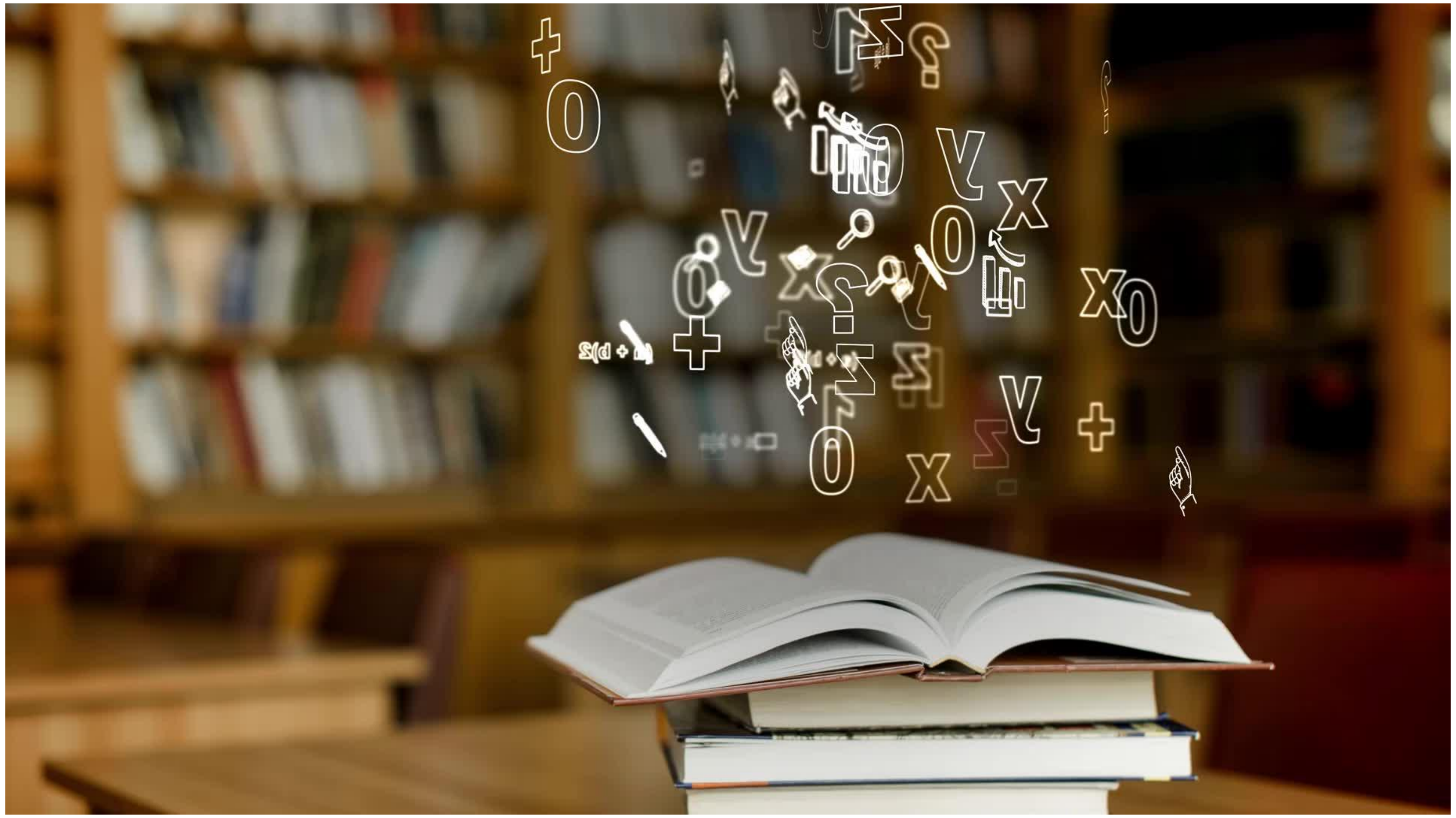


Book Barn Library

Bahareh Jabarzadnouri &

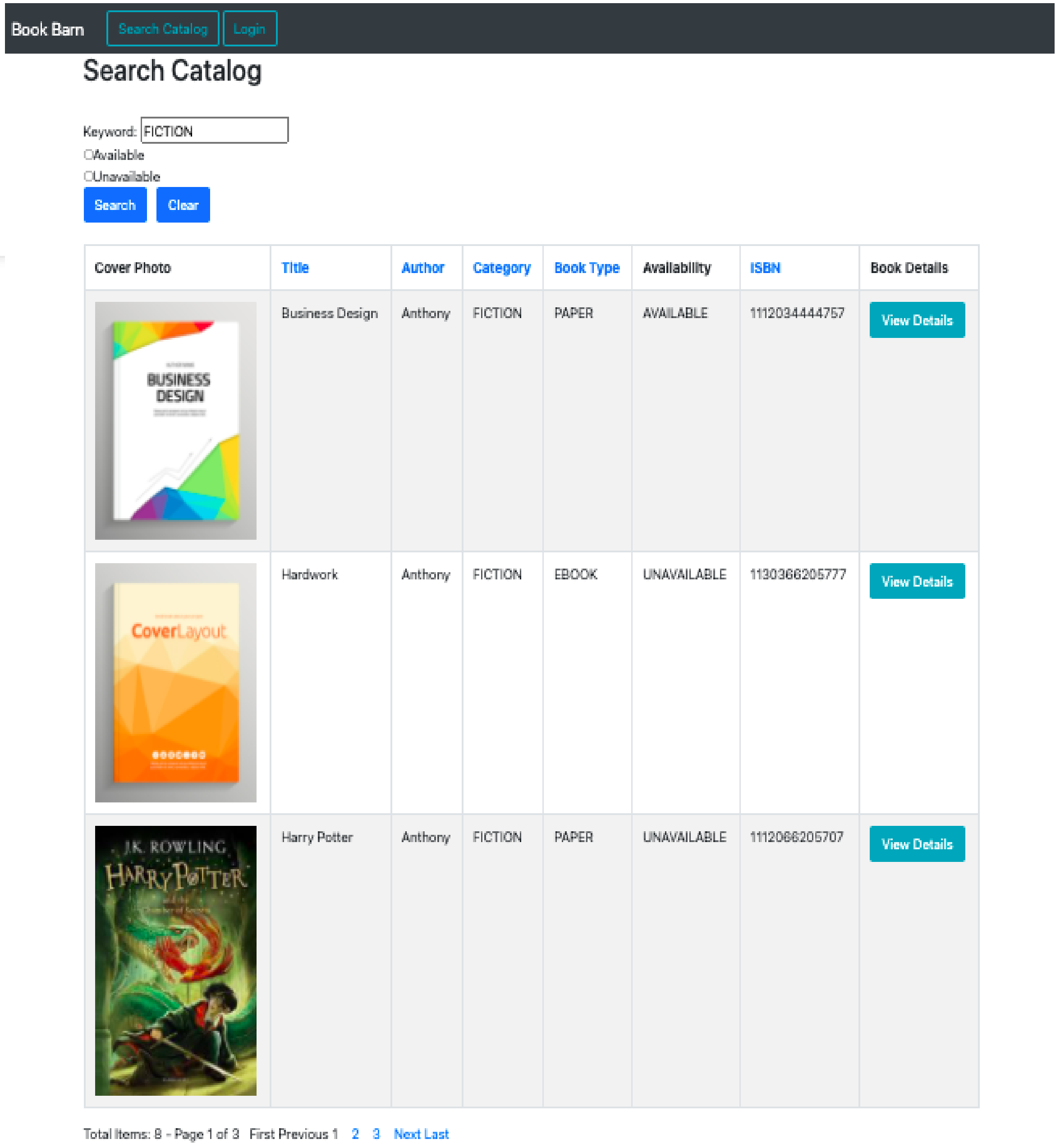
Kim Alizadeh

Dec. 20th, 2021

High Level View - Library

Security	Data storage (e.g. e-book files, photos)	Renting book online	Search catalog
Late fees	Rental tracking	Access to quality-assured resources	User-centric navigation

Search Catalog – Solution Overview

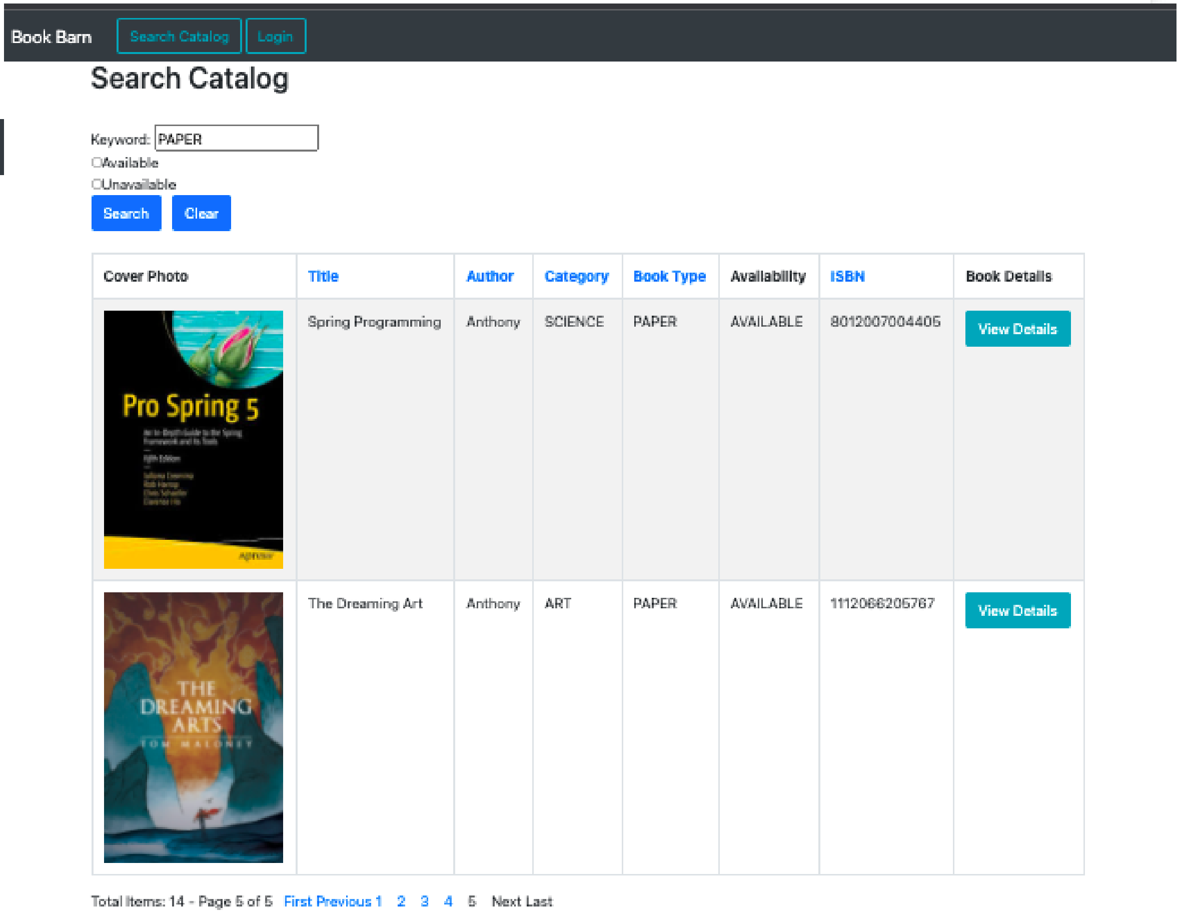


Search Catalog

Keyword: FICTION
Available
Unavailable

Cover Photo	Title	Author	Category	Book Type	Availability	ISBN	Book Details
	Business Design	Anthony	FICTION	PAPER	AVAILABLE	1112034444757	View Details
	Hardwork	Anthony	FICTION	EBOOK	UNAVAILABLE	1130366205777	View Details
	Harry Potter	Anthony	FICTION	PAPER	UNAVAILABLE	1112066205707	View Details

