

## Lab Sheet 3: Introduction to XML and Basic Operations

### 1. Creating Your First XML Document

```
<?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>
```

## 2.Create a Java Class for XML Parsing:

```
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\\Documents\\NetBeansProjects\\JavaProject1\\src\\javaproject1\\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();
}

```



```

Output - JavaProject1 (run)

run:
Title: The Great Gatsby
Author: F. Scott Fitzgerald
Year: 1925
Genre: Fiction
-----
Title: To Kill a Mockingbird
Author: Harper Lee
Year: 1960
Genre: Fiction
-----
Title: 1984
Author: George Orwell
Year: 1949
Genre: Dystopian
-----
BUILD SUCCESSFUL (total time: 0 seconds)

```

## 2. Modify the XML Document

```
// 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\\Documents\\NetBeansProjects\\JavaProject1\\src\\javaproject1\\upd
ated_books.xml"));
transformer.transform(source, result);
```

