**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 version="1.0" encoding="UTF-8"?>

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-->

<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>

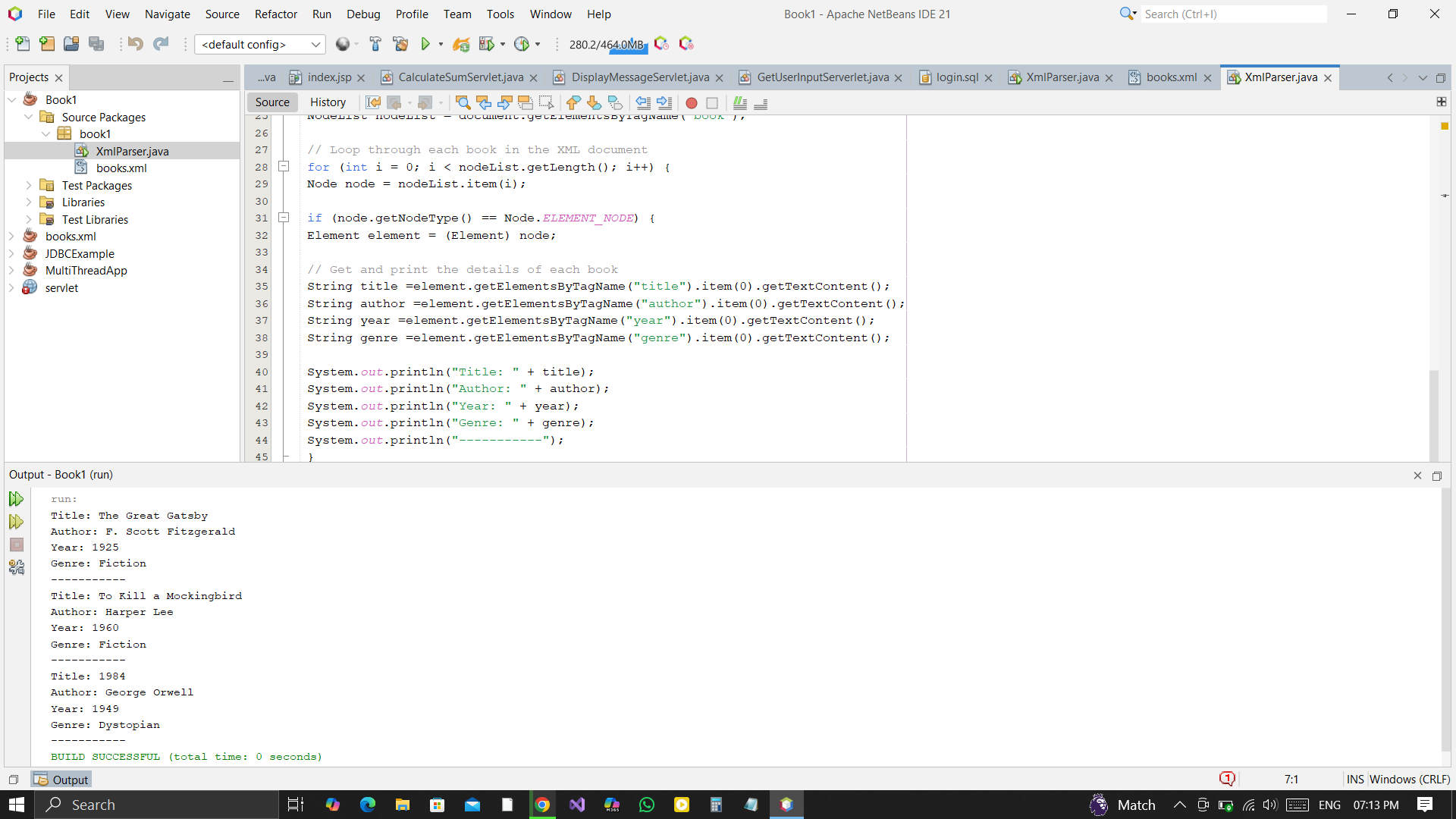
<year>1949</year>

<genre>Dystopian</genre>

</book>

</library>

**OUTPUT**



**JDBC**

**DATABASECONNECTION**

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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**

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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**

