

# Ratatouille

## food app

By: Kirollos Zikry 900213037  
Kirolous Fouty 900212444  
Mario Ghaly 900202178  
Mark George 900211436  
Michael Reda 900203291  
Moaz Hafez 900214137



# Overview

Many dorm students struggle with limited time and experience  
to cook for themselves,  
resulting in unhealthy eating habits and unbalanced diets.



# Overview

Introducing "Ratatouille",  
an app where users input the available ingredients,  
and it then generates recipes using these ingredients,  
providing options for filtering based on preferences.



# Planning



# Sprint Planning

## Final Sprint Goal:

- Build upon the previous milestones to progress while adhering to the proposed architecture
- Integrate the Gemini interface with the GUI
- Implement the Computer Vision Model
- Demonstration of the complete system in operation
- Testing the integrated features
- Finalize the reports



# Backlog

- Kiro Fouty (Database, Testing)
- Kirollos Zikry (Flutter, App UI)
- Mario (Integrating API with Gemini)
  - Mark (Reporting ,Testing)
- Michael (Integrated Food Recognition Model)
  - Moaz ( Backlog, Diagrams, Presentation)



# Backlog

Projects / My Scrum Project

## Backlog



Epic ▾

Insights

View settings

☐ Milestone 4 1 May – 20 May (15 issues)

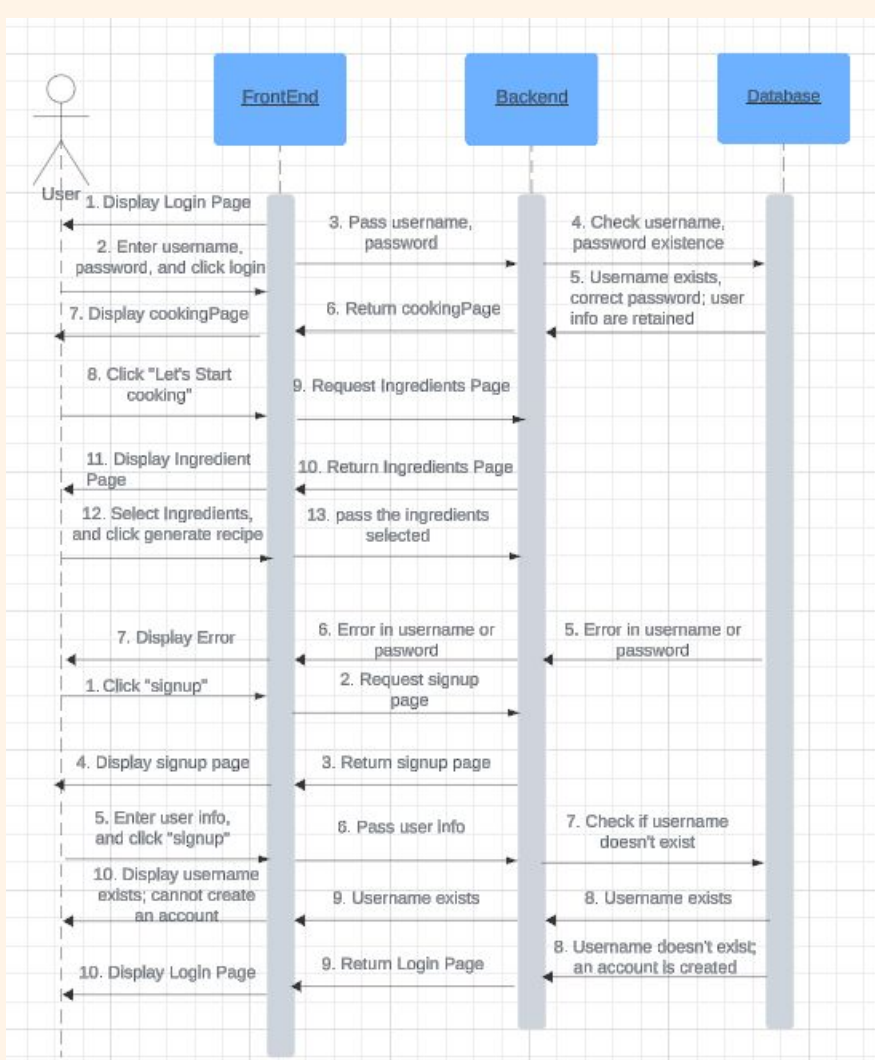
To finalize the project and integrate the main components

0 0 0 Complete sprint

SCRUM-17	Computer Vision, and ML (part B)	DONE ▾	
SCRUM-21	Meal History	DONE ▾	
SCRUM-22	Favourite Meals List	DONE ▾	
SCRUM-24	Ingredients Scanner & Auto-Select	DONE ▾	
SCRUM-25	Allergen Filtering	DONE ▾	
SCRUM-26	Calories Calculator	DONE ▾	
SCRUM-27	Integrated Timer	DONE ▾	
SCRUM-28	Integrated Measuring Units Converter	DONE ▾	
SCRUM-29	General Health and Wellness Tips Banner	DONE ▾	
SCRUM-30	Cuisine Filtering	DONE ▾	
SCRUM-37	Integrating the Database	DONE ▾	
SCRUM-38	Integrating the API	DONE ▾	
SCRUM-40	Reporting	DONE ▾	
SCRUM-41	Reporting II	DONE ▾	
SCRUM-42	Presentation Slides	DONE ▾	

