

## Lab 08

### Thực hành JSPServlet Session08

#### 1. Mục tiêu

- Thực hành kỹ thuật phân trang trong Jsp/Servlet.

#### Phần I Bài tập step by step

##### Bài 1.1

Tạo database theo câu lệnh sql sau và tạo các thủ tục theo hướng dẫn (Sử dụng sqlserver 2012 trở lên)

```
create database JspServlet_Lab08
go
use JspServlet_Lab08
go
create table BookStore(isbn varchar(10) primary key, name varchar(200),
author varchar(200), price float, description varchar(2000), img_url
varchar(20));
insert into BookStore values('B0101', 'The Confession: A
Novel(Hardcover)', 'John Grisham', 28.95, '"The secrets of Grisham's
success are no secret at all. There are two of them: his pacing, which
ranges from fast to breakneck, and his Theme--little guy takes on big
conspiracy with the little guy getting the win in the end." --Time
magazineThe law, by its nature, creates drama, and a new Grisham promises
us an inside look at the dirty machineries of process and power, with
plenty of entertainment" --Los Angeles Times', 'img/1.jpg');
insert into BookStore values('B0102', 'American Assassin: A Thriller
[Hardcover]', 'Vince Flynn', 15.11, '1 New York Times bestselling author
Vince Flynn returns with yet another explosive thriller, introducing the
young Mitch Rapp, as he takes on his first assignment. Before he was
considered a CIA superagent, before he was thought of as a terrorist's
worst nightmare, and before he was both loathed and admired by the
```



```
politicians on Capitol Hill, Mitch Rapp was a gifted college athlete
without a care in the world . . . and then tragedy struck.', 'img/2.jpg');
insert into BookStore values('B0103', 'Towers of Midnight (Wheel of Time)
[Hardcover]', 'Robert Jordan', 16.19, 'The battle scenes have the
breathless urgency of firsthand experience, and the . . . evil laced into
the forces of good, the dangers latent in any promised salvation, the
sense of the unavoidable onslaught of unpredictable events bear the marks
of American national experience during the last three decades, just as the
experience of the First World War and its aftermath gave its imprint to J.
R. R. Tolkien's work.'--The New York Times on The Wheel of Time',
'img/3.jpg');
insert into BookStore values('B0104', 'The Reversal [Hardcover]', 'Michael
Connelly', 14.87, 'Starred Review* Connelly may be our most versatile
crime writer. His Harry Bosch series has taken the hard-boiled cop novel
to a new level of complexity, both in its portrayal of the hero's inner
life and in Connelly's ability to intertwine landscape and meaning. His
Mickey Haller novels, on the other hand, starring the maverick lawyer who
uses his Lincoln Town Car as an office, are testaments to the sublime
architecture of plot. With the crime novel now commonly rubbing elbows
with literary fiction, it sometimes seems that pure story has become a
forgotten stepchild. In his Haller novels, Connelly reminds us how
satisfying it can be to follow the path of a well-constructed plot. So it
is here, in the third Haller novel, which finds the antiestablishment
attorney accepting an unlikely offer: a one-time gig as a prosecutor,
retrying a case in which a killer's 24-year-old conviction has been
overturned on the basis of DNA. Taking second chair will be Haller's ex-
wife, the formidable Maggie, with Harry Bosch (identified in The Brass
Verdict, 2008, as Haller's half brother) serving as special investigator.
The table is set for a straightforward legal thriller, albeit one starring
three superbly multidimensional characters. And, yet, Connelly bobs and
weaves around all our expectations. There is suspense, of course, and
there are plenty of surprises, both in the courtroom and outside of it,
but this is a plot that won't be pigeonholed. Reading this book is like
watching a master craftsman, slowly and carefully, brick by brick, build
something that holds together exquisitely, form and function in perfect
alignment. --Bill Ott', 'img/4.jpg');
```



```
insert into BookStore values('B0105', 'Freedom: A Novel (Oprahs Book Club) [Hardcover]', 'Jonathan Franzen', 14.00, '"The awful thing about life is this:" says Octave to the Marquis in Renoirs Rules of the Game. "Everyone has his reasons." That could be a motto for novelists as well, few more so than Jonathan Franzen, who seems less concerned with creating merely likeable characters than ones who are fully alive, in all their self-justifying complexity. Freedom is his fourth novel, and, yes, his first in nine years since The Corrections. Happy to say, its very much a match for that great book, a wrenching, funny, and forgiving portrait of a Midwestern family (from St. Paul this time, rather than the fictional St. Jude). Patty and Walter Berglund find each other early: a pretty jock, focused on the court and a little lost off it, and a stolid budding lawyer, besotted with her and almost burdened by his integrity. They make a family and a life together, and, over time, slowly lose track of each other. Their stories align at times with Big Issues--among them mountaintop removal, war profiteering, and rocknroll--and in some ways cant be separated from them, but what you remember most are the characters, whom you grow to love the way families often love each other: not for their charm or goodness, but because they have their reasons, and you know them. --Tom Nissley', 'img/5.jpg');
