NEW YORK INSTITUTE OF TECHNOLOGY

Old Westbury Campus

SENIOR PROJECT PROPOSAL

(CSCI 455 - W01 - Dr. Frank Lee)

COOKBOOK

Project Leader:

1. Aloysius Arno Wiputra #1244139

Members

1. Ruchira Bunga #1262634
2. Hetul Patel #1250935

New York Institute of Technology

Northern Boulevard at Valentines Lane

Old Westbury, New York 11568

United States of America

ABSTRACT

One of the more valuable skills someone can have is the ability to cook. A lot of people learn during transition to adulthood when they have to live by themselves. To cook there is a need for recipes, which can either be handed down or passed around locally, or with the age of the internet and rapid globalization, can be found online. However, a lot of online recipes have unnecessary filler data that pad the site. Using the skills we have learned in our time with New York Tech, as well as additional ones we plan to learn, we intend to create a singular solution to get straight to the point in those websites and store the recipes in one place. We plan to have various things, with the things considered essential being the scraper for at least 3 websites, a database for storage, a driver program, version control, and cloud hosting. If given the time and budget, we would also like to have an additional hardware integration for a meal prep module, with account system and security features such as encryptions, a QR scanning system, and machine learning as well as additional features like grocery and inventory management. There have been various systems with the purpose of recipe management, such as Tasty, Kitchen Stories, and Allrecipes with each their own unique features. To accomplish our goal, we plan to use tools such as the G-Suite for real time collaboration, and languages such as Java, Python, and MySQL. We plan to use the waterfall software design model with a v-model structure to complement it.

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CHAPTER 1

INTRODUCTIONS

1.1 Motivations & Background

One of the most valuable skills a person could have is to learn how to cook. Whether it is when they start living by themselves when they move out for college, or maybe as an effect of the recent global pandemic where some people are less likely to eat out. For some, cooking is a way to save money and perhaps eat in a more healthy manner. However, cooking is a process and often requires recipes. These recipes can be handed down by family members or from people around, or in a world with rapid globalization, through the internet.

The internet has had enough time to grow where a person looking for a recipe can find almost any recipe they are looking for. In the same line, however, there can be too many recipes and it becomes a bit of a chore to keep track of all of them. Even worse, a lot of websites seem to have paragraphs after paragraphs of backstories that led to the creation of the recipe. Oftentimes, especially during the rush of dinner time, we just want to know what we need and how we need it, and deven better, a single place to keep track of all of that information.

It is with this purpose that we are planning to create this project. Our intent is to make it easier for people to keep track of recipes, ingredients, and all in all provide a much more flowing experience than having to google something every time and unnecessarily waste a lot of time.

1.2 Goals & Significance

The goal of this project is threefold. One, we would like to implement skills that we have learned in our time with New York Tech which include:

1. Demonstrate proficiency in Java, as taught in courses such as Programming I (CSCI 125), Programming II (CSCI 185), and Data Structures (CSCI 260).

2. Demonstrate proficiency in Python and data evaluation as well as web scraping, as taught in classes such as Big Data Analytics (CSCI 436), Introduction to Data Mining (CSCI 415), and Information Retrieval (CSCI 426)
3. Demonstrate proficiency in creating algorithms as taught in various courses, such as Discrete Structures (CSCI 235) and Design & Analysis of Algorithms (CSCI 335)
4. Demonstrate proficiency in creating a database system and diagrams as taught in Database Management (CSCI 360)
5. Demonstrate our ability to implement and work in various SDLC as taught in Intro to Software Engineering (CSCI 380)

We also plan to implement new technologies not taught in class, such as integration with existing technologies, for example GitHub which is used in various projects for version control and cloud storage such as Google Cloud, mainly for database hosting such that the project can be accessed remotely without needing to rely on one specific machine for hosting.

CHAPTER 2
SPECIFIC AIMS

2.1 Must Have

We have several ideas for this project. However, keeping in mind the lower personnel count of our team as well as the limited time frame, we are dividing the project scope into two, the “must have” and the “could have”.

