if (node.getNodeType() == Node.ELEMENT_NODE) {
                    Element element = (Element) node;

                    // 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();
}
}
}

```



Task 03 - 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\\b
            ooks.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("2
            023");

            // 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_bo
oks.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>

```

