



DHARMSINH DESAI UNIVERSITY, NADIAD

Faculty of Technology

Department of Computer Engineering

B. Tech Semester IV

Subject : Software Engineering Principles & Practices

Project Title : Restaurant Management System

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Project By :

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1. Abstraction :

Food industry is one of the evolving industries nowadays. With continued evolution it is of utmost importance to provide best and smooth experience to the customer as well as management. It can be possible with the use of day to day evolving technology. Restaurant management systems are the best way to combine effectiveness and smoothness to workflow as well as experience.

Restaurant management systems(RMS) can improve management for the restaurant management and staff as well as it should improve customer experience with fast and smooth workflow. Restaurant should be paperfree so it can show the restaurant's "GO GREEN" approach which can also help restaurants brand value and brand recognition.

2. Introduction:

Restaurant Management System(RMS) is designed specially for inner management of restaurants. RMS helps any restaurant to boost management efficiency. Daily functions become easy with use of technology which is also true for restaurants. RMS can be part of every single function of a restaurant and it will help restaurants to smooth their workflow and give the best experience to the customer. RMS also helps upper management to review processes and activities.

From viewing the menu online to get their online bill, customers can experience modern technology and smooth workflow of the system, which helps to build brand recognition. Overall restaurant management software can be a great tool for management as well as can be used for marketing purposes.

Technology Used for Developing RMS :

- Python
- Django Framework
- PostgreSQL
- HTML, CSS, Bootstrap
- Javascript

Tools :

- Pycharm
- Google Chrome
- Github (Version Control System)

Platform :

- Virtual Environment
- Local Development Server
- PgAdmin

3. Software Requirements :

1. User Management :

1.1 : Login :

Description : All user should be able to log in by providing

Input : name, password

Output : Log in successful.

1.2 : Register Staff Details :

Description : Manager should be able to add a new staff member by adding his/her given details : Name, Salary, Work, password, Allotment of table.(If staff is waiter)

Input : Staff Details

Output : Confirmation of details added

1.3 : Updating staff details :

Description : Manager should be able to edit any detail of staff.

Input : Staff details to be updated

Output : Details Changed Confirmation

1.4 : Removing Staff Member :

Description : Manager should be able to remove a staff member from data.

Input : Staff member name

Output : Confirmation message of deletion

2. Menu Management :

2.1 : Adding Menu Item :

Description : Menu item can only be added by manager. Items can only be added to current categories.

Input : Item name, category, price, Item key

Output : Confirmation of item addition.

2.2 : Updating Menu Item :

Description : Menu item can only be updated by manager.

Input : Item details to be updated

Output : Confirmation of item details updated.

2.3 : Displaying Menu :

Description : Menu should display category wise to customers.
Customer should

be able to add items to the bill.

Input :

Output : Menu items category wise with add item button.

3. Bill management :

3.1 : Create a new bill :

Description : A new bill should be created when a customer order via software or manager/waiter also can create a new bill if customer orders manually. A notification should be there for the kitchen supervisor when a new bill is created. Bill identified by table no.

Input : Create bill button by any user having permission of it / Item name, quantity and description if ordered by the customer.

Output : A notification to kitchen supervisor, waiter who is handling table no. of bill added. Display menu for customer(user). New Bill Generation.

3.2 : Updating a bill :

3.2.1 Item addition :

Description : Waiter or manager can add items with a number of items and description.

Input : Item details : Item name, Quantity, Description

Output : Notification to kitchen supervisor and waiter.

3.2.2 Item Marked as done :

Description : An item added in the bill can be marked as done by the kitchen supervisor.

Input : Marks on items

Output : item marked

3.3 : Request Bill :

Description : Customer can request a bill. Which should send notification to the waiter which is handling particular table no. and manager.

Input : Table number of requested bill.

Output : Notification to waiter and manager.

3.4 : Print Bill :

Description : Waiter or manager can make a command for printing a bill containing List of Items, Rate, Quantity, Total. And Payable amount.

Input : Table number of requested bill.

Output : A printable copy of a particular requested bill to the printer. Notification to waiter.

3.5 : Finish Bill :

Description : Manager can only finish bill. Finishing a bill means amount

can save bills to the database.

Input : Table number of requested bill.

