SAGARMATHA ENGINEERING COLLEGE

(TU Affiliated)

Sanepa, Lalitpur

DBMS

A LAB REPORT ON

Cooking Recipe Database

SUBMITTED BY:

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1. Introduction

This project is a Cooking Recipe Web Application built using Flask (Python) as the backend framework and MySQL as the database system. It enables users to perform essential CRUD (Create, Read, Update, Delete) operations to manage cooking recipes through an intuitive web interface. The aim is to digitally manage personal or community-contributed recipe content efficiently.

2. Objective

The main objective of this project is to:

- Create a responsive and user-friendly web application for managing cooking recipes.
- Implement CRUD operations using Flask and MySQL.
- Provide clean UI layouts for each operation (view, add, edit, delete).
- Apply backend error handling and flash messaging for better user experience.
- Structure and store recipe data in a normalized database.

3. Methodology

3.1 Block Diagram (Input → Process → Output)

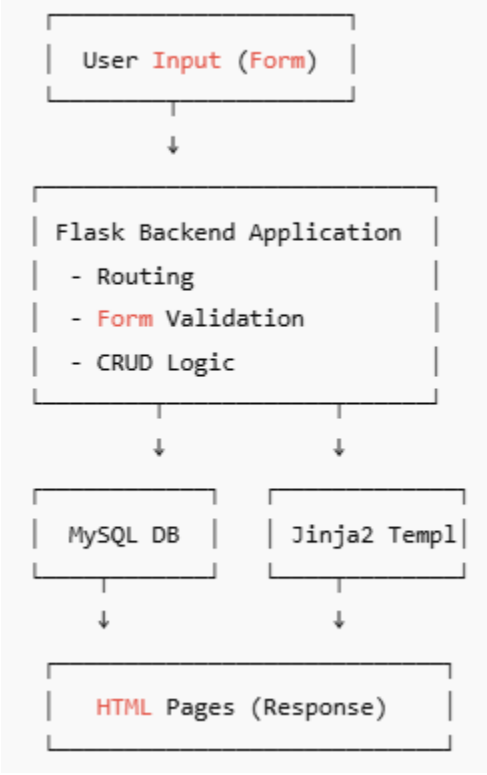


Fig: Block diagram

Purpose:

To visually represent how data flows in the application, from user actions to processing and output (result on the screen or database).

Step-by-step Explanation:

1. **User Input (Form)**
   Users interact with the site via forms (like adding or editing a recipe) — this is the **input layer**.
2. **Flask Backend Application**
   Flask receives that form input through routes like /add, /edit, etc.
   - **Routing**: Maps URLs to functions.
   - **Form Validation**: Checks if the user entered required data.
   - **CRUD Logic**: Decides whether to add, fetch, update, or delete data in the database.
3. **MySQL Database (DB)**
   Stores all recipe records persistently.
   - Data is written to or read from here using mysql.connector.
4. **Jinja2 Templates (Template Engine)**
   Dynamically generates HTML pages using Python data (e.g., recipe titles, ingredients).
5. **HTML Response (Output)**
   Final user interface that displays content like a list of recipes or form confirmations.

3.2 ER Diagram

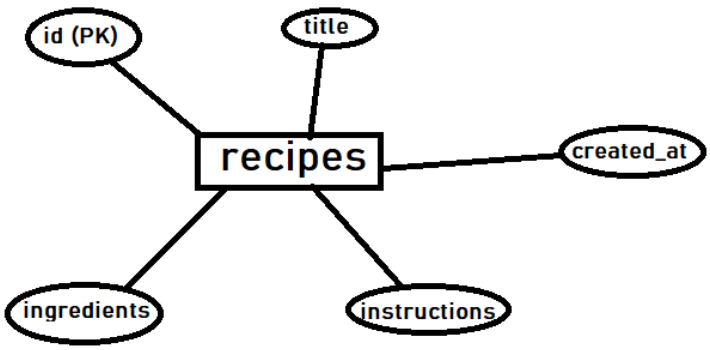


Fig: ER diagram

 Entity: recipes
This is the only table in our simplified application.

