XML

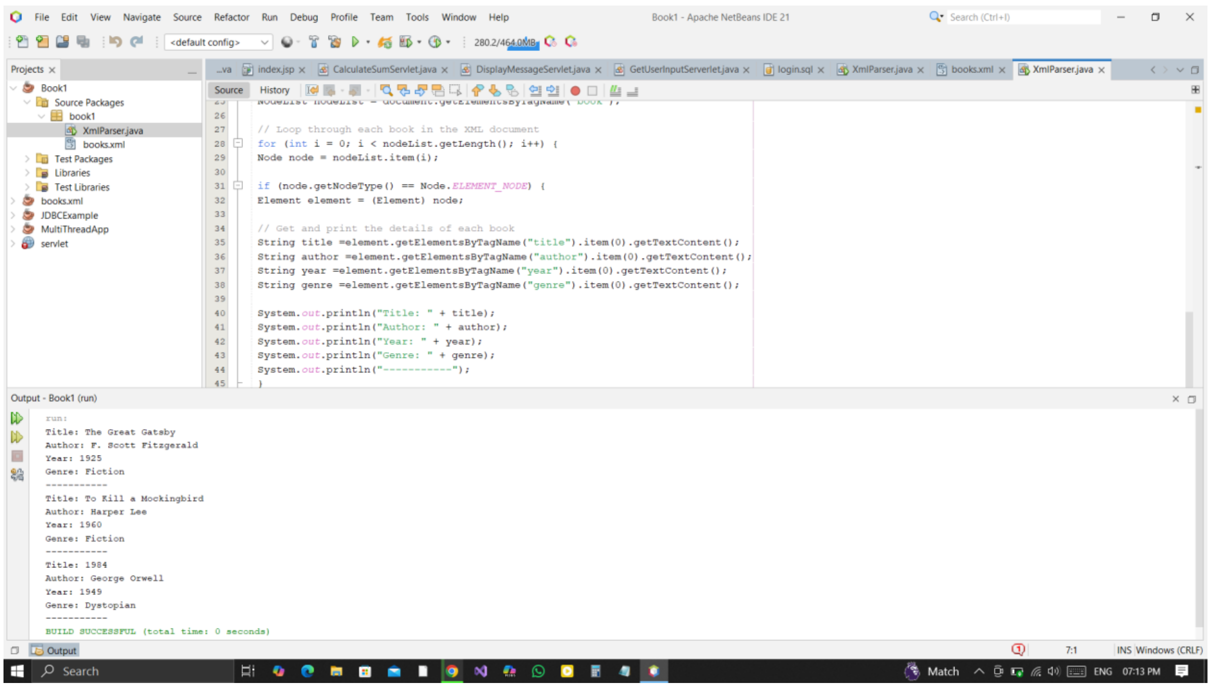
XML PARSERS

```
package book1;

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("books.xml");
Document document =
builder.parse("C:\\Users\\User\\Desktop\\Book1\\src\\book1\\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();}}}
```

BOOK.XML

```xml
<?xml version="1.0" encoding="UTF-8"?>
<!--
Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this license
Click nbfs://nbhost/SystemFileSystem/Templates/XML/XMLDocument.xml to edit this template
-->



<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>
```

OUTPUT



```
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("-----------");
}
```

Output - Book1 (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)
```

JDBC

DATABASECONNECTION

```
/*
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this license
 * Click nbfs://nbhost/SystemFileSystem/Templates/Classes/Class.java to edit this template
 */
package jdbcexample;

import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.SQLException;

public class DatabaseConnection {
    private static final String URL = "jdbc:mysql://localhost:3306/employee_db"; // Database URL
    private static final String USER = "root"; // Your MySQL username
    private static final String PASSWORD = "0523"; // Your MySQL password

    public static Connection getConnection() throws SQLException {
        try {
            // Load the JDBC driver
            Class.forName("com.mysql.cj.jdbc.Driver");
            // Return the database connection
            return DriverManager.getConnection(URL, USER, PASSWORD);
        } catch (ClassNotFoundException | SQLException e) {
            System.out.println("Connection failed: " + e.getMessage());
            throw new SQLException("Failed to establish connection.");
        }
    }
}
```

EMPLOYEE

