SOFTWARE REQUIREMENTS SPECIFICATION

For

Recipe Recommendation System

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Team 19

1. Introduction

1.1 Purpose

Recipe recommendation systems aim to enhance the cooking experience by providing personalized and efficient suggestions tailored to users' preferences, dietary restrictions, and skill levels. By offering diverse and relevant recipe options, these systems save time, promote culinary exploration, and contribute to user satisfaction, fostering engagement and loyalty.

1.2 Document Conventions

- Entire document should be justified.
- Convention for Main title
  - Font face: Times New Roman
  - Font style: Bold
  - Font Size: 14
- Convention for Sub title
  - Font face: Times New Roman
  - Font style: Bold
  - Font Size: 12
- Convention for body
  - Font face: Times New Roman
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1.3 Scope of Development Project

The scope of developing a recipe recommendation project is expansive, encompassing various technical and user-centric aspects. On the technical side, the project involves data collection and analysis to understand user preferences, dietary restrictions, and cooking habits. Implementing machine learning algorithms for personalized recipe recommendations, creating a user-friendly interface for easy navigation, and integrating social features for community engagement are key components. Additionally, the system should adapt to seasonal variations, consider local food trends, and accommodate different skill levels, ensuring a comprehensive and versatile user experience. From a user perspective, the project aims to streamline the cooking process, introduce culinary diversity, and foster a sense of community through shared recipes and experiences.

Furthermore, the project's scope extends to continuous improvement and updates, incorporating user feedback to enhance recommendation accuracy and system usability. Integration with emerging technologies, such as voice commands or augmented reality for hands-free cooking guidance, could also be explored to keep the project at the forefront of innovation in the evolving landscape of culinary technology. Overall, the scope is dynamic, covering both technical sophistication and user-centric features to deliver a robust and evolving recipe recommendation system.

1.4 Definitions, Acronyms and Abbreviations

JAVA -> platform independence
SQL-> Structured query Language
ER-> Entity Relationship
UML -> Unified Modeling Language
IDE-> Integrated Development Environment
SRS-> Software Requirement Specification

