

# Fundamentals of Software Engineering

## Project Title: CuisineCraft ERP

**Subtitle:** Restaurant Enterprise Resource Planning, Desktop Application

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**Deliverable Number:** 4

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## **1. Introduction:**

Cuisine Craft ERP aims to develop a comprehensive desktop application for managing various aspects of restaurant operations. This system will streamline processes related to Customers, Finances, Human Resource, and various other essential functions in a restaurant setting. Deliverable 3 focuses on the modules of the application, including Cuisine Search, Finance Records, and Human Resource.

## **2. User Stories:**

- **Login and Signup:**

- As a user, I want to be able to create an account and log into the application using my credentials.
  - Sub-User Stories:
    - User should be able to select a username and password for his account.
    - User should be able to enter their username and password.
    - System should verify the entered credentials against the database.
    - User should receive appropriate feedback for successful or failed login attempts.
- And I know I am done when I will be able to login into this application with my unique credentials.

- **Home:**

- As a user, I want to have a central dashboard displaying key information and functionalities.
  - Sub-User Stories:
    - User should be greeted with a welcome message upon successful login.
    - Dashboard should display relevant statistics such as sales figures, orders etc.
    - Navigation options to other modules should be easily accessible.
- And I know I am done when I can have a bird eye view of my Resturant.

- **Customer Response Manangement:**

- As a restaurant manager, I want to efficiently manage customer relationships and feedback.
  - Sub-User Stories:
    - Ability to create and view customer profiles with details such as name, contact information, etc.
    - Record customer visits and associated details like date, time, and order.
    - Capture customer feedback and suggestions for improvement.
    - Implement a loyalty program to reward frequent customers.
  - And I know I am done when I can save the information of my customers and I have a data that shows the feedbacks provided by my customers.

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- **Inventory:**

- As a restaurant staff member, I want to manage stock items and track inventory levels.
  - Sub-User Stories:
    - Maintain a catalog of stock items with details like name, quantity, and unit price.
    - Record purchases of stock items including supplier information and quantities.
    - Generate alerts for low stock levels to facilitate timely reordering.
  - And I know I am done when I can update my inventory and gets the list of low stock items on a single click.

- **Menu:**

- As a restaurant manager, I want to maintain a comprehensive food menu with a variety of different cuisines.
  - Sub-User Stories:
    - View current menu
    - Ability to add a new menu item to the system.
    - Ability to update the information of an existing menu item.
    - Ability to delete a menu item from the system.

- And I know I am done when I can perform the CRUD operation on menu.

- **Orders:**

- As a restaurant manager, I want to effectively manage all the orders, online and dine in orders from the customers.
  - Sub-User Stories:
    - View all the orders, completed and pending
    - Add a new order with details such as items, quantity, price, and category.
    - Update order information such as status.
    - Delete an order from the system
- And I know I am done when I can perform these operations on the orders.

- **Tables:**

- As a restaurant manager, I want to efficiently manage the tables in my restaurant.
  - Sub-User Stories:
    - Ability to create and view tables with details such as number of persons, category, reservation date and time, etc.
    - Record reservation date, time, and associated details like order description.
    - Update table information of existing tables.
    - Delete an existing table.
- And I know I am done when I can save the information of my tables and I have a data that shows the details of all the tables.

- **Cuisine Search:**

- As a restaurant manager, I want to efficiently search for the menu items instead of manually looking for them in the complete menu.
  - Sub-User Stories:
    - View Dish you searched for
    - Ability to search for a dish by uploading its picture.
    - Ability to search for an existing dish by typing its name in the search box.
- And I know I am done when I can efficiently manage the cuisine searching and operational productivity.

- **Financial Records:**

- As a restaurant manager, I want to effectively manage all the financial records including reports, transactions, payments etc.
  - Sub-User Stories:
    - View all the reports about annual, monthly finance, statements of cash flow and Income statement.
    - Add a new transaction with details such as id, title, amount, and type along with description.
    - Update transaction information .
    - Delete a transaction from the system
    - Similarly Add and delete payments.
    - You can add, view or delete invoices generated for you.
    - Use forecasting features to predict future sales based on historical data.
    - Lastly, you can see the monthly expenses of your restaurant.
- And I know I am done when I can perform these operations on the financial records.

- **Human Resources:**

- As a restaurant manager, I want to efficiently manage the human resources in my restaurant.
  - Sub-User Stories:
    - Ability to add, update and delete employees with details such as employeeID, name, age and salary etc.
    - Record the performance of employees by adding, updating or deleting its records. This feature is helpful in promotion, bonus management.
    - Mark the attendance of the employees with details such as employeeID, Date and Day, Attendance Status etc.
    - After marking the attendance record their work hours by adding ,updating or deleting their details including EntryTime, BreakHours, TotalHours worked etc.
    - Similarly you can add, delete or update the PayrollJournal of the employees to identify the transactions.

- Recruitment feature will help you to manage the data of hiring new employees for the job with their Salary, Job Title and Deadline details.
- And I know I am done when I can save the information of employees on human resources and calculate their servings.

### **3. Structured Specifications:**

- **Cuisine Search:**

- Specification: Cuisine Search by image
    - Description: This is used to search a restaurant menu item by uploading its picture.
  - Specification: Cuisine Search by name
    - Description: This is used to search the restaurant dish by simply typing its name in a search bar making it more efficient to manage the dishes.

- **Financial Records:**

Specification: Record Reports

- Description: All financial reports, annual and monthly, will be recorded and maintained in a relational database.

Specification: Manage Transactions Data

- Description: Add, Update, or Delete the status of the transactions performed.