```
/*
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this
license
 * Click nbfs://nbhost/SystemFileSystem/Templates/Classes/Class.java to edit this template
 */
package jdbcexample;

public class Employee {
    private int id;
    private String name;
    private String position;
    private double salary;

    public Employee(int id, String name, String position, double salary) {
        this.id = id;
        this.name = name;
        this.position = position;
        this.salary = salary;
    }

    // Getters and setters
    public int getId() { return id; }
    public void setId(int id) { this.id = id; }

    public String getName() { return name; }
    public void setName(String name) { this.name = name; }

    public String getPosition() { return position; }
    public void setPosition(String position) { this.position = position; }

    public double getSalary() { return salary; }
    public void setSalary(double salary) { this.salary = salary; }

    @Override
    public String toString() {
        return "Employee{id=" + id + ", name='" + name + "', position='" +
position + "', salary=" + salary + '}';
    }
}
```

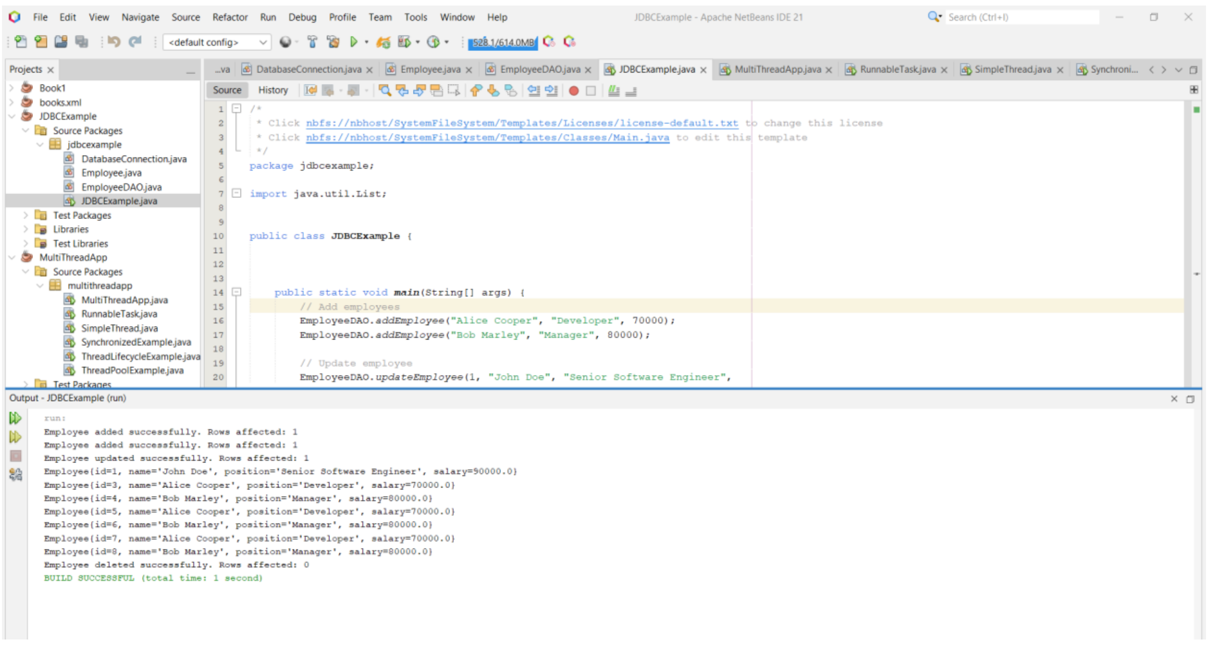
EMPLOYEEDAO

```
/*
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this
license
 * Click nbfs://nbhost/SystemFileSystem/Templates/Classes/Class.java to edit this template
 */
package jdbcexample;

import java.sql.*;
import java.util.ArrayList;
import java.util.List;

public class EmployeeDAO {

  // Create an employee
  public static void addEmployee(String name, String position, double salary)
{
    String sql = "INSERT INTO employees (name, position, salary) VALUES (?, ?, ?)";

    try (Connection conn = DatabaseConnection.getConnection(); PreparedStatement stmt =
conn.prepareStatement(sql)) {

      stmt.setString(1, name);
      stmt.setString(2, position);
      stmt.setDouble(3, salary);

      int rowsAffected = stmt.executeUpdate();
      System.out.println("Employee added successfully. Rows affected: " + rowsAffected);
    } catch (SQLException e) {
      e.printStackTrace();
    }
  }