insert into BookStore values('B0106', 'Fall of Giants (The Century Trilogy) [Hardcover]', 'Kan Follett', 17.40, 'Welcome to the 20th century as youve never seen it. At over 1,000 pages, Fall of Giants delivers all the elements that fans of Ken Follett have come to treasure: historical accuracy, richly developed characters, and a sweeping yet intimate portrait of a past world that youll fully inhabit before the first chapter is through. The story follows five families across the globe as their fates intertwine with the extraordinary events of World War I, the political struggles within their own countries, and the rise of the feminist movement. Intriguing stories of love and loyalty abound, from a forbidden romance between a German spy and a British aristocrat to a Russian soldier and his scandal-ridden brother in love with the same woman. Action-packed with blood on the battlefield and conspiracies behind closed doors, Fall of Giants brings the nuances of each character to life and shifts easily from dirty coal mines to sparkling palaces. There is so much to love here, and the good news is the end is just the beginning:
```



```
Fall of Giants is the first in a planned trilogy. --Miriam Landis',  
'img/6.jpg');  
insert into BookStore values('B0107', 'Happy Ever After (Bride Quartet)  
[Deckle Edge] [Paperback]', 'Nora Roberts', 8.64, 'Bridal expert Parker  
"Legs" Brown meets her perfect match in Robertss delicious ode to weddings  
and happy endings, the charming conclusion of the Bride Quartet (after  
Savor the Moment) about four childhood friends who as adults form a  
Connecticut wedding planning company. In the palatial Brown estate, a  
multitude of marriages have been celebrated while each wedding planner in  
turn has found her hearts desire. Cupids target for Parker is her brother  
Dels friend Malcolm Kavanaugh, a former stuntman turned mechanic. Harley-  
riding Mal is a rough-and-tumble hunk who captures Parkers heart with  
twinkling eyes and steamy moves that melt her cool reserve. Romance  
veteran Roberts fills the pages with frothy fun, culminating in--of  
course--plenty of bridal fabulousness. (Nov.) (c)', 'img/7.jpg');  
insert into BookStore values('B0108', 'Squirrel Seeks Chipmunk: A Modest  
Bestiary [Hardcover]', 'David Selaris', 10.98, 'Featuring David Sedariss  
unique blend of hilarity and heart, this new collection of keen-eyed  
animal-themed tales is an utter delight. Though the characters may not be  
human, the situations in these stories bear an uncanny resemblance to the  
insanity of everyday life. In "The Toad, the Turtle, and the Duck," three  
strangers commiserate about animal bureaucracy while waiting in a  
complaint line. In "Hello Kitty," a cynical feline struggles to sit  
through his prison-mandated AA meetings. In "The Squirrel and the  
Chipmunk," a pair of star-crossed lovers is separated by prejudiced family  
members.', 'img/8.jpg');  
insert into BookStore values('B0109', 'Safe Haven [Hardcover]', 'Nicholas  
Sparks', 13.18, 'When a mysterious young woman named Katie appears in the  
small North Carolina town of Southport, her sudden arrival raises  
questions about her past. Beautiful yet self-effacing, Katie seems  
determined to avoid forming personal ties until a series of events draws  
her into two reluctant relationships: one with Alex, a widowed store owner  
with a kind heart and two young children; and another with her plainspoken  
single neighbor, Jo. Despite her reservations, Katie slowly begins to let  
down her guard, putting down roots in the close-knit community and  
becoming increasingly attached to Alex and his family.', 'img/9.jpg');
```



```
select * from BookStore;

-- Tạo thủ tục trả về số bản ghi của bảng
go
create proc getTotalRecordsBookStore
@totalRecord int out
as
select @totalRecord = (select COUNT(*) from BookStore)

go

-- Test thử
declare @total int
exec getTotalRecordsBookStore @total out
print @total

-- Tạo thủ tục lấy về thông tin bản ghi theo start và page
go

CREATE PROC GetBookStorePaginated
    @startRowIndex int,
    @pageSize int
AS
BEGIN
    -- Thiết lập NOCOUNT là on ON để hạn chế tập kết quả mở rộng can
    thiệp với câu lệnh select
    SET NOCOUNT ON;

    -- Lấy về thông tin sách theo chỉ số start và số trang
    SELECT * FROM BookStore
    ORDER BY isbn OFFSET @startRowIndex ROWS FETCH NEXT @pageSize ROWS
ONLY
END

go
```



```
--SELECT First Name + ' ' + Last Name FROM Employees ORDER BY First Name  
OFFSET 10 ROWS FETCH NEXT 5 ROWS ONLY;  
-- Test thử  
declare @start int = 0  
declare @page int = 3  
exec GetBookStorePaginated @start, @page
```

