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FACULTY OF ENGINEERING
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Cooking Community Platform: CookUP Application

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ABSTRACT

The CookUp platform is a dynamic cooking community designed to streamline the process of recipe discovery, sharing, and engagement. Aimed at individuals seeking culinary inspiration or looking to share their favorite recipes with others, CookUp offers a user-friendly interface accessible via web browsers. The platform caters to three main user roles: Contributors, Explorers, and Moderators.

Contributors are empowered to upload their recipes, complete with detailed ingredients, instructions, images, and optional tags, fostering a collaborative environment. Explorers can browse, search, and bookmark recipes uploaded by others, facilitating a diverse culinary experience. Moderators play a crucial role in maintaining community standards, ensuring the quality and integrity of content through oversight and moderation. With its intuitive design and robust features, CookUp fosters a vibrant cooking community where users can explore, create, and connect over their shared love of food.

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1. INTRODUCTION

1.1. Description of the Problem

- The culinary world is vast and diverse, with countless recipes waiting to be discovered and shared. However, many individuals face challenges when it comes to deciding what to cook or finding new recipes that suit their tastes and preferences. The abundance of options often leads to indecision and uncertainty, hindering users' ability to confidently embark on their cooking endeavors. Additionally, while there is a wealth of cooking resources available online, the process of searching for specific recipes or discovering new ones can be time-consuming and overwhelming.
- One notable platform is Allrecipes, a popular website and app that allows users to browse, upload, and rate recipes. Allrecipes boasts a vast collection of user-generated recipes, along with helpful features such as ingredient search, meal planning tools, and user reviews. Similarly, platforms like Food Network and Epicurious offer curated collections of recipes from professional chefs and culinary experts, catering to a diverse range of tastes and preferences.
- On the social media front, platforms like Pinterest and Instagram have become popular destinations for recipe sharing and discovery. Users can easily save and share recipes with their followers, creating a visually engaging experience that encourages exploration and experimentation in the kitchen.
- While these existing solutions provide valuable resources for recipe enthusiasts, CookUp aims to differentiate itself by focusing on simplicity, community engagement, and user empowerment. By offering a streamlined interface and intuitive features tailored specifically for recipe discovery and sharing, CookUp aims to provide a more cohesive and user-friendly experience for individuals seeking culinary inspiration.
- A comparative evaluation of existing solutions/products in the recipe discovery and sharing space reveals key differences in terms of features, user experience, and community engagement.
 - **Allrecipes:** Offers a vast collection of user-generated recipes, with features like ingredient search and meal planning tools. However, the interface can be cluttered, and the quality of recipes varies widely.
 - **Instagram:** Offer visually engaging platforms for recipe sharing and discovery, with a strong emphasis on aesthetics. However, the lack of structured organization and search functionality can make it challenging to find specific recipes.

1.2. Project Goal

The primary goal of the project is to develop a software product, specifically a web-based platform called CookUp, aimed at facilitating recipe discovery, sharing, and community engagement. CookUp will serve as a comprehensive solution to address the challenges individuals face when deciding what to cook or finding new recipes that suit their tastes and preferences.

1.3. Project Output

The output of this project is a software product in the form of a web-based platform called CookUp. CookUp will serve as a comprehensive solution for recipe discovery, sharing, and community engagement.

Key features and deliverables of the CookUp software product include:

User Interface: A user-friendly web interface accessible via web browsers, providing intuitive navigation and seamless interaction for users.

Recipe Discovery Features: Implement intuitive search and browsing functionalities, including keyword search, tags, categories, and sorting options, to help users quickly discover new recipes.

Recipe Sharing Functionality: Develop upload forms with customizable fields for contributors to share their favorite recipes with the community. Allow users to upload detailed recipes, including ingredients, instructions, images, and optional tags.

Community Engagement Tools: Implement features such as comments, ratings, and user profiles to foster engagement and interaction among users. Enable users to connect, interact, and collaborate with others who share their culinary interests.

In summary, the project output consists of a fully functional software product, CookUp, designed to facilitate recipe discovery, sharing, and community engagement, with a focus on usability, reliability, and quality.