  // Read all employees
  public static List<Employee> getAllEmployees() {
    List<Employee> employees = new ArrayList<>();
    String sql = "SELECT * FROM employees";

    try (Connection conn = DatabaseConnection.getConnection(); Statement stmt =
conn.createStatement(); ResultSet rs = stmt.executeQuery(sql)) {

      while (rs.next()) {
        Employee employee = new Employee(



          rs.getInt("id"),
                rs.getString("name"),
                rs.getString("position"),
                rs.getDouble("salary")
            );
            employees.add(employee);
        }
    } catch (SQLException e) {
        e.printStackTrace();
    }

    return employees;
  }

  // Update an employee's information
  public static void updateEmployee(int id, String name, String position,
double salary) {
    String sql = "UPDATE employees SET name = ?, position = ?, salary = ? WHERE id = ?";

    try (Connection conn = DatabaseConnection.getConnection();
         PreparedStatement stmt = conn.prepareStatement(sql)) {

        stmt.setString(1, name);
        stmt.setString(2, position);
        stmt.setDouble(3, salary);
        stmt.setInt(4, id);

        int rowsAffected = stmt.executeUpdate();
        System.out.println("Employee updated successfully. Rows affected: "
+ rowsAffected);
    } catch (SQLException e) {
        e.printStackTrace();
    }
  }

  // Delete an employee
  public static void deleteEmployee(int id) {
    String sql = "DELETE FROM employees WHERE id = ?";

    try (Connection conn = DatabaseConnection.getConnection();
         PreparedStatement stmt = conn.prepareStatement(sql)) {

        stmt.setInt(1, id);
        int rowsAffected = stmt.executeUpdate();
        System.out.println("Employee deleted successfully. Rows affected: "
+ rowsAffected);
    } catch (SQLException e) {
        e.printStackTrace();
    }   }
```

JDBCEXAMPLE

```
/*
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this
license
 * Click nbfs://nbhost/SystemFileSystem/Templates/Classes/Main.java to edit this template
 */
package jdbcexample;

import java.util.List;


public class JDBCExample {



  public static void main(String[] args) {
    // Add employees
    EmployeeDAO.addEmployee("Alice Cooper", "Developer", 70000);
    EmployeeDAO.addEmployee("Bob Marley", "Manager", 80000);

    // Update employee
    EmployeeDAO.updateEmployee(1, "John Doe", "Senior Software Engineer",
90000);

    // Get all employees
    List<Employee> employees = EmployeeDAO.getAllEmployees();
    employees.forEach(System.out::println);

    // Delete employee
    EmployeeDAO.deleteEmployee(2);
  }
}
```

OUTPUT



```java
/*
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this license
 * Click nbfs://nbhost/SystemFileSystem/Templates/Classes/Main.java to edit this template
 */
package jdbcexample;

import java.util.List;


public class JDBCExample {



    public static void main(String[] args) {
        // Add employees
        EmployeeDAO.addEmployee("Alice Cooper", "Developer", 70000);
        EmployeeDAO.addEmployee("Bob Marley", "Manager", 80000);

        // Update employee
        EmployeeDAO.updateEmployee(1, "John Doe", "Senior Software Engineer",
```

```
run:
Employee added successfully. Rows affected: 1
Employee added successfully. Rows affected: 1
Employee updated successfully. Rows affected: 1
Employee{id=1, name='John Doe', position='Senior Software Engineer', salary=90000.0}
Employee{id=3, name='Alice Cooper', position='Developer', salary=70000.0}
Employee{id=4, name='Bob Marley', position='Manager', salary=80000.0}
Employee{id=5, name='Alice Cooper', position='Developer', salary=70000.0}
Employee{id=6, name='Bob Marley', position='Manager', salary=80000.0}
Employee{id=7, name='Alice Cooper', position='Developer', salary=70000.0}
Employee{id=8, name='Bob Marley', position='Manager', salary=80000.0}
Employee deleted successfully. Rows affected: 0
BUILD SUCCESSFUL (total time: 1 second)
```

JAVA THREAD

RUNNABLE TASK