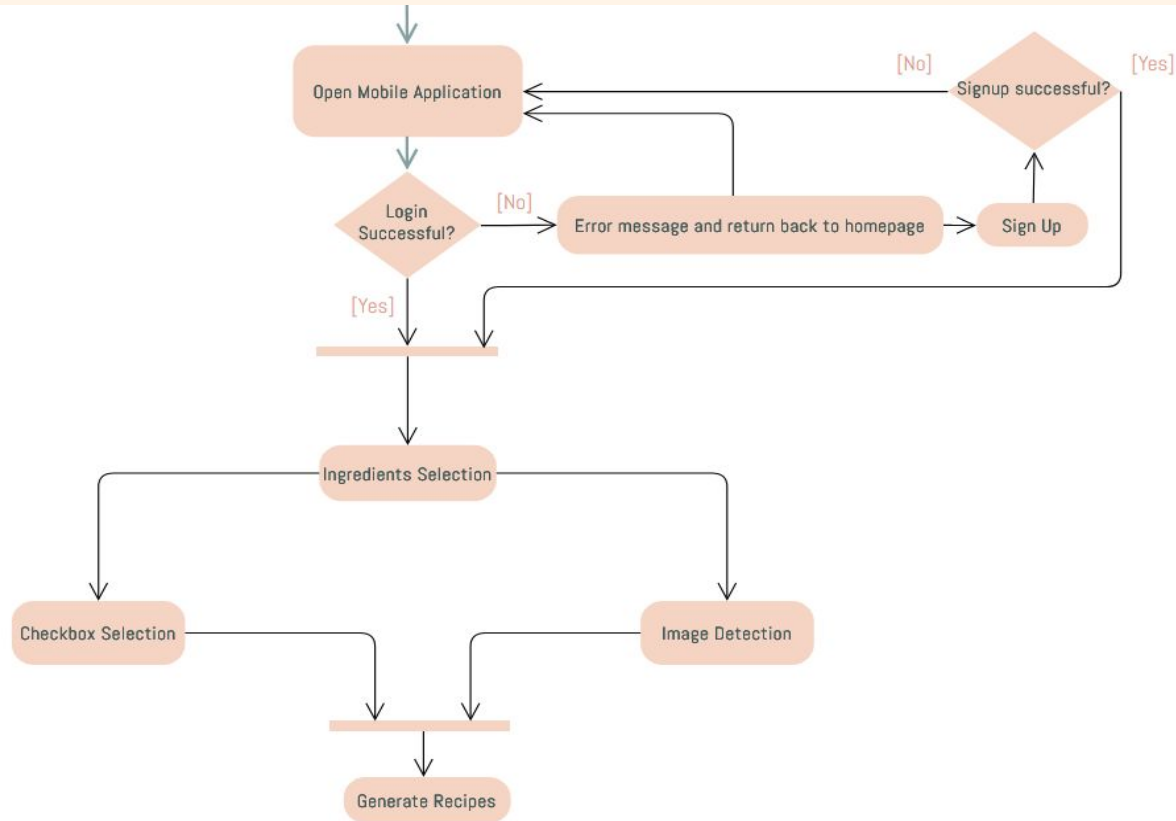
+ Create issue

# Sequence Diagram

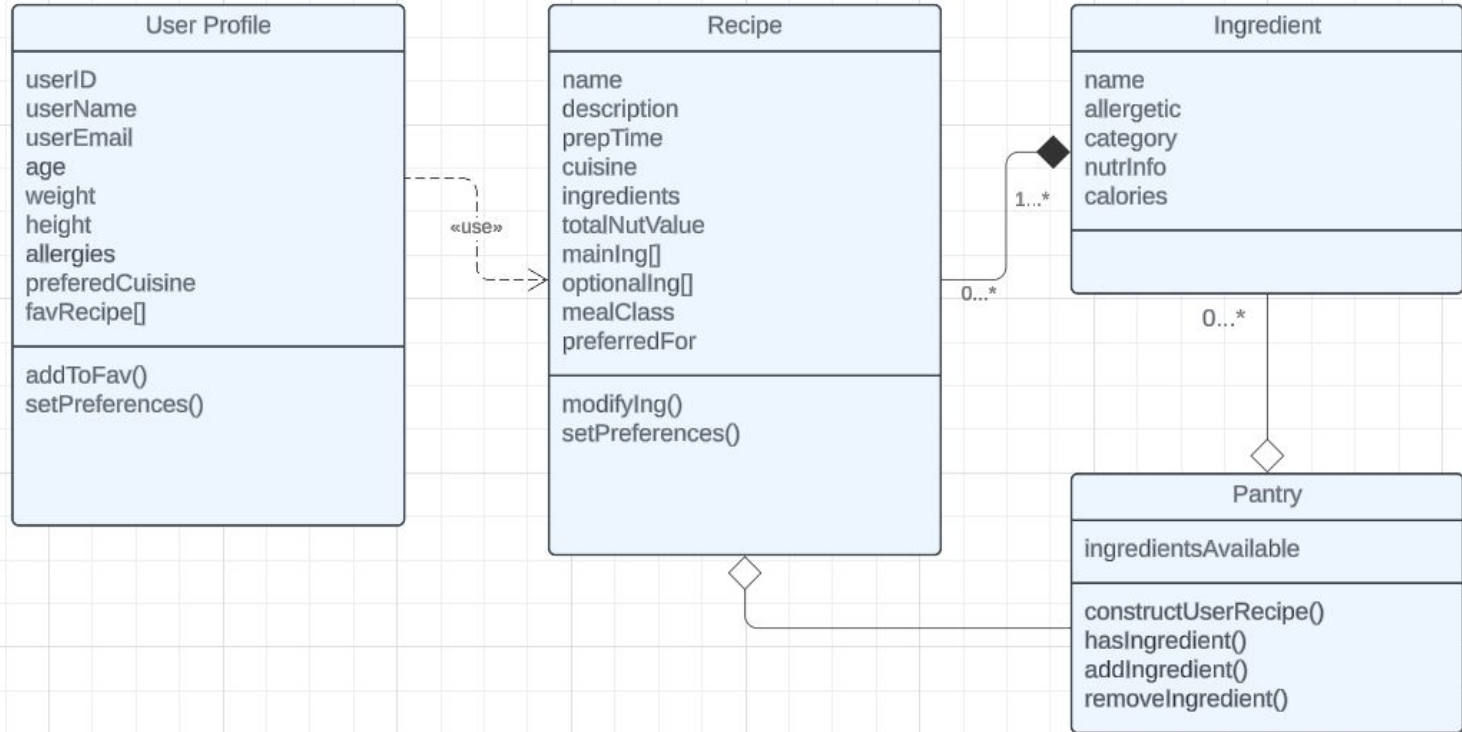




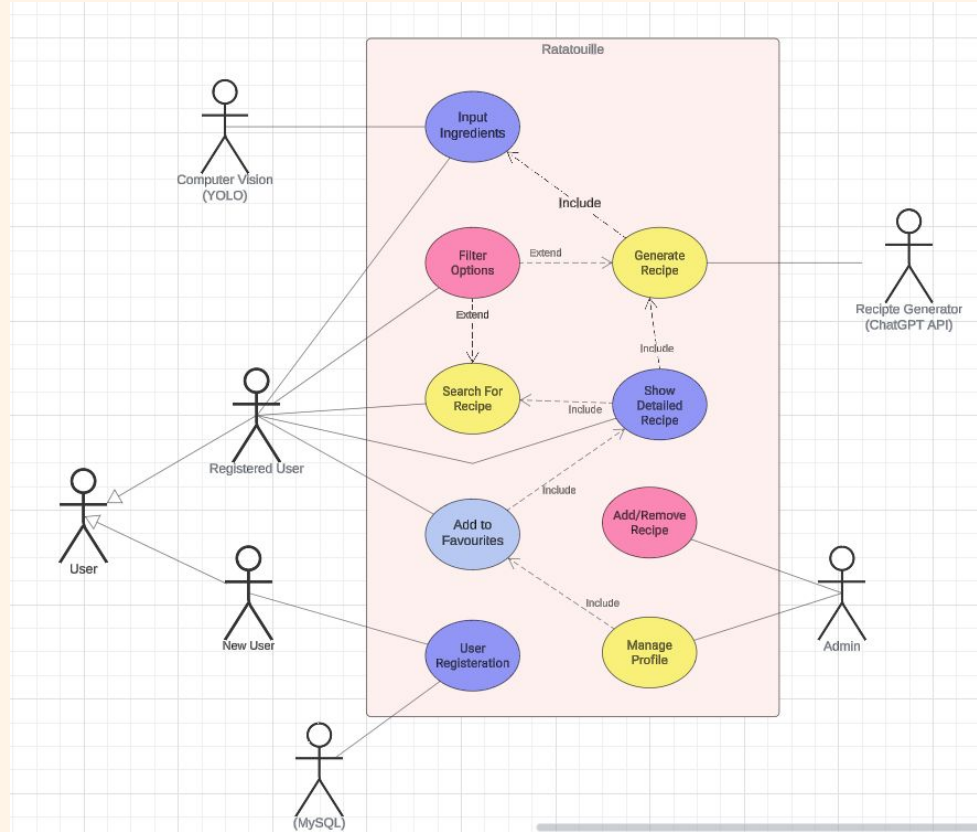
# Activity Diagram



# UML Class Diagram

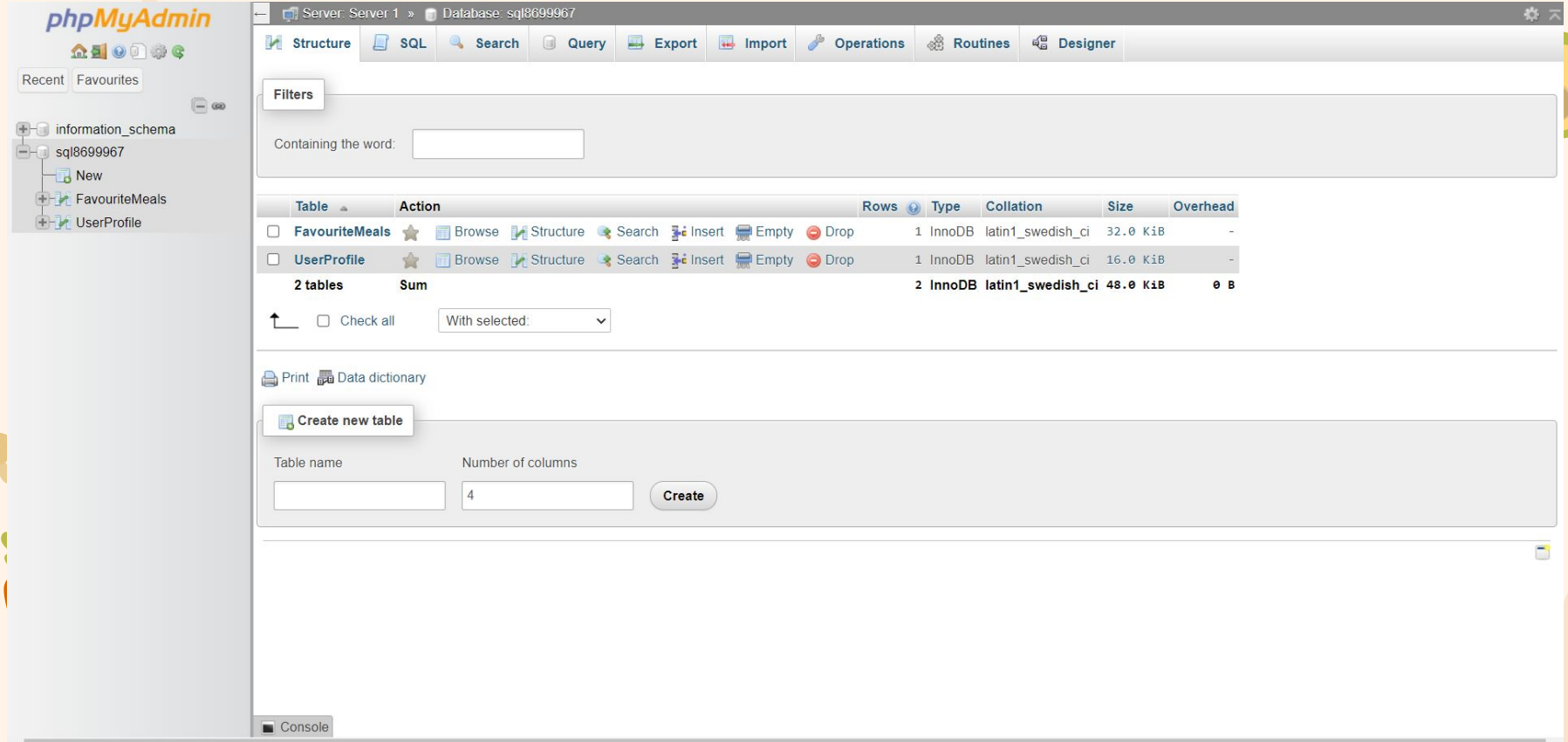


# Use Case Diagram



# Development (DB)

User(Email, Password, FirstName, LastName, Birthyear)  
FavouriteMeals(UserEmail, MealID, MealDescription)



The screenshot shows the phpMyAdmin interface for a database named 'sql8699967' on 'Server: Server 1'. The left sidebar shows the database structure with 'information\_schema' expanded, listing 'FavouriteMeals' and 'UserProfile'. The main panel displays the 'Structure' tab for the 'information\_schema' database, showing a list of tables and their properties.

**Filters**

Containing the word:

Table	Action	Rows	Type	Collation	Size	Overhead
<input type="checkbox"/> FavouriteMeals		1	InnoDB	latin1_swedish_ci	32.0 KiB	-
<input type="checkbox"/> UserProfile		1	InnoDB	latin1_swedish_ci	16.0 KiB	-
<b>2 tables</b>	<b>Sum</b>	<b>2</b>	<b>InnoDB</b>	<b>latin1_swedish_ci</b>	<b>48.0 KiB</b>	<b>0 B</b>

☐ Check all    With selected:

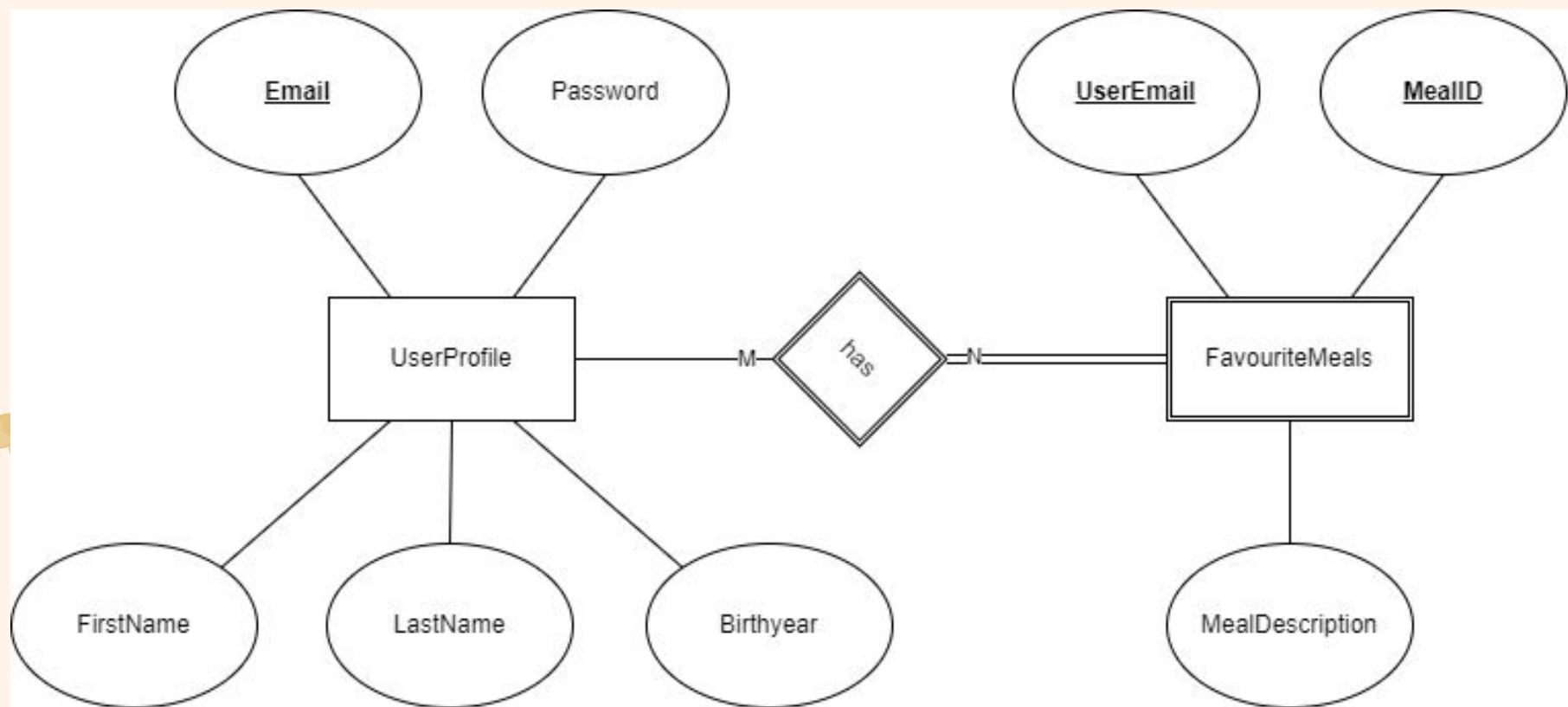
Print    Data dictionary

**Create new table**

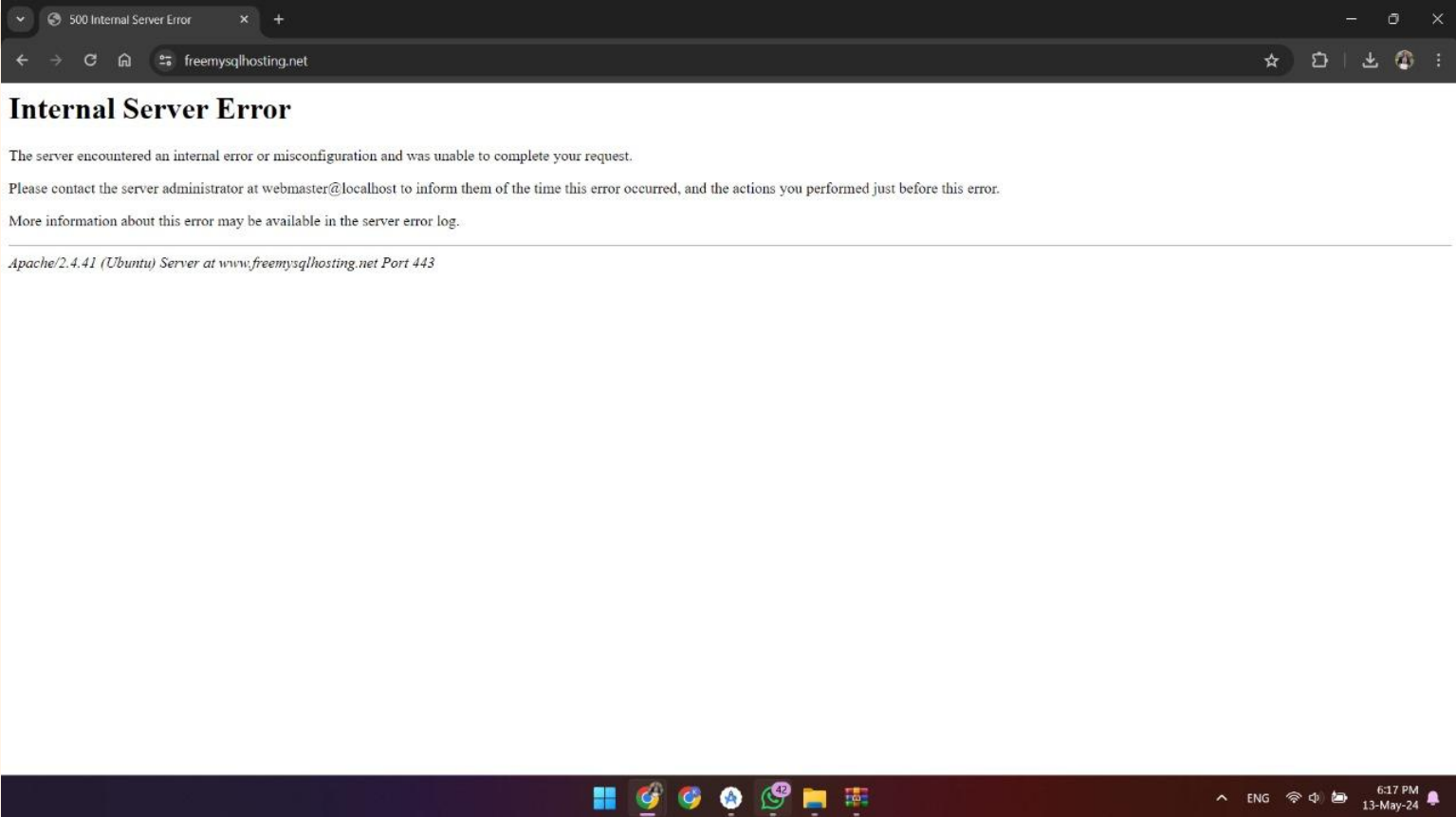
Table name:     Number of columns:    

Console

# Development (ERD)



# Development (DB)



# Development (DB)



www.phpmyadminonline.com / x 500 Internal Server Error x Freemysqlhosting.net - Is Freem x +

isitdownrightnow.com/freemysqlhosting.net.html

## IsItDown RightNow?

### Is Freemysqlhosting down? Check all freemysqlhosting.net outages

#### Freemysqlhosting.net Server Status Check

**Website Name:** Freemysqlhosting

**URL Checked:** www.freemysqlhosting.net

**Response Time:** 158.32 ms.

**Down For:** more than a week

**DOWN** Freemysqlhosting.net is DOWN  
It is not just you. The server is not responding...

[Report an Issue](#)

#### Freemysqlhosting Website Status History

No graph shown : Not enough data to create a graph

Date	Status
01-Jul 14:54	952.77
01-Jul 19:24	884.25
01-Jul 23:48	918.41
02-Jul 04:31	641.88
02-Jul 09:18	951.45
02-Jul 13:34	1246.05
02-Jul 18:04	303.89
02-Jul 22:33	688.89
03-Jul 05:03	1270.73
03-Jul 09:31	548.34

We have tried pinging Freemysqlhosting website using our server and the website returned the above results. If freemysqlhosting.net is down for us too there is nothing you can do except waiting. Probably the server is overloaded, down or unreachable because of a network problem, outage or a website maintenance is in progress.

#### Rate Freemysqlhosting

Freemysqlhosting.net has been rated 4.0 out of 5 points. A total of 1 votes cast and 0 users reviewed the website.