2. REQUIREMENTS

2.1. Functional Requirements

Functional requirements outline the specific features and capabilities that the CookUp platform must possess to meet the needs of its users. These requirements focus on the functional aspects of the software product, describing what it should do. Below are the functional requirements for CookUp:

1. **User Registration and Authentication:**
 - Users should be able to create accounts and log in securely to access the platform.
 - Authentication mechanisms such as email verification or password reset should be implemented for security purposes.
2. **Recipe Upload:**
 - Contributors should have the ability to upload their own recipes to the platform.
 - Upload forms should include fields for recipe title, ingredients, instructions, food item description, images, and optional tags.
3. **Recipe Discovery:**
 - Users should be able to search for recipes by keywords, ingredients, or categories.
 - Browsing functionalities such as sorting options, filtering by dietary preferences, and exploring trending or featured recipes should be provided.
4. **Recipe Details:**

- Individual pages for each recipe should display detailed information such as ingredients, instructions, images, descriptions, comments, and ratings.
 - Users should be able to bookmark or save their favorite recipes for future reference.
5. **Community Interaction:**
 - Users should be able to leave comments on recipes to share feedback, tips, or variations.
 - Rating systems should allow users to rate recipes based on their experience and satisfaction.
 6. **User Profiles:**
 - Each user should have a profile page where they can manage their uploaded recipes, view their activity history, and interact with other users.
 - Features such as following other users, messaging, and notifications should be provided to facilitate user engagement and networking.
 7. **Content Moderation:**
 - Moderators should have the ability to review and approve uploaded content, ensuring compliance with community guidelines and standards.
 - Dispute resolution mechanisms should be in place to handle conflicts or reported violations effectively.
 8. **Accessibility and Usability:**
 - The platform should be designed with accessibility in mind, ensuring that all users, including those with disabilities, can navigate and interact with the interface easily.
 - User experience should be intuitive and user-friendly, with clear navigation paths and responsive design across different devices and screen sizes.

These functional requirements form the foundation of the CookUp platform, guiding its development to create a robust and user-centric solution for recipe discovery, sharing, and community engagement.

2.1.1 Main User Interface and Functions

1. Discover New Recipes: Explore a variety of recipes uploaded by our community members.
2. Share Your Recipes: Upload your own recipes to share with the CookUp community.
3. Search for Recipes: Find specific recipes by keywords, ingredients, or categories.
4. View Your Profile: Manage your uploaded recipes, activity history, and interactions with other users.
5. Community Engagement: Leave comments, rate recipes, and connect with other cooking enthusiasts.
6. Moderation Tools: Access tools for content moderation, dispute resolution, and community management.
7. Help and Support: Get assistance with using the platform, reporting issues, or contacting support.
- 8.

Each function listed above is a link to the corresponding web page or feature within the CookUp platform. Users can navigate the platform easily using this main menu, accessing the functionalities they need to discover, share, and engage with recipes and other users in the community.

2.1.2. Function 1: Enter Registration Information

To register for the conference, participants will need to fill out the following form. Fields marked with a * are mandatory, and a message will be displayed to remind users of this requirement.

Fields:

- Lastname*
- Name*
- Email*
- Password*
- Job Function
- Office Phone
- GSM Phone
- Address Line 1
- Address Line 2
- Address City
- Address Country (select from a menu of all countries)
- Payment Due
- Payment Status
- Comments (Free info field)

Buttons:

- SUBMIT
- CANCEL

Upon submission of the form, if all mandatory fields are filled and valid, an email will be sent to the participant's email address with a web link and a random character string. A confirmation message will be displayed on the screen:

"An email has been sent to your email address. Please confirm your registration in conference ZZZZZZ by activating the web link. Thank you."

The participant must confirm their registration within 24 hours by clicking the web link in the email.

If the confirmation is successful, the entered data will be stored in the conference database, and the following message will be displayed to the participant:

"You are registered as participant number dddd in conference ZZZZZZ. Thank you."

Buttons:

- Return to Main Menu

Entries not confirmed within 24 hours will be discarded. Duplicate email entries will not be allowed.

The date and time of registration will be recorded in the database in the format yyyyymmdd-hhm.