Total Items: 8 - Page 1 of 3 First Previous 1 2 3 Next Last

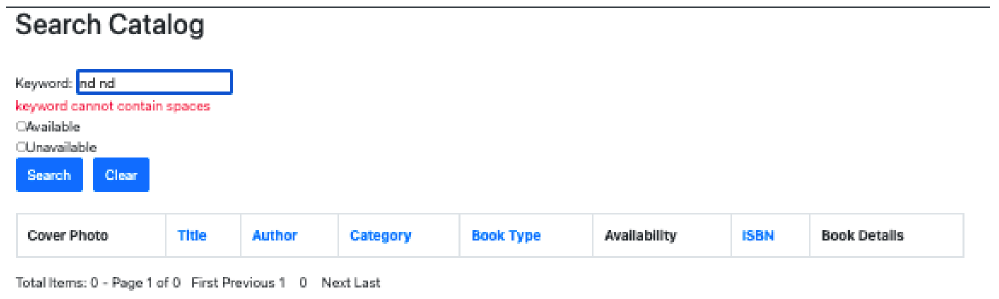


Search Catalog

Keyword: PAPER
Available
Unavailable

Cover Photo	Title	Author	Category	Book Type	Availability	ISBN	Book Details
	Spring Programming	Anthony	SCIENCE	PAPER	AVAILABLE	8012007004405	View Details
	The Dreaming Art	Anthony	ART	PAPER	AVAILABLE	1112066205767	View Details

Total Items: 14 - Page 5 of 5 First Previous 1 2 3 4 5 Next Last



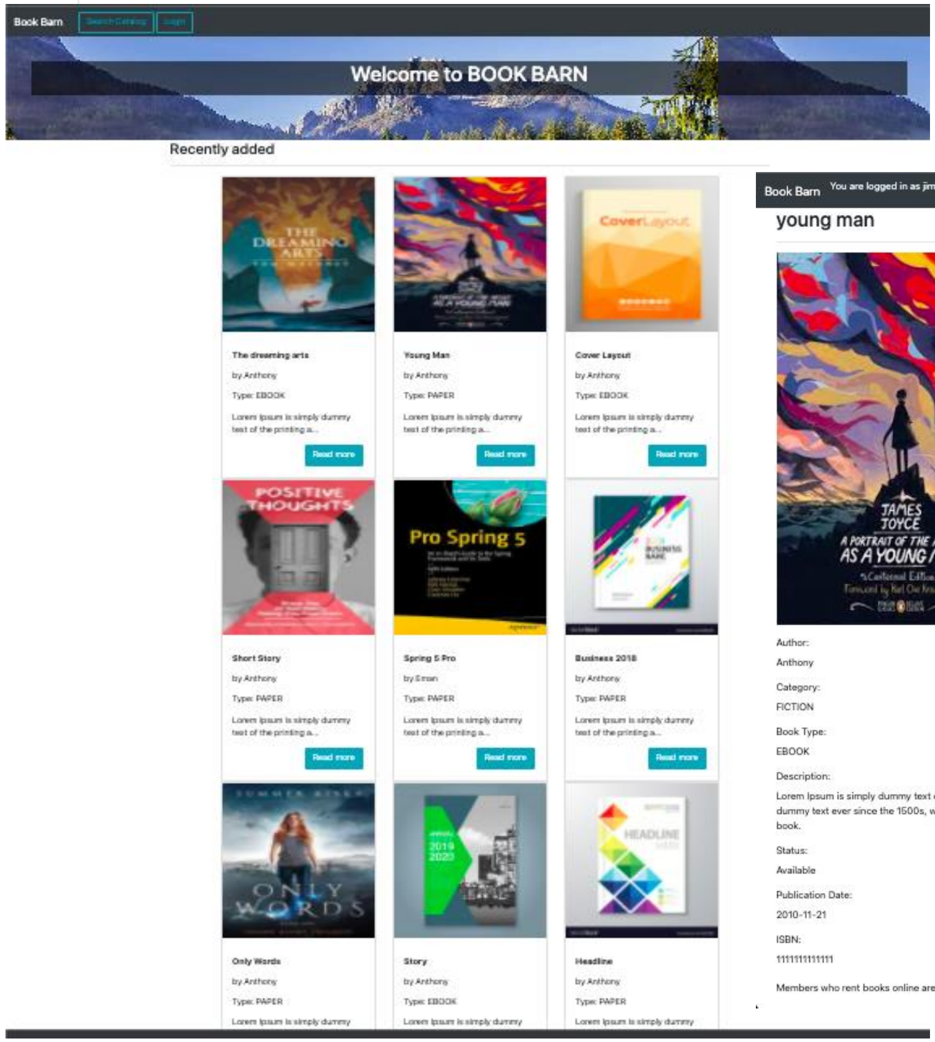
Search Catalog

Keyword: nd nd
keyword cannot contain spaces
Available
Unavailable

Cover Photo	Title	Author	Category	Book Type	Availability	ISBN	Book Details

Total Items: 0 - Page 1 of 0 First Previous 1 0 Next Last

Member Dashboard – Solution Overview

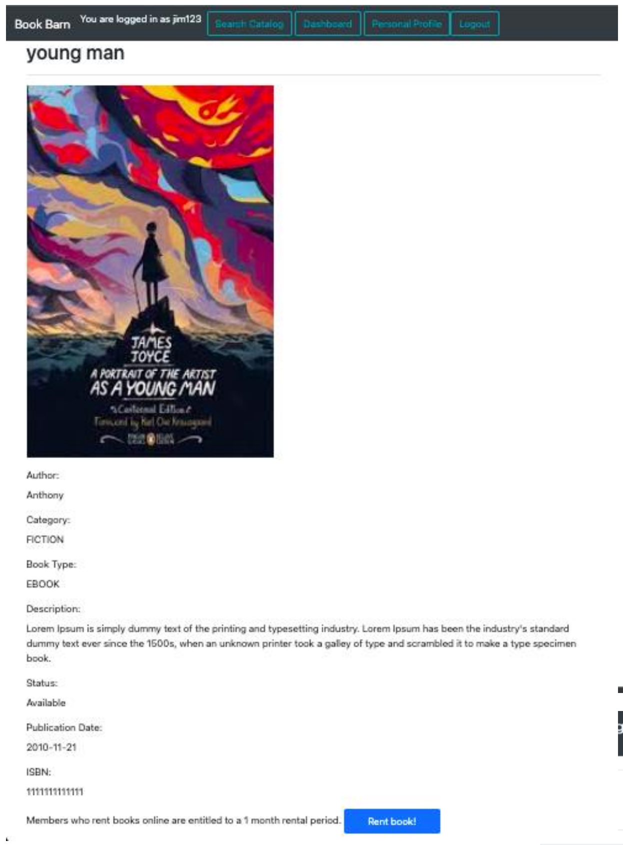


Book Barn | Search Catalog | Login

Welcome to BOOK BARN

Recently added

The dreaming arts by Anthony Type: EBOOK Lorem Ipsum is simply dummy text of the printing a... Read more	**Young Man** by Anthony Type: PAPER Lorem Ipsum is simply dummy text of the printing a... Read more	**Cover Layout** by Anthony Type: EBOOK Lorem Ipsum is simply dummy text of the printing a... Read more
Short Story by Anthony Type: PAPER Lorem Ipsum is simply dummy text of the printing a... Read more	**Spring 5 Pro** by Eman Type: PAPER Lorem Ipsum is simply dummy text of the printing a... Read more	**Business 2018** by Anthony Type: PAPER Lorem Ipsum is simply dummy text of the printing a... Read more
Only Words by Anthony Type: PAPER Lorem Ipsum is simply dummy	**Story** by Anthony Type: EBOOK Lorem Ipsum is simply dummy	**Headline** by Anthony Type: PAPER Lorem Ipsum is simply dummy



Book Barn You are logged in as jim123 | Search Catalog | Dashboard | Personal Profile | Logout

young man

Author:
Anthony

Category:
FICTION

Book Type:
EBOOK

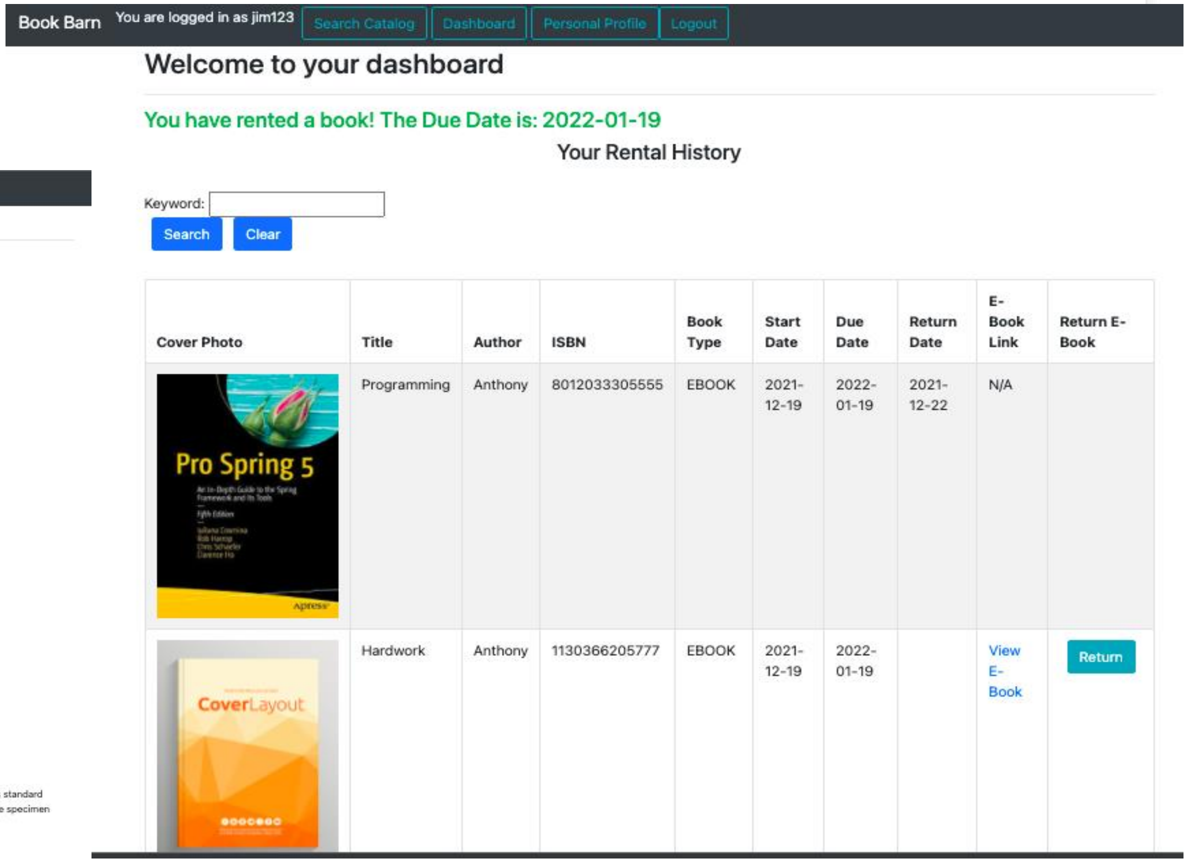
Description:
Lorem Ipsum is simply dummy text of the printing and typesetting industry. Lorem Ipsum has been the industry's standard dummy text ever since the 1500s, when an unknown printer took a galley of type and scrambled it to make a type specimen book.