Output : Confirmation of saving entry to database.

3.6 : Displaying a bill :

Description : Customer, waiter and manager where customer will only see item name and quantity, where other users will be able to watch all the details.

Input : Table number of displaying bill.

Output : Requested bill

4. Accounting :

4.1 : Display sales :

Description : Manager should be able to see total of sales with particular entries by given time period.

Input : Time period(Date wise)

Output : Total of sales generated in given time period with particular bill Entries.

5. Feedback :

5.1 : Give Feedback :

Description : Customers must be able to leave feedback.
We have to collect data from customers while he gives feedback.

Input : Feedback and details

Output : Thank you message to customer, Notification to manager about new feedback.

5.2 : Display Feedback :

Description : Manager will be able to display feedback in a given time period.

Input : Time Period

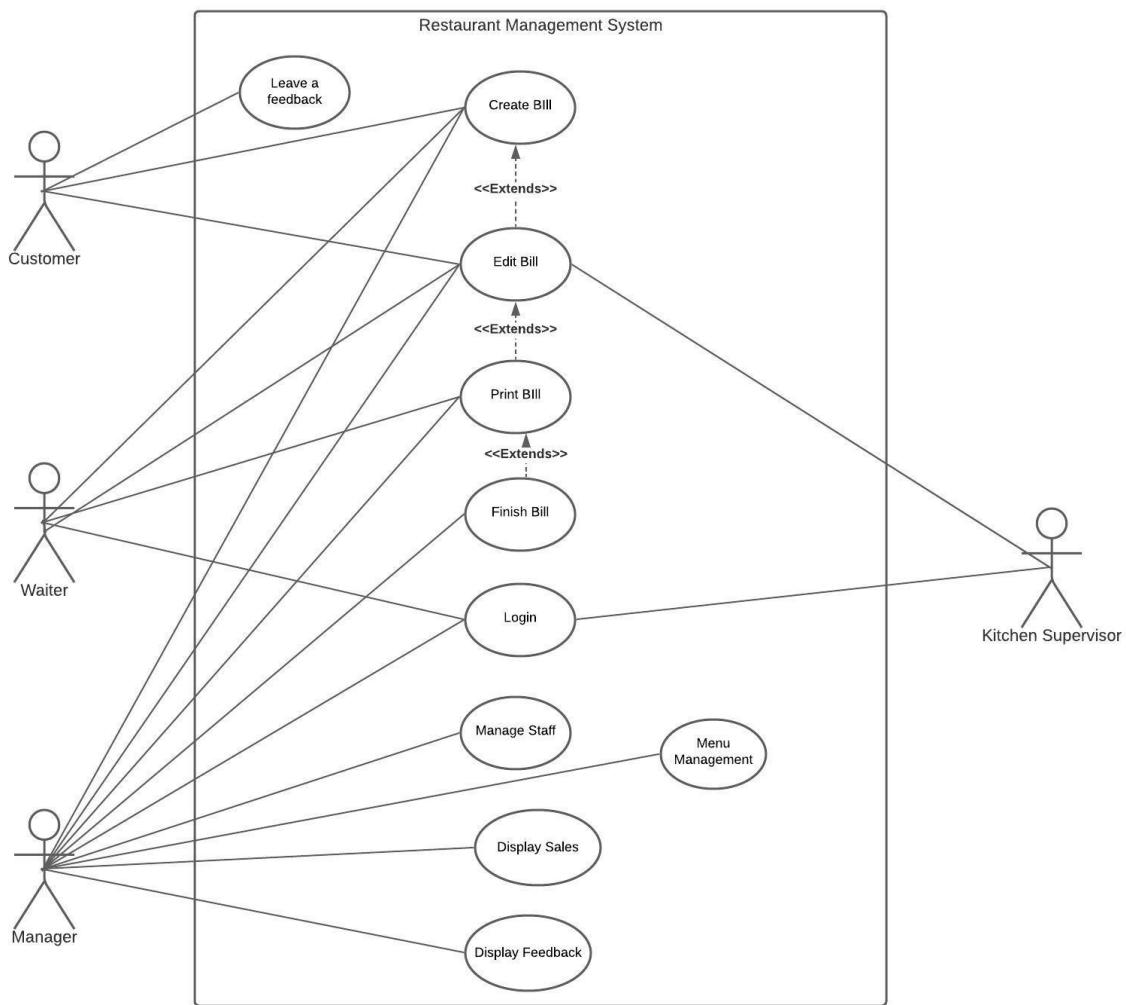
Output : Feedback during a given time period.

