NATONAL UNIVERSITY OF COMPUTER AND EMERGING TECHNOLOGY

Programming Fundamentals Final Project

Submitted to

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A Project Submitted in Partial Fulfilment of The FAST University Degree of BSBA By

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Contents

1. Project Description

The Restaurant Menu Management System is a Python-based console program built to help restaurants manage daily operations. The program allows staff to manage dishes, take customer orders, track ingredient stock, generate bills, and create reports.

1.1 Menu Management

The system lets users:

- Add new dishes to the menu
- View the full menu
- Update dish price or ingredients
- Remove dishes
- Search dishes by name or category

Each dish stores:

- Name
- Category
- Price
- Ingredients

1.2 Ordering & Billing

The system can take table-wise orders. It checks if a table is already occupied and warns the user when ingredient stock is low.
Ingredients are automatically deducted as soon as an order is placed.
A bill is generated showing dish names, quantities, and total cost.

1.3 Reporting & Forecasting

The program includes:

- **Sales Report:** Calculates total revenue and identifies best-selling and least-selling dishes.
- **Inventory Report:** Shows remaining ingredient stock and highlights low-stock items.
- **Forecasting:** Predicts next week's ingredient usage based on previous orders.

2. Sample Outputs

2.1 Adding a Dish

```
========= RESTAURANT MENU SYSTEM =========
1. Add New Dish
2. View Menu
3. Update Dish
4. Remove Dish
5. Search Dish
6. Ordering
7. Bill
8. Sales Report
9. Inventory Report
10. Forecast Next Week
11. Exit

Enter option:  1
--- Add New Dish ---
Enter Dish Name:  Margherita Pizza
Enter Category (Appetizer/Main Course/Dessert/Beverage):  Main course
Enter Price:  1699
Enter ingredients separated by commas:  chicken,cheese,flour
Dish Added Successfully!
```

2.2 Placing an Order

```
========= RESTAURANT MENU SYSTEM =========
1. Add New Dish
2. View Menu
3. Update Dish
4. Remove Dish
5. Search Dish
6. Ordering
7. Bill
8. Sales Report
9. Inventory Report
10. Forecast Next Week
11. Exit

Enter option:  6

--- Place Order ---
Enter table number:  2

========== MENU ==========
Name: Margherita Pizza
Category: Main course
Price: 1799.0
Ingredients: chicken, cheese, flour
------------------------------

 Enter dish to order:  Margherita pizza
 WARNING: Low stock on 'cheese' (3 left)!
 WARNING: Low stock on 'flour' (None left)!
 How many plates?:  2
 Added to order!
 Do you want to order more? (yes/no):  no
 Order taken for Table 2
```

2.3 Sales Report

```
========= RESTAURANT MENU SYSTEM =========
1. Add New Dish
2. View Menu
3. Update Dish
4. Remove Dish
5. Search Dish
6. Ordering
7. Bill
8. Sales Report
9. Inventory Report
10. Forecast Next Week
11. Exit
Enter option:  8

--- SALES REPORT ---
Total Revenue: 3598.0
Best Selling Dish: Margherita Pizza
Least Popular Dish: Margherita Pizza
```

3. Challenges & Solutions

3.1 Ingredient Stock Handling

Challenge: Managing ingredient deduction and showing warnings when stock gets low.
Solution: A loop deducts ingredients based on order quantity, and warnings are shown when stock < 5 units.

3.2 Preventing Duplicate Table Orders

Challenge: System originally allowed multiple orders for the same table.
Solution: A set () named was introduced active tables to track currently occupied tables.

3.3 Searching & Updating Dishes

Challenge: User input variations caused mismatches (capital letters, extra spaces).
Solution:. strip and lower was used for converting ingredients into a list.

3.4 Forecasting

Challenge: Forecasting next week's ingredient usage required linking dish, quantity, and ingredients.
Solution: Order history was stored as a list of items, and ingredient totals were summed accurately.