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\*/

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**

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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();

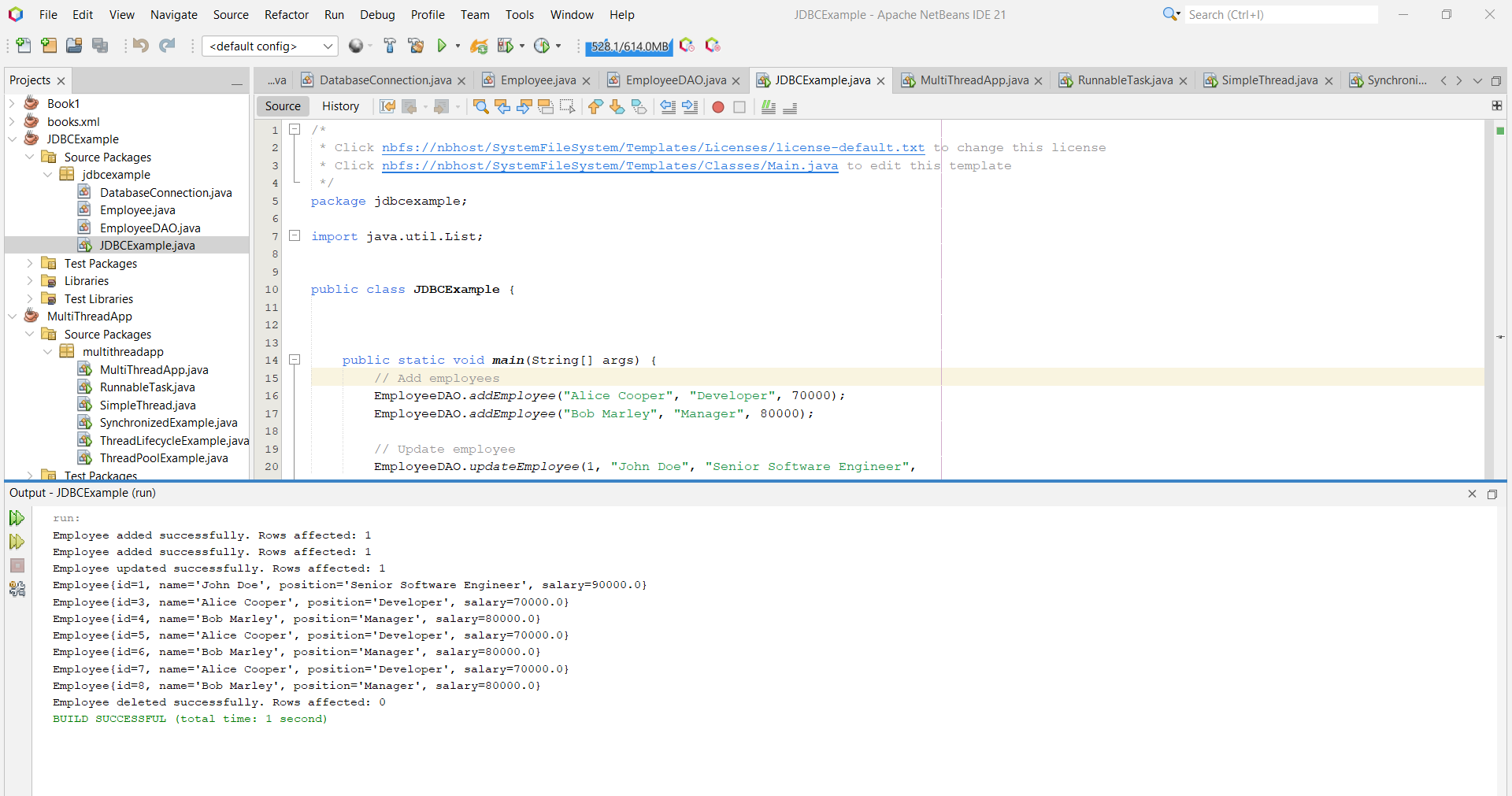
employees.forEach(System.out::println);

// Delete employee

EmployeeDAO.deleteEmployee(2);

}

}

**OUTPUT**

**JAVA THREAD**

**RUNNABLE TASK**

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package multithreadapp;