## STEP 1: Tạo project và add các gói thư viện

- Create Dynamic Web Project -> Đặt tên project “JspServlet\_Lab08” (Tạo target runtime nếu nó chưa có)-> Next -> Next -> Finish.
- Copy các thư viện “sqljdbc4.jar” và “jstl1.2.jar” vào thư mục lib của project và chọn build path -> Add To Build Path.

## STEP 2: Tạo class đóng/mở kết nối, tạo class entities.

- Right click src/main/java -> New -> Class.. -> Đặt tên file “DBUtility”, package “utility”.
- **Viết code để đóng/mở kết nối**

```
package utility;  
  
import java.sql.Connection;  
import java.sql.DriverManager;  
import java.sql.PreparedStatement;  
import java.sql.ResultSet;  
import java.sql.SQLException;  
import java.util.logging.Level;  
import java.util.logging.Logger;  
  
/**  
 *  
 * @author hai.bt  
 */
```



```
public class DBUtility {  
    public static Connection getConnection() {  
        Connection conn = null;  
        try {  
            Class.forName("com.microsoft.sqlserver.jdbc.SQLServerDriver");  
            conn =  
DriverManager.getConnection("jdbc:sqlserver://localhost:1433;databaseName=JspServlet_Lab08", "  
sa", "1234$");  
        } catch (SQLException ex) {  
            Logger.getLogger(DBUtility.class.getName()).log(Level.SEVERE, null, ex);  
        } catch (ClassNotFoundException ex) {  
            Logger.getLogger(DBUtility.class.getName()).log(Level.SEVERE, null, ex);  
        }  
        return conn;  
    }  
  
    public static void closeAll(Connection con, PreparedStatement pstmt, ResultSet rs) {  
        if(con!=null)  
            try {  
                con.close();  
            } catch (SQLException ex) {  
                Logger.getLogger(DBUtility.class.getName()).log(Level.SEVERE, null, ex);  
            }  
        if(pstmt!=null)  
            try {  
                pstmt.close();  
            } catch (SQLException ex) {  
                Logger.getLogger(DBUtility.class.getName()).log(Level.SEVERE, null, ex);  
            }  
        if(rs!=null)  
            try {  
                rs.close();  
            } catch (SQLException ex) {  
                Logger.getLogger(DBUtility.class.getName()).log(Level.SEVERE, null, ex);  
            }  
    }  
}
```



- Tạo class “BookSote”: Right click src/main/java -> New -> Class.. -> Đặt tên file “BookStore”, package “entities”. Class này có các thuộc tính tương ứng các cột của bảng.

```
package entities;

public class BookStore {

    private String isbn;
    private String name;
    private String author;
    private float price;
    private String description;
    private String imgUrl;
    public BookStore() {
    }

    public BookStore(String isbn, String name, String author, float price, String
description, String imgUrl) {

        this.isbn = isbn;
        this.name = name;
        this.author = author;
        this.price = price;
        this.description = description;
        this.imgUrl = imgUrl;
    }

    public String getIsbn() {
        return isbn;
    }

    public void setIsbn(String isbn) {
        this.isbn = isbn;
    }

    public String getName() {
        return name;
    }
}
```





```
}  
  
public void setName(String name) {  
    this.name = name;  
}  
  
public String getAuthor() {  
    return author;  
}  
  
public void setAuthor(String author) {  
    this.author = author;  
}  
  
public float getPrice() {  
    return price;  
}  
  
public void setPrice(float price) {  
    this.price = price;  
}  
  
public String getDescription() {  
    return description;  
}  
  
public void setDescription(String description) {  
    this.description = description;  
}  
  
public String getImgUrl() {  
    return imgUrl;  
}  
  
public void setImgUrl(String imgUrl) {  
    this.imgUrl = imgUrl;  
}  
}
```