2.1.3 Function 2: Update Registration Information

To update registration information, participants will need to fill out a form with their email and password. The following information will be required:

Fields:

- Email*
- Password*

Buttons:

- SHOW MY REGISTRATION INFO
- CANCEL
- I FORGOT MY PASSWORD

Upon correct entry of the email and password, participants can choose to display their registration information by clicking the SHOW MY REGISTRATION INFO button. The displayed information will include all fields from Function 1, including the user registration number, date and time.

Participants can then update any field, except for payment due, payment status, and registration date/time fields, and resubmit the form to update information in the database.

Password changes can also be made through this function.

Buttons on the update screen:

- UPDATE
- CANCEL

A proper message will be displayed to the user to confirm the update, similar to Function 1. If a participant has forgotten their password, they can click the I FORGOT MY PASSWORD button. The password will be mailed to the user's first entered email address (not the address entered on the update screen). If the user has forgotten their initial email address, there is no chance they will retrieve the password.

2.1.4 Function 3: List Names and Organizations of All Conference Participants

To list the names and organizations of all conference participants, users can access this function from the main menu. Upon selecting this function, the system will display a list of all registered participants along with their respective names and organizations.

This function does not require any user input. Instead, it provides users with valuable information about the attendees of the conference, facilitating networking and collaboration among participants.

The list will be presented in a clear and organized format, allowing users to easily browse through the names and organizations of all conference attendees.

Buttons:

- RETURN TO MAIN MENU: Allows users to navigate back to the main menu after viewing the list of conference participants.

2.2. Non-Functional Requirements

Non-functional requirements specify the quality attributes or constraints that the CookUp platform must adhere to. These requirements focus on aspects such as performance, security, usability, and scalability. Below are the non-functional requirements for CookUp:

1. Security:

- User data, including personal information and login credentials, should be stored securely and encrypted to protect against unauthorized access.

- Secure authentication mechanisms, such as password hashing and multi-factor authentication, should be implemented to safeguard user accounts.
 - Data transmission between the client and server should be encrypted using HTTPS to prevent interception and eavesdropping.
2. Usability:
 - The user interface should be intuitive, with clear navigation paths and consistent design elements across all pages.
 - Accessibility features should be implemented to ensure that the platform is usable by individuals with disabilities.
 - Error messages and prompts should be informative and user-friendly, guiding users in resolving issues or completing tasks.
 3. Multiple Language Support:
 - Providing support for multiple languages enhances accessibility and usability for users from diverse linguistic backgrounds.
 - Implementing language support through a dictionary file simplifies maintenance and ensures consistency in language translations across the application.

2.2.1 Non functional Requirement 1 Usability

The CookUp platform must prioritize usability to ensure a seamless and intuitive user experience for all users, including contributors, explorers, and moderators.

2.2.2 Non functional Requirement 2 Security

All client-server operations through the internet will be conducted using SSL (Secure Sockets Layer) to ensure data confidentiality and integrity.