Status:
Available

Publication Date:
2010-11-21

ISBN:
1111111111111

Members who rent books online are entitled to a 1 month rental period. Rent book!



Book Barn You are logged in as jim123 | Search Catalog | Dashboard | Personal Profile | Logout

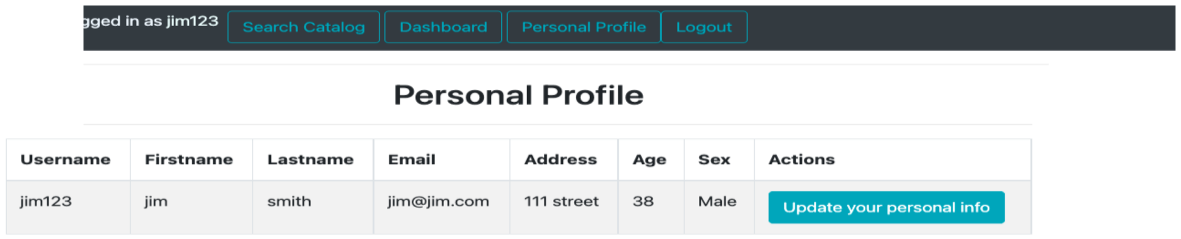
Welcome to your dashboard

You have rented a book! The Due Date is: 2022-01-19

Your Rental History

Keyword:
Search | Clear

Cover Photo	Title	Author	ISBN	Book Type	Start Date	Due Date	Return Date	E-Book Link	Return E-Book
Pro Spring 5	Programming	Anthony	8012033305555	EBOOK	2021-12-19	2022-01-19	2021-12-22	N/A	
CoverLayout	Hardwork	Anthony	1130366205777	EBOOK	2021-12-19	2022-01-19		View E-Book	Return

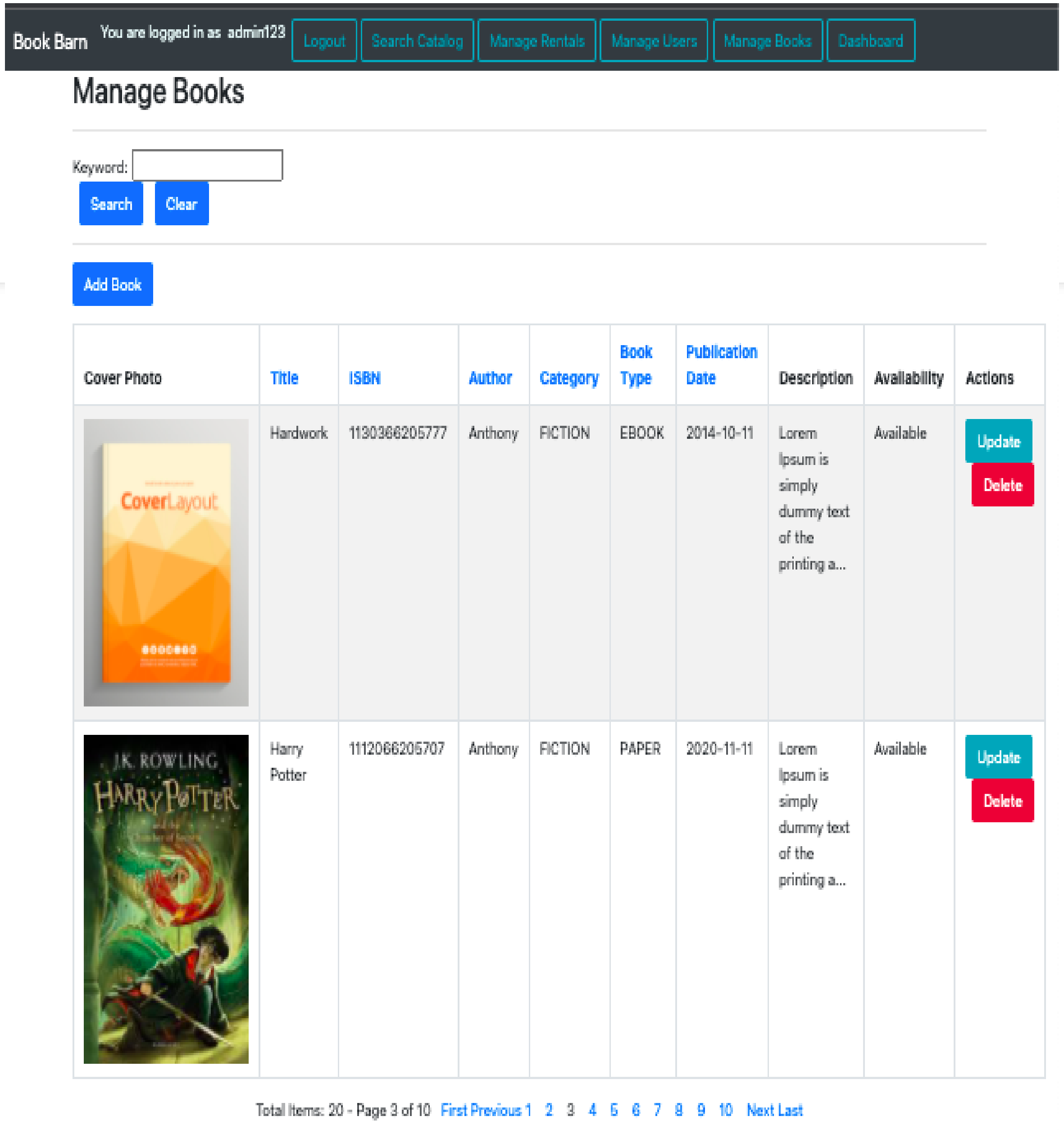


gged in as jim123 | Search Catalog | Dashboard | Personal Profile | Logout

Personal Profile

Username	Firstname	Lastname	Email	Address	Age	Sex	Actions
jim123	jim	smith	jim@jim.com	111 street	38	Male	Update your personal info

Admin dashboard – Solution Overview



Book Barn You are logged in as admin123 Logout Search Catalog Manage Rentals Manage Users Manage Books Dashboard

Manage Books

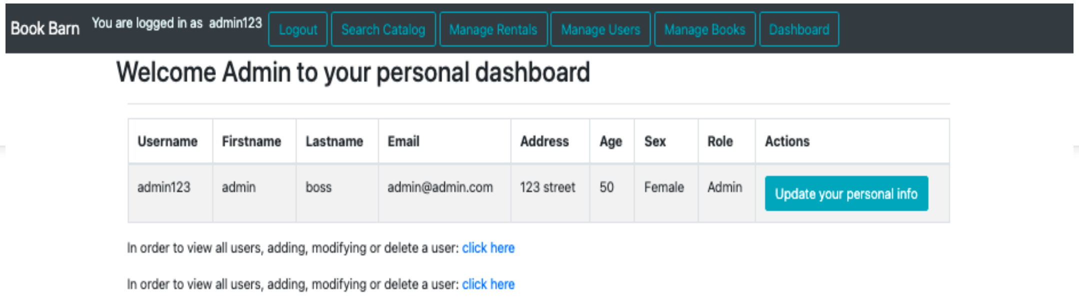
Keyword:

Search Clear

Add Book

Cover Photo	Title	ISBN	Author	Category	Book Type	Publication Date	Description	Availability	Actions
	Hardwork	1130366205777	Anthony	FICTION	EBOOK	2014-10-11	Lorem Ipsum is simply dummy text of the printing a...	Available	Update Delete
	Harry Potter	1112066205707	Anthony	FICTION	PAPER	2020-11-11	Lorem Ipsum is simply dummy text of the printing a...	Available	Update Delete

Total Items: 20 - Page 3 of 10 First Previous 1 2 3 4 5 6 7 8 9 10 Next Last



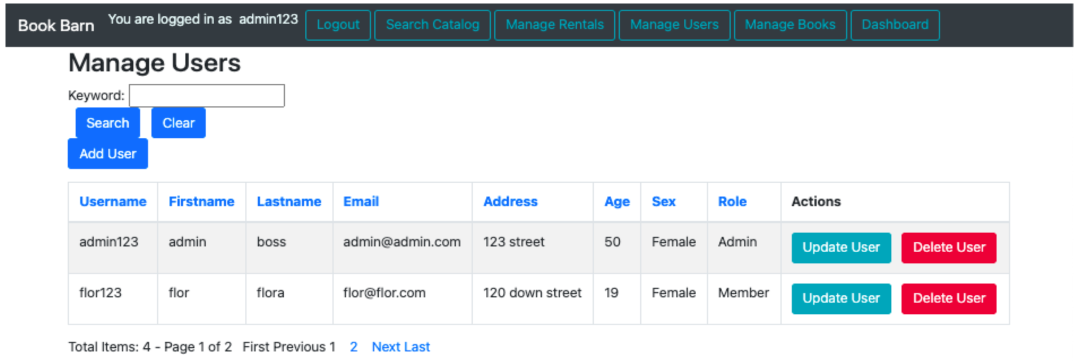
Book Barn You are logged in as admin123 Logout Search Catalog Manage Rentals Manage Users Manage Books Dashboard

Welcome Admin to your personal dashboard

Username	Firstname	Lastname	Email	Address	Age	Sex	Role	Actions
admin123	admin	boss	admin@admin.com	123 street	50	Female	Admin	Update your personal info

In order to view all users, adding, modifying or delete a user: click here

In order to view all users, adding, modifying or delete a user: click here



Book Barn You are logged in as admin123 Logout Search Catalog Manage Rentals Manage Users Manage Books Dashboard

Manage Users

Keyword:

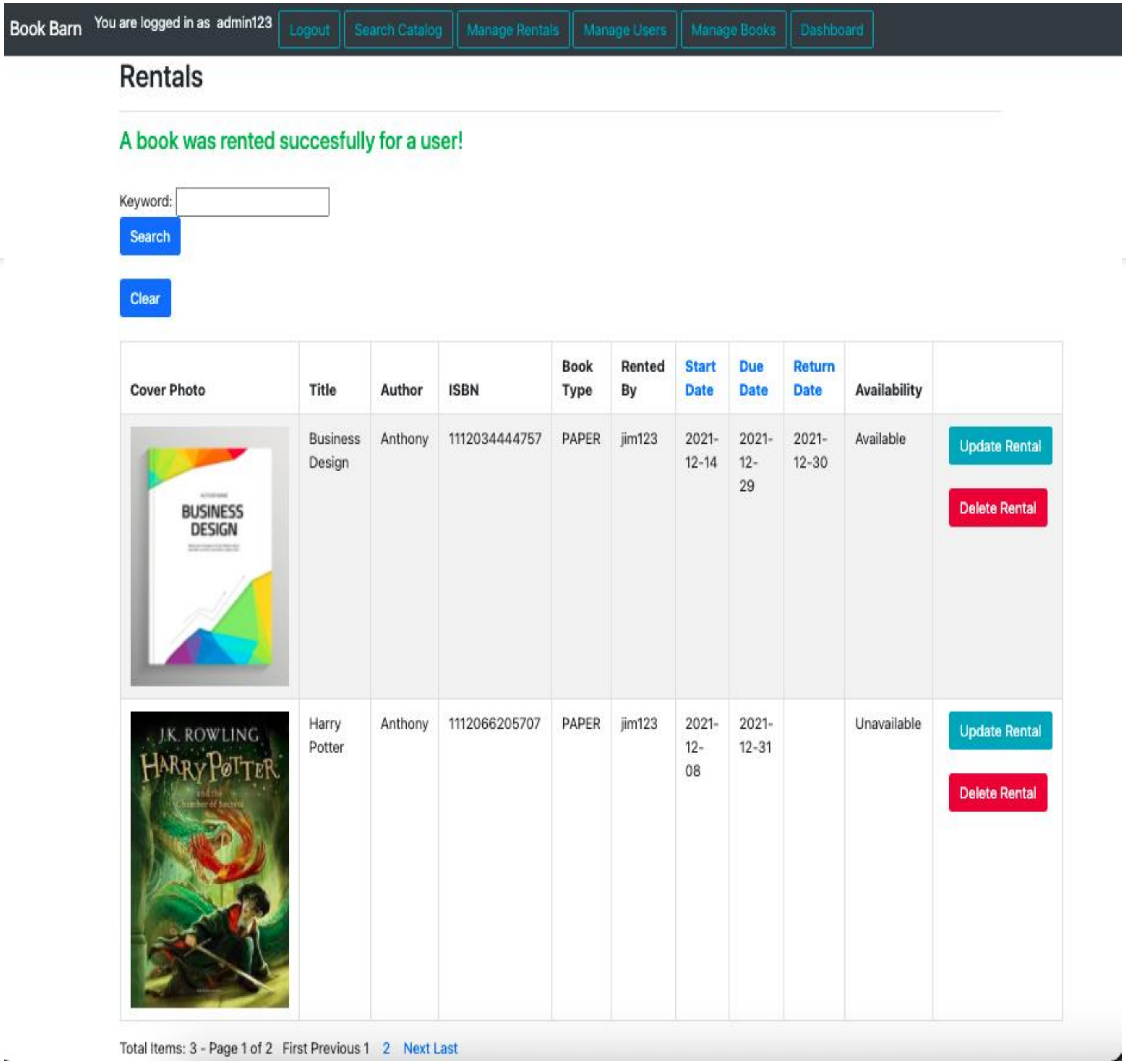
Search Clear

Add User

Username	Firstname	Lastname	Email	Address	Age	Sex	Role	Actions
admin123	admin	boss	admin@admin.com	123 street	50	Female	Admin	Update User Delete User
flor123	flor	flora	flor@flor.com	120 down street	19	Female	Member	Update User Delete User

Total Items: 4 - Page 1 of 2 First Previous 1 2 Next Last

Admin – Solution Overview

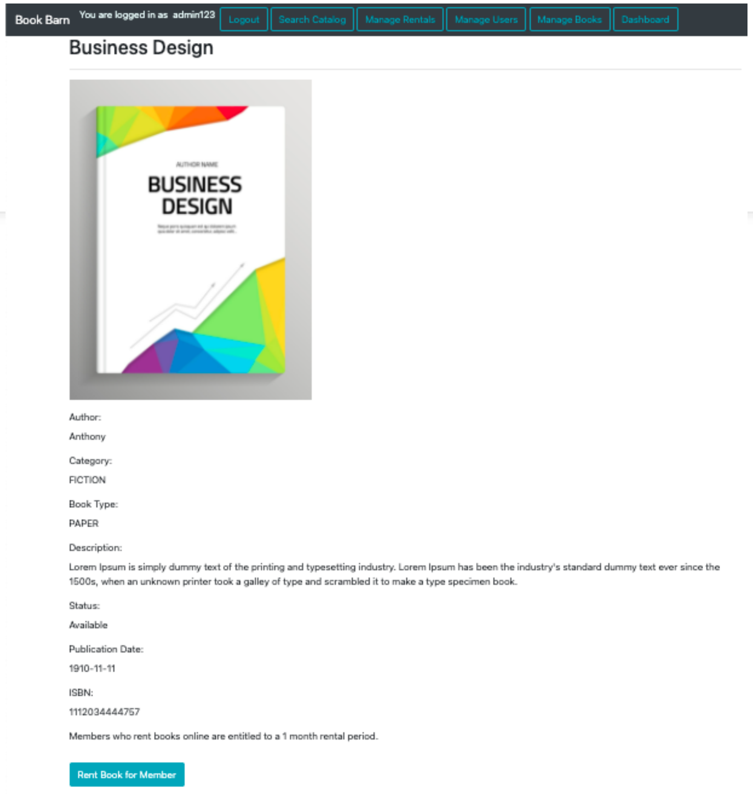


Rentals

A book was rented succesfully for a user!

Cover Photo	Title	Author	ISBN	Book Type	Rented By	Start Date	Due Date	Return Date	Availability	
	Business Design	Anthony	1112034444757	PAPER	jim123	2021-12-14	2021-12-29	2021-12-30	Available	Update Rental Delete Rental
	Harry Potter	Anthony	1112066205707	PAPER	jim123	2021-12-08	2021-12-31		Unavailable	Update Rental Delete Rental

Total Items: 3 - Page 1 of 2 First Previous 1 2 Next Last



Business Design

Author:
Anthony

Category:
FICTION

Book Type:
PAPER

Description:
Lorem Ipsum is simply dummy text of the printing and typesetting industry. Lorem Ipsum has been the industry's standard dummy text ever since the 1500s, when an unknown printer took a galley of type and scrambled it to make a type specimen book.

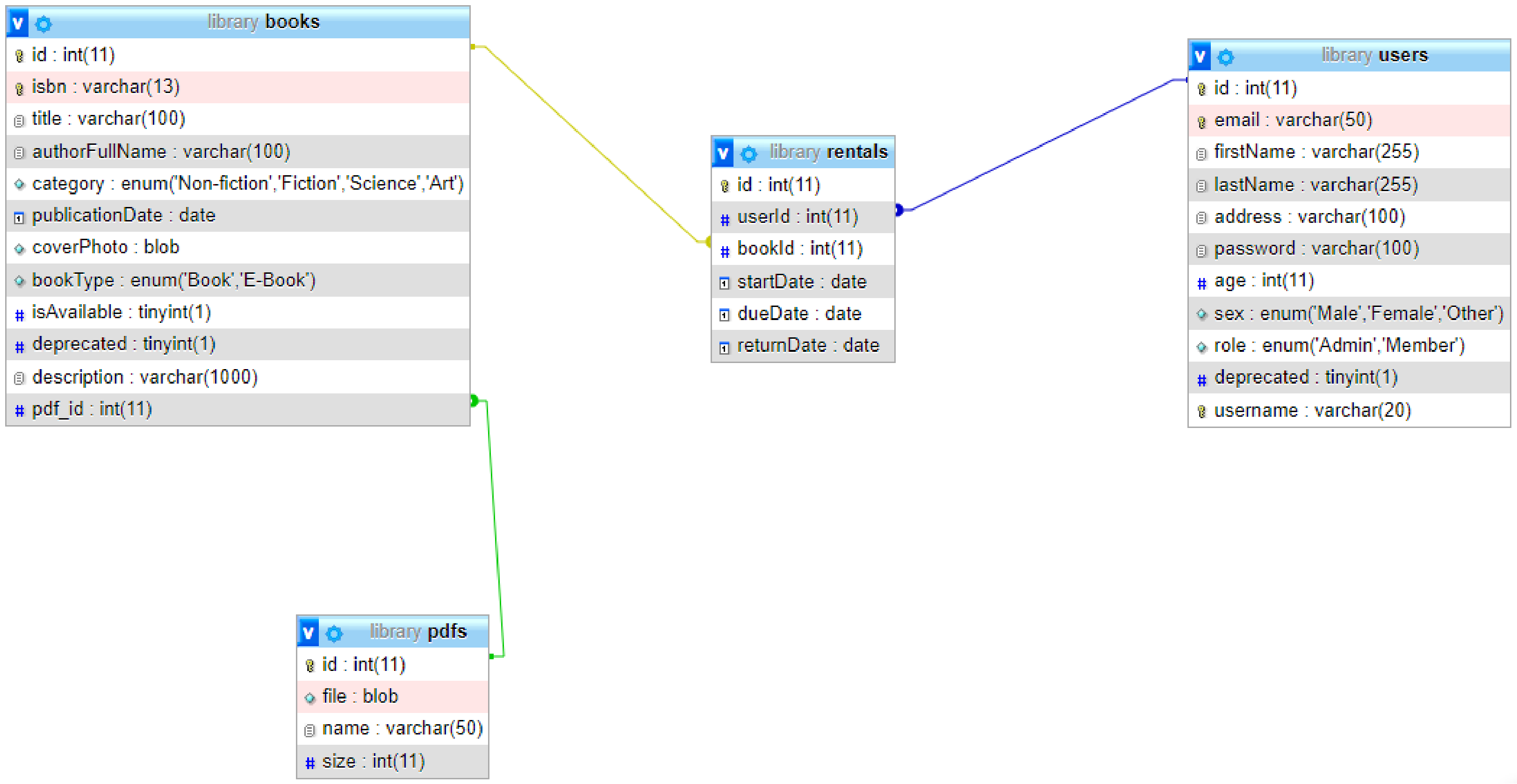
Status:
Available

Publication Date:
1910-11-11

ISBN:
1112034444757

Members who rent books online are entitled to a 1 month rental period.