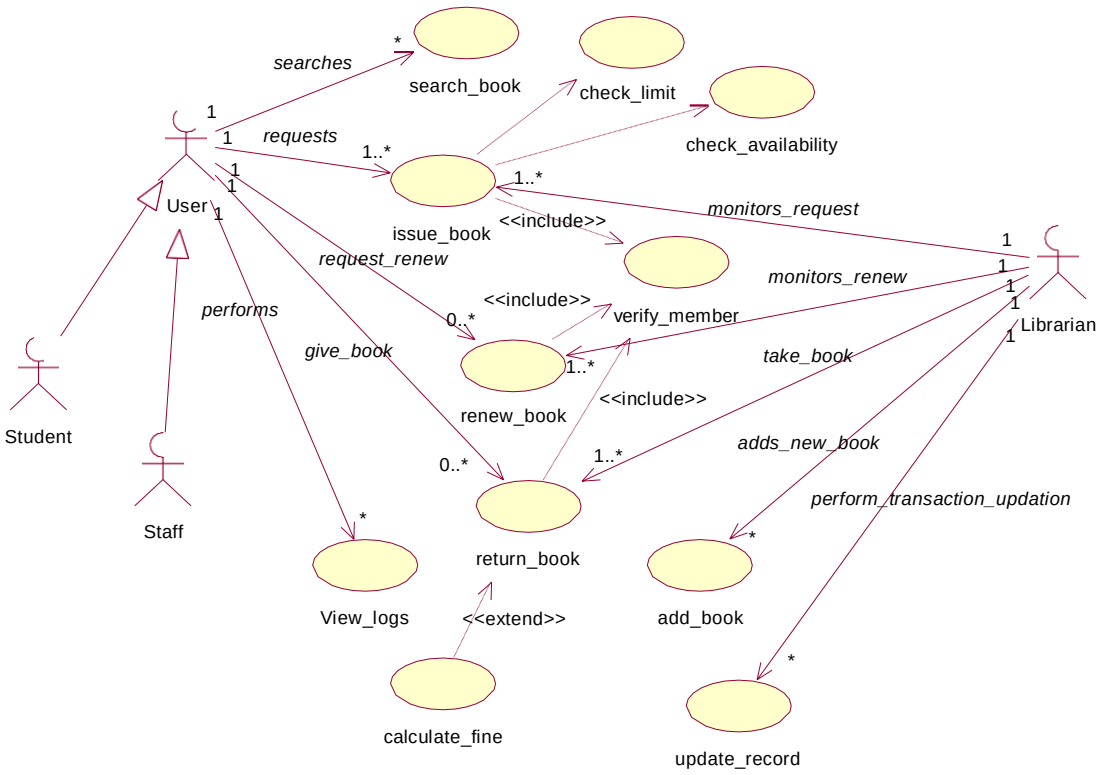
1.5 References

- Books
  - Software Requirements and Specifications: A Lexicon of Practice, Principles and Prejudices (ACM Press) by Michael Jackson
  - Software Requirements (Microsoft) Second EditionBy Karl E. Wiegers
  - Software Engineering: A Practitioner's Approach Fifth Edition By Roger S. Pressman
- Websites
  - **http://www.slideshare.net/**
  - **http://ebookily.net/doc/srs-library-management-system**