Non Functional requirements :

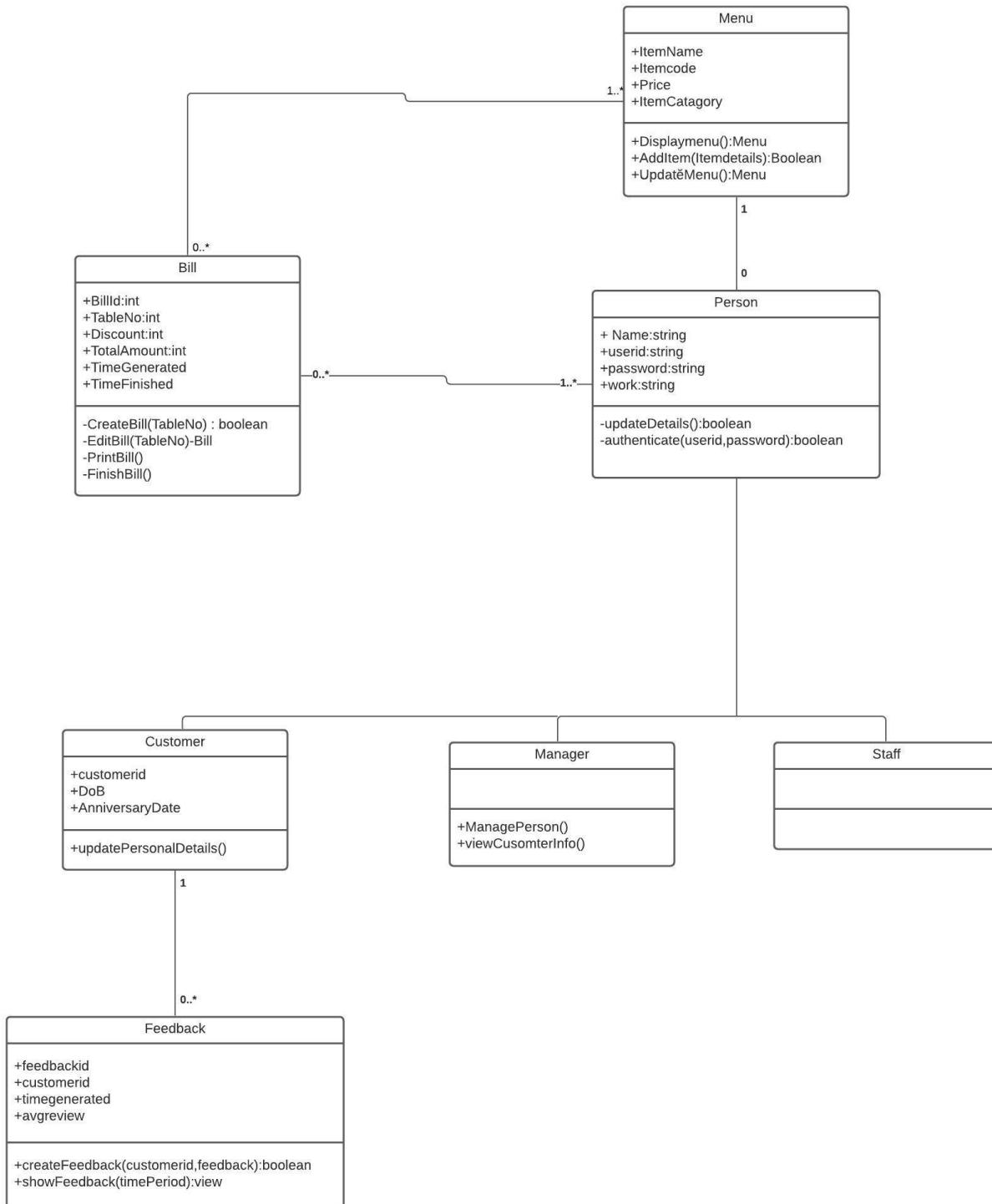
1. Responsive
2. Performance
3. Reliability
4. Security
5. Database