### STEP 3: Tạo class DAO để cài đặt các hàm tương tác database

- Right click src/main/java -> New -> Class.. -> Đặt tên file "BookDAO", package "dao".
- Cài đặt các hàm sau:

```
package dao;

import entities.BookStore;
import java.sql.CallableStatement;
import java.sql.Connection;
import java.sql.ResultSet;
import java.sql.SQLException;
import java.util.ArrayList;
import java.util.List;
import java.util.logging.Level;
import java.util.logging.Logger;
import utility.DBUtility;

/**
 *
 * @author HAITHANH
 */
public class BookDAO {
    //Hàm trả về số bản ghi của bảng
    public int getTotalRecord(){
        int total = 0;
        Connection con;
        CallableStatement cstmt = null;
        ResultSet rs = null;

        con = DBUtility.getConnection();
        try {
            cstmt = con.prepareCall("{call getTotalRecordsBookStore (?)}");
            cstmt.registerOutParameter(1, java.sql.Types.INTEGER);
            cstmt.execute();
            total = cstmt.getInt(1);
        } catch (SQLException ex) {
            Logger.getLogger(BookDAO.class.getName()).log(Level.SEVERE, null, ex);
        } finally {
            DBUtility.closeAll(con, cstmt, rs);
        }
        return total;
    }

    //Hàm trả về thông tin bản ghi từ vị trí offset với số bản ghi là pagesize
    public List<BookStore> getBookByOffsetAndPageSize(int offset, int pagesize){
        List<BookStore> list = new ArrayList<>();

        Connection con;
```



```
CallableStatement cstmt = null;
ResultSet rs = null;

con = DBUtility.getConnection();
try {
    cstmt = con.prepareCall("{call GetBookStorePaginated (?,?)}");
    cstmt.setInt(1, offset);
    cstmt.setInt(2, pagesize);
    rs = cstmt.executeQuery();
    while(rs.next()){
        BookStore b = new BookStore();
        b.setIsbn(rs.getString("isbn"));
        b.setName(rs.getString("name"));
        b.setAuthor(rs.getString("author"));
        b.setPrice(rs.getFloat("price"));
        b.setDescription("description");
        b.setImgUrl(rs.getString("img_url"));
        list.add(b);
    }
} catch (SQLException ex) {
    Logger.getLogger(BookDAO.class.getName()).log(Level.SEVERE, null, ex);
} finally{
    DBUtility.closeAll(con, cstmt, rs);
}
return list;
}
```

## STEP 4: Tạo trang index.jsp được chạy đầu tiên và forward sang servlet để load dữ liệu

- Right click webapp -> New -> JSP File-> Đặt tên file "index".

-

```
<%@ page language="java" contentType="text/html; charset=UTF-8"
    pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
<head>
<meta charset="UTF-8">
<title>Insert title here</title>
</head>
<body>
    <jsp:forward page="LoadBooks"></jsp:forward>
</body>
</html>
```



## STEP 5: Tạo Servlet để load dữ liệu

- Right click src/main/java -> New -> Servlet -> Đặt tên file "LoadBooks", package "servlet".
- Cài đặt lệnh trong hàm "doGet()":

```
protected void doGet(HttpServletRequest request, HttpServletResponse response)
throws ServletException, IOException {
    // TODO Auto-generated method stub
    //Số sách trên 1 trang
    int pageSize = 2;

    Object page = request.getParameter("page");
    //Tính vị trí bắt đầu của trang
    int offset;
    if(page==null) {
        offset = 0;
    }else {
        int numOfPage = Integer.parseInt(page+"");
        offset = (numOfPage-1)*pageSize;
    }

    List<BookStore> list = new
    BookDAO().getBookByOffsetAndPageSize(offset, pageSize);
    request.setAttribute("list", list);

    //Xử lý số trang sẽ hiển thị
    int totalRecord = new BookDAO().getTotalRecord();
    int totalPages =
    (totalRecord/pageSize)+(totalRecord%pageSize==0?0:1);
    List<Integer> listPages = new ArrayList();
    for (int i = 1; i <= totalPages; i++) {
        listPages.add(i);
    }
    request.setAttribute("listPages", listPages);

    //Chuyển trang
    request.getRequestDispatcher("listBooks.jsp").forward(request,
    response);
}
```