 Attributes:

- id: Primary Key (unique for each recipe).
- title: The name of the recipe.
- ingredients: Text listing all required ingredients.
- instructions: Text describing how to prepare the recipe.

 Primary **Key (PK)**:
id ensures each recipe can be uniquely identified. This is important for operations like edit and delete.

This simple schema suffices for a single-user system managing text-based recipes.

3.3 Procedure from Start to Finish

1. Set up the environment

- Install Python and Flask:

```
pip install flask
```

2. Create Database and Table

- Use the init_db() function inside the Flask app to create a table named recipes with fields:
  - id (primary key)
  - title
  - ingredients
  - instructions

3. Build Flask Routes

- / : Shows the list of all recipes (Read)
- /recipe/<id> : View single recipe details (Read)
- /add : Add new recipe (Create)
- /edit/<id> : Edit existing recipe (Update)
- /delete/<id> : Delete recipe (Delete)

4. Create HTML templates

- index.html: Lists recipes with View, Edit, Delete buttons + Add new recipe button
- view.html: Displays single recipe details
- add.html: Form to add new recipe
- edit.html: Form to edit existing recipe

5. Implement CRUD functionality

- Use SQLite queries to perform insert, select, update, delete operations.
- Handle POST requests on Add and Edit pages.

- Use Flask's flash to show success/error messages.
- Confirmation for delete is handled with a JS popup on index page.

6. Add Styling

- Use CSS embedded in HTML templates to create clean, professional user interfaces.
- Add hover effects, spacing, colors, and responsive widths for better UX.

7. Run and Test

- Run the app locally:

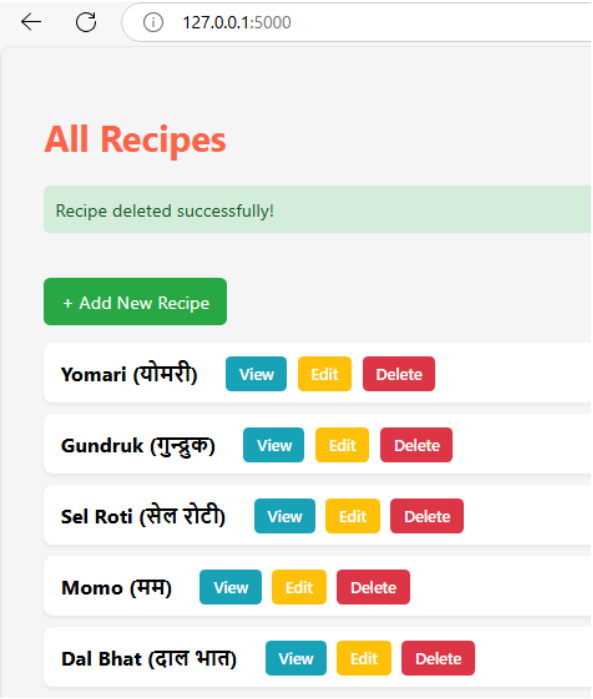
  python app.py

 Visit http://127.0.0.1:5000/ in browser.

 Test add, view, edit, delete features thoroughly.