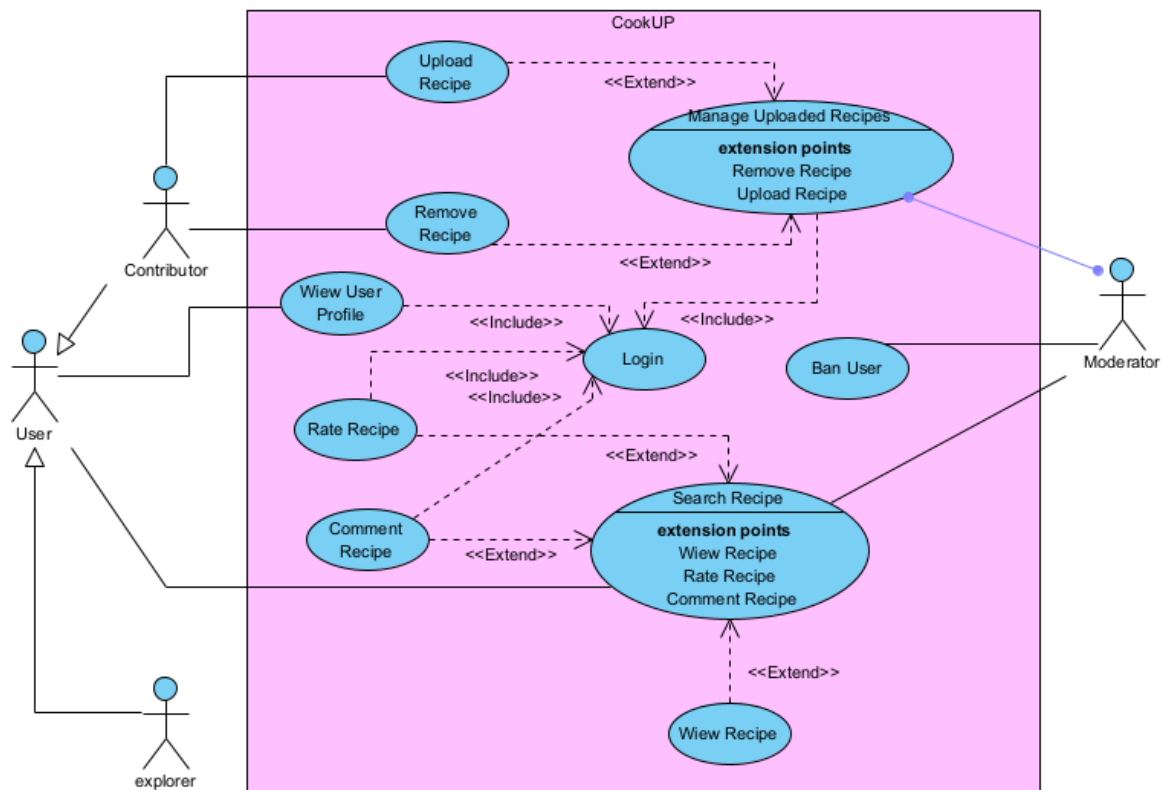
Sensitive information regarding the conference, such as user credentials, personal details, and payment information, must be stored in encrypted form to prevent unauthorized access by system administrators or any other unauthorized individuals.

2.2.3 Non functional Requirement 3 Multiple Language Support

The conference web application must be capable of supporting multiple languages. However, this support will not be dynamic, meaning users, participants, and administrators cannot select the language they prefer. Instead, language support will be provided by a dictionary file during application installation.