Specification: Manage Payments Data

- Description: Add, Update or Delete the status of a payment received or sent in a relational database.

Specification: Manage Invoice Data

- Description: Handling the creation, tracking, and processing of invoices for various expenses incurred by the restaurant.

Specification: Provides Forecasting of Data

- Description: For predicting future sales, it utilizes historical sales data and gives the predicted result.

Specification: Provides Expense tracking of Data

- Description: The system captures and organizes various expenses incurred by the restaurant.

- **Human Resources:**

- Specification: Record Employees Data

- Description: All the employees data will be recorded and maintained properly in a database with functionalities like Add Employee, Update Employee, Delete Employee with their details.

- Specification: Records Employees Performance

- Description: Keeps the track of their performance by adding, deleting or updating their records with the details like EmployeeID, Rank, Promotion Status.

- Specification: Timecard Feature

- Description: Records the total working hours of each Employee by recording its start time and end time along with the total hours worked by him in a database

- Specification: Payroll Journal

- Description: This system accepts inputs related to payroll transactions, including employee identification, earnings, taxes, and other deductions.

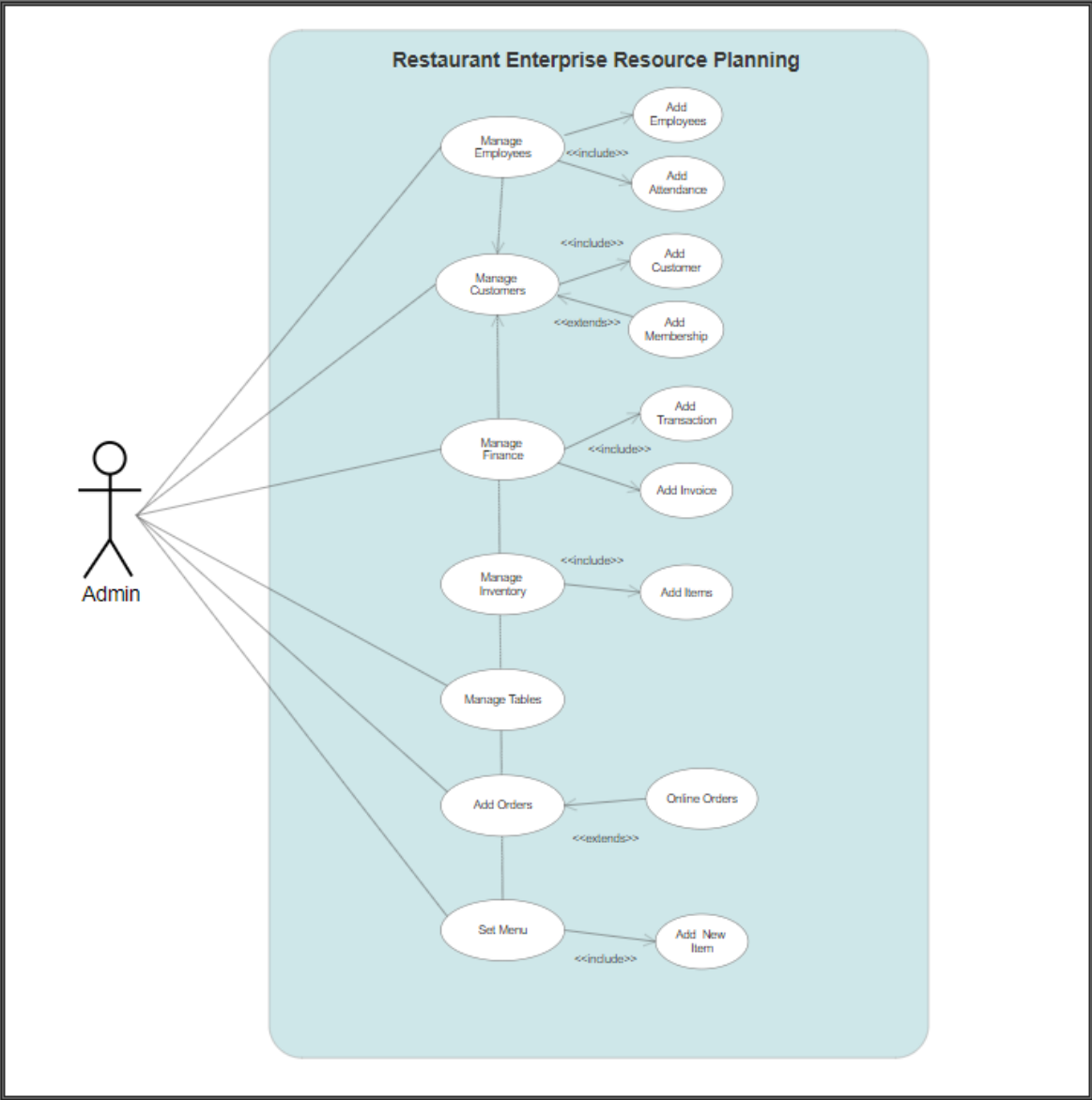
- Specification: Employee Attendance

- Description: This feature is built to keep the record of the employees working days by marking their attendance on a daily basis.
- Specification: Recruitments
  - Description: It manages the hiring process, improves candidate experience, and ensures the restaurant has the right talent to meet its operational needs.