#### Down Right Now

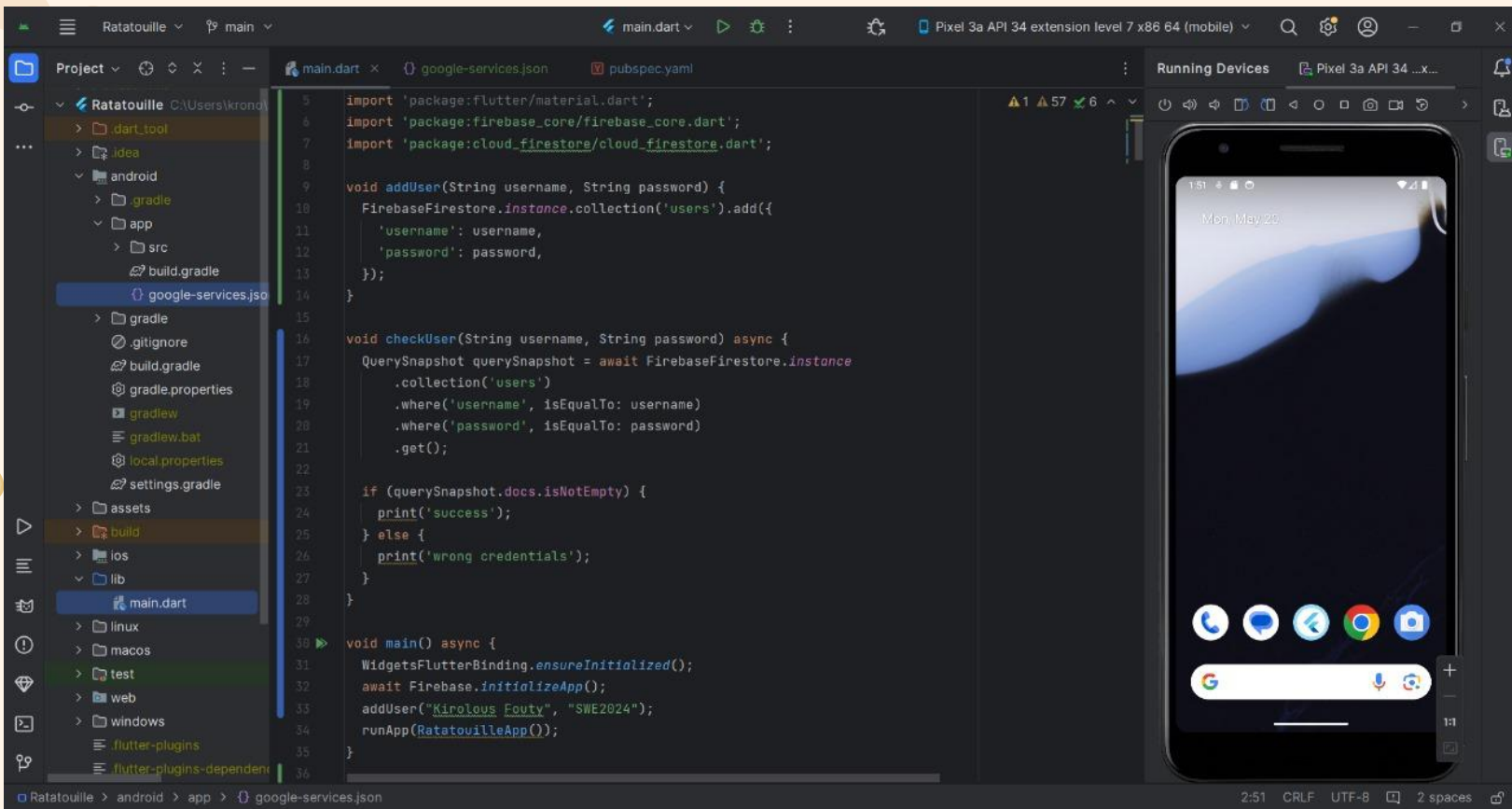
- vodafone.com.au** - Vodafone Australia  
Server is down. Last checked 26 secs ago.
- nationalarchives.gov.uk** - The National Archives UK  
Server is down. Last checked 1 min ago.
- 000webhost.com** - 000webhost  
Server is down. Last checked 1 min ago.
- pajak.go.id** - Pajak  
Server is down. Last checked 2 mins ago.
- mongodb.org** - MongoDB  
Server is down. Last checked 2 mins ago.

#### Latest Sites Checked

- capitalone.com** - Capital One  
Server is up. Last checked 1 sec ago.
- discord.com** - Discord  
Server is up. Last checked 3 secs ago.
- radiotimes.com** - Radio Times  
Server is up. Last checked 4 secs ago.
- tsp.gov** - Thrift Savings Plan  
Server is up. Last checked 6 secs ago.
- blacket.com** - Blacket