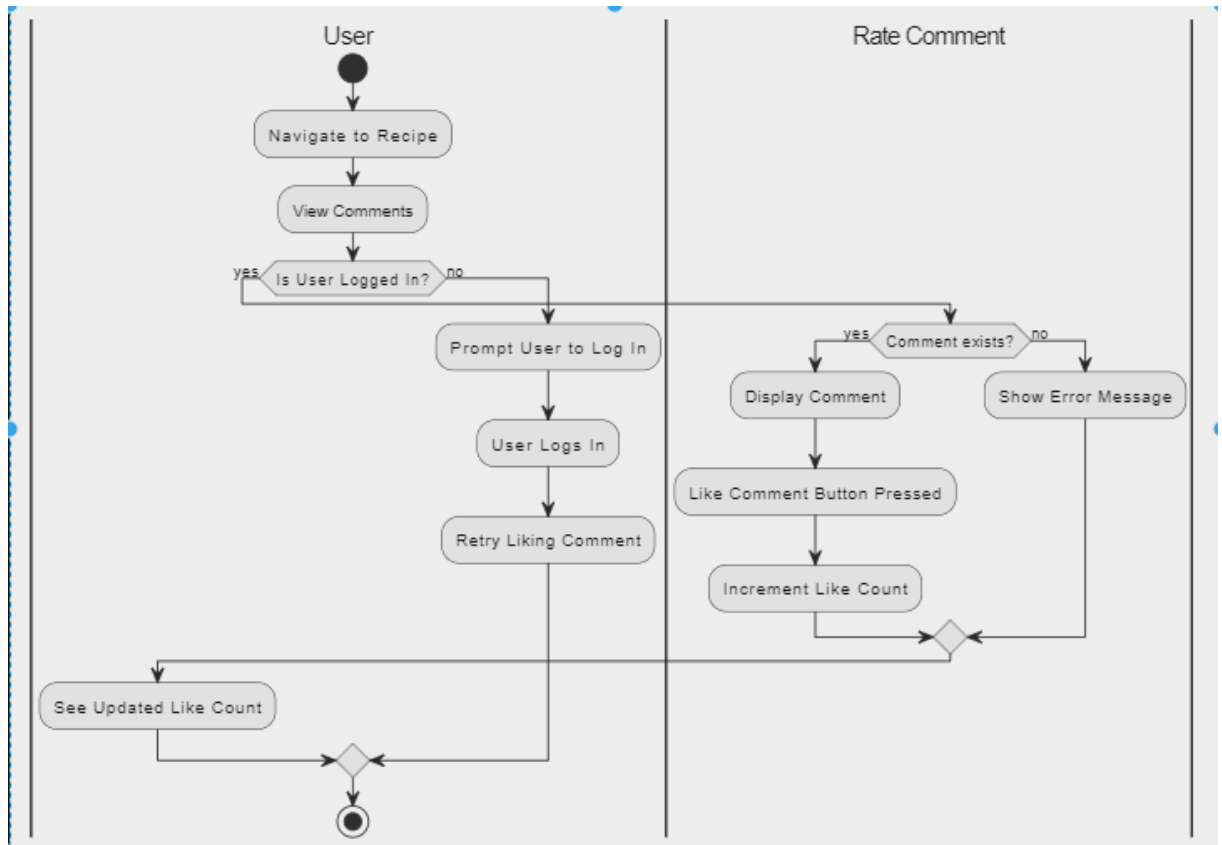
2.3 Diagrams

2.3.1 Use Case Diagram

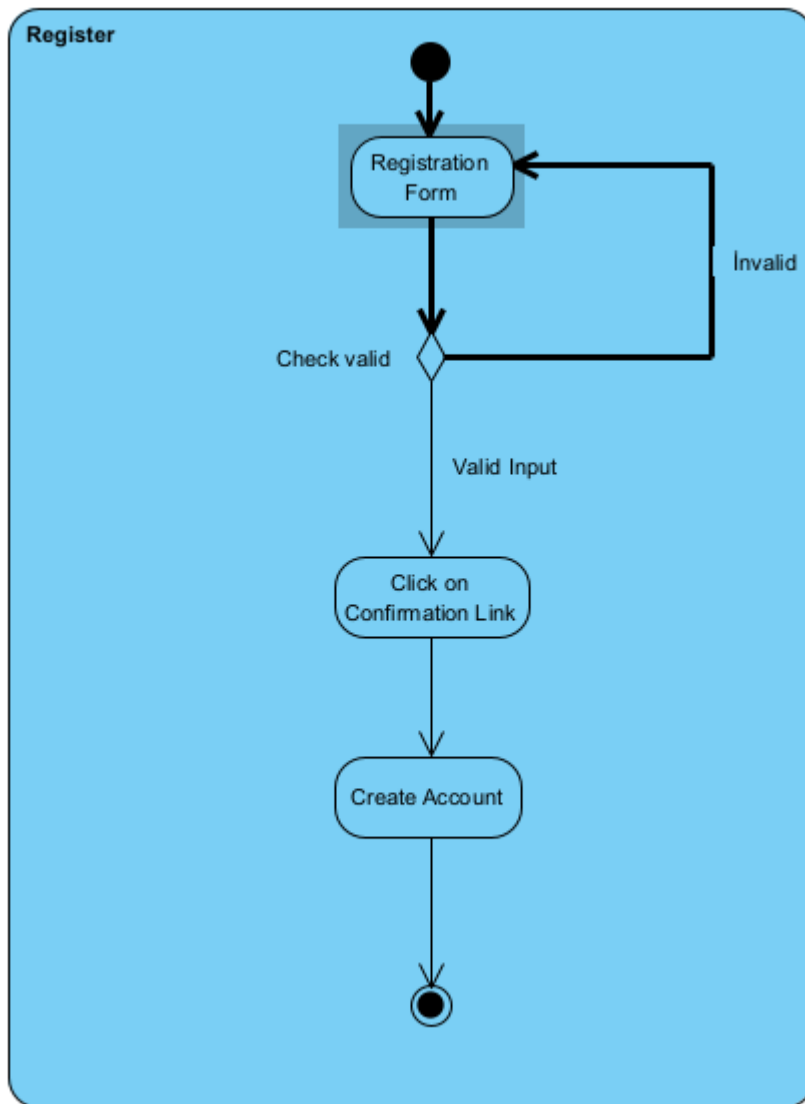


- Search Recipes: Allows users and moderators to explore a variety of recipes uploaded by the contributors. Allows explorers to view, rate and comment for the recipes. For rate and comment users must be logged in.
- View Your Profile: Allows users to manage their uploaded recipes, activity history, and interactions with other users users must be logged in.
- Manage Uploaded Recipes: Allows to Contributors or Moderators to upload or remove recipe.
- Ban user: Allows Moderators to ban users.