## STEP 6: Tạo trang listBooks.jsp để hiển thị dữ liệu

- Right click webapp -> New -> JSP File -> Đặt tên file "listBooks".

```
<%@ page language="java" contentType="text/html; charset=UTF-8"
```



```
    pageEncoding="UTF-8"%>
<%@taglib prefix="c" uri="http://java.sun.com/jsp/jstl/core"%>
<!DOCTYPE html>
<html>
<head>
<meta charset="UTF-8">
<title>List Books</title>
<style>
.center {
    display: flex;
    flex-direction: column;
    align-items: center;
    justify-content: center;
}

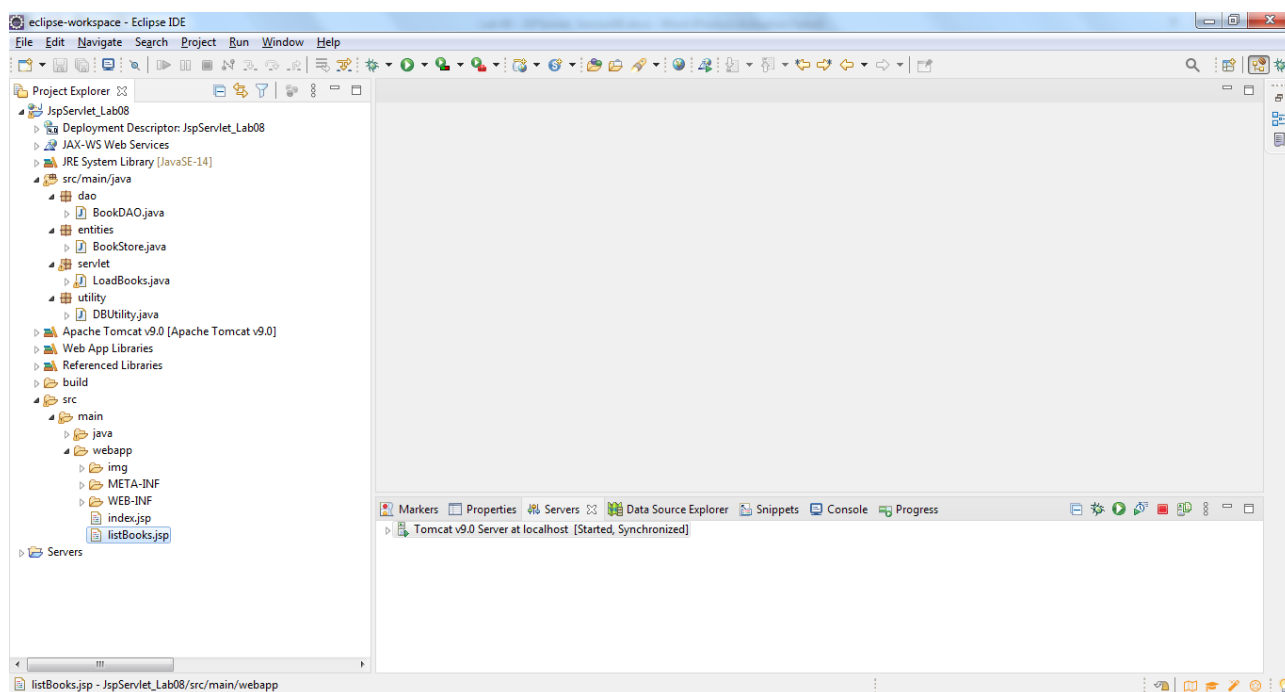
.top {
    vertical-align: top;
}

.block {
    display: block;
}
</style>
</head>
<body>
    <div class="center">
        <h1>LIST BOOKS</h1>
        <table>
            <c:forEach items="${list}" var="b">
                <tr>
                    <td></td>
                    <td class="top">
                        <table>
                            <tr>
                                <td>Isbn</td>
                                <td>${b.isbn}</td>
                            </tr>
                            <tr>
                                <td>Name</td>
                                <td>${b.name}</td>
                            </tr>
                            <tr>
                                <td>Author</td>
                                <td>${b.author}</td>
                            </tr>
                            <tr>
                                <td>Price</td>
                                <td>${b.price}</td>
                            </tr>
                            <tr>
                                <td>Description</td>
                                <td>${b.description}</td>
                            </tr>
                        </table>
                    </td>
                </tr>
            </c:forEach>
        </table>
    </div>
</body>
</html>
```