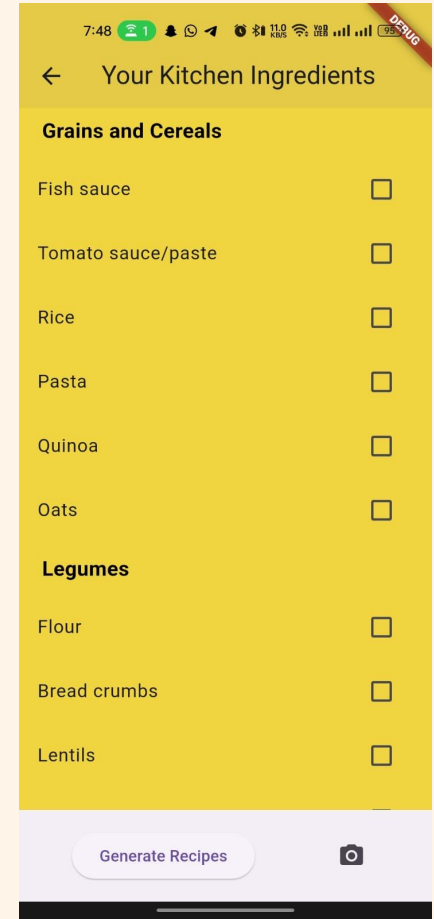
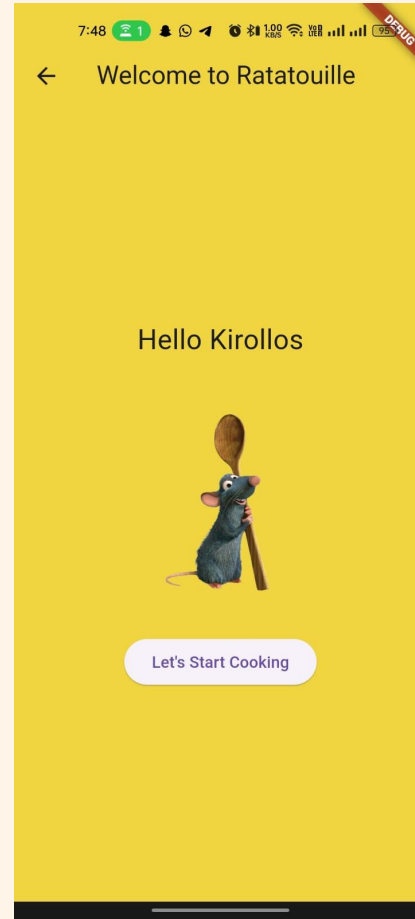
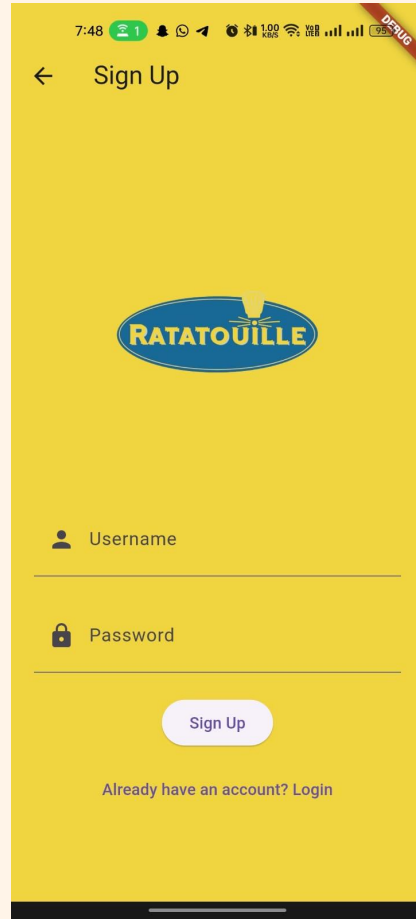
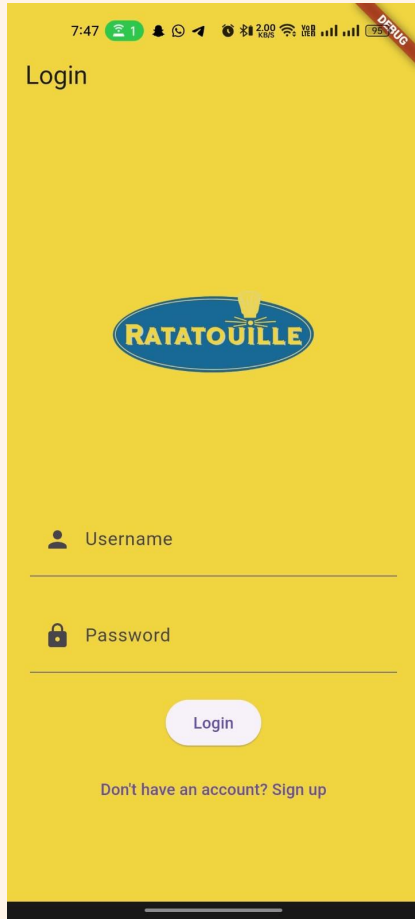
7:05 PM 13-May-24

# Development (DB)





# GUI Development



# Development (Computer Vision)

## Model Selection:

- A roboflow pretrained model was used that depends on yolo v9
- Roboflow allowed me to find a customised pretrained model that is related to food recognition

The screenshot displays the Roboflow Model Upload interface for a YOLOv5 model. The top bar shows the model type and three performance metrics: 85.8%, 81.2%, and 83.4%. A 'View Model Graphs' link is present. The left sidebar contains options to view test set samples, upload files, or paste a URL. The main area shows an image of a bowl of white rice with a bounding box and the label 'white rice 83%'. The right sidebar shows adjustable thresholds and a JSON output of the prediction.

Model Type: yolo v5 Model Upload

85.8% 81.2% 83.4%

View Model Graphs →

Samples from Test Set

View Test Set →

Upload Image or a Video File

Drop files here or

Select File

Paste YouTube or Image URL

Paste a link...

Try With Webcam

Try On My Machine

white rice 83%

Confidence Threshold: 0% 100%

Overlap Threshold: 0% 100%

Label Display Mode: Draw Confidence

```
{
  "predictions": [
    {
      "x": 219.5,
      "y": 289,
      "width": 275,
      "height": 240,
      "confidence": 0.829,
      "class": "white rice",
      "class_id": 60
    }
  ]
}
```

# Development (Computer Vision)

roboflow  
INFERENCE

MODEL

food-ingredient-recognit

VERSION

4

API KEY

2dS40Rg8jaJfaMvPoLjc

Upload Method

Upload

URL

Select File

download.jpg

Browse

Filter Classes

Enter class names

Separate names with commas

Min Confidence

40

%

Max Overlap

30

%

Inference Result

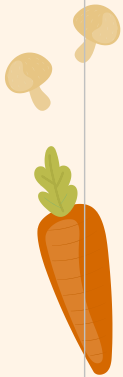
Image

JSON

Run Inference

## Result

```
{
  "time": 0.1497889800026675,
  "image": {
    "width": 204,
    "height": 192
  },
  "predictions": [
    {
      "x": 106.5,
      "y": 101.5,
      "width": 195,
      "height": 163,
      "confidence": 0.8984369039535522,
      "class": "tuna",
      "class_id": 58,
      "detection_id": "b11f4edc-31af-4bcc-8eec-a62fbd5eac14"
    }
  ]
}
```



