**Case Study**

**Objective:**

The objective of this case study is to build a portal for ordering/returning rental books. Users can browse online catalog of books, select book and request for delivery of book. The user needs to open a request for return of book once finishes reading.

**Details:**

Role: None

1.       Search based on Book’s Title, Author, Category.

2.       Search Results with: Title, Image, Description, Author, Publisher, Category, Availability etc.

3.       Self-Registration

User’s registration to include selection of a subscription plan from multiple options available. The subscription plan includes amount, period and max books that users can request for together.

Role: User

1.       Initiate delivery/return/cancel request of book(s) as per the subscription plan.

Delivery Request: Status can be Pending/Closed/Cancelled.

Return Request: Status can be Pending/Closed/Cancelled. A return request can be made against books with either a Delivery status ‘Closed’ or books with Return status ‘Cancelled’.

Cancel Request: Can act on ‘Pending’ delivery/return requests only.

Please note:

         User cannot place a new delivery request or cancel return requests after (plan end date – x days).

         No payment gateway needs to be implemented.

         The request for book’s delivery/return, should confirm the address including an option to change address.

         User should be able to see the books which the user is currently holding. This covers following requests.

-       Delivery Pending/Closed.

-       Return Pending/Cancelled.

2.       Manage a virtual book shelf.

User can add/remove books from this list.

3.       View History: Subscription + Book Request

Subscription history should tell user about the start/end dates of subscriptions.

Book Request’s history should tell user about the books ordered for delivery including delivery request date and return closed date.

4.       Enrolment to new subscription plan.

User cannot have overlapping subscription plans.

**5.**       User’s Profile includes name, address, phone number, email id, language and other details.

6.       Books recommendation

System needs to be able to recommended books. The recommendations would be built offline periodically and should be based on the users’ history.

7.       Receive email alerts of:

a.        Order/Return/Cancellation – immediate.

b.       Subscription ending date – 1 month; 1 week and 1 day before the subscription is about to end.

Role: Operator

1.       Add/Update/Delete Book.

2.       Add/Update/Delete Books using CSV feed files periodically processed by a scheduler.

3.       Add/Update/Delete Subscription Plan using XML file upload.

4.       View users with active subscriptions.

5.       View user’s requests. Should be able to filter by request types and statuses. Should be able to modify statuses.

6.       Generate PDF report containing summary of Books. Filters can be selected for report generation like books rented for a period, books of an author rented for a certain period, books of a category rented for a certain period; Books and theirs counters for delivery/return/cancellation etc.

**Some additional information:**

         All summary tables should be sortable.

         At least 1 service of the application should also be available as web services (Both SOAP and REST)

         Processing logic for CSV feed file should reside in a DB stored procedure.

After completion of this case study, one would have hands-on experience in following areas:

-          Creating a 4+1 view (includes ER diagram, class diagram, sequence diagram, component interaction diagram, deployment diagram etc.)

-          Basic Design Patterns (Object Factory, Singleton and any other)

-          N-Tier Architecture

-         SPRING & MVC Framework

-          ORM

-          Exception handling

-          Logging

-          Scheduler for feed file processing and any other scenario as necessary

-          Mailing for sending emails to registered users.

-          File Upload

-          DB concepts (Stored Procedure)

-          XML/XLS parsing

-          PDF Report Generation

-          Basic idea of Ajax, jQuery

-          Profiling

-          Build Scripts

-          Continuous Integration (Hudson and jenkin server)

-          Unit Test Cases.

-          Code Quality Metrics and tools

**Deliverables:**

1.       4+1 view diagram (It should include the database structure as well as object interactions)

2.       N-Tier architecture diagram

3.       Java Documentation

4.       Unit test cases coverage report

5.       Code Quality Report

6.       Profiling Report (J profiler; application performance testing ; JVM logs of memory and CPU)

7.       Application Demo covering all functionalities

8.       Application codebase (Unit test cases code to be included)