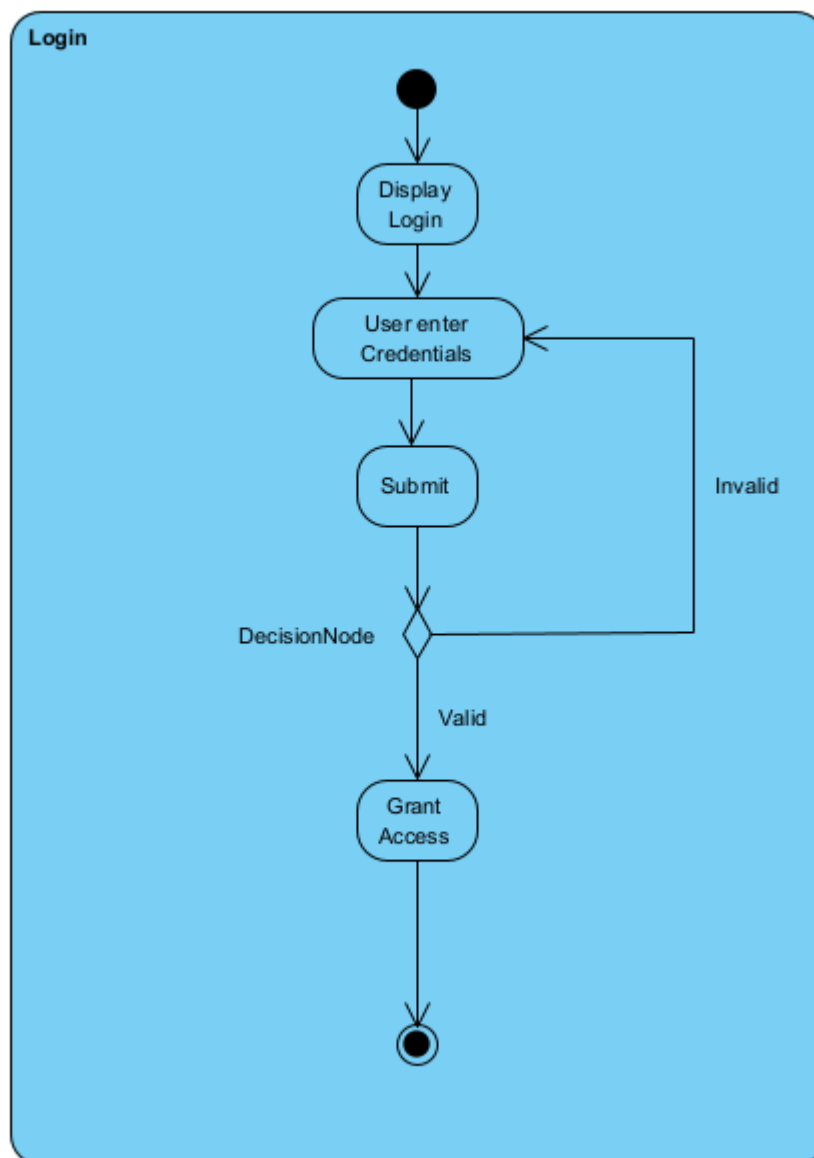
2.3.2 Activity Diagram



- The user navigates to a recipe.
- The user views the comments on the recipe.
- The system checks if the user is logged in.
- If the user is logged in:
- The CommentAndRate function checks if the comment exists.
- If the comment exists, it is displayed, and the user can press the "Like Comment" button, which increments the like count for the comment.
- If the comment does not exist, an error message is shown.
- The user sees the updated like count for the comment.
- If the user is not logged in:
- The system prompts the user to log in.
- The user logs in.
- The system retries the process of liking the comment.