2. Overall Descriptions

2.1 Product Perspective

Use Case Diagram of Library Management System

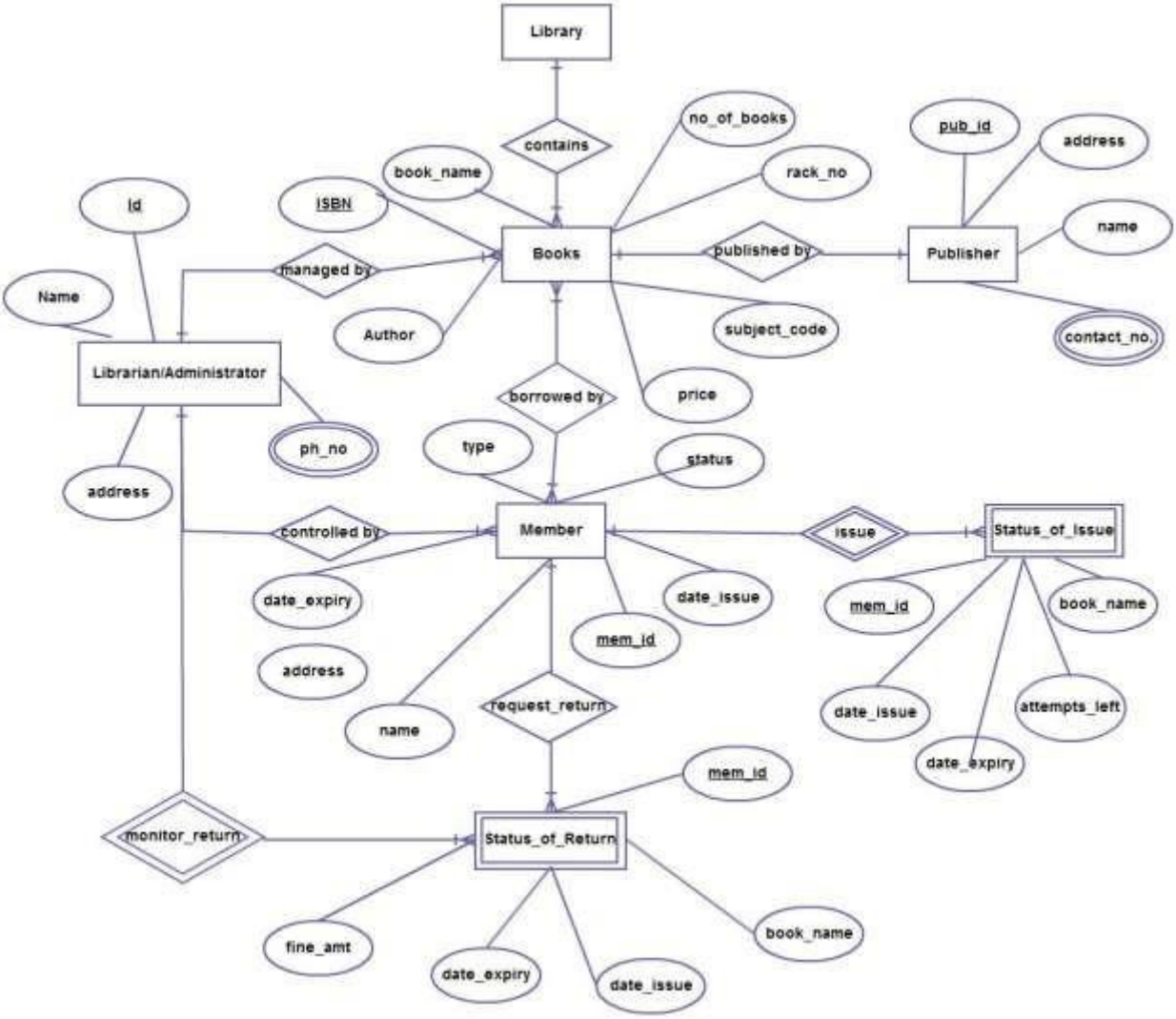


This is a broad level diagram of the project showing a basic overview. The users can be either staff or student.. This System will provide a search functionality to facilitate the search of resources. This search will be based on various categories viz. book name or the ISBN. Further the library staff personnel can add/update the resources and the resource users from the

system.The users of the system can request issue/renew/return of books for which they would have to follow certain criteria.

2.2 Product Function

Entity Relationship Diagram of Library Management System



The Online Library System provides online real time information about the books available in the Library and the user information. The main purpose of this project is to reduce the manual work. This software is capable of managing Book Issues, Returns, Calculating/Managing Fine, Generating various Reports for Record-Keeping according to end user requirements. The Librarian will act as the administrator to control members and manage books. The member's status of issue/return is maintained in the library database. The member's details can be fetched by the librarian from the database as and when required. The valid members are also allowed to view their account information.

2.3 User Classes and Characteristics

The system provides different types of services based on the type of users [Member/Librarian]. The Librarian will be acting as the controller and he will have all the privileges of an administrator. The member can be either a student or staff of the university who will be accessing the Library online.

The features that are available to the Librarian are:-

- A librarian can issue a book to the member.
- Can view the different categories of books available in the Library
- Can view the List of books available in each category
- Can take the book returned from students
- Add books and their information to the database
- Edit the information of existing books
- Can check the report of the existing books
- Can check the report of the issued books
- Can access all the accounts of the students

The features that are available to the Members are:-

- Can view the different categories of books available in the Library
- Can view the List of books available in each category
- Can own an account in the library.
- Can view the books issued to him
- Can put a request for a new book
- Can view the history of books issued to him previously
- Can search for a particular book

2.4 Operating Environment

The product will be operating in windows environment. The Recipe Recommendation System is a website and shall operate in all famous browsers, for a model we are taking Microsoft Internet Explorer, Google Chrome, and Mozilla Firefox. Also, it will be compatible with the IE 6.0. Most of the features will be compatible with the Mozilla Firefox & Opera 7.0 or higher version. The only requirement to use this online product would be the internet connection. The hardware configuration includes Hard Disk: 40 GB, Monitor: 15" Color monitor, Keyboard: 122 keys. The basic input devices required are keyboard, mouse and output devices are monitor, printer etc.