```
/*
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license
 * Click nbfs://nbhost/SystemFileSystem/Templates/Classes/Class.java to edit this template
 */
package multithreadapp;

/**
 *
 * @author User
 */
public class RunnableTask implements Runnable {
 @Override
 public void run() {
 System.out.println(Thread.currentThread().getId() + " is executing the runnable task.");
 }
 public static void main(String[] args) {
 RunnableTask task1 = new RunnableTask();
 RunnableTask task2 = new RunnableTask();

 Thread thread1 = new Thread(task1);
 Thread thread2 = new Thread(task2);

 thread1.start(); // Starts thread1
 thread2.start(); // Starts thread2 }}
```

MULTITHREADAPP

```
/*
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this
license
 * Click nbfs://nbhost/SystemFileSystem/Templates/Classes/Class.java to edit this template
 */
package multithreadapp;

/**
 *
 * @author User
 */

   public class SimpleThread extends Thread {
 @Override
 public void run() {
 System.out.println(Thread.currentThread().getId() + " is executing the thread.");
 }
 public static void main(String[] args) {

 SimpleThread thread1 = new SimpleThread();
 SimpleThread thread2 = new SimpleThread();

 thread1.start(); // Starts thread1
 thread2.start(); // Starts thread2
 }
}
```

SYNCHRONIZEDEXAMPLE

```
/*
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this
license
 * Click nbfs://nbhost/SystemFileSystem/Templates/Classes/Class.java to edit this template
 */
package multithreadapp;

/**
 *
 * @author User
 */
class Counter {
 private int count = 0;
 // Synchronized method to ensure thread-safe access to the counter
 public synchronized void increment() {
 count++;
 }
 public int getCount() {
 return count;
 }
}
public class SynchronizedExample extends Thread {
 private Counter counter;
 public SynchronizedExample(Counter counter) {
 this.counter = counter;
 }
 @Override
 public void run() {
 for (int i = 0; i < 1000; i++) {
 counter.increment();
 }
 }
 public static void main(String[] args) throws InterruptedException {
 Counter counter = new Counter();

