Introduction to XML and Basic Operations

Creating Your First XML Document:

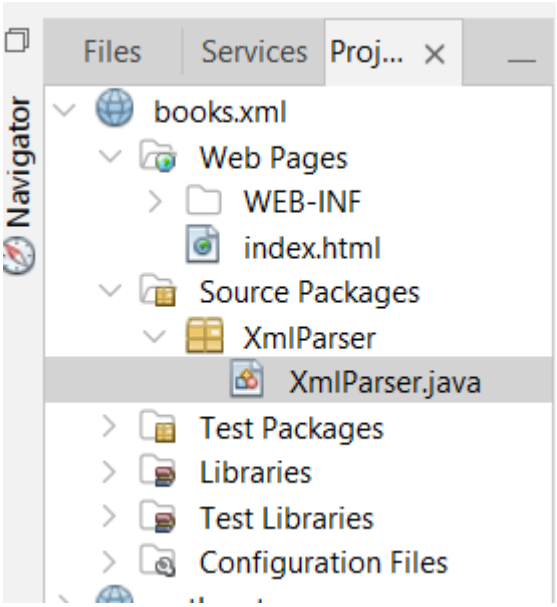
1. **Create an XML Document**:

```
<?xml version="1.0" encoding="UTF-8"?>
 <library>
        <book>
                <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

1. **Create a Java Class for XML Parsing**:

o Create a new Java class named **XmlParser.java** in your project.



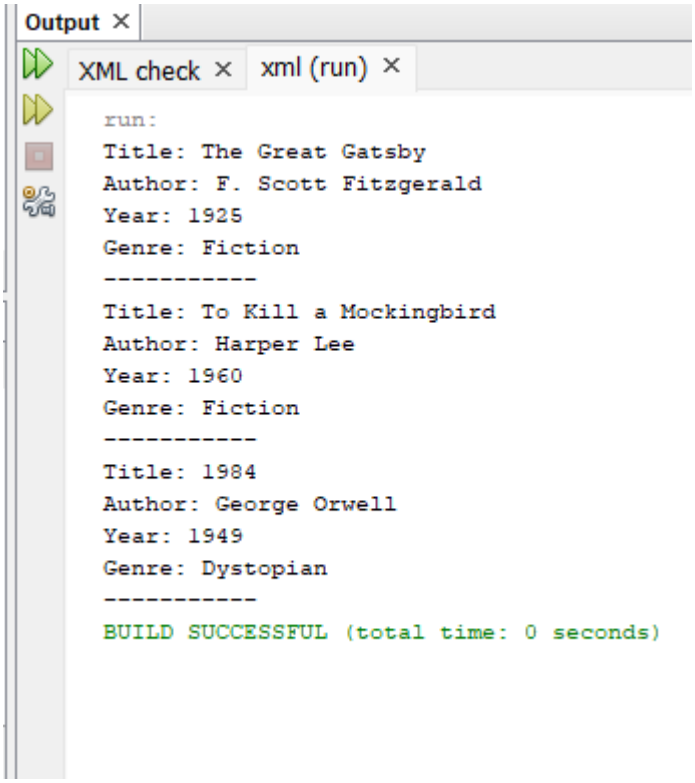
o Add the following code to read and parse the books.xml file:

```
 import org.w3c.dom.*;
import javax.xml.parsers.*;

public class XmlPraser {
    public static void main(String[] args) {

 try {
// Create a new DocumentBuilderFactory and DocumentBuilder
 DocumentBuilderFactory factory = DocumentBuilderFactory.newInstance();
 DocumentBuilder builder = factory.newDocumentBuilder();

 Document document =
 builder.parse("/C:/Users/User/Documents/NetBeansProjects/xml/src/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();
      }
   }
}
```

Run the Program:

o Run the XmlParser.java class, and you should see the details of each book printed to the console.



Part 4: Modifying XML Data

Modify the XML Document:

```
import java.io.File;
import java.io.InputStream;
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;
import org.w3c.dom.*;
public class XmlParser {
```

```
public static void main(String[] args) {
    try {
        // Load XML from the src/xmlproject folder
        InputStream inputStream = XmlParser.class.getResourceAsStream("books.xml");

        if (inputStream == null) {
            System.out.println("File not found in package xmlproject!");
            return;
        }

        // Create a DocumentBuilderFactory and parse the XML content
        DocumentBuilderFactory factory = DocumentBuilderFactory.newInstance();
        DocumentBuilder builder = factory.newDocumentBuilder();
        Document document = builder.parse(inputStream);

        // Normalize document
        document.getDocumentElement().normalize();

        // Get all <book> elements
        NodeList nodeList = document.getElementsByTagName("book");

        // Loop through each book
        for (int i = 0; i < nodeList.getLength(); i++) {
            Node node = nodeList.item(i);
```

```
            if (node.getNodeType() == Node.ELEMENT_NODE) {
                Element element = (Element) node;

                // Extract values for 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();

                // Print book details
                System.out.println("Title: " + title);
                System.out.println("Author: " + author);
                System.out.println("Year: " + year);
                System.out.println("Genre: " + genre);
                System.out.println("----------");
            }
        }
        Element firstBook = (Element) nodeList.item(0);
        firstBook.getElementsByTagName("year").item(0).setTextContent("2023");
        TransformerFactory transformerFactory = TransformerFactory.newInstance();
        Transformer transformer = transformerFactory.newTransformer();
        DOMSource source = new DOMSource(document);
```

```
            StreamResult result = new StreamResult(new File("updated_books.xml"));
            transformer.transform(source, result);
        }
catch (Exception e) {
            e.printStackTrace();
        }
    }
}
```