The must haves of this project are:

1. Functional web scraper that works on 3 different websites, the goal is to get at least the ingredients and title of the recipes
2. Database for recipe storage and unique ID for each recipe
3. Driver program with read and write control for the database, with input sanitation
4. Version control integration
5. Cloud database hosting

2.2 Could Have

If we are able to get the project rolling and have enough time and additional budget, we also want to expand the project with additional features, such as:

1. Hardware integration with Arduino or RPi, as an additional optional module to help with meal prepping
2. Account system with password encryption and hashing
3. A QR scanning system from the unique recipe ID such that we can easily look up the entries
4. Machine learning for recipe and web scraping, to further expand the usable sites in the future
5. Additional database features such as grocery list with online lookup and inventory management

CHAPTER 3

PRELIMINARY DATA

3.1 Existing Systems

There are numerous existing websites and applications that contain recipes, some of the popular ones being Tasty, Kitchen Stories, Allrecipies, Delish, Myrecipies and many more. However with abundance comes compilations, each of these sites have multiple features, from articles that list similar dishes to personal stories of cooking to family recipes; some even collaborate with stores such as Walmart to send your grocery list to their cart, and while many of these systems are useful; we find that none act as a personal recipe book. Our goal is to create a space where you can save the recipes you like, hassle free and without a multitude of miscellaneous information. Example existing systems include:

- Tasty : Tasty is a web page/application that contains videos as well as an ingredient list and a recipe, it allows for customers to add their own personal take on the recipe and post how the turn out of their attempt to use said recipe was. They are partnered with Walmat for swift grocery shopping, they also have numerous advertisements and articles.

- Kitchen Stories : This website has a more personal approach to the art of cooking, it's a space where a number of experts publish their specific recipes alongside videos of them cooking as well as the recipe itself. It is a smaller community of people and has a more personal environment.

- Allrecipes : Yet another space which allows for customers to rate the recipe published. Each recipe is accompanied with nutritional information. This website also has numerous articles regarding cooking in general, as well as themed articles for different occasions.

- Delish : Is a food network website that has a large database of recipes for each dish. They rate dishes based on popularity and the time of the year! Most if not all recipes are accompanied by video footage of a chef and the website also has a lot of tips and tricks!
- Myrecipes : This website is more of a listing website, it has a lot of articles that combine numerous recipes based on time, ingredients, equipment, occasion and so on

- Taste of Home : As a space, here is one that is directed solely to provide a more homely recipe list, from Grandma's Favorites to Cozy Weather recipe's, they have numerous lists of 50 - 100 recipes!