Database



library **books**
- id : int(11)
- isbn : varchar(13)
- title : varchar(100)
- authorFullName : varchar(100)
- category : enum('Non-fiction','Fiction','Science','Art')
- publicationDate : date
- coverPhoto : blob
- bookType : enum('Book','E-Book')
- isAvailable : tinyint(1)
- deprecated : tinyint(1)
- description : varchar(1000)
- pdf_id : int(11)

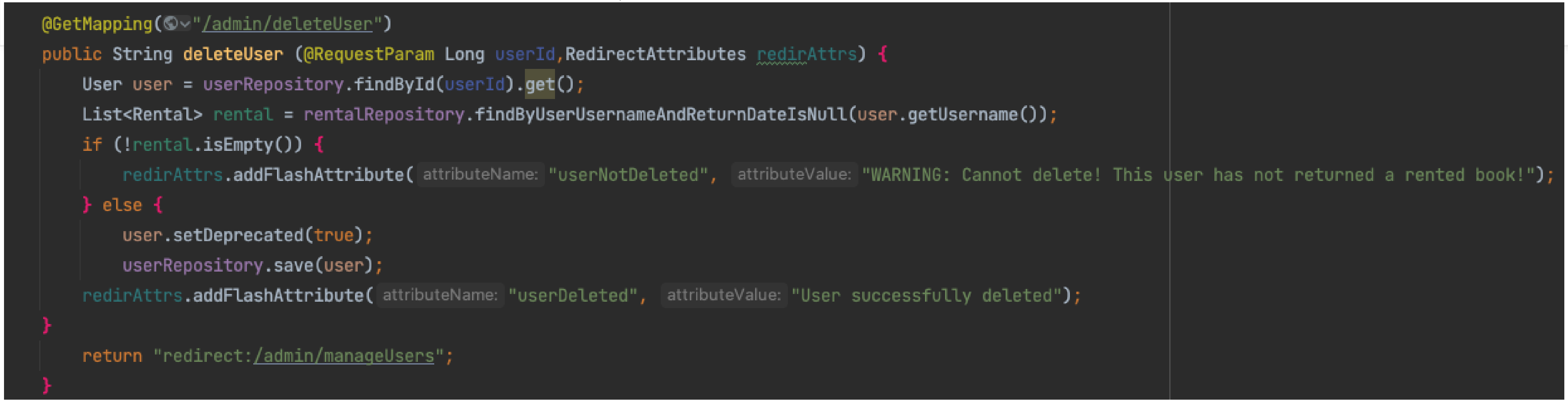
library **rentals**
- id : int(11)
- userId : int(11)
- bookId : int(11)
- startDate : date
- dueDate : date
- returnDate : date

library **users**
- id : int(11)
- email : varchar(50)
- firstName : varchar(255)
- lastName : varchar(255)
- address : varchar(100)
- password : varchar(100)
- age : int(11)
- sex : enum('Male','Female','Other')
- role : enum('Admin','Member')
- deprecated : tinyint(1)
- username : varchar(20)

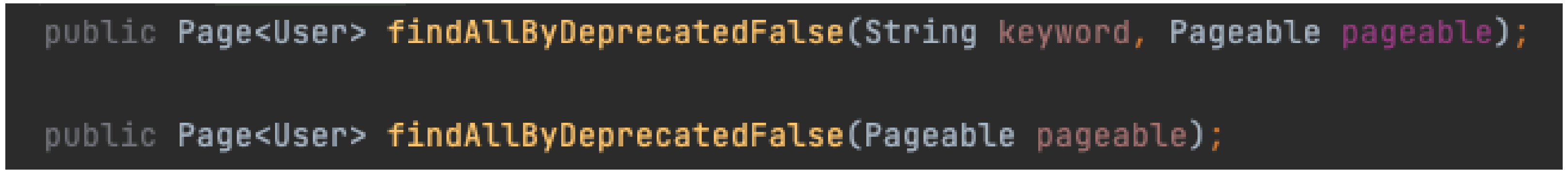
library **pdfs**
- id : int(11)
- file : blob
- name : varchar(50)
- size : int(11)

Challenges and Solutions

- Deprecate Books/Users while we have them in database



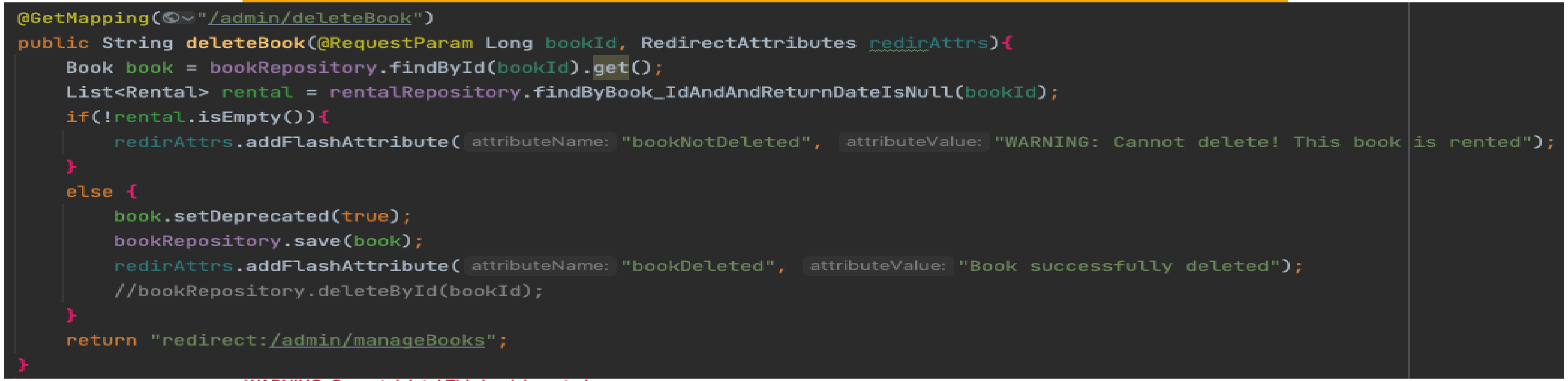
```
@GetMapping("/admin/deleteUser")
public String deleteUser (@RequestParam Long userId,RedirectAttributes redirAttrs) {
    User user = userRepository.findById(userId).get();
    List<Rental> rental = rentalRepository.findByUserUsernameAndReturnDateIsNull(user.getUsername());
    if (!rental.isEmpty()) {
        redirAttrs.addFlashAttribute( attributeName: "userNotDeleted",  attributeValue: "WARNING: Cannot delete! This user has not returned a rented book!");
    } else {
        user.setDeprecated(true);
        userRepository.save(user);
    redirAttrs.addFlashAttribute( attributeName: "userDeleted",  attributeValue: "User successfully deleted");
}
    return "redirect:/admin/manageUsers";
}
```



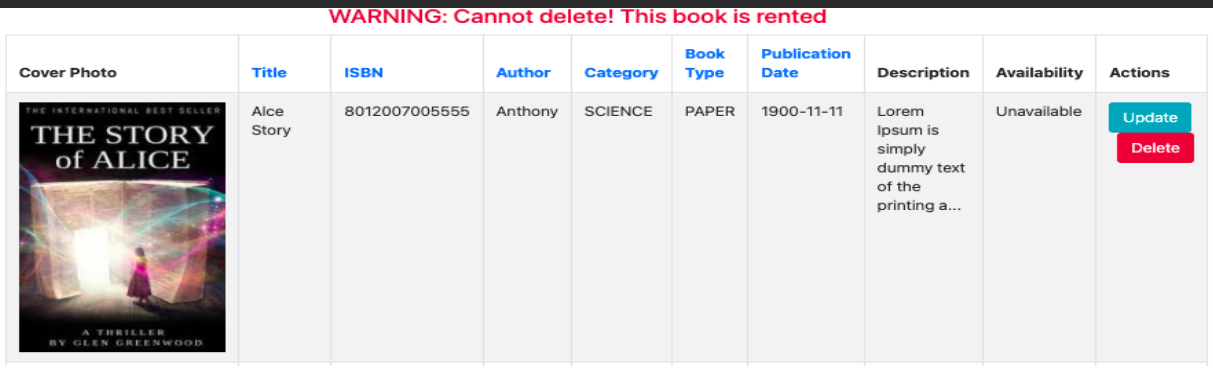
```
public Page<User> findAllByDeprecatedFalse(String keyword, Pageable pageable);

public Page<User> findAllByDeprecatedFalse(Pageable pageable);
```

Challenges and Solutions

Flash Messages

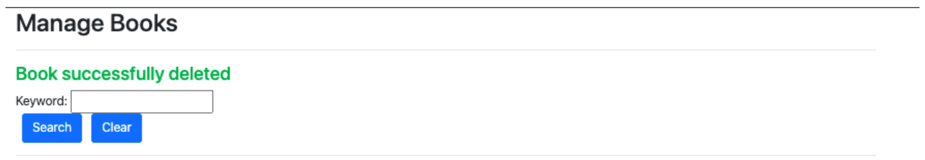


```
@GetMapping("/admin/deleteBook")
public String deleteBook(@RequestParam Long bookId, RedirectAttributes redirAttrs){
    Book book = bookRepository.findById(bookId).get();
    List<Rental> rental = rentalRepository.findByBook_IdAndAndReturnDateIsNull(bookId);
    if(!rental.isEmpty()){
        redirAttrs.addFlashAttribute( attributeName: "bookNotDeleted",  attributeValue: "WARNING: Cannot delete! This book is rented");
    }
    else {
        book.setDeprecated(true);
        bookRepository.save(book);
        redirAttrs.addFlashAttribute( attributeName: "bookDeleted",  attributeValue: "Book successfully deleted");
        //bookRepository.deleteById(bookId);
    }
    return "redirect:/admin/manageBooks";
}
```



WARNING: Cannot delete! This book is rented

Cover Photo	Title	ISBN	Author	Category	Book Type	Publication Date	Description	Availability	Actions
THE INTERNATIONAL BEST SELLER THE STORY of ALICE A THRILLER BY GLEN GREENWOOD	Alce Story	8012007005555	Anthony	SCIENCE	PAPER	1900-11-11	Lorem Ipsum is simply dummy text of the printing a...	Unavailable	Update Delete



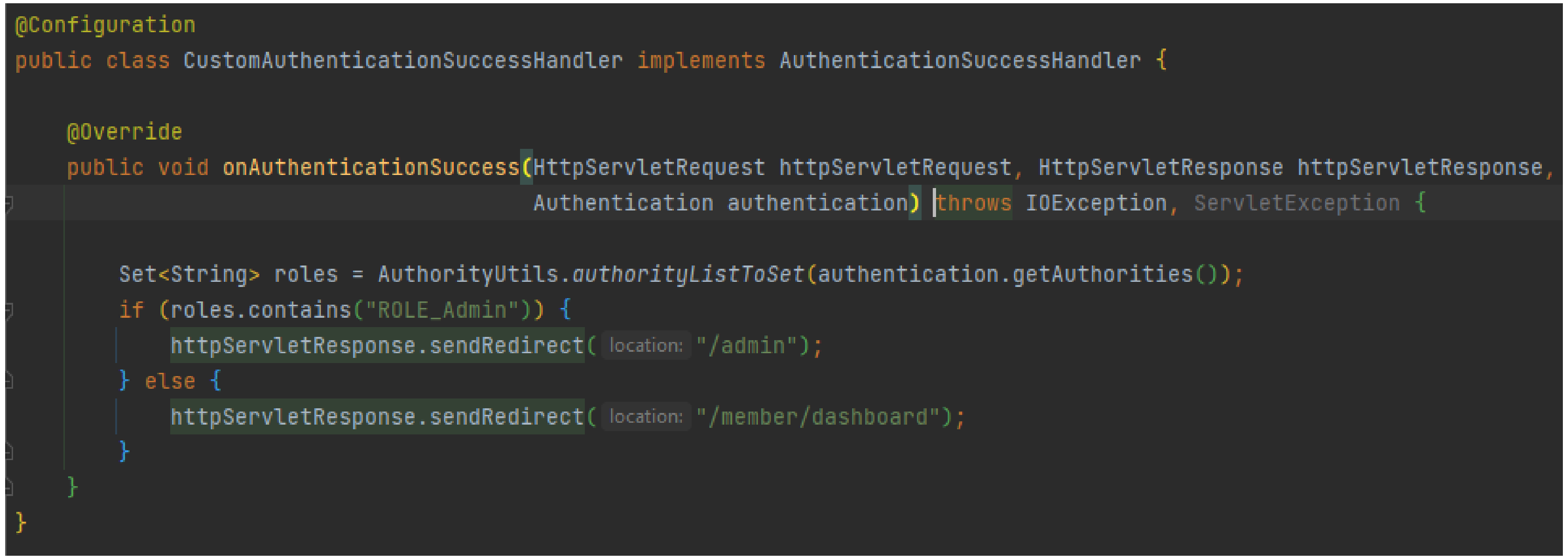
Manage Books

Book successfully deleted

Keyword:

Challenges and Solutions

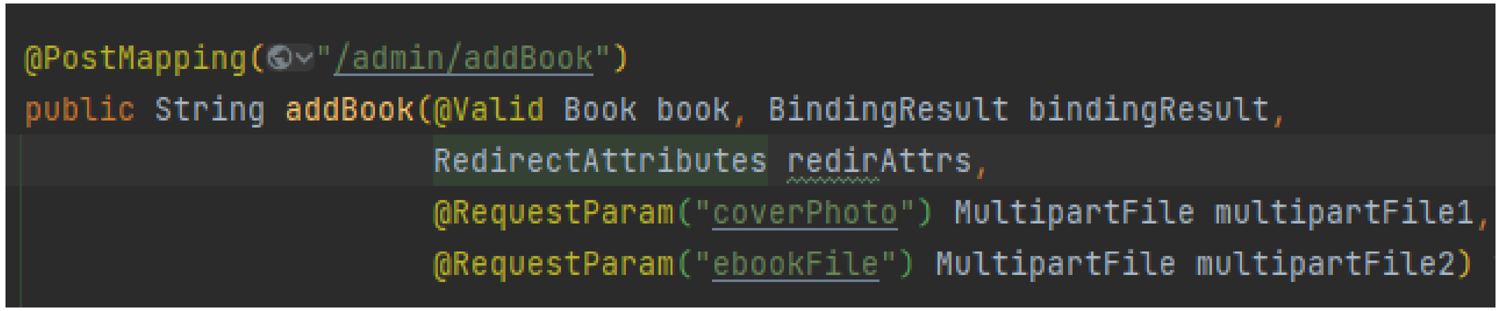
- Spring Security redirect based on Roles
- Solution:



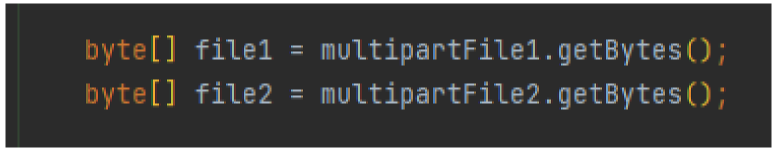
```
@Configuration
public class CustomAuthenticationSuccessHandler implements AuthenticationSuccessHandler {

    @Override
    public void onAuthenticationSuccess(HttpServletRequest httpServletRequest, HttpServletResponse httpServletResponse,
                                        Authentication authentication) throws IOException, ServletException {

        Set<String> roles = AuthorityUtils.authorityListToSet(authentication.getAuthorities());
        if (roles.contains("ROLE_Admin")) {
            httpServletResponse.sendRedirect( location: "/admin");
        } else {
            httpServletResponse.sendRedirect( location: "/member/dashboard");
        }
    }
}
```

Challenges and Solutions

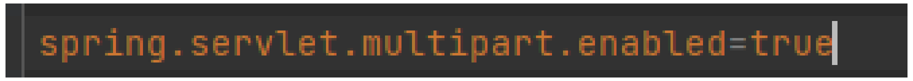
- Uploading files
  - @Lob, [] byte
  - MultipartFile



```
@PostMapping("/admin/addBook")
public String addBook(@Valid Book book, BindingResult bindingResult,
                      RedirectAttributes redirAttrs,
                      @RequestParam("coverPhoto") MultipartFile multipartFile1,
                      @RequestParam("ebookFile") MultipartFile multipartFile2)
```



```
    byte[] file1 = multipartFile1.getBytes();
    byte[] file2 = multipartFile2.getBytes();
```

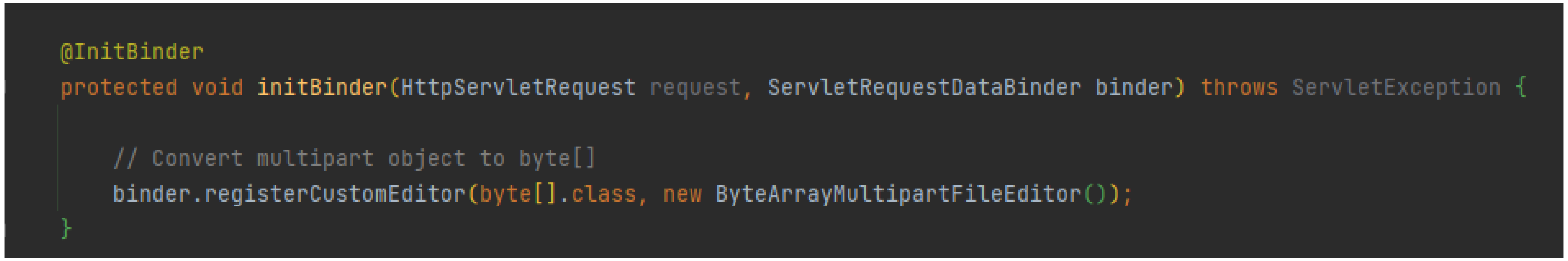


```
spring.servlet.multipart.enabled=true
```

Challenges and Solutions

"Failed to convert property value of type org.springframework.web.multipart.support.StandardMultipartHttpServletRequest$StandardMultipartFile to required type byte[]"

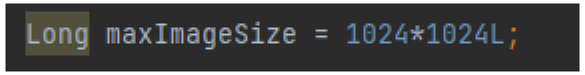
- Solution:



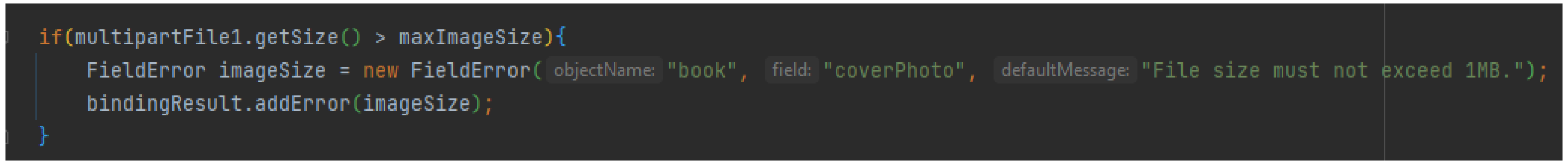
```
@InitBinder
protected void initBinder(HttpServletRequest request, ServletRequestDataBinder binder) throws ServletException {

    // Convert multipart object to byte[]
    binder.registerCustomEditor(byte[].class, new ByteArrayMultipartFileEditor());
}
```

Challenges and Solutions

- Managing file sizes
- Solution:
  - Storing E-book PDFs in a separate table
  - Setting file size limits

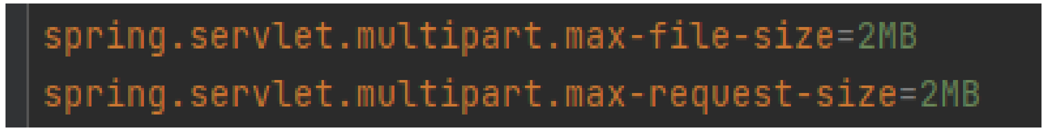


```
Long maxImageSize = 1024*1024L;
```



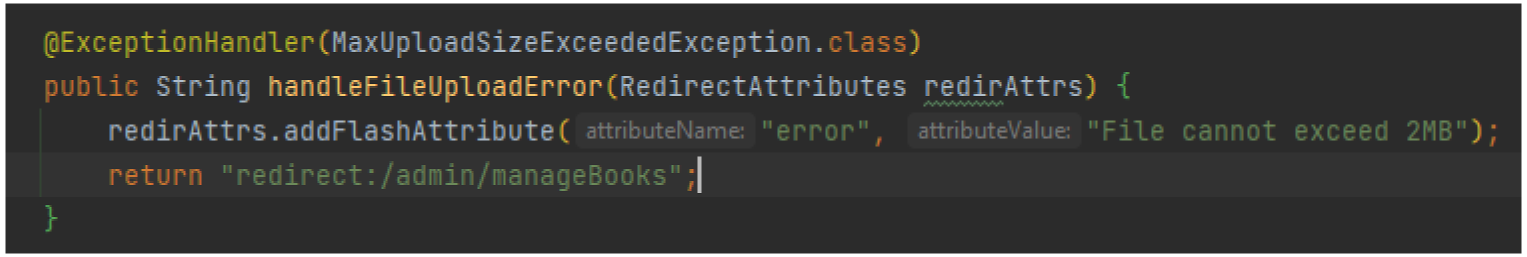
```
if(multipartFile1.getSize() > maxImageSize){
    FieldError imageSize = new FieldError( objectName: "book",  field: "coverPhoto",  defaultMessage: "File size must not exceed 1MB.");
    bindingResult.addError(imageSize);
}
```

Challenges and Solutions

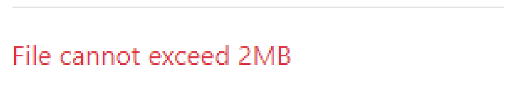


```
spring.servlet.multipart.max-file-size=2MB
spring.servlet.multipart.max-request-size=2MB
```

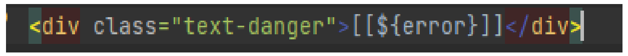
- @ControllerAdvice



```
@ExceptionHandler(MaxUploadSizeExceededException.class)
public String handleFileUploadError(RedirectAttributes redirAttrs) {
    redirAttrs.addFlashAttribute( attributeName: "error",  attributeValue: "File cannot exceed 2MB");
    return "redirect:/admin/manageBooks";
}
```