4. How CRUD Works Here

Main page

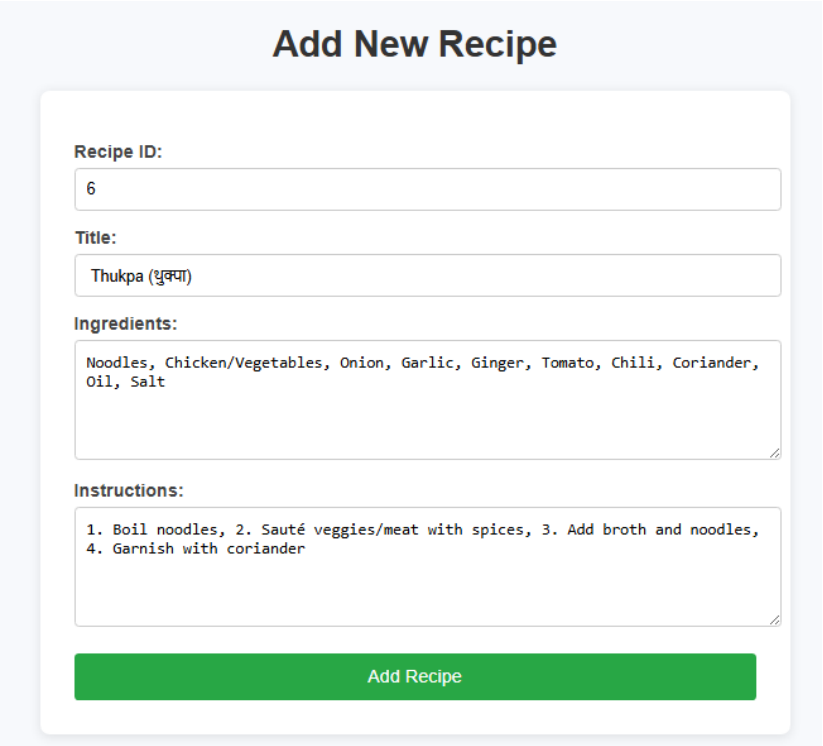


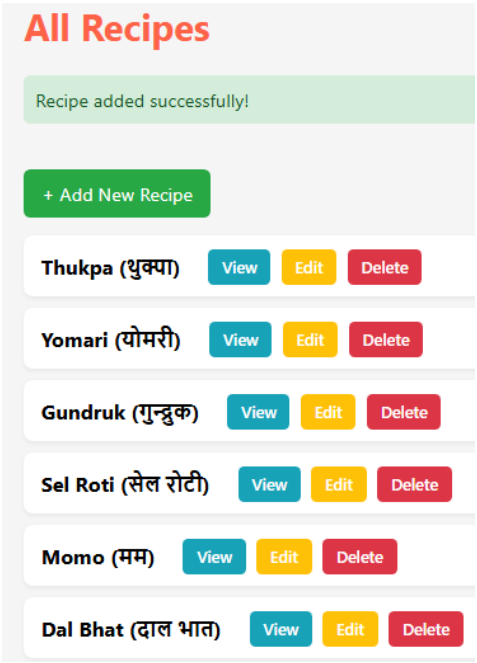
On database:

id	title	ingredients	instructions	created_at
1	Dal Bhat (दाल भात)	Rice, Lentils, Vegetables, Pickle, Ghee, Salt	1. Cook rice and lentils separately, 2. Fry spices...	2025-07-16 19:37:24
2	Momo (मम)	Flour, Water, Minced Meat/Vegetables, Onion, ...	1. Knead dough, 2. Prepare filling, 3. Shape du...	2025-07-16 19:38:15
3	Sel Roti (सेल रोटी)	Rice Flour, Sugar, Water, Cardamom, Oil	1. Mix batter, 2. Heat oil, 3. Pour in ring shape,...	2025-07-16 19:39:07
4	Gundruk (गुन्द्रुक)	Fermented Leafy Greens, Tomato, Onion, Garlic...	1. Soak gundruk, 2. Sauté with spices, 3. Serve...	2025-07-16 19:40:01
5	Yomari (योमरी)	Rice Flour, Chaku (molasses), Sesame Seeds, C...	1. Make dough, 2. Fill with chaku mix, 3. Shape ...	2025-07-16 19:40:46
NULL	NULL	NULL	NULL	NULL

Create

- Route: /add
- Functionality: Accepts form inputs (title, ingredients, instructions) and inserts them into the database.





On database:

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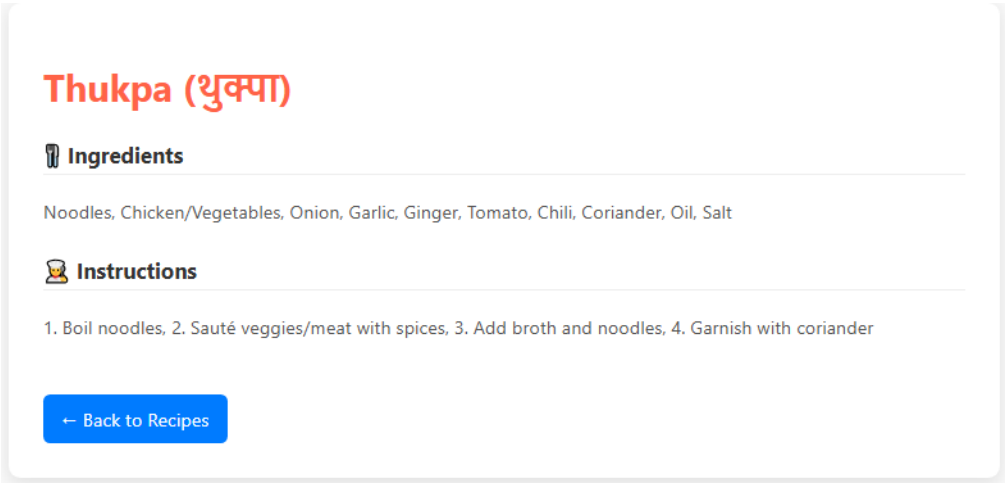
6	Thukpa (थुक्पा)	Noodles, Chicken/Vegetables, Onion, Garlic, Gin...	1. Boil noodles, 2. Sauté veggies/meat with spic...	2025-07-16 21:33:43
NULL	NULL	NULL	NULL	NULL

Read

- Route: / (index), /view/<id>
- Functionality:
  - index: Displays all recipes.
  - view: Shows detailed info for a specific recipe.

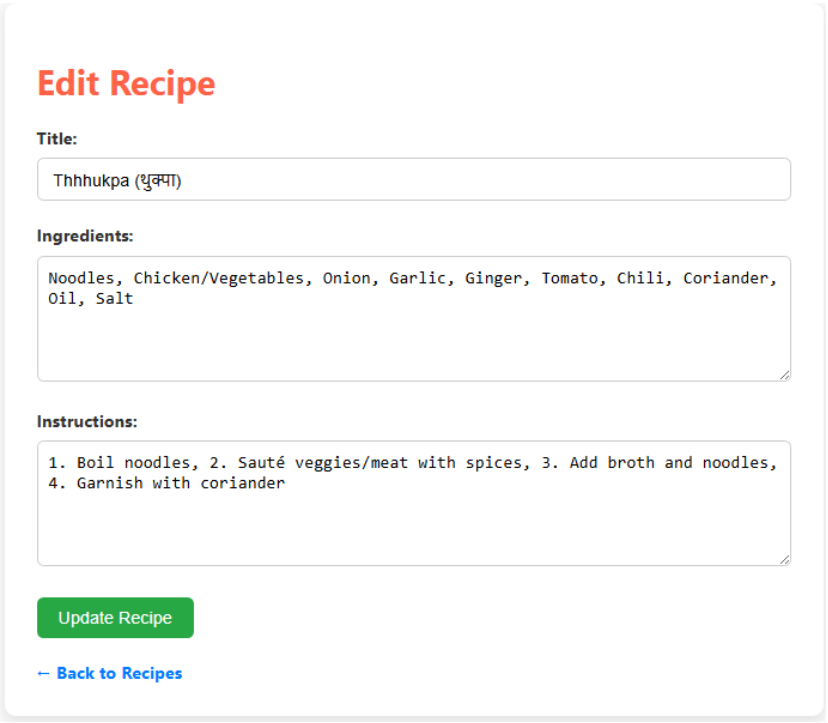
On clicking View:

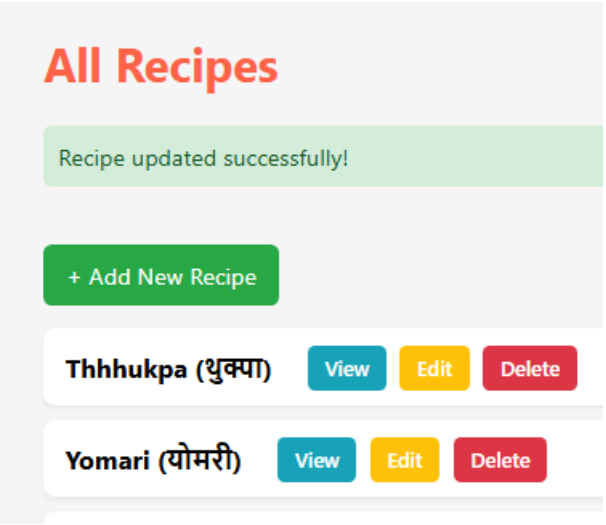


Update

- Route: /edit/<id>
- Functionality: Retrieves recipe by ID, populates a form with current data, and updates the row in the database upon submission.

On clicking edit :





Change can be seen as:Thhhukpa

On database:

id	title	ingredients	instructions	created_at
1	Dal Bhat (दाल भात)	Rice, Lentils, Vegetables, Pickle, Ghee, Salt	1. Cook rice and lentils separately, 2. Fry spices...	2025-07-16 19:37:24
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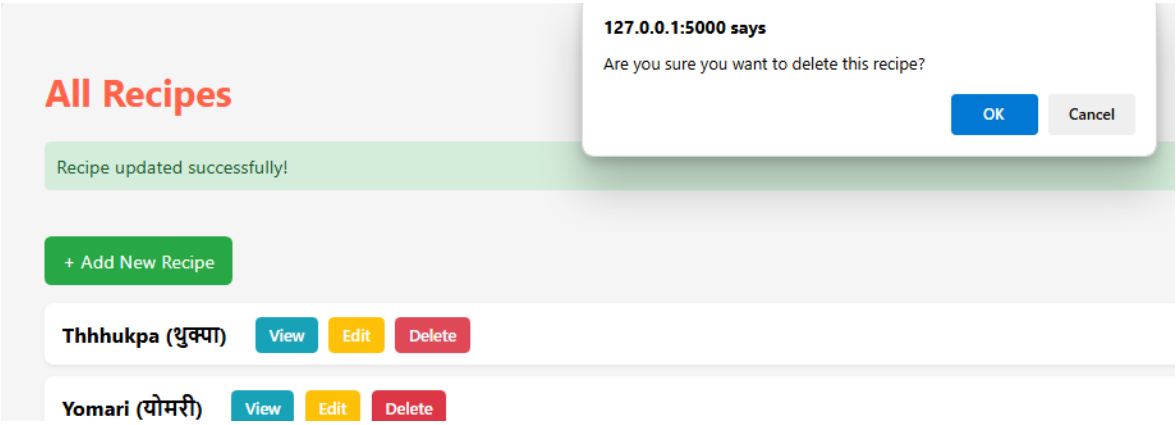
Delete



On deletion (Thhhukpa is deleted)

- Route: /delete/<id>
- Functionality: Confirms then deletes the record for the given ID from the database.

On database:

id	title	ingredients	instructions	created_at
1	Dal Bhat (दाल भात)	Rice, Lentils, Vegetables, Pickle, Ghee, Salt	1. Cook rice and lentils separately, 2. Fry spices...	2025-07-16 19:37:24
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All operations use SQL queries through Python's mysql.connector.

5. Conclusion & Future Enhancements

Conclusion:

The cooking recipe management system is successfully implemented using Flask and MySQL. It provides a simple yet powerful interface for users to manage recipes efficiently. It supports all four core database operations with UI and backend integration and ensures data persistence through MySQL Workbench.

Future Enhancements:

- Add image upload support for each recipe.
- Introduce user authentication and roles.
- Implement recipe categories or tags.
- Add search and filter features.
- Make it mobile-responsive and deployable using platforms like Heroku or Render.

6. References (IEEE Format)

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