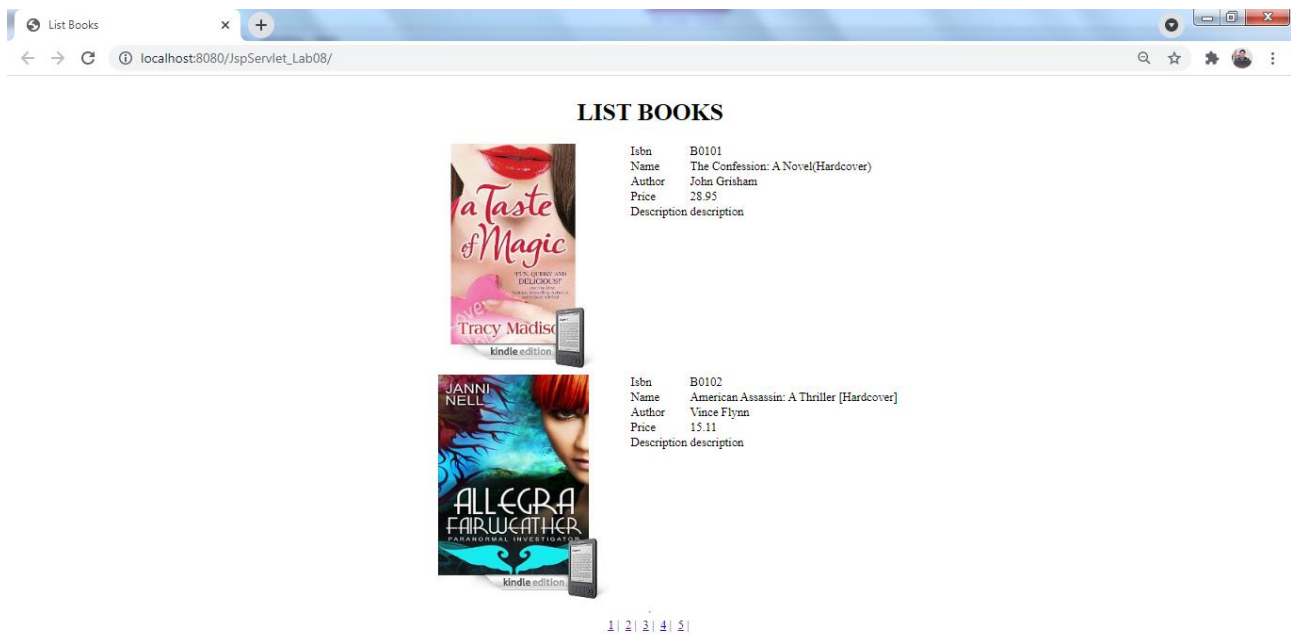
```
        </c:forEach>
    </table>
    <hr />
    <div class="block">
        <c:forEach items="${listPages}" var="page">
            <a
href="LoadBooks?page=${page}">${page}</a>&nbsp;|&nbsp;&nbsp;
        </c:forEach>
    </div>
</div>
</body>
</html>
```

