**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("-----------");

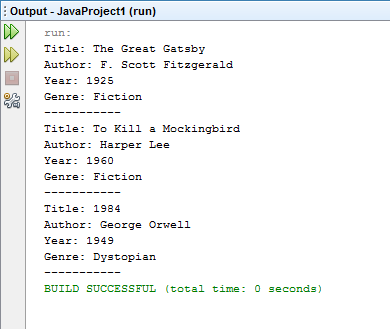
}

}

} catch (Exception e) {

e.printStackTrace();

}

}

1. **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\\updated\_books.xml"));

transformer.transform(source, result);