#### **4. Design (Diagrams):**

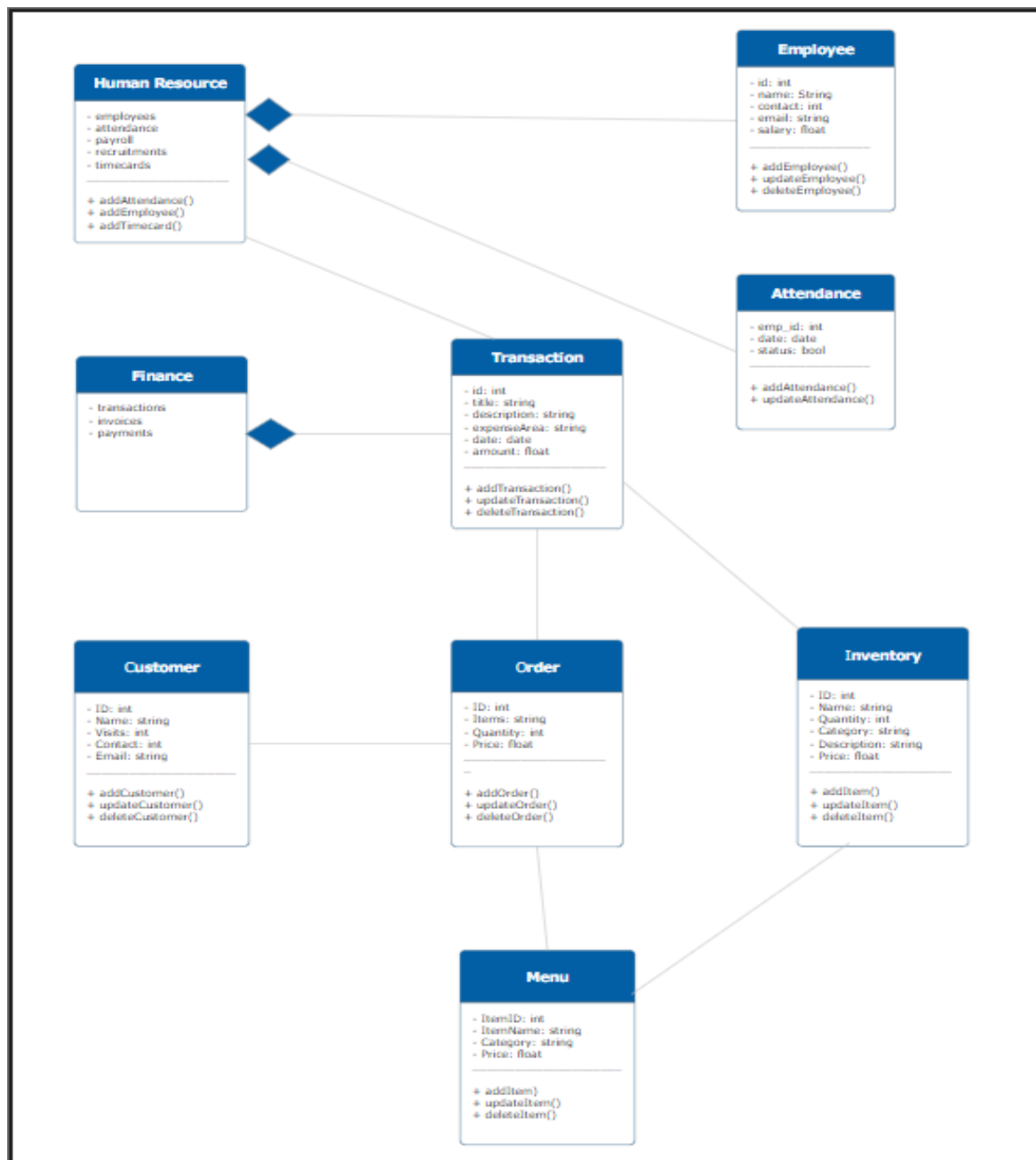
- Use Case Diagram:



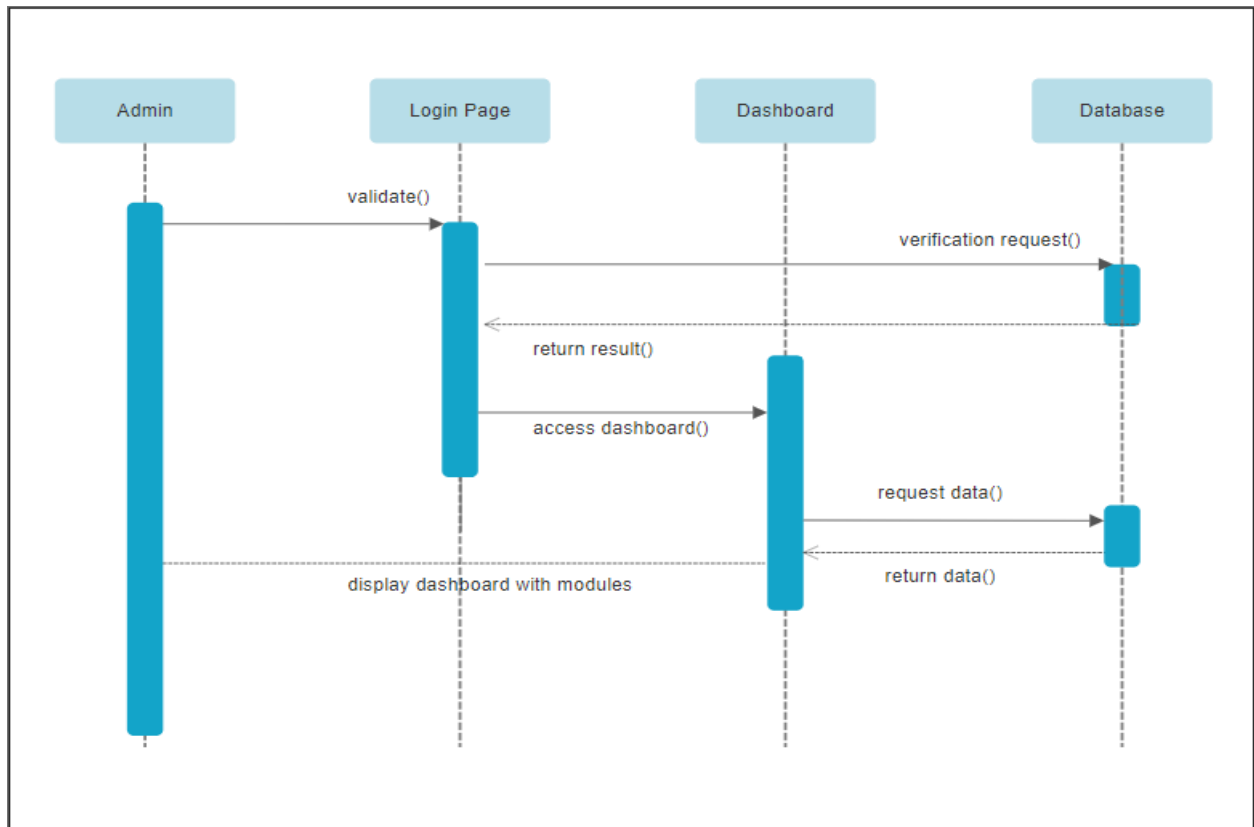




- Class Diagram:

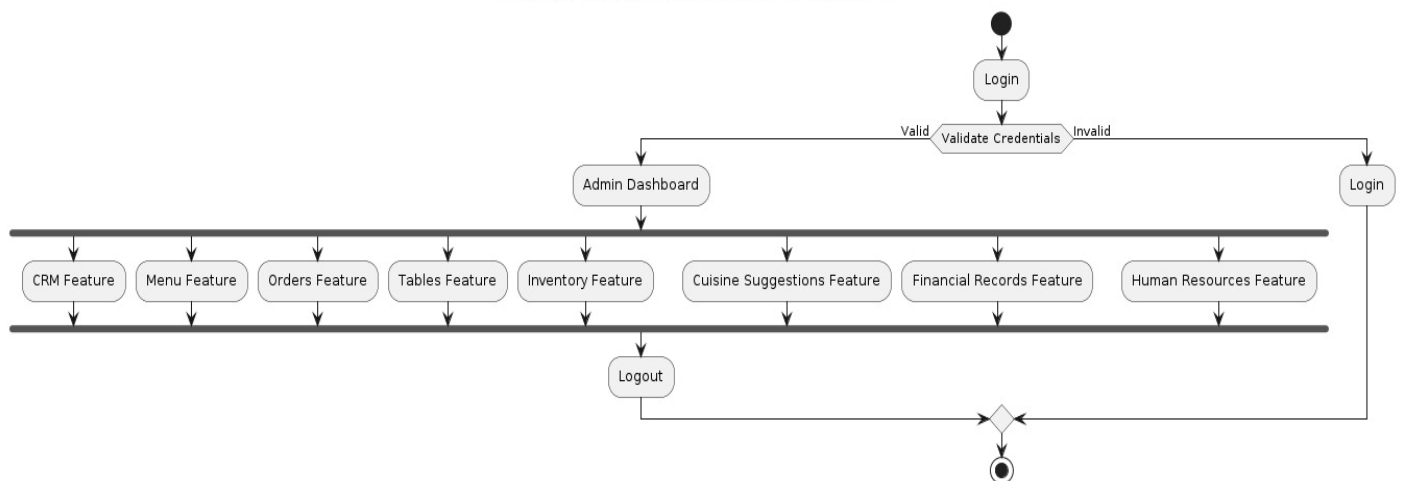


➤ Sequence Diagram:



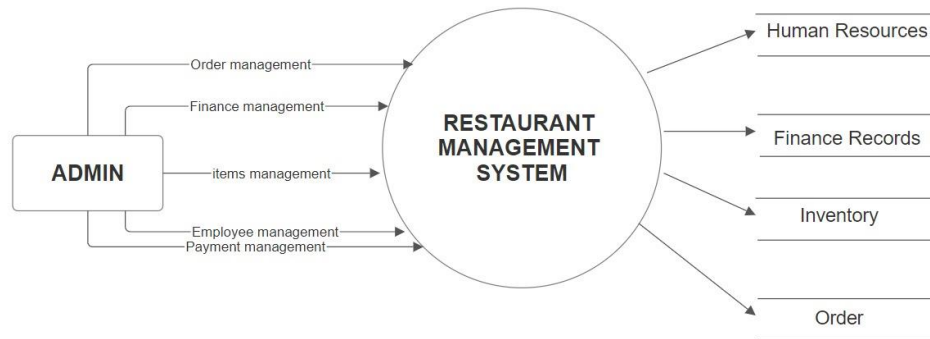
• Activity Diagram:

Activity Diagram for Restaurant Admin Features

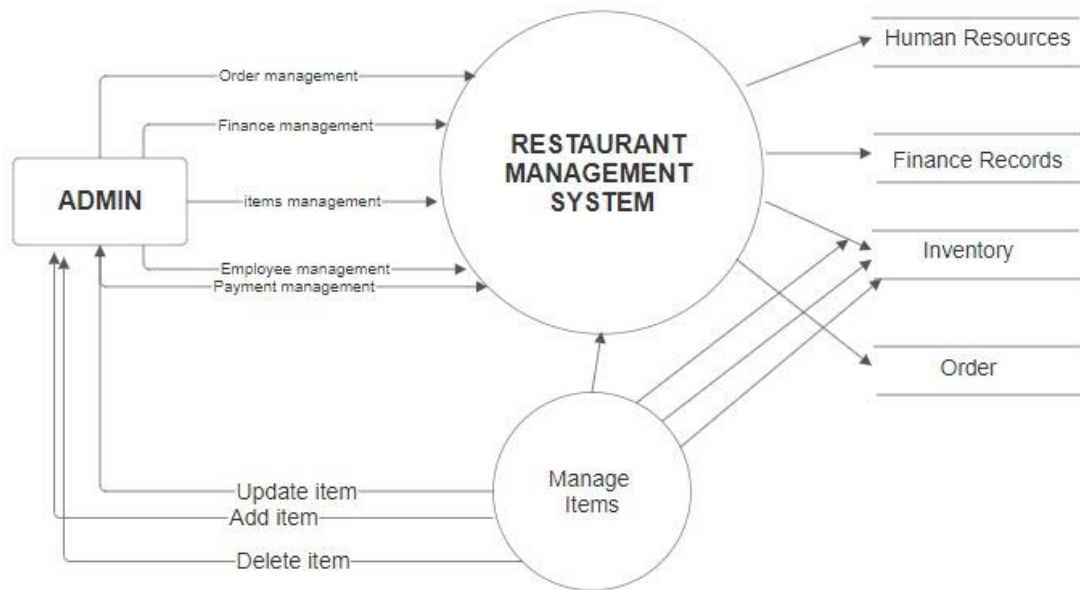


- Data Flow Diagrams:

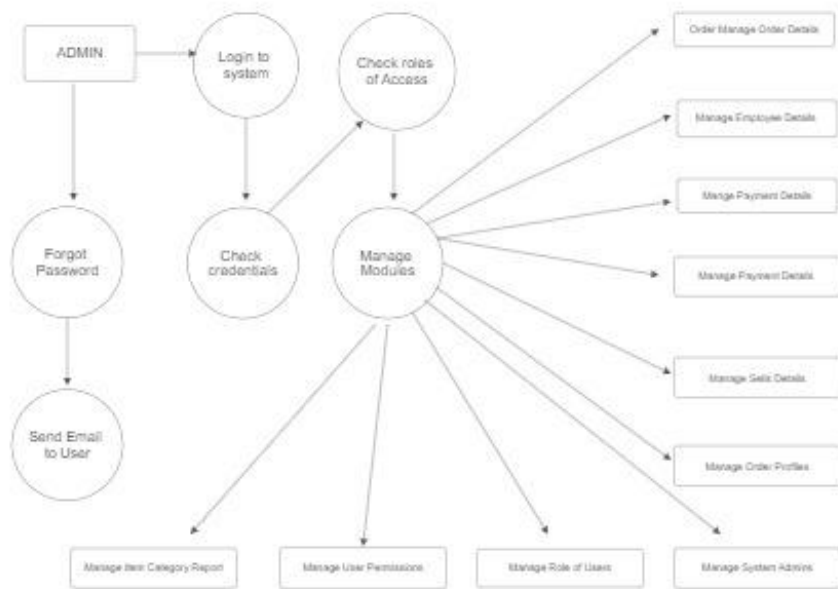
Level 0:



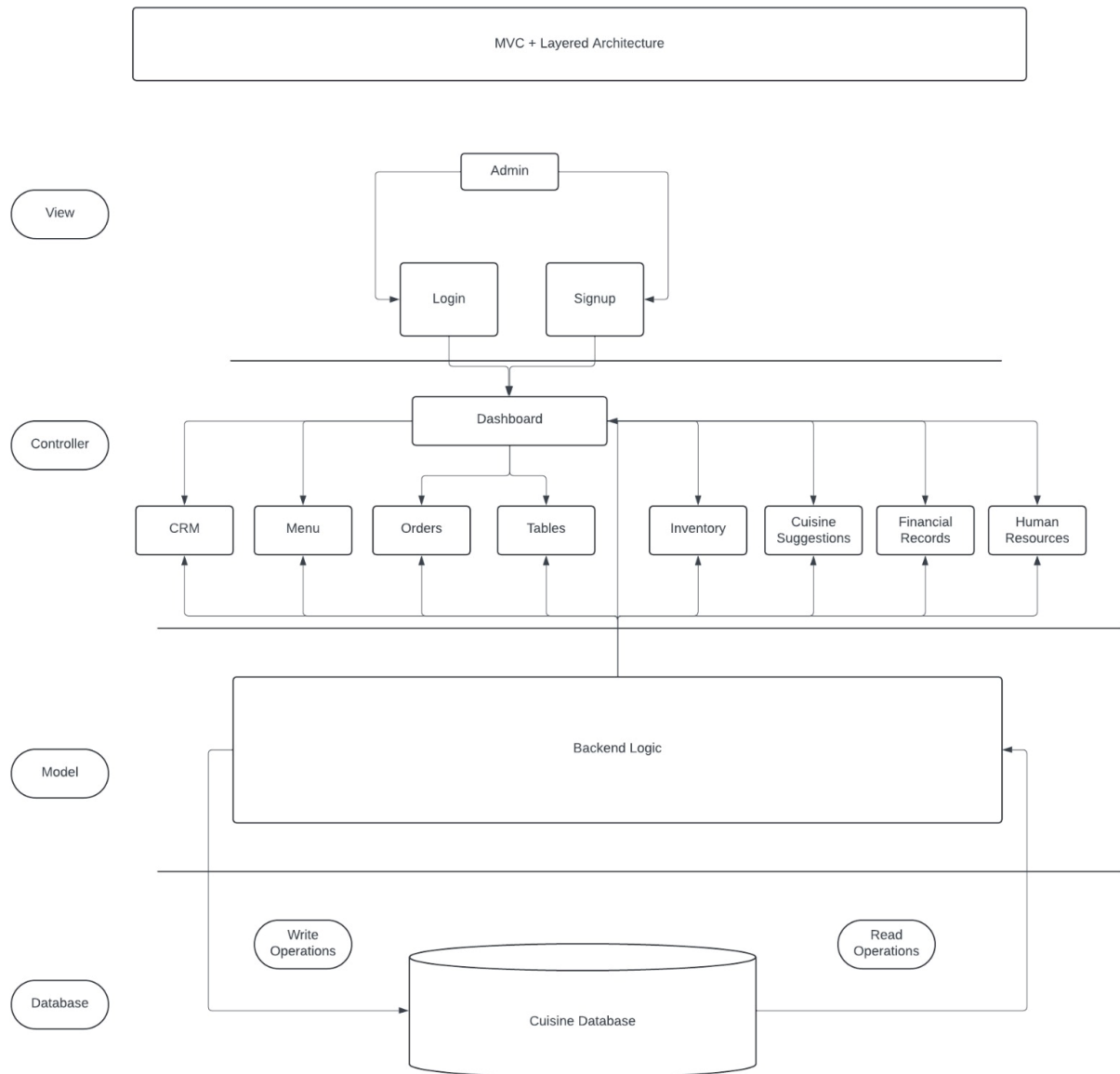
Level 1:



Level2:

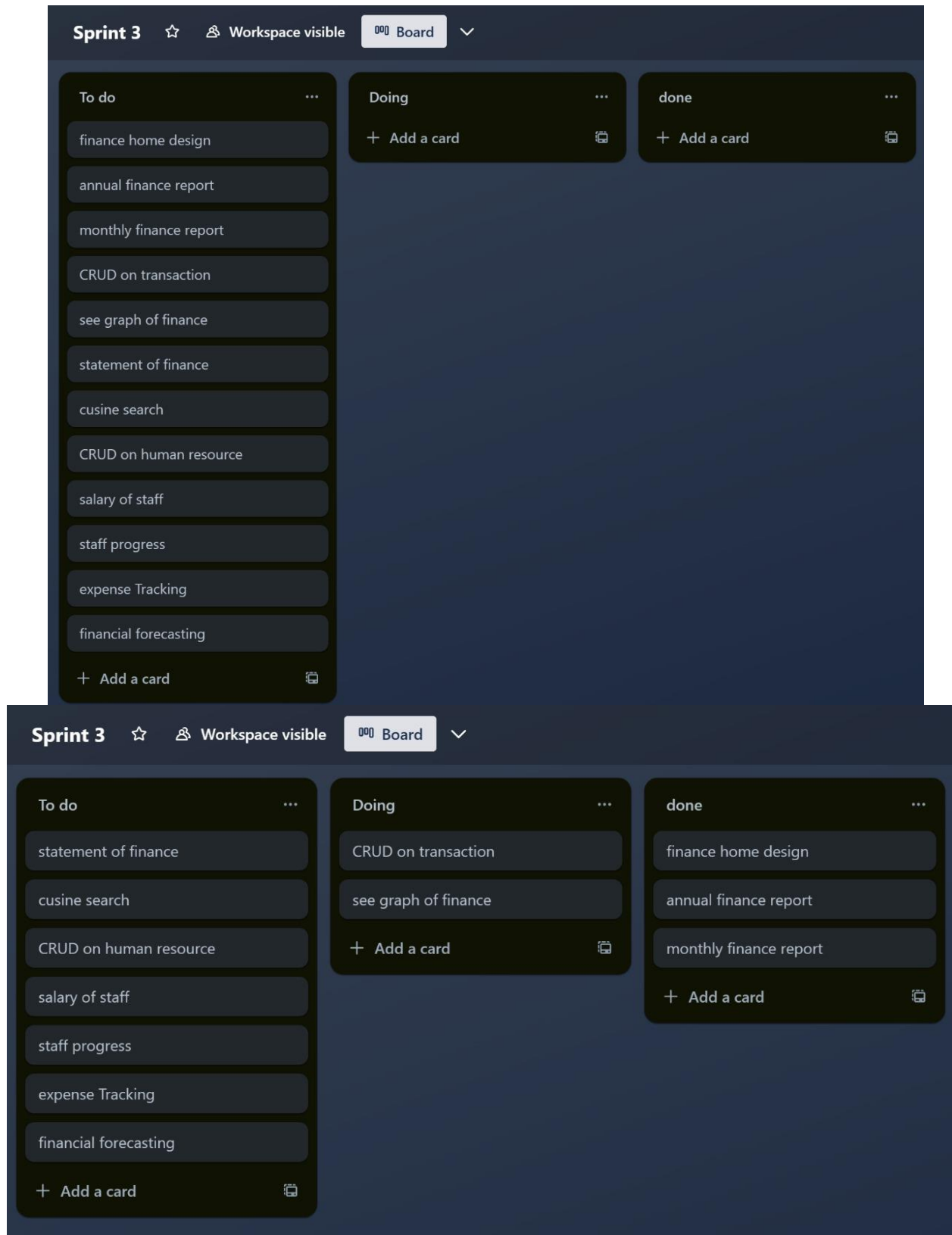


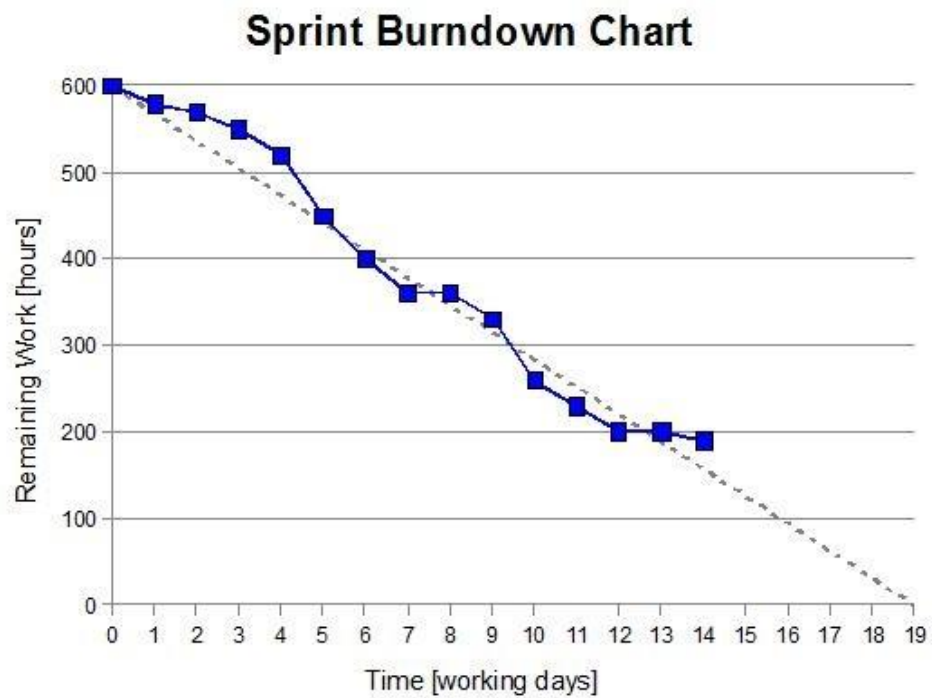