- The user enters their details into the registration form.
- The system validates the input data provided by the user.
- If the input data is valid, the system creates a new account for the user.
- An email with a confirmation link is sent to the user's email address.
- The user confirms their registration by clicking the confirmation link.
- The registration process is completed, and the user can now access the CookUp platform.



- The system displays the login page with fields for username and password.
- User enter credentials.
- The user submits the credentials by clicking the "Login" button.
- Validate Credentials: The system checks the entered username and password against stored data.
- If the credentials are incorrect, proceed to the user enter credentials activity. If the credentials are correct, proceed to the "Grant Access" activity.
- Grant Access: Allow the user to access the system.

3. Design

3.1. High Level Design

In the high-level design phase, I have outlined the overall architecture and functionality of the CookUp platform. This includes defining the main components of the system, such as user registration, recipe upload, search functionality, community engagement features, and

moderation tools. Additionally, I have identified the technologies and frameworks that will be used to develop the platform, such as the programming languages, database management systems, and web servers. The high-level design provides a roadmap for the development team and sets the foundation for the detailed design phase.

3.2. Detailed Design

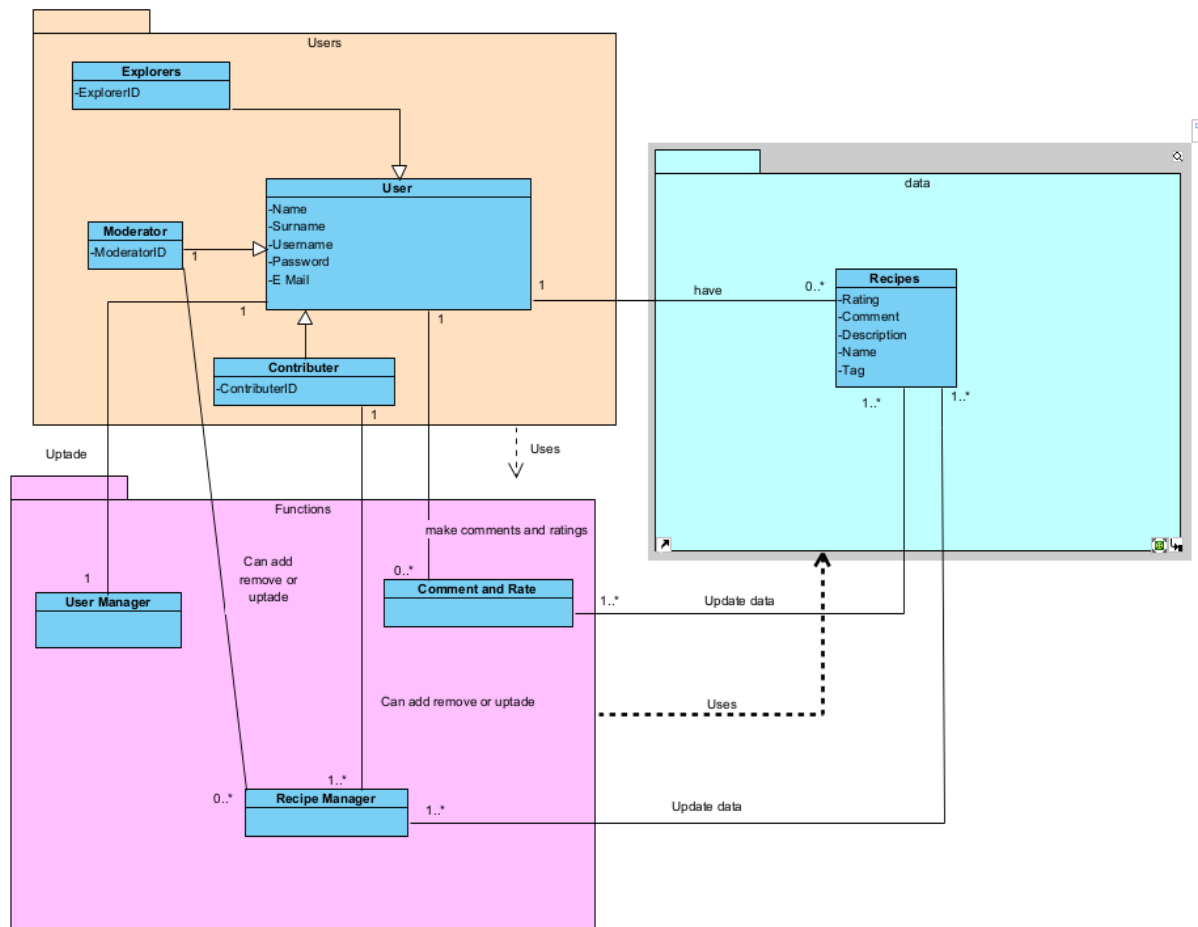
In the detailed design phase, I have delved deeper into the implementation details of each component identified in the high-level design. I have also specified the user interface design, including wireframes and mockups, to ensure a user-friendly experience. Additionally, I have documented the API specifications and data flow diagrams to guide the development process.