4. Design :

1. Use case Diagram :

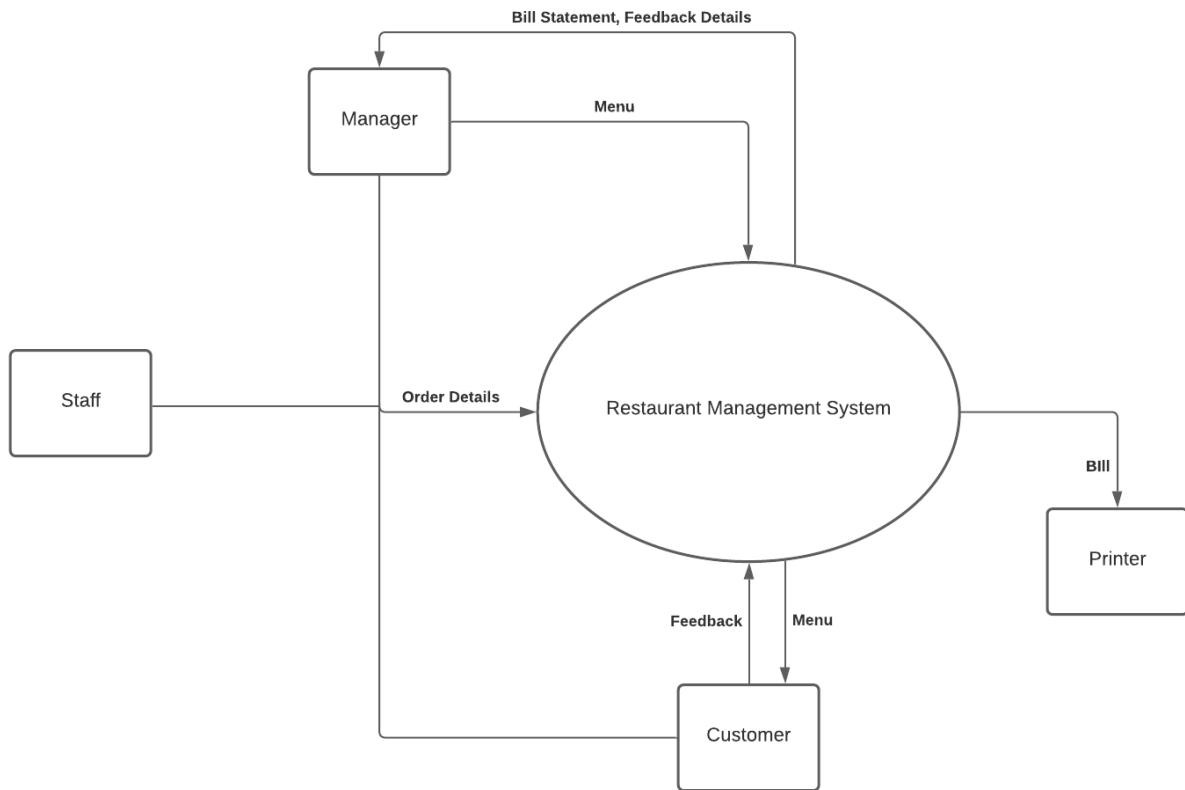


2. Class Diagram :