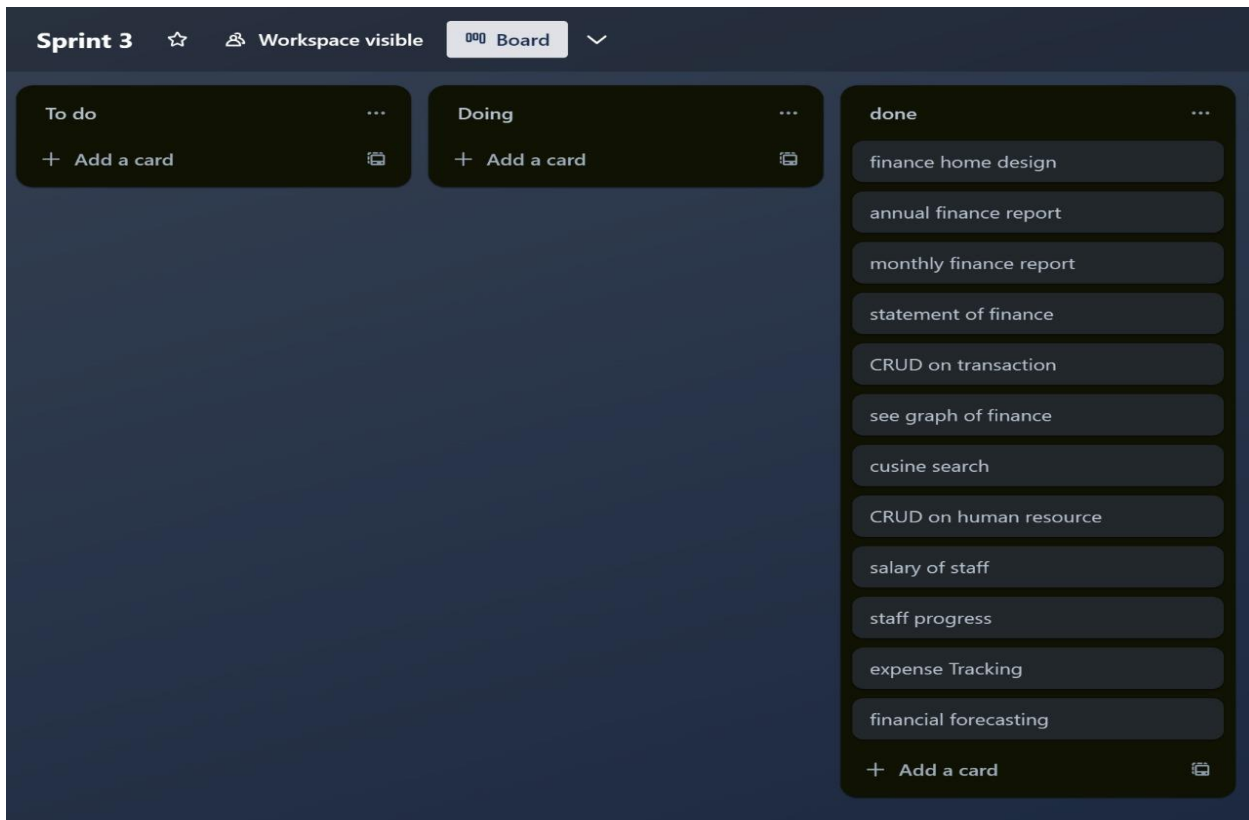
## 5. Architecture:





## 6.Scrum Board:

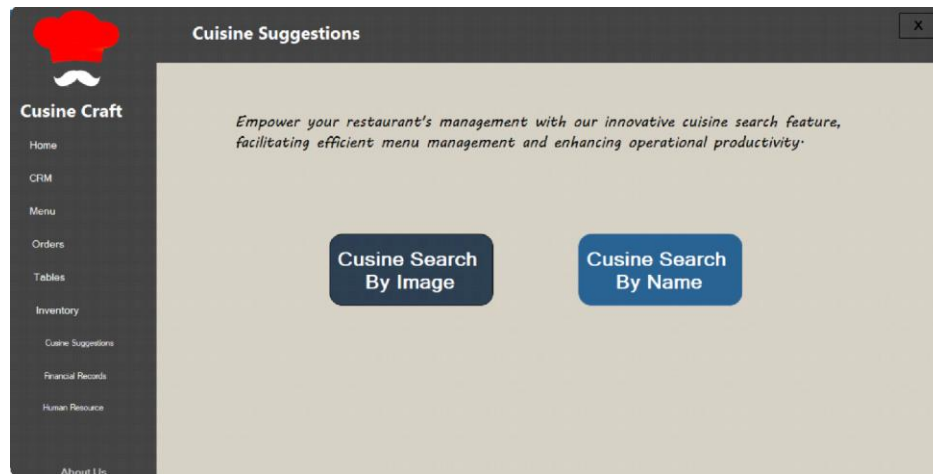


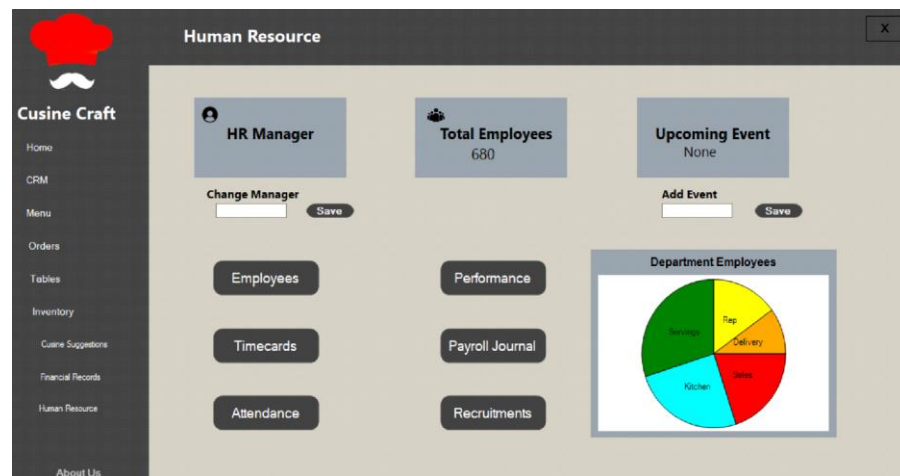
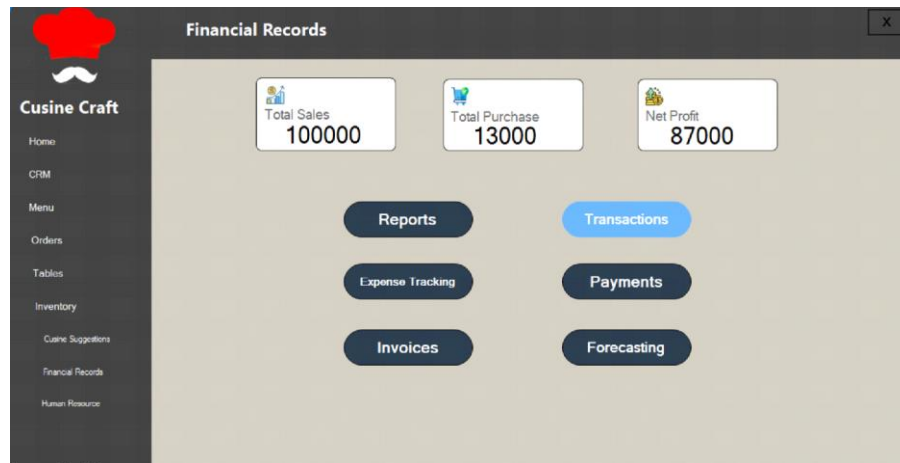


## 7. NFR Specification:

- **Performance:** The system should perform efficiently without delays in displaying data or performing operations.
- **Security:** User authentication and authorization should be implemented using UserName and Password verification.
- **Usability:** The user interface should be intuitive and easy to navigate, requiring minimal training for new users.
- **Reliability:** The system should have a system uptime of at least 99.9% and it should be capable of data recovery from unexpected failures.
- **Maintainability:** The codebase should follow coding standards and best practices to facilitate easy maintenance and future enhancements.

## 8. Iteration 3 Implementation Screenshots:





## 9. Boundary Value Analysis Testing:

On the login page of our application, we perform the boundary value testing. This includes different test case values mentioned as follows:

a. Entering only username or password or none of them while registering or logging in:

The application will display the error prompt asking the user to enter complete information.

b. Entering wrong username or password on the login page:

The application will display the error prompt asking the user to enter correct information.

c. Entering all lower case or upper case values in username or password:

The application checks for the correct match in database considering the case sensitivity. If values are same but with different case, application will prompt the wrong value error.

d. Entering correct value for username and password:

The application will match the values with database. Once the match is found, it will proceed and load the dashboard for the admin.

## **10. Work Division:**

- Cuisine Search: Bilal
- Financial Records: Bilal
- Human Resource: Abdullah
- Documentation: Shahzad and Hashir

## **11. Lessons learnt:**

- Experienced a wonderful environment of teamwork and collaboration.
- Skills enhancement by learning C# programming language and desktop application development.
- Workflow management by distributing the tasks according to the prescribed iterations/deliverables.
- Professional work ethic by collaborating through Github and maintaining a proper repository
- Understanding the essence of software engineering concepts and how they allow to upgrade the development process on a larger scale