## STEP 7: Copy file img chứa dữ liệu ảnh vào thư mục webapp

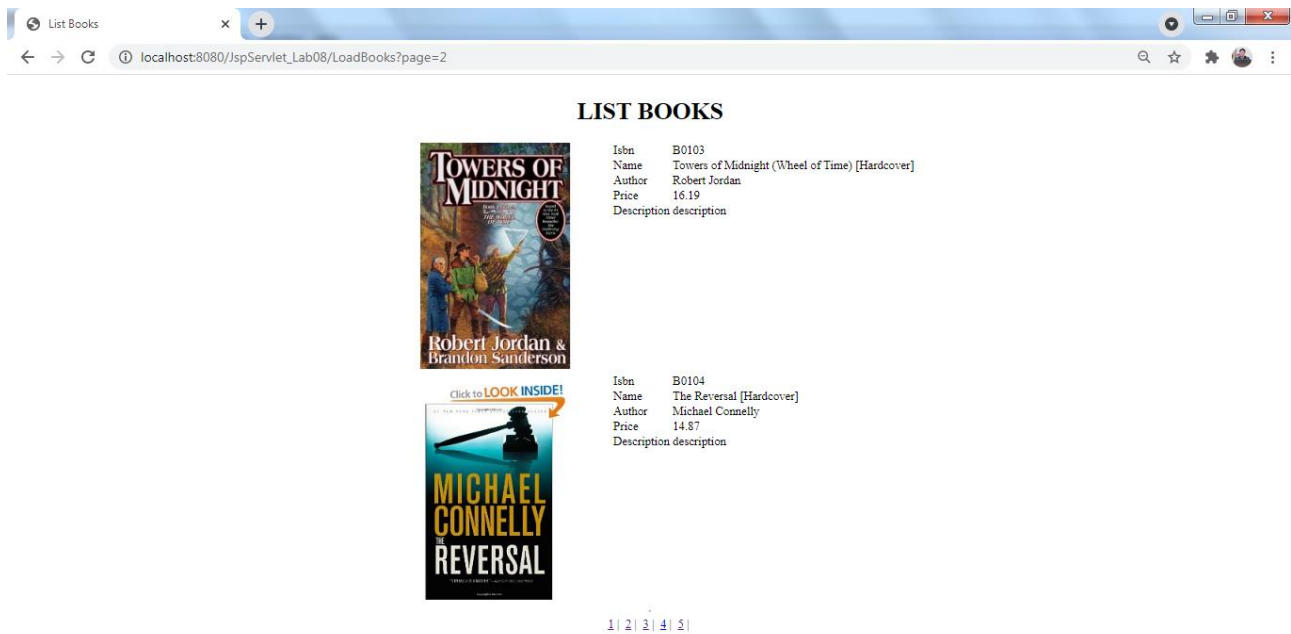


Deploy và chạy project ta được kết quả sau:

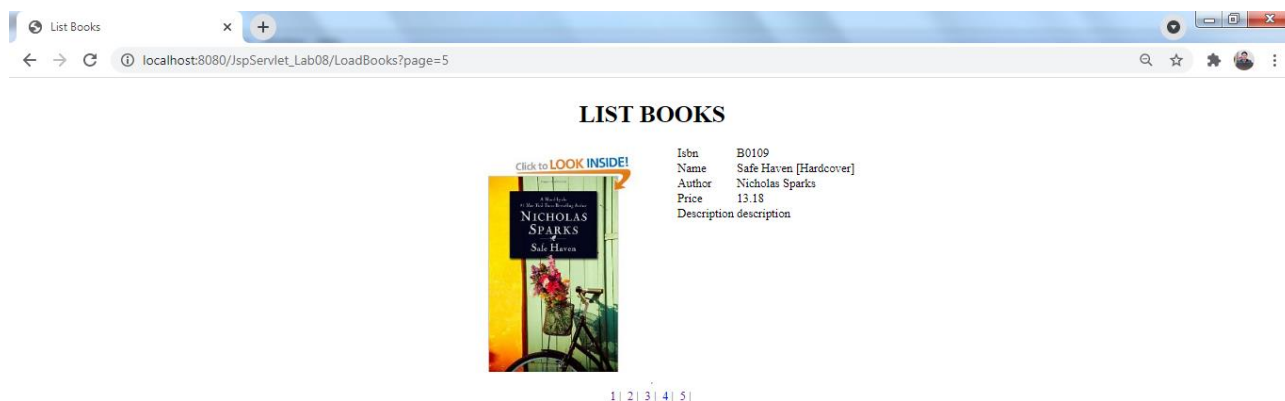




Click vào trang 2:



Click vào trang 5:



## PHẦN 2: BÀI TẬP LÀM THÊM

Thực hành phân trang cho một ứng dụng web bất kỳ và có thêm combobox để chọn số sản phẩm có thể hiển thị trên một trang.

HẾT