 // Create and start multiple threads
 Thread thread1 = new SynchronizedExample(counter);
 Thread thread2 = new SynchronizedExample(counter);
 thread1.start();
 thread2.start();
 // Wait for threads to finish
 thread1.join(); thread2.join(); System.out.println("Final counter value: " + counter.getCount());
}}
```

ThreadPoolExample

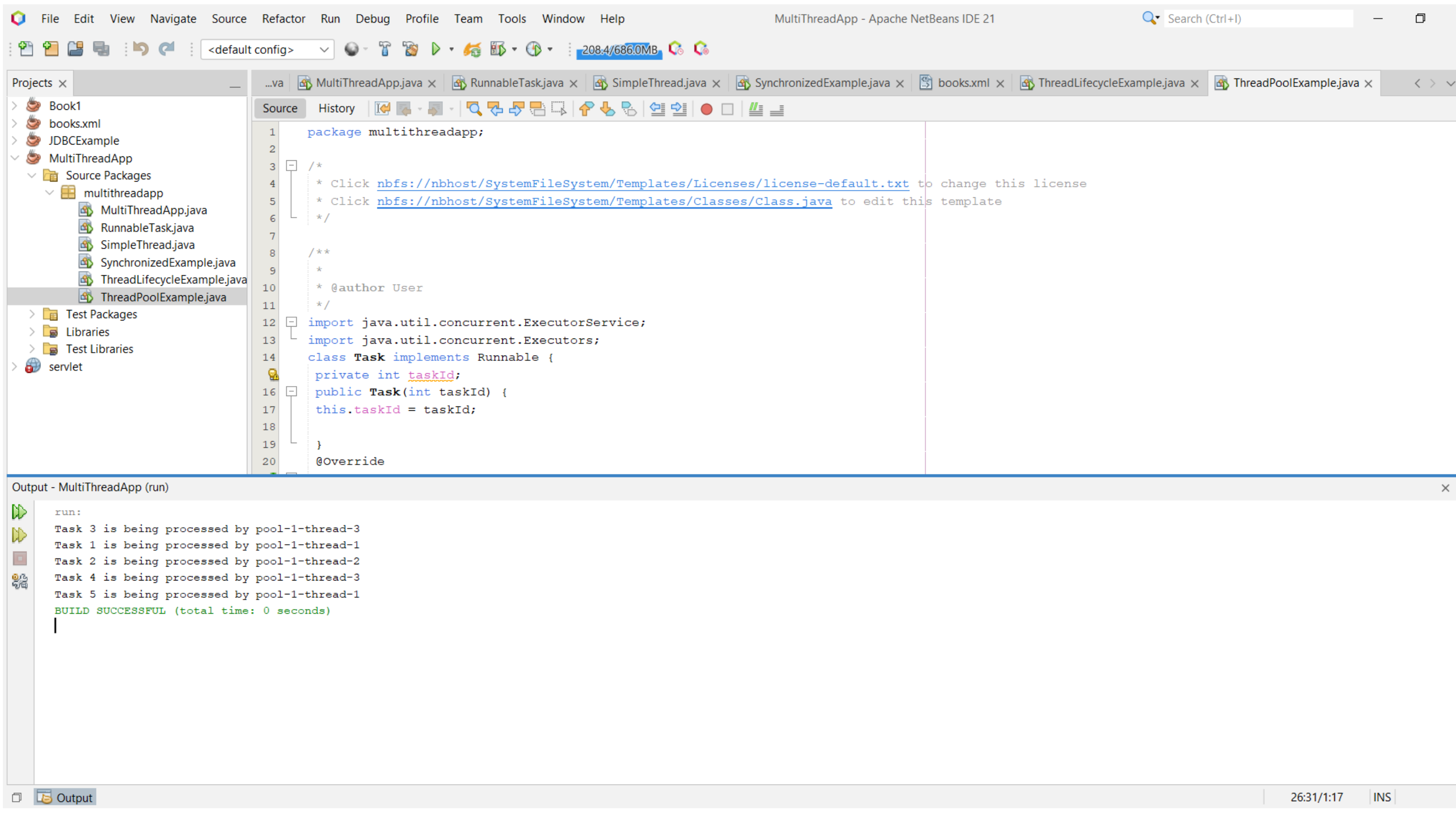
```
package multithreadapp;

/*
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this
license
 * Click nbfs://nbhost/SystemFileSystem/Templates/Classes/Class.java to edit this template
 */

/**
 *
 * @author User
 */
import java.util.concurrent.ExecutorService;
import java.util.concurrent.Executors;
class Task implements Runnable {
 private int taskId;
 public Task(int taskId) {
 this.taskId = taskId;

 }
 @Override
 public void run() {
 System.out.println("Task " + taskId + " is being processed by " +
Thread.currentThread().getName());
 }
}
public class ThreadPoolExample {
 public static void main(String[] args) {
 // Create a thread pool with 3 threads
 ExecutorService executorService = Executors.newFixedThreadPool(3);
 // Submit tasks to the pool
 for (int i = 1; i <= 5; i++) {
 executorService.submit(new Task(i));
 }
 // Shutdown the thread pool
 executorService.shutdown();
 }
}
```

Output



```java
package multithreadapp;

/*
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this license
 * Click nbfs://nbhost/SystemFileSystem/Templates/Classes/Class.java to edit this template
 */

/**
 *
 * @author User
 */
import java.util.concurrent.ExecutorService;
import java.util.concurrent.Executors;
class Task implements Runnable {
 private int taskId;
 public Task(int taskId) {
 this.taskId = taskId;

 }
 @Override
```

```
run:
Task 3 is being processed by pool-1-thread-3
Task 1 is being processed by pool-1-thread-1
Task 2 is being processed by pool-1-thread-2
Task 4 is being processed by pool-1-thread-3
Task 5 is being processed by pool-1-thread-1
BUILD SUCCESSFUL (total time: 0 seconds)
```