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**SECD 2613-15 SYSTEM ANALYSIS AND DESIGN**

**2023/2024 – SEMESTER 2**

**PHASE 2**

**RECIPE MANAGER**

**FACULTY OF MJIIT**

**Section 16**

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**GROUP 1**

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1.0 OVERVIEW OF THE PROJECT

The Recipe Manager project is designed to be a simple application that lets you store and find the recipes you like. Due to increased interactions at home and the different recipes available online, there is a need for an application that can help manage the activities in the kitchen. This app will allow the user to create, modify, remove, and look for recipes using certain ingredients or type. The best and efficient way of achieving this is to make the use of recipes manageable, and boost the process of cooking while at the same time minimizing fuss of maintaining different recipes.

2.0 PROBLEM STATEMENT

Most people who like cooking prefer their recipes to be in one place and readily available but this is not the case now since most of them are found in different apps and websites. This disorganization can cause meal selection and preparation to be a chore an effort consuming decision making process. Other tools might not be containing the functionality, that is required, such as a fast search, user-friendly, or Linked-in compatible. Let it be mentioned there is definitely a great demand for an integrated solution allowing one to organize recipes in a more effective manner.

3.0 PROPOSED SOLUTIONS

To solve these issues, the Recipe Manager will offer for these challenges the following mitigation measures shall be undertaken by the Recipe Manager:

 1. Centralized Recipe Management: Many a list of all recipes with a format that can easily help to sort them in the pocket.

 2. Efficient Recipe Editing: Features which allow for formation, modification and deletion of recipes that provide functions for the adaptation of the library by the user.

 3. Intuitive Search Functionality: Other alternatives to allow users to search for foods by perhaps the selected ingredients, the categories or even any keyword.

 4. Enhanced User Experience: Quite simple, but with slightly increased measures of complexity in the interface, and efficient in any device that is opened on.

 5. Promotion of Culinary Exploration: The level includes the following characteristics that imply sharing of recipes with friends:

 6. Integration with Social Platforms: For support from the community and sharing the social media app is integrated for the further use.

 7. Data Security and Privacy: Full coverage of the users and their data together with the guarantee stem from the high level of protection against leakage of such data.

 8. Scalability and Adaptability: A strategy that can be easily used to build upon and explain users growth easily, to its accounts.

By means of such specific features, the Recipe Manager is to help everyone avoid the least inspiring part of this mundane activity and make cooking easier.

**4.0 INFORMATION GATHERING PROCESS**

This paper also details the various methods and strategies that were used in the information-gathering process for Recipe Manager: Following are the various techniques and instrumentations that have been employed in the collection of this crucial information.

**4.1 METHODS USED**

To gather relevant information, we employed the following methods:

**Interviews:** With the help of interviews carried out on home cooks, specialized cooks, nutritionist and potential consumers some quantitative data were collected as well as qualitative data in the form of interviews**.**

**Surveys and Questionnaires:** circulated to a more extensive population to gather an aggregate of numerical information and user preferences concerning contemporary recipe management solutions and preferred characteristics.

**Observations:** Used in the current practices to assess the current activities or usage rates in the homes as well as in the hotel and restaurant business.

**4.2 SUMMARY FROM METHODS USED**

The following are the methods used and the summary that has been derived from the research.

Interviews: Essentials that arose from interviews with home cooks and persons in the culinary line include the following:

**Customization Requirements:**

Specifically, it is necessary in relation to the problem of the absence of a ready-made platform to note the following points, which were mentioned by the participants: the ability to use various media formats for creating and editing recipes.

**Security and Privacy Concerns:** Concerns for data security and data privacy were prevalent, some in need of adhering to the GDPR or General Data Protection Regulation.

Example: A Target audience A target group consisted of professional chefs, one of whom raised an issue of the confidential nature of recipes and the need to implement protective measures to prevent unauthorized users from accessing such information.

**Surveys and Questionnaires:** Details were collected using a questionnaire which was administered through an online survey; 170 potential users responded to the survey out of which 200 were contacted hence giving us a response rate of 85%. Specifically, the emphasis was on current user experiences with existing platforms as well as what they would like to have in them. Key findings included:

**User-Friendly Interface:**

Specifically, the overwhelming majority of the surveyed audience – 78% – reported that ease of use was essential to the success of the platform.

**Advanced Features:**

Respondents wanted newer features and had an interest of making enhancements such as: Search, Categorization, and easy Edit capabilities had an interest of by 80% of the respondents.