2.5 Assumptions and Dependencies

<u>The assumptions are: -</u>

- The coding should be error free
- The system should be user-friendly so that it is easy to use for the users
- The information of all users, books and libraries must be stored in a database that is accessible by the website
- The system should have more storage capacity and provide fast access to the database
- The system should provide search facility and support quick transactions
- The Recipe System is running 24 hours a day
- Users may access from any computer that has Internet browsing capabilities and an

Internet connection

- Users must have their correct usernames and passwords to enter into their online accounts and do actions

The dependencies are: -

- The specific hardware and software due to which the product will be run
- On the basis of listing requirements and specification the project will be developed and run
- The end users (admin) should have proper understanding of the product
- The system should have the general report stored
- The information of all the users must be stored in a database that is accessible by the Recipe System

2.6 Requirement

Software Configuration: -

This software package is developed using java as front end which is supported by sun microsystem. Microsoft SQL Server as the back end to store the database.
Operating System: Windows NT, windows 98, Windows XP
Language: Java Runtime Environment, Net beans 7.0.1 (front end)
Database: MS SQL Server (back end)

Hardware Configuration: -
Processor: Pentium(R)Dualcore CPU
Hard Disk: 40GB
RAM: 256 MB or more

2.7 Data Requirement

The inputs consist of the query to the database and the output consists of the solutions for the query. The output also includes the user receiving the details of their accounts. In this project the inputs will be the queries as fired by the users like create an account, selecting ingredients and viewing similar recipes. Now the output will be visible when the user requests the server to get details of their account in the form of time, date and which recipes are currently in the account.

3. External Interface Requirement

3.1 GUI

The software provides good graphical interface for the user and the administrator can operate on the system, performing the required task such as create, update, viewing the details of the recipe.

- The Recipe Recommendation System GUI should present an inviting and user-friendly interface, featuring a visually appealing layout with high-quality images of recommended dishes to engage users.
- Users should have seamless navigation through recipe categories, and the GUI must include an efficient search bar, sorting options, and filters based on dietary preferences and cooking difficulty levels for a personalized experience.
- Interactive features like a "Favorites" section, where users can save preferred recipes, and a "Recently Viewed" history contribute to a more user-centric interface.

- The GUI should include a feedback mechanism, allowing users to rate recipes, provide comments, and share their cooking experiences, fostering community interaction.

Login Interface: -
In case the user is not yet registered, he can enter the details and register to create his account. Once his account is created he can 'Login' which asks the user to type his username and password. If the user entered either his username or password incorrectly then an error message appears.

Search:-
The search option in the Recipe Recommendation System enables users to effortlessly find recipes by entering keywords or ingredients, ensuring a tailored and efficient culinary exploration. Advanced filters, including dietary preferences, enhance the precision of recipe suggestions.

Categories View:-
It offers users a structured and visually intuitive display of recipes, grouped by culinary genres or themes. This feature simplifies navigation and encourages exploration, allowing users to easily discover a variety of dishes within their preferred categories.

4. System Features

The users of the system should be provided the surety that their account is secure. This is possible by providing: -

- Personalized Recommendations: The system tailors recipe suggestions based on user preferences.
- Social Integration: Users can share, rate, and engage with recipes in a community-driven platform.
- Multimedia Guidance: Step-by-step visuals aid users in following and replicating recipes with ease.

5. Other Non-functional Requirements

5.1 Performance Requirement

The Recipe Recommendation System must demonstrate swift response times, ensuring that recipe suggestions are presented promptly to users. The backend infrastructure should handle concurrent user requests efficiently, maintaining optimal system performance even during peak usage periods.

The recommendation algorithm should be optimized to deliver accurate suggestions in real-time, considering factors such as user preferences, dietary restrictions, and trending recipes.

Additionally, the system should be scalable to accommodate potential increases in user base and evolving data volumes, guaranteeing sustained high performance as the platform grows.

5.2 Safety Requirement

Safety in the Recipe Recommendation System is paramount. User data, including personal information and culinary preferences, must be securely stored and encrypted to protect privacy. The system should adhere to industry standards for data security, implement robust authentication measures, and regularly undergo security audits to ensure a safe and trustworthy user experience.

5.3 Security Requirement

- Data Encryption: Protect user data with strong encryption methods to ensure confidentiality and integrity.
- Secure Authentication: Implement multi-factor authentication to prevent unauthorized access to user accounts.
- Regular Security Audits: Conduct frequent security audits to identify and address potential vulnerabilities.
- Access Controls: Restrict system access to authorized personnel, minimizing the risk of unauthorized alterations.
- Secure APIs: Ensure secure communication between system components through authenticated and authorized APIs..