/\*\*

\*

\* @author User

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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**

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\*/

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**

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\*/

package multithreadapp;

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\* @author User

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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;

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\*

\* @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));

}

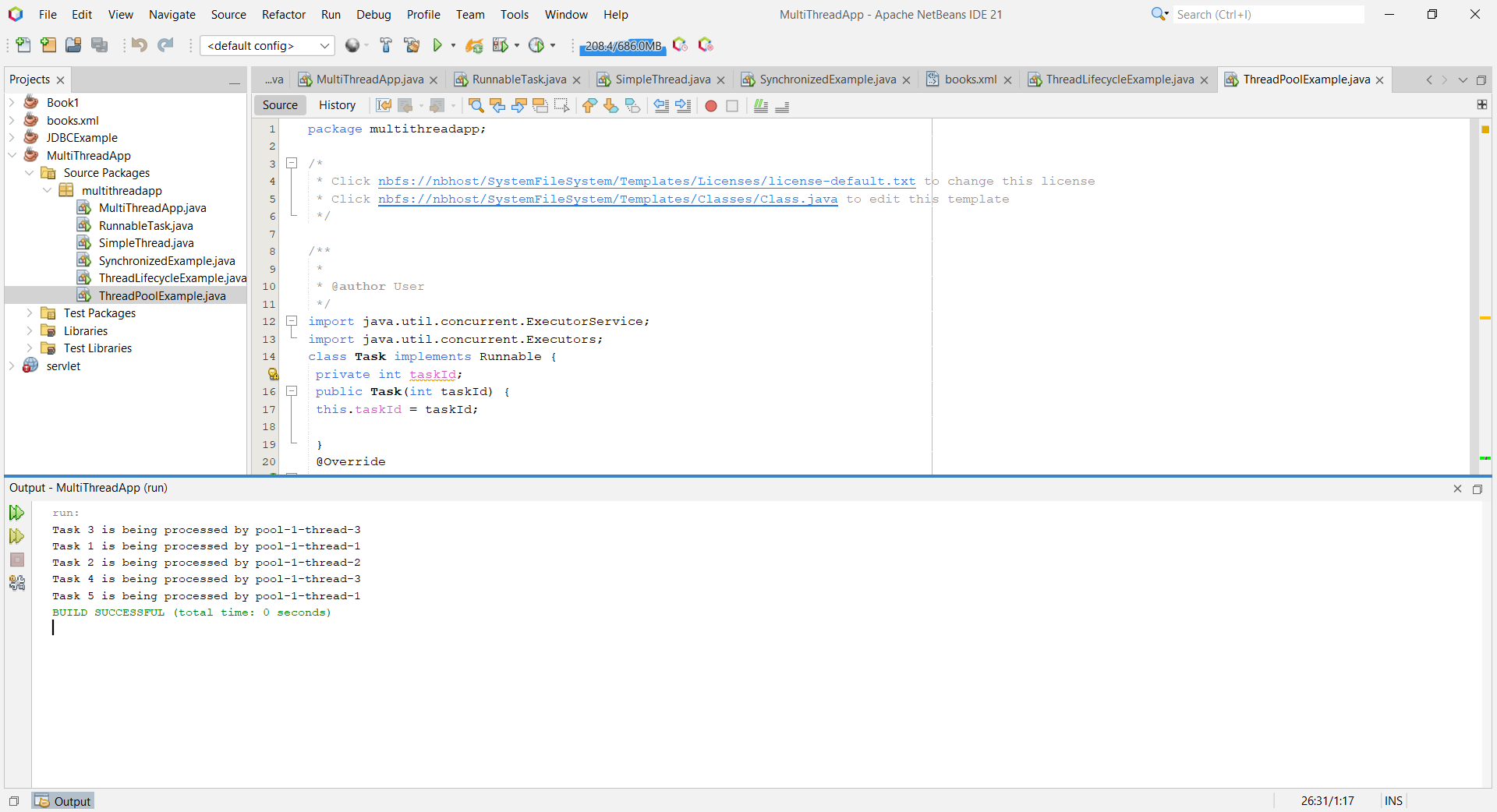
// Shutdown the thread pool

executorService.shutdown();

}

}

**Output**

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