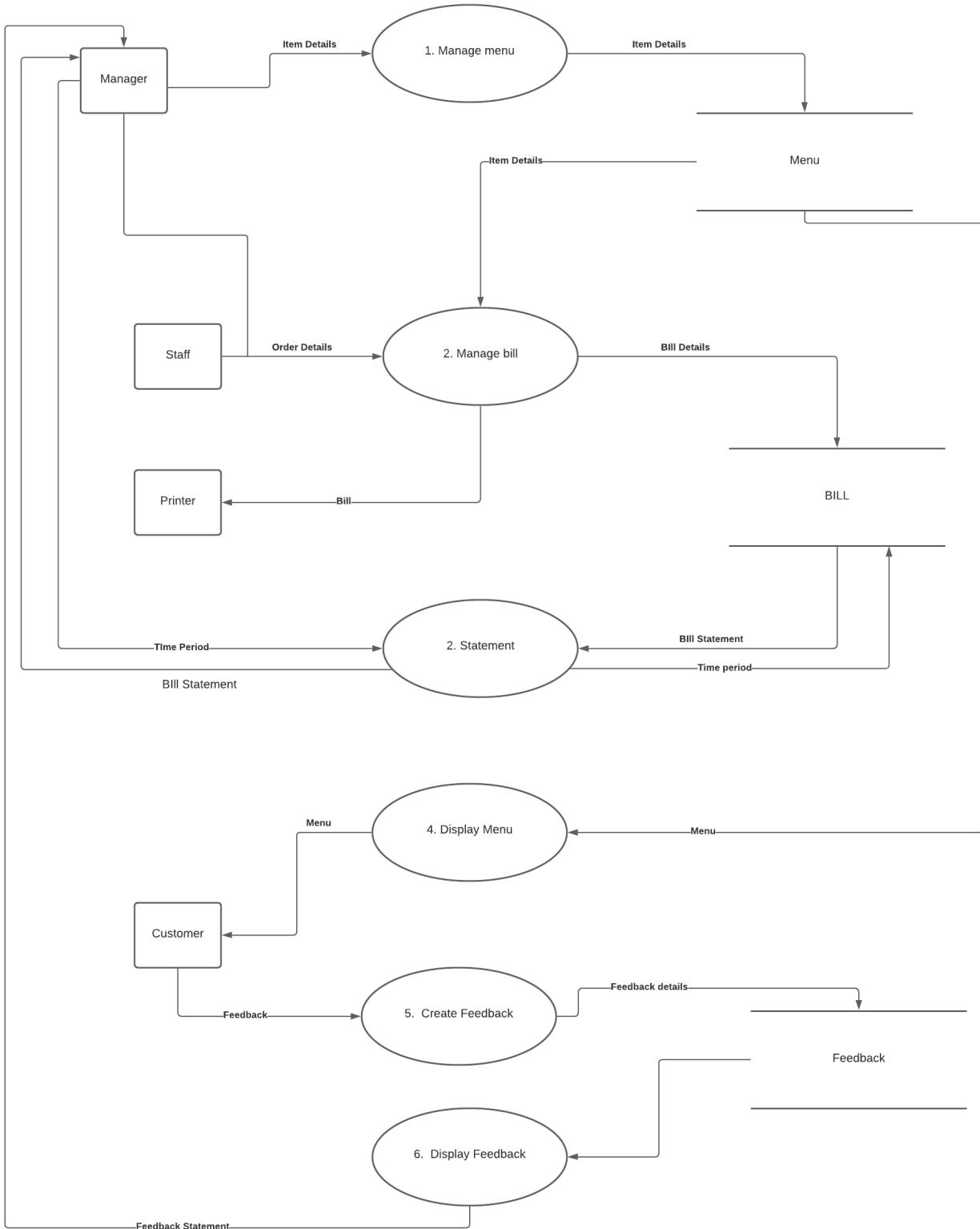


3. DFD Diagrams :

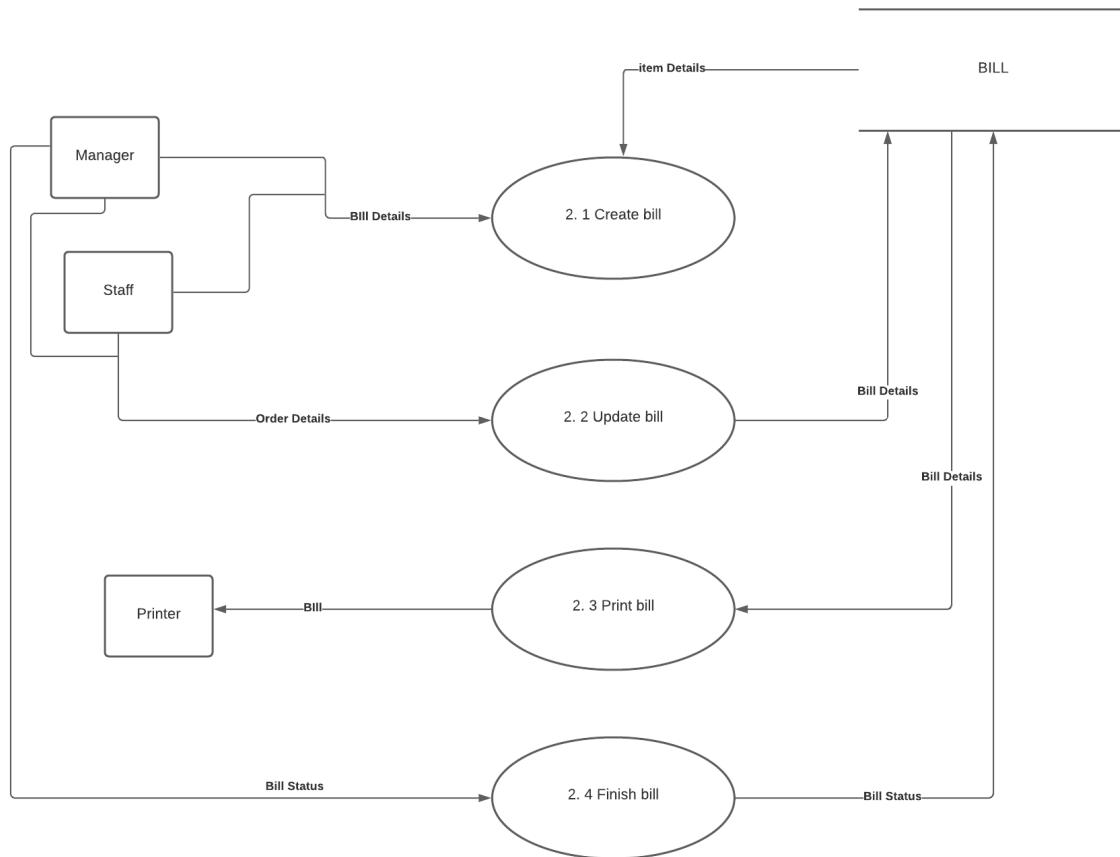
Level 0



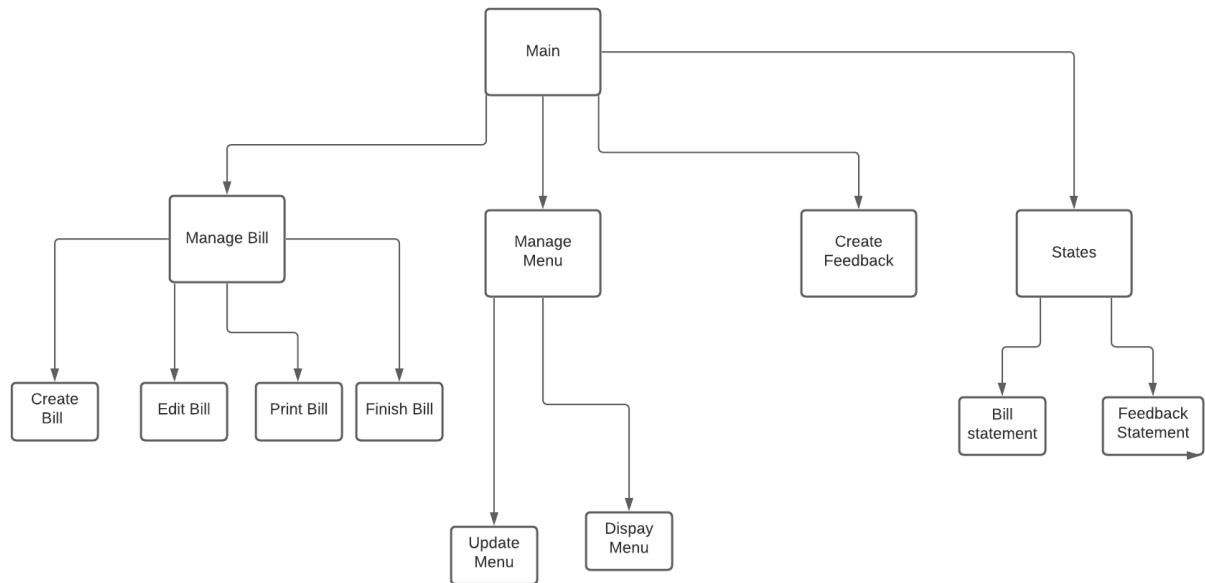
Level 1



Level 2