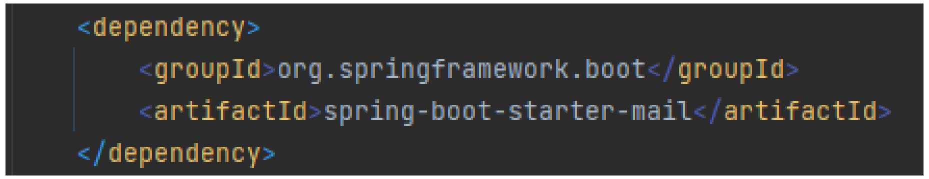
File cannot exceed 2MB



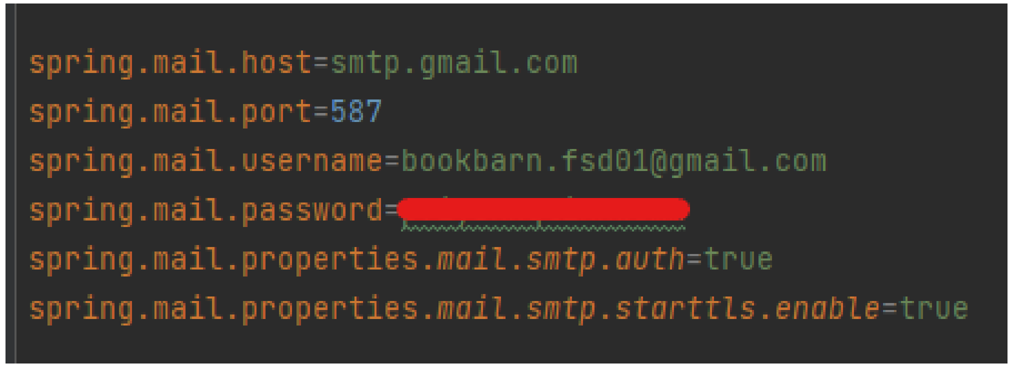
```
<div class="text-danger">[[${error}]]</div>
```

What We Learned

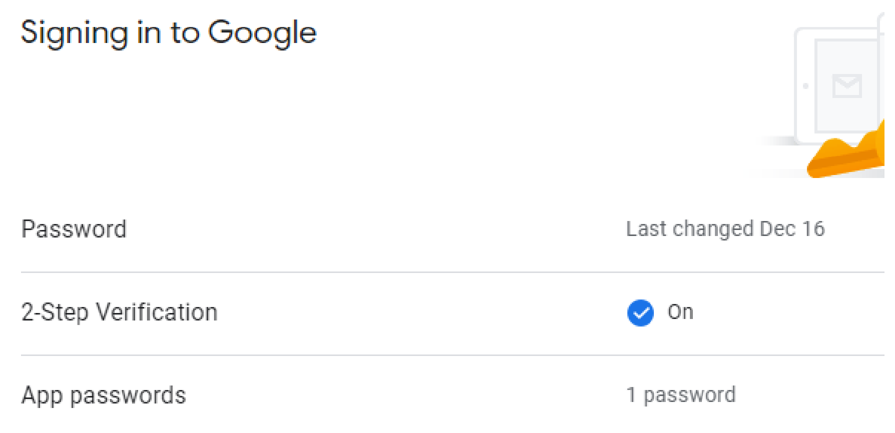
- Sending e-mail confirmations when a book is rented
- Gmail SMTP Server with Java Mail Sender



```
<dependency>
    <groupId>org.springframework.boot</groupId>
    <artifactId>spring-boot-starter-mail</artifactId>
</dependency>
```



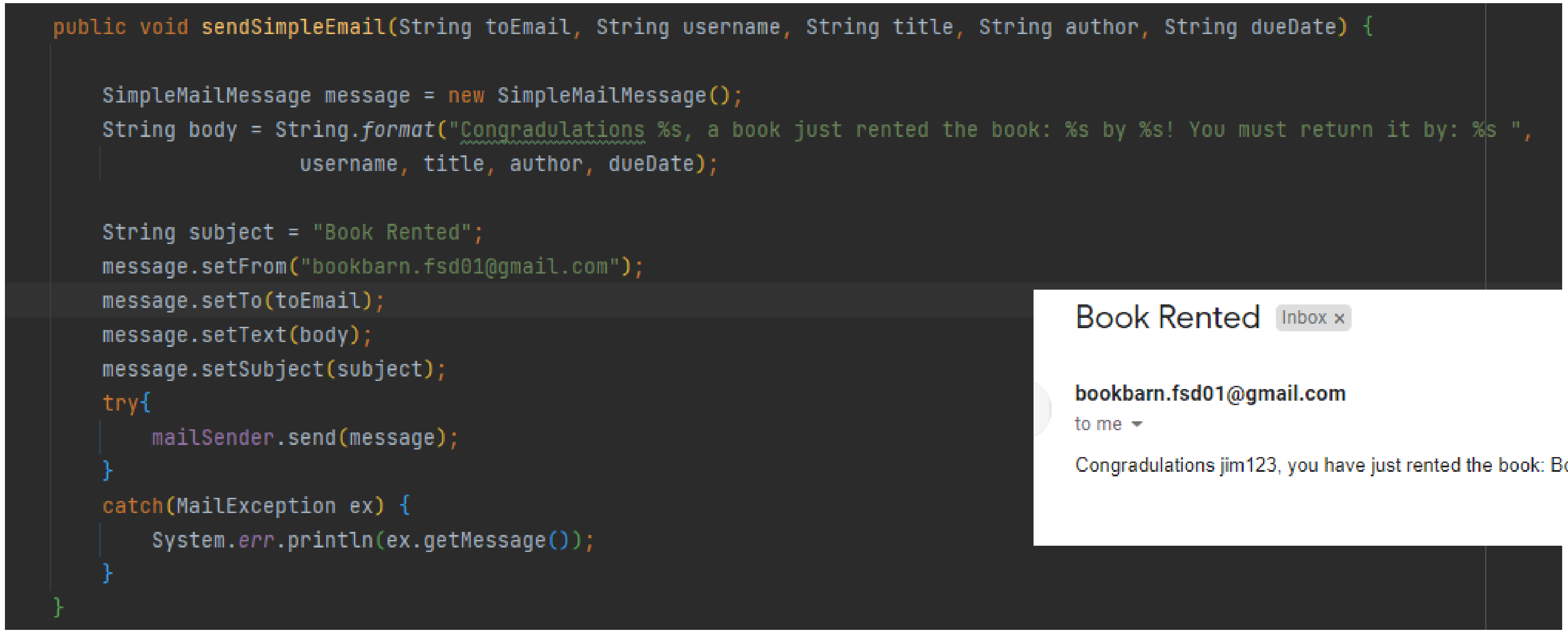
```
spring.mail.host=smtp.gmail.com
spring.mail.port=587
spring.mail.username=bookbarn.fsd01@gmail.com
spring.mail.password=[redacted]
spring.mail.properties.mail.smtp.auth=true
spring.mail.properties.mail.smtp.starttls.enable=true
```



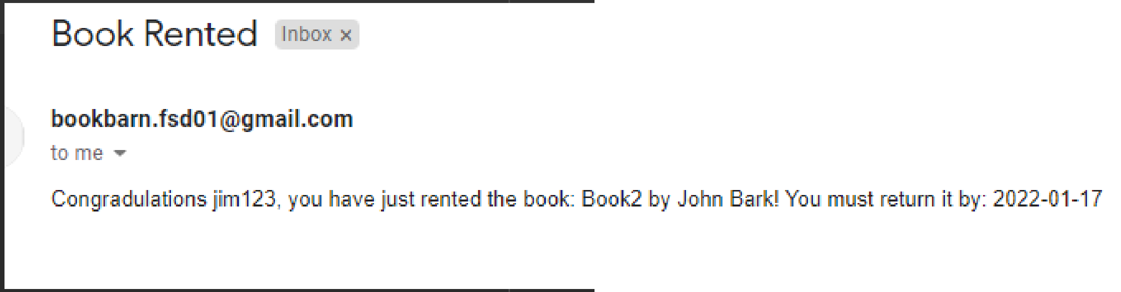
Signing in to Google

Password	Last changed Dec 16
2-Step Verification	✓ On
App passwords	1 password

What We Learned



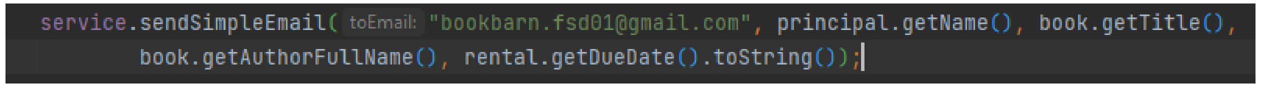
```java
public void sendSimpleEmail(String toEmail, String username, String title, String author, String dueDate) {

    SimpleMailMessage message = new SimpleMailMessage();
    String body = String.format("Congradulations %s, a book just rented the book: %s by %s! You must return it by: %s ",
                    username, title, author, dueDate);

    String subject = "Book Rented";
    message.setFrom("bookbarn.fsd01@gmail.com");
    message.setTo(toEmail);
    message.setText(body);
    message.setSubject(subject);
    try{
        mailSender.send(message);
    }
    catch(MailException ex) {
        System.err.println(ex.getMessage());
    }
}
```



Book Rented Inbox ×

bookbarn.fsd01@gmail.com
to me

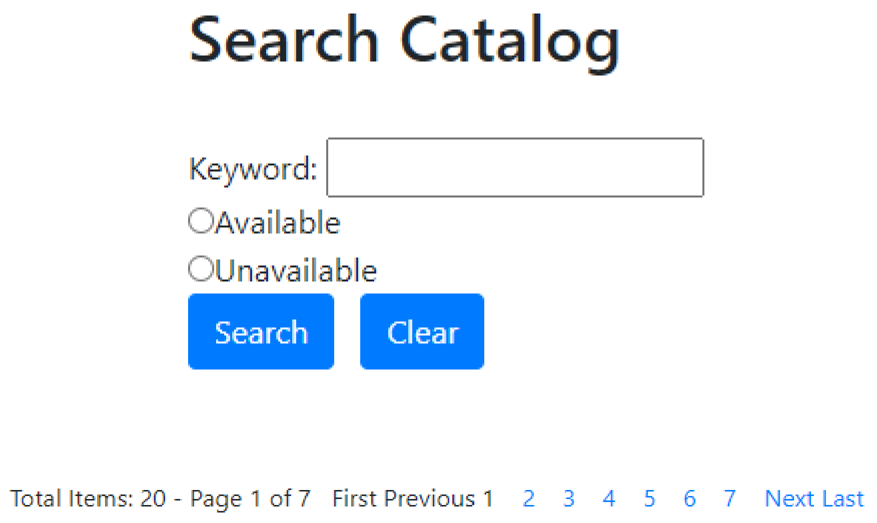
Congradulations jim123, you have just rented the book: Book2 by John Bark! You must return it by: 2022-01-17



```java
service.sendSimpleEmail( toEmail: "bookbarn.fsd01@gmail.com", principal.getName(), book.getTitle(),
        book.getAuthorFullName(), rental.getDueDate().toString());
```

What we learned

- Retrieving and displaying relevant information in small chunks for the search catalog
- Solution:
  - Query using keyword and availability
  - Pagination using Pageable interface
  - Sorting using Sort class


Search Catalog

Keyword:

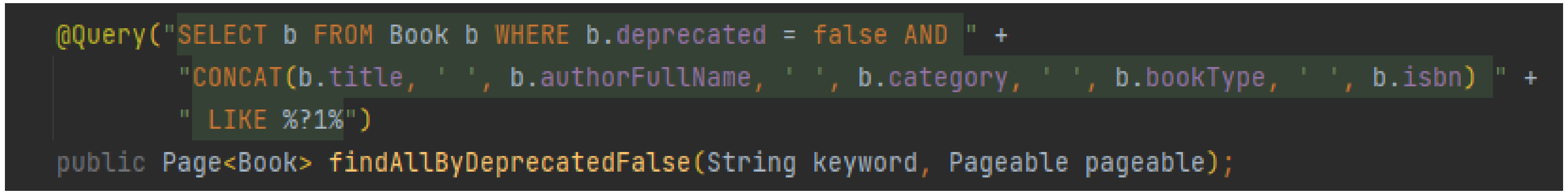
Available

Unavailable

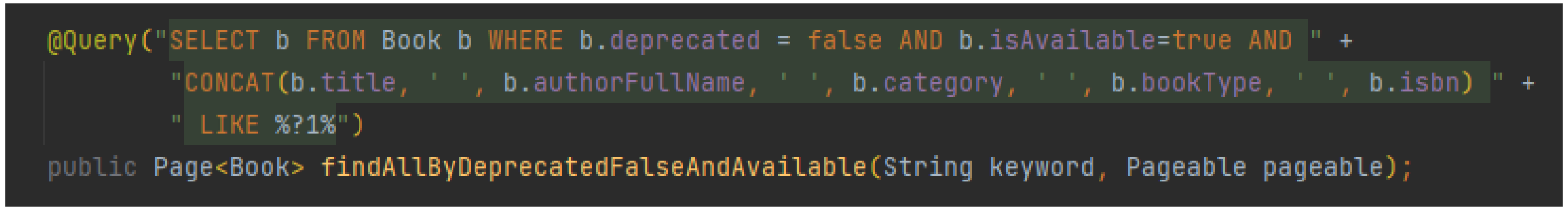
Total Items: 20 - Page 1 of 7 First Previous 1 2 3 4 5 6 7 Next Last

What we learned

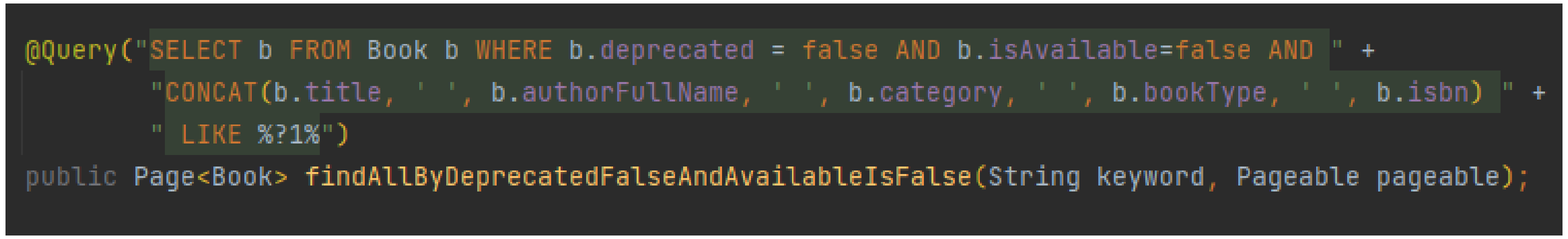
Keyword queries



```
@Query("SELECT b FROM Book b WHERE b.deprecated = false AND " +
        "CONCAT(b.title, ' ', b.authorFullName, ' ', b.category, ' ', b.bookType, ' ', b.isbn) " +
        " LIKE %?1%")
public Page<Book> findAllByDeprecatedFalse(String keyword, Pageable pageable);
```

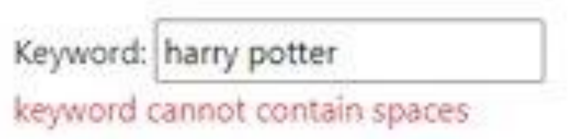


```
@Query("SELECT b FROM Book b WHERE b.deprecated = false AND b.isAvailable=true AND " +
        "CONCAT(b.title, ' ', b.authorFullName, ' ', b.category, ' ', b.bookType, ' ', b.isbn) " +
        " LIKE %?1%")
public Page<Book> findAllByDeprecatedFalseAndAvailable(String keyword, Pageable pageable);
```



```
@Query("SELECT b FROM Book b WHERE b.deprecated = false AND b.isAvailable=false AND " +
        "CONCAT(b.title, ' ', b.authorFullName, ' ', b.category, ' ', b.bookType, ' ', b.isbn) " +
        " LIKE %?1%")
public Page<Book> findAllByDeprecatedFalseAndAvailableIsFalse(String keyword, Pageable pageable);
```

- Caveat: only works for 1 keyword, not multiple keywords

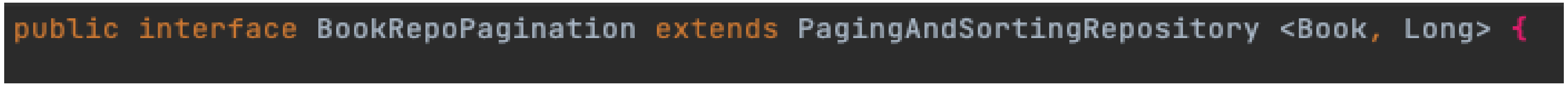


Keyword: harry potter

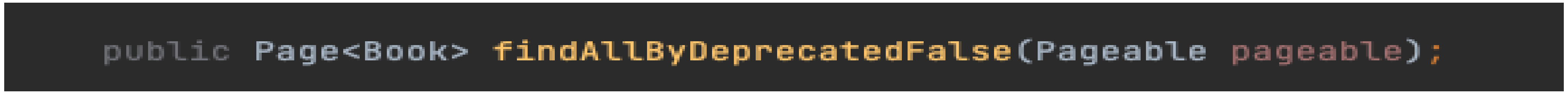
keyword cannot contain spaces

What we learned

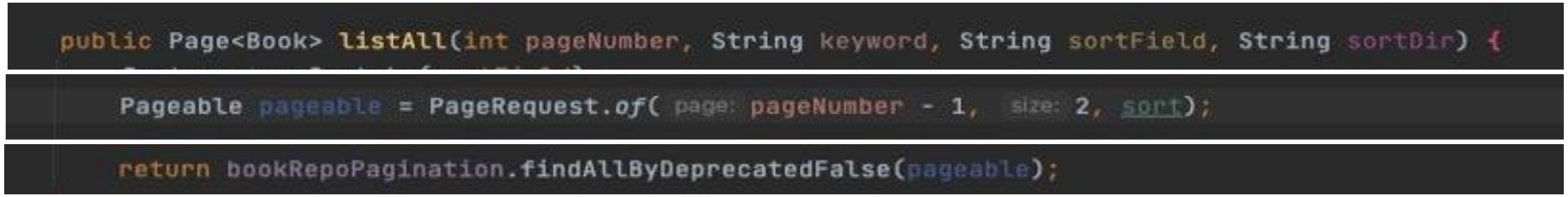
Sorting and Pagination



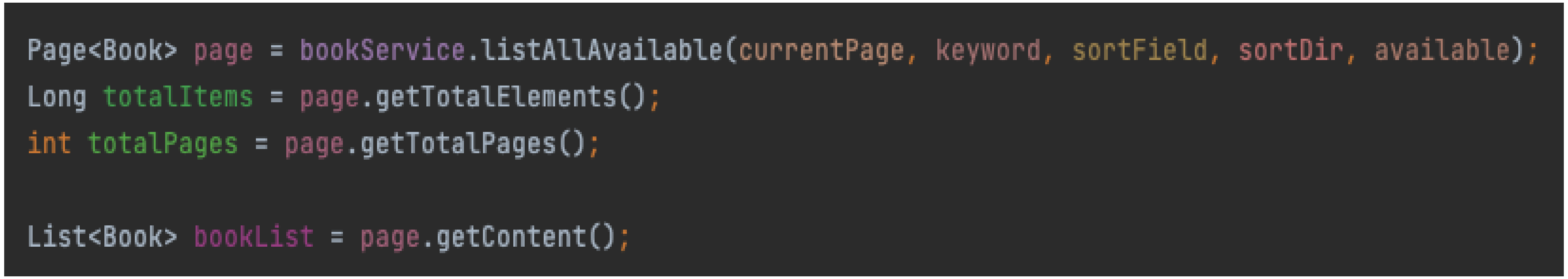
```java
public interface BookRepoPagination extends PagingAndSortingRepository <Book, Long> {
```



```java
    public Page<Book> findAllByDeprecatedFalse(Pageable pageable);
```



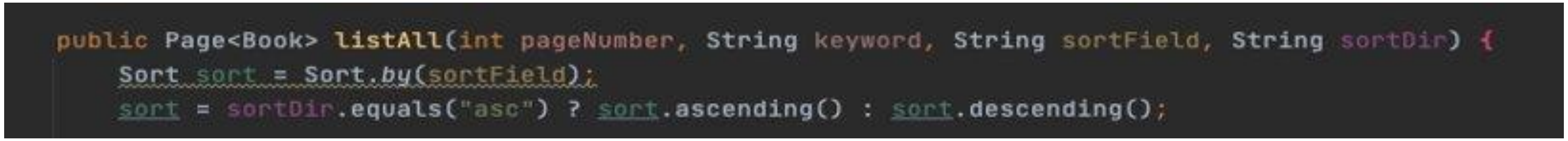
```java
  public Page<Book> listAll(int pageNumber, String keyword, String sortField, String sortDir) {
      Pageable pageable = PageRequest.of( page: pageNumber - 1,  size: 2, sort);
      return bookRepoPagination.findAllByDeprecatedFalse(pageable);
```



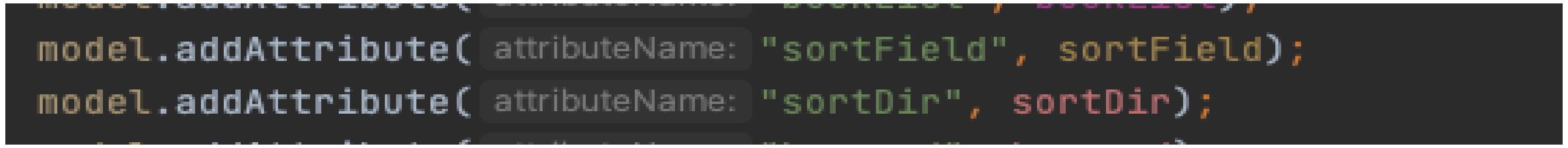
```java
Page<Book> page = bookService.listAllAvailable(currentPage, keyword, sortField, sortDir, available);
Long totalItems = page.getTotalElements();
int totalPages = page.getTotalPages();

List<Book> bookList = page.getContent();
```

What we learned

Sorting and Pagination



```java
public Page<Book> listAll(int pageNumber, String keyword, String sortField, String sortDir) {
    Sort sort = Sort.by(sortField);
    sort = sortDir.equals("asc") ? sort.ascending() : sort.descending();
```



```java
model.addAttribute( attributeName: "sortField", sortField);
model.addAttribute( attributeName: "sortDir", sortDir);
```

Future Work

- Late fees tracking & payment
- Dynamic queries
- File compression
- Email reminders for due date
- Password recovery
- More front-end development

Summary

- Accomplished many of the goals in our proposal
- Successfully combined different technologies
- Created a functional library system