3.3. Realistic Restrictions and Conditions in the Design

In the design, I have considered several realistic restrictions and conditions that may impact the implementation and operation of the CookUp platform. Some of these restrictions include limited security measures, such as basic password enforcement and encryption, as well as constraints on server capacity, such as supporting a maximum of 1000 users simultaneously. Additionally, the platform may not initially support distributed file storage or advanced scalability features, which could be addressed in future iterations.

Diagrams

Class diagram:



- **Users Package:** This package contains three class: explorers, moderators, and contributors.
 - **Explorers:** Represents users who browse and search for recipes. Each explorer has a unique ID, as well as common user attributes such as name, surname, username, password, and email.
 - **Moderators:** Represents users with elevated privileges responsible for overseeing platform activity. Each moderator has a unique ID, along with common user attributes.
 - **Contributors:** Represents users who upload recipes and contribute to the platform. Each contributor has a unique ID, in addition to the common user attributes.
- **Functions Package:** This package contains three class: UserManager, RecipeManager, and CommentAndRate.
 - **UserManager:** Manages user-related operations such as updating and registering user accounts.
 - **RecipeManager:** Manages recipe-related operations such as updating, adding and removing recipes.
 - **CommentAndRate:** Handles adding comments and ratings to recipes.
- **Data Package:** This package contains Recipe. Represents a recipe uploaded by a user. Contains attributes such as rating, comment etc.

4. IMPLEMENTATION/Mock up DISCUSSIONS

4.1. Implementation of the Product

The implementation of the CookUp platform involves developing the backend logic, frontend interface, and integrating various components to create a fully functional web application. The backend will be built using Python or Java, with Flask or Spring Boot frameworks for RESTful API development. MySQL will be used as the database management system. The frontend will be developed using HTML, CSS, and JavaScript, with frameworks like React or Angular for building dynamic user interfaces. Security measures, such as SSL encryption and input validation, will be implemented to protect user data. Additionally, moderation tools and community engagement features will be incorporated to ensure a positive user experience.

4.2. User Interface of the product

The user interface of CookUp will feature a clean and intuitive design, with easy navigation and interactive elements to enhance user engagement. Users will be able to browse recipes, upload their own recipes, search for specific dishes, and interact with other members of the community through comments and ratings. Mockup software can be used to generate visual representations of the user interface, including wireframes and prototypes, to provide a preview of the final product.

5. CONCLUSIONS

5.1. Summary

In summary, the CookUp platform aims to provide a comprehensive solution for recipe discovery, sharing, and community engagement. The project promises to deliver a user-friendly web application where users can explore new culinary inspirations, upload their own recipes, and connect with other cooking enthusiasts. By implementing features such as search functionality, user profiles, and moderation tools, CookUp aims to create a vibrant and supportive community for food lovers to share their passion for cooking.

5.2. Benefits of the Project

The benefits of CookUp extend to its users, the community, and society as a whole. For users, CookUp provides a convenient platform for discovering new recipes, sharing their culinary creations, and connecting with like-minded individuals. The platform fosters a sense of community and collaboration, encouraging users to explore new cuisines and cooking techniques. Additionally, CookUp promotes healthy eating habits and sustainable cooking practices, contributing to overall well-being and environmental conservation efforts.

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