5.4 Requirement attributes

- Reliability: The system must consistently provide accurate recipe recommendations based on user preferences and dietary restrictions.
- Scalability: It should easily adapt to accommodate a growing user base and increased data volumes without compromising performance.
- Maintainability: Regular updates and modifications should be straightforward to ensure the system's efficiency and relevance over time.
- Usability: The interface should be intuitive, enabling users to navigate and interact with the system effortlessly.

5.5 Business Rules

The Recipe Recommendation System adheres to key business rules to optimize user experience and system functionality. These rules govern factors such as user privacy, ensuring that personal data is handled with the utmost confidentiality. Additionally, the system abides by industry standards for recipe accuracy, regularly updating its database to reflect evolving culinary trends.

5.6 User Requirement

A recipe recommendation system is designed for both members and administrators, with administrators serving as the system maintainers. Members are assumed to have basic computer and internet skills, while administrators possess advanced knowledge to address technical issues.The system prioritizes a user-friendly interface, comprehensive user manual, online help, and installation/maintenance guides to ensure smooth usage.

The admin provides certain facilities to the users in the form of:-

- Backup and Recovery
- Forgot Password
- Data migration i.e. whenever user registers for the first time then the data is stored in the server
- Data replication i.e. if the data is lost in one branch, it is still stored with the server
- Auto Recovery i.e. frequently auto saving the information
- Maintaining files i.e. File Organization
- The server must be maintained regularly and it has to be updated from time to time

6. Other Requirements

6.1 Data and Category Requirement

There are different categories of users namely Firstly, ingredient data with detailed nutritional information is crucial for accurate recommendations. Recipe categories, ranging from cuisines to dietary preferences, help organize content effectively. User interaction data, including ratings and reviews, refines the system's understanding of preferences. Cooking difficulty levels and preparation time add granularity to user choices. Regular updates to the recipe database ensure freshness and relevance. Lastly, metadata like tags and keywords contribute to efficient search functionality, enhancing the overall user experience.

6.2 Appendix

A: Admin, Abbreviation, Acronym, Assumptions; B: Books, Business rules; C: Class, Client, Conventions; D: Data requirement, Dependencies; G: GUI; K: Key; M: Member; N: Non-functional Requirement; O: Operating environment; P: Performance, Perspective,Purpose; R: Requirement, Requirement attributes; S: Safety, Scope, Security, System features; U: User, User class and characteristics, User requirement;

6.3 Glossary

The following are the list of conventions and acronyms used in this document and the project as well:

- Administrator: A login id representing a user with user administration privileges to the software
- User: A general login id assigned to most users
- Client: Intended users for the software
- SQL: Structured Query Language; used to retrieve information from a database
- SQL Server: A server used to store data in an organized format
- Layer: Represents a section of the project
- User Interface Layer: The section of the assignment referring to what the user interacts with directly
- Application Logic Layer: The section of the assignment referring to the Web Server. This is where all computations are completed
- Data Storage Layer: The section of the assignment referring to where all data is recorded
- Use Case: A broad level diagram of the project showing a basic overview
- Class diagram: It is a type of static structure diagram that describes the structure of a system by showing the system's cases, their attributes, and the relationships between the classes
- Interface: Something used to communicate across different mediums
- Unique Key: Used to differentiate entries in a database

6.4 Class Diagram

A class is an abstract, user-defined description of a type of data. It identifies the attributes of the data and the operations that can be performed on instances (i.e. objects) of the data. A class of data has a name, a set of attributes that describes its characteristics, and a set of operations that can be performed on the objects of that class. The classes' structure and their relationships to each other frozen in time represent the static model. In this project there are certain main classes

which are related to other classes required for their working. There are different kinds of relationships between the classes as shown in the diagram like normal association, aggregation, and generalization. The relationships are depicted using a role name and multiplicities. Here 'Librarian', 'Member' and 'Books' are the most important classes which are related to other classes.