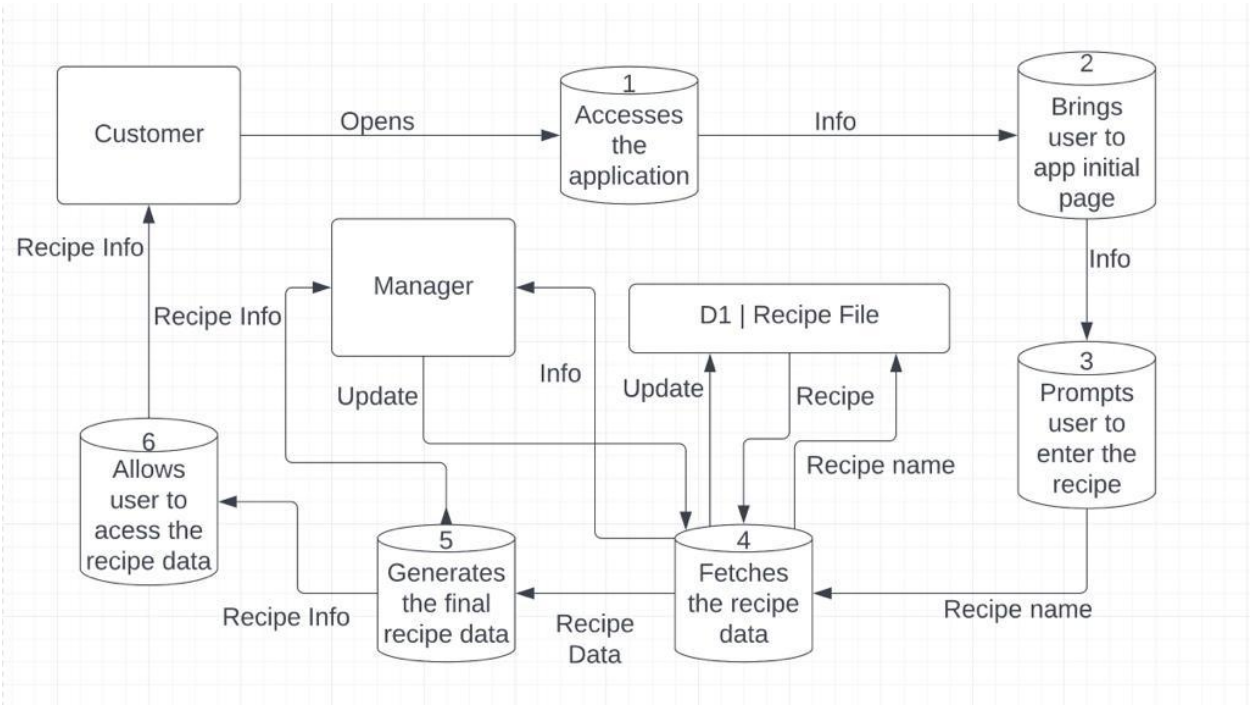
CHAPTER 4

EXPERIMENTAL DESIGN AND METHODS

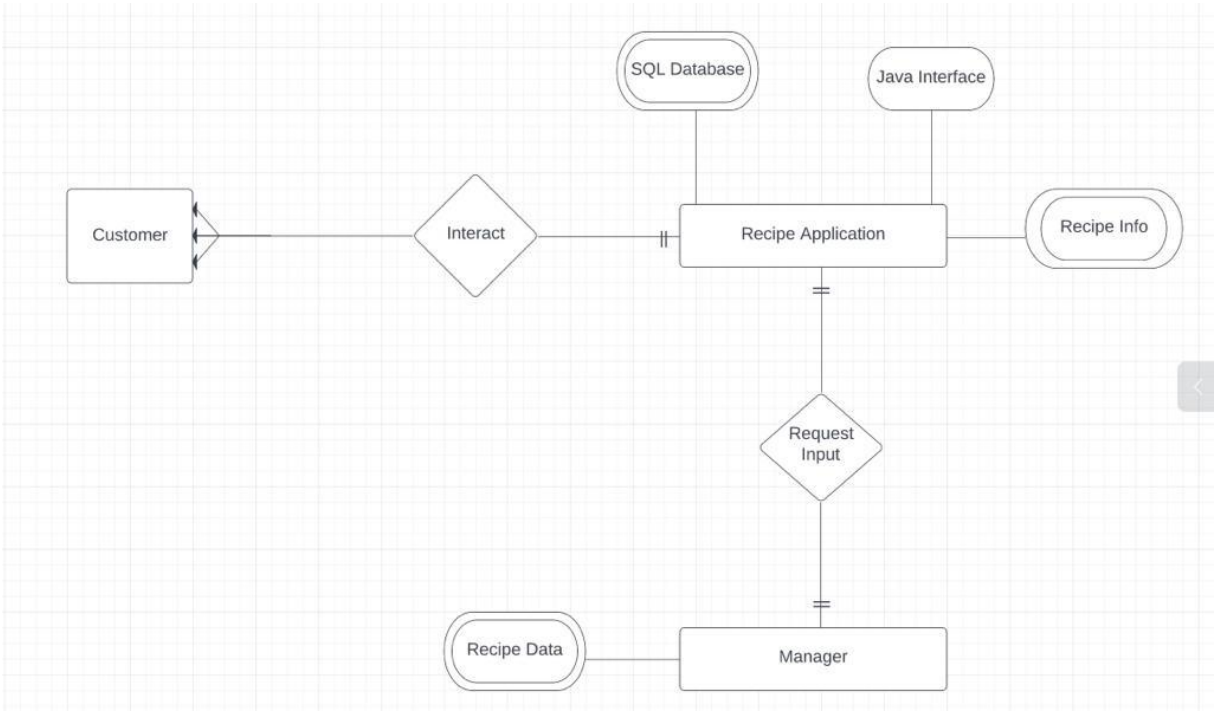
4.1 Software Design Model

As a group, we believe the best Software Engineering model structure to use for this project is a combination of the waterfall along with a v-model structure. A Waterfall model alone is not suitable enough as we need to make sure that we are completing the correct requirements and that our software is working correctly. For this, we need to add a v-model approach to validate and verify requirements at each stage of development. The v-model approach also allows us to ensure we are meeting requirements and make sure we do not have any bugs or glitches in the system. If glitches or bugs occur, we can catch them and correct them before deployment.

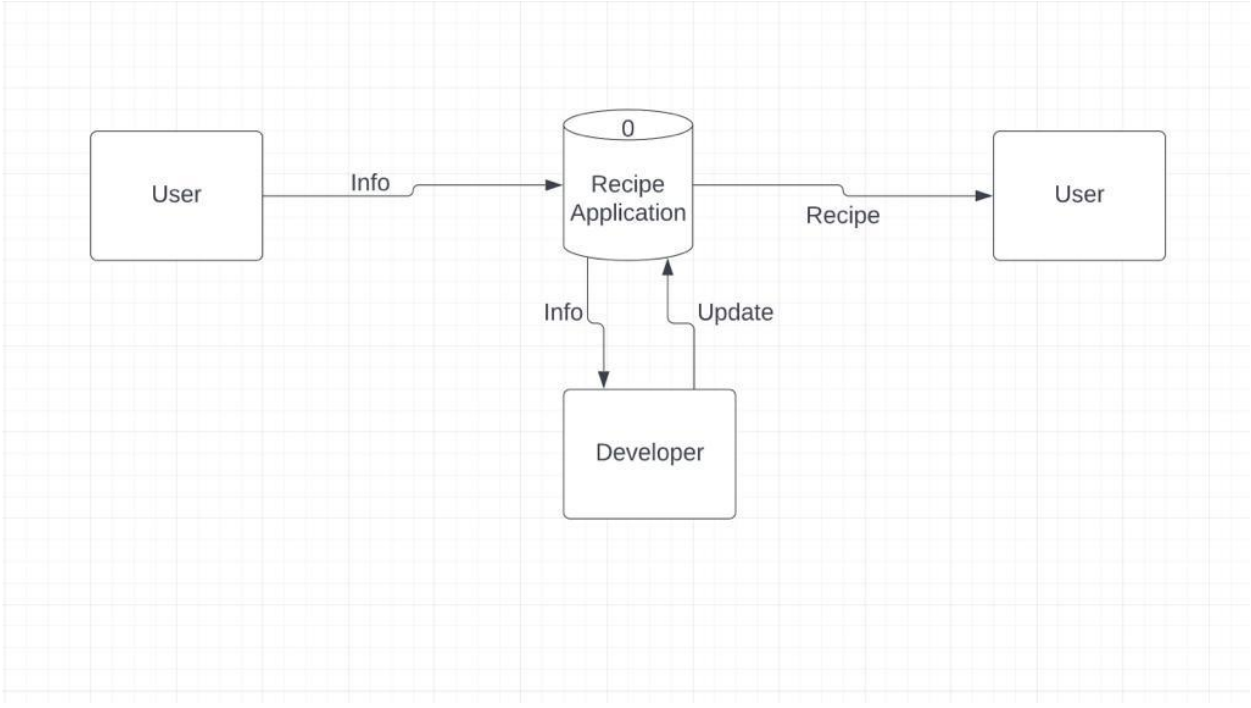
4.2 Data Flow Diagram



4.3 Entity Relationship Diagram



4.4 Context Diagram



4.5 Tools and Technologies

The tools and technologies that our team will be using during this innovative project are listed below:

- For communication:
    - Discord
    - WhatsApp
    - Email
- For collaboration on documentation and presentation:
    - Google Suite (G -Suite)
        - Google Docs
        - Google Slides
        - Google Drive
        - Google Sheets
- For technical collaboration:
    - IDE
        - Jetbrains IntelliJ IDEA
        - MySQL Workbench
        - Jetbrains PyCharm
        - Google Colab
    - Language
        - Java
        - Python
        - MySQL
    - Others
        - Gliffy.com
        - GitHub
        - Lucidcharts.com
        - Google Cloud

4.6 Timeline

1. **Planning and Defining requirements** [Completed at time of submission]
    a. The requirements and tools to be used for the software project are already specified in this document.
2. **Data Flow Diagram (DFD) and Entity Relationships Diagram (ERD)** [October 17, 2022]
    a. The DFD and ERD diagrams will be completed as a portion of the Planning and project definition and will depict the project in a more visual friendly way
    b. Moreover, the diagrams will act as a map to layout the requirements in an easy to understand manner
3. **Designing, Prototyping and Building the software** [November 30, 2022)]
    a. This will be the longest portion of the project where the team will hold frequent SCRUM meetings using Kanban methods to evaluate team-members proficiency as well as develop the features and functionality determined in the Designing, Prototyping, and Building section.
4. **Testing and Performing Quality Assurance Evaluations** [December 7, 2022]
    a. The specified date for quality assurance testing is general rather than specific because December 7, 2022, would be considered the last possible chance for system testing and diagnostics.
    b. However, system testing and evaluations will occur periodically throughout the development cycle.
5. **Deployment** [December 14, 2022]
    a. Deployment of the system is expected to be on December 14th, 2022. Alongside the software deployment will be extensive technical documentation elaborating on the system development, use cases.