# Development (integrating API with Gemini)



# Integrating Gemini API

- **Creating API key:** Gemini-pro api key
- **Testing the API key:** was done by a python code following the documentation of Gemini APIs
- **Integrating the API key:** setting dependencies
- **Recipe Generation Page:**
  - passing selected ingredients
  - Composing the request sentence to Gemini
  - Waiting for the response
  - Updating the page with the response

```
import os
api_key = os.environ["GOOGLE_API_KEY"]
GOOGLE_API_KEY = os.getenv('GOOGLE_API_KEY')
genai.configure(api_key=GOOGLE_API_KEY)
```

```
[58] # Fetch the API key from the environment variable
GOOGLE_API_KEY = os.getenv('GOOGLE_API_KEY')
if not GOOGLE_API_KEY:
    raise ValueError("API key is not set in environment variables.")
if GOOGLE_API_KEY:
    print("yay!")
for m in genai.list_models():
    if 'generateContent' in m.supported_generation_methods:
        print(m.name)
```

```
yay!
models/gemini-1.0-pro
models/gemini-1.0-pro-001
models/gemini-1.0-pro-latest
models/gemini-1.0-pro-vision-latest
models/gemini-1.5-flash-latest
models/gemini-1.5-pro-latest
models/gemini-pro
models/gemini-pro-vision
```

```
%%time
response = model.generate_content("What is the meaning of life?")

CPU times: user 102 ms, sys: 10.3 ms, total: 112 ms
Wall time: 7.38 s
```

# Testing

← Generated Recipes

## Recipe:

**\*\*Paprika-Ketchup Cheeseburger Bites\*\***

### **\*\*Ingredients:\*\***

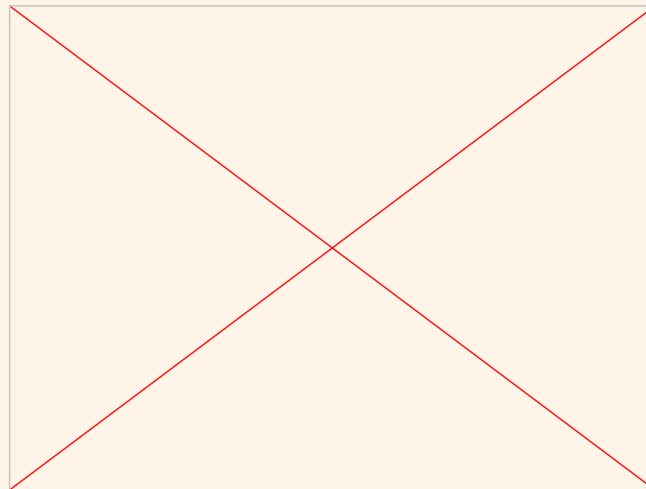
- \* 1 pound ground beef
- \* 1/4 cup chopped onion
- \* 1/4 cup paprika
- \* 1/4 cup ketchup
- \* 1/2 cup shredded cheese
- \* 6 eggs
- \* Salt and pepper to taste

### **\*\*Instructions:\*\***

1. Preheat oven to 350°F (175°C).
2. In a large skillet, brown the ground beef and onion over medium heat. Drain off any excess grease.
3. Stir in the paprika, ketchup, salt, and pepper. Cook until heated through.
4. In a bowl, whisk together the eggs.
5. Spray a mini muffin tin with cooking spray.
6. Fill each muffin cup with about 1 tablespoon of the beef mixture. Top with about 1 tablespoon of the shredded cheese.
7. Pour about 1 tablespoon of the whisked egg over each muffin cup.
8. Bake for 15-20 minutes, or until the eggs are set and the cheeseburgers are cooked through.
9. Let cool slightly before serving.

### **\*\*Tips:\*\***

- \* You can use any type of cheese you like.
- \* For a spicier flavor, add more paprika or a pinch of cayenne pepper.
- \* Serve with your favorite dipping sauce, such as ketchup, mustard, or mayonnaise.



# Problems



- **Constraints:** If the user enters one ingredient only, it will output a recipe with more than these ingredients. E.g. salt
- **Frontend:** needs to be user-friendly

## ← Generated Recipes

### Recipe:

**\*\*Ingredients:\*\***

- \* 1 pound boneless, skinless chicken breasts
- \* 1 tablespoon salt
- \* 1 teaspoon black pepper
- \* 1/4 cup olive oil
- \* 1/4 cup lemon juice

**\*\*Instructions:\*\***

1. Preheat oven to 400°F (200°C).
2. Season chicken breasts with salt and pepper.
3. In a small bowl, whisk together olive oil and lemon juice.
4. Place chicken breasts in a baking dish and pour olive oil mixture over them.
5. Bake for 20-25 minutes, or until chicken is cooked through.
6. Let chicken rest for 5 minutes before slicing and serving.



# Refactoring



```
461 ...ingredients.map((ingredient) {  
462   return CheckboxListTile(  
463     title: Text(ingredient),  
464     value: checkedIngredients[ingredient],  
465     onChanged: (bool? value) {  
466       setState(() {  
467         checkedIngredients[ingredient] = va  
468       });  
469     },  
470   );  
471 }).toList(),  
472 ],  
473 );  
474 }  
475 }
```



main.dart

```
📄 cooking_page.dart  
📄 ingredients_page.dart  
📄 login_page.dart  
📄 recipes_page.dart  
📄 signup_page.dart
```

Max 270, avg of 70



475

- For improving the internal structure, readability, and maintainability of a software codebase without affecting its functionality



# Requirements

- **User Registration and Authentication:** Users are able to register for an account and login securely.
- **Ingredient Input - Computer Vision:** Users are able to input the ingredients available in their kitchen
- **Recipe Generation - Generative AI:** The application generates recipes based on the input ingredients
- **Recipe Details - Database/Gen.AI:** Each recipe displays detailed instructions, ingredients, and nutritional information
- **Save and Favorite Recipes - Database:** Users are able to save and favorite recipes for future reference.



# Expansion

## Plan for future expansion

- 1-Enhance social sharing features for recipe exchange among users
- 2- Implement robust analytics for personalized meal recommendations and insights on dietary habits.
- 3- Scalability improvements will be made to handle a growing user base and increasing data volumes.
- 4- Long-term, partnership with grocery delivery services for seamless ingredient sourcing.





# Thanks

Do you have any questions?