**Example:** As one home cook stated, “Currently I use my hand to support my tool and the model I currently work with is not easy to use; it requires more interfaces that make it easier to switch through the recipes without having to be trained. ”

**Observations:**

Observations in various kitchen environments revealed several insights:

**Efficiency Challenges:**

* + Traditional methods of managing recipes, such as handwritten notes or disparate digital files, are often cumbersome and time-consuming.
  + Users struggle with organizing recipes into coherent categories, which makes retrieval difficult and inefficient.
  + The lack of standardization across various recipe formats (e.g., text files, images, PDFs) leads to additional time spent on formatting and categorization.
  + **Example:** In one observed home kitchen, a user spent significant time searching through a cluttered drawer of handwritten recipes, highlighting the inefficiency of manual organization. Another instance involved a professional chef who found it cumbersome to convert various recipe formats into a unified digital system, indicating the need for seamless integration and categorization features.

1. **Remote Access Needs:**
   * The necessity for a platform that supports remote access was evident, enabling users to manage and access recipes from different locations, whether they are at home, in a professional kitchen, or traveling.
   * Users expressed the need for synchronization across devices, ensuring that any changes made on one device are reflected on all others.
   * Remote access also facilitates collaboration among users, such as sharing recipes with family members or colleagues in a professional setting.
   * **Example:** Observations in a culinary school showed that instructors required a way to access and update recipes from different classrooms and even from home. Another scenario involved a traveling chef who needed to access his recipe database on-the-go, underscoring the importance of a cloud-based solution that offers reliable and secure remote access.

**5.0 Requirement Analysis AS IS Analysis**

**5.1 Existing business process map Comparative Business Process (AS-IS)**

**Scenarios and Workflow**

There are several scenarios in the current business process for managing recipes and all of these depict how users are disadvantaged and faced with a lot of problems. These include:

**Scenario 1: Multiplex Mess Recipe Storage**

* **Workflow:** Recipes are stored in many different forms and places including hand-written notes, a physical cookbook collected or bookmarked websites, and electronically on different devices.
* **Challenges:**
  + Managing and finding recipes is a nightmare.
  + It is tedious to search for a specific recipe in the traditional way.
  + This means that there is no centralized system to create all the recipes for use in the company.

**Scenario 2: Improper editing and sorting**

* **Workflow:** Currently, raw and compiled recipes go through manual post-processing and tagging with basic tools such as word processors or folders.
* **Challenges:**
  + There are some drawbacks of using this design: little flexibility for editing and categorizing.
  + Time-consuming and error-prone process.
  + They also identify inconsistent categorization as another route to further disorganization.

**Scenario 3: Lack of proper Search Engine features**

* Workflow: People try to find recipes using information relevant to them from different sources by a word of mouth.
* **Challenges:**
  + Lack of efficient and less time consuming search strategies for information is another key issue.
  + The problem of sorting recipes depending on certain criteria such as certain type of ingredient or banned ones, specific type of food preferences etc. .
  + Some of the users reported dissatisfaction caused by the absence of new search options.

**Scenario 4: Remote access and synchronization**

One of the key areas that are not properly implemented in the current system is the lack of remote access and synchronization.

* **Workflow:** Users open recipes from multiple platforms, and there is no primary hub they go via.
* **Challenges:**
  + No consistent update of recipes in recipe management systems.
  + One of the disadvantages of using cloud storage is that the changes made in the cloud are not reflected in all the devices immediately.
  + Issues, for example, of cooking or sharing recipes with other people at different locations.

**Functional Requirements (AS-IS)**

**Input:**

* A recipe can include information about ingredients, steps, categories they are under and any media relevant to it.
* Based on the collected data: User preferences and the text of search queries.

**Process:**

* Storing and categorizing recipes.
* Making recipe adjustments and modifications of recipe information.
* Procedure of selecting and sorting options depending on the client’s preferences.
* Another factor involve in affecting backup strategies is synchronizing data across devices for remote access.

**Output:**

* Together it makes for an organized and accessible collection of recipes.
* Important information to display when a user performs a search and the recipes that are related to it.
* They include, recipe update notifications, and activity notifications from the community.

**Non-Functional Requirements (AS-IS)**

**Performance:**

* There is no delay in any section or tool of the program, and transitions seem smooth and fast.
* Flexibility in managing big recipe databases.

**Control:**

* Authorization by individual identification of users in order to provide access to the system.
* Protection of the personal information that a company or an organization handles.
* Backup solutions and data preservation protocols: Backup as an activity that requires implementation on a regular basis.

**Usability:**

* Intuitive and user-friendly interface.
* The usability for common users and the web-design that will not require any additional skills from the users.

**Scalability:**

* Scalability to accommodate additional features or additional traffic from users as might become necessary in the future.
* Design for modularity to extend it to embrace other technologies and services.

**5.2. DFD (AS-IS) System Logical Overview**

1. **Context Diagram:**

Shown below is the use case diagram of the Recipe Manager system that shows user interaction with the system and the primary input and output data that is exchanged between the user and the system in terms of recipes and search queries.

* Key Interactions:
  + Users: Enter the recipes, set the search terms, and then output the search results.
  + System: An input process that stores recipe data and provides an output to the given queries entered by the user.

1. Diagram 0:
   * Recipe Storage: The procedure of sorting and selection of the recipes with the help of users.
   * Recipe Editing: Any changes or enhancements regarding the considered recipe details.
   * Recipe Search: As it will be defined below, the process of searching and selection of the recipes according to the criteria set by the user.
   * Data Synchronization: Coordinating the data of recipes through the means of synchronization in order to enable access from all kinds of devices and constantly updating the recipe information.

**Child Diagrams:**

* Search Algorithm: Explaining how filtering and retrieval of recipes by queries occur, the process in detail.
* Data Encryption and Security: This section explains how the data behind recipes and the users are protected from unauthorized access and potential misuse.
* Synchronization Process: Explaining the manner in which data ensures synchronization when used on various devices.

**Link to Information Gathering**

* Efficiency Challenges: The ineffectiveness in the traditional management of recipes has informed recommendations for the improvement of the work processes and search functions.
* Remote Access Needs: Due to the envisioned need to access and work on recipes regardless of the location, the system integrates the concept of remote access and synchronization.
* Customization and Security Concerns: Both the functional and non-functional requirements of the platform, therefore, bear the need for flexible recipe creation and security as key considerations in meeting the expectations of the users.

**5.3 NON-FUNCTIONAL REQUIREMENT (PERFORMANCE AND**

**CONTROL)**

Performance Requirements

* Response Time:

The identified objective involves fulfilling up to 90% of queries within 2 seconds of a search performed in the system concerning recipes. Moreover, the system should then guarantee that all page transitions are done within a half a second.

* Scalability:

This means that concurrent usage will not significantly affect the desired performance of the application and should therefore support up to 10,000 users.

To achieve this, the database of the systems shall contain up to 1 million recipes in such a way that the search performance of the application shall not degrade more than 5%.

* Throughput:

During the business hours of the day, it shall be able to handle and store at least 1000 new recipes per minute.

* Resource Utilization:

The system shall not operate at maximum CPU utilization of more than 70% under the working load and not more than 90% during the peak hours.

Maximum permitted operating memory usage shall be 75 percent of the total capacity when operating in normal mode.

* Data Transfer Rate:

The system shall be capable of handling data transfer rates not exceeding 500 MB per second where data uploads and downloads are massive.

**Control Requirements**

* Authentication and Authorization:

The system shall have adequate security measures through the use of RBAC so that only authorized personnel can interact with the management functions.

Essentially, ALL users have to authenticate in a secure way, preferably, OAuth 2. 0 or Multi-Factor Authentication (MFA) is a combination of two or more security measures used for verifying the identity of a user with the purpose to enhance the protection against unauthorized persons.

* Data Integrity:

Data integrity shall be maintained for recipe data in transmission and storage by checksums incorporated into the system.

They will need to perform regular data backups to ensure data is not lost, they will need to set the recovery time objective (RTO) at 4 hours and recovery point objective (RPO) at 30 minutes.

* Audit and Logging:

It shall be useful to include the time stamp for all activities done in the system, such as creating, editing, or erasing a recipe, among others.

Records should be stored for at least 1 year and be kept at a secured location for audit purposes.

* Compliance:

The system must align with standard legal requirements concerning personal information processing such as GDPR, CCPA, among others, to protect the privacy of users and their data.

Annual compliance audits are to be conducted as a part of compliance reporting on a regular basis.

**5.4 LOGICAL DFD AS-IS SYSTEM (CONTEXT DIAGRAM, DIAGRAM 0, CHILD)**

* **Context Diagram:**

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* **Diagram 0:**

**A diagram of a software company

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**Completion:**

**A diagram of a software application

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**Child Diagrams:**

**1.**

A diagram of a data flow

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**2.**

**A diagram of a flowchart

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**3.A diagram of a software system

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**4.**

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**5.**

**A diagram of a process

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**6.0 SUMMARY OF REQUIREMENT ANALYSIS PROCESS:**

**Recipe Manager Project Summary**

**Developed by Group 1 under the facilitation of Dr. Amy Hamidah at the Faculty of MJIIT, the Recipe Manager project involves the construction of an application whose primary function is to store recipes and make access to them easier. The idea lies in the problem that recipes are divided into numerous sources, which leads to difficulties during meal preparation.**

**To address this, Recipe Manager provides the singular point of recipe management, convenient editing features, encompasses powerful search tools, and an improved user interface. Also, it allows the use of social platforms in uploading the recipes, provides security to the users’ information and is expandable to cover the increasing number of users.**

**Secondary sources also gleaned from interviews with the project team, online surveys, and direct observations pointed to the importance of an intuitive, search and indexing functionalities, and accessible remote account access. This is why their approach can be described as a holistic one that has the potential to revolutionize the way in which people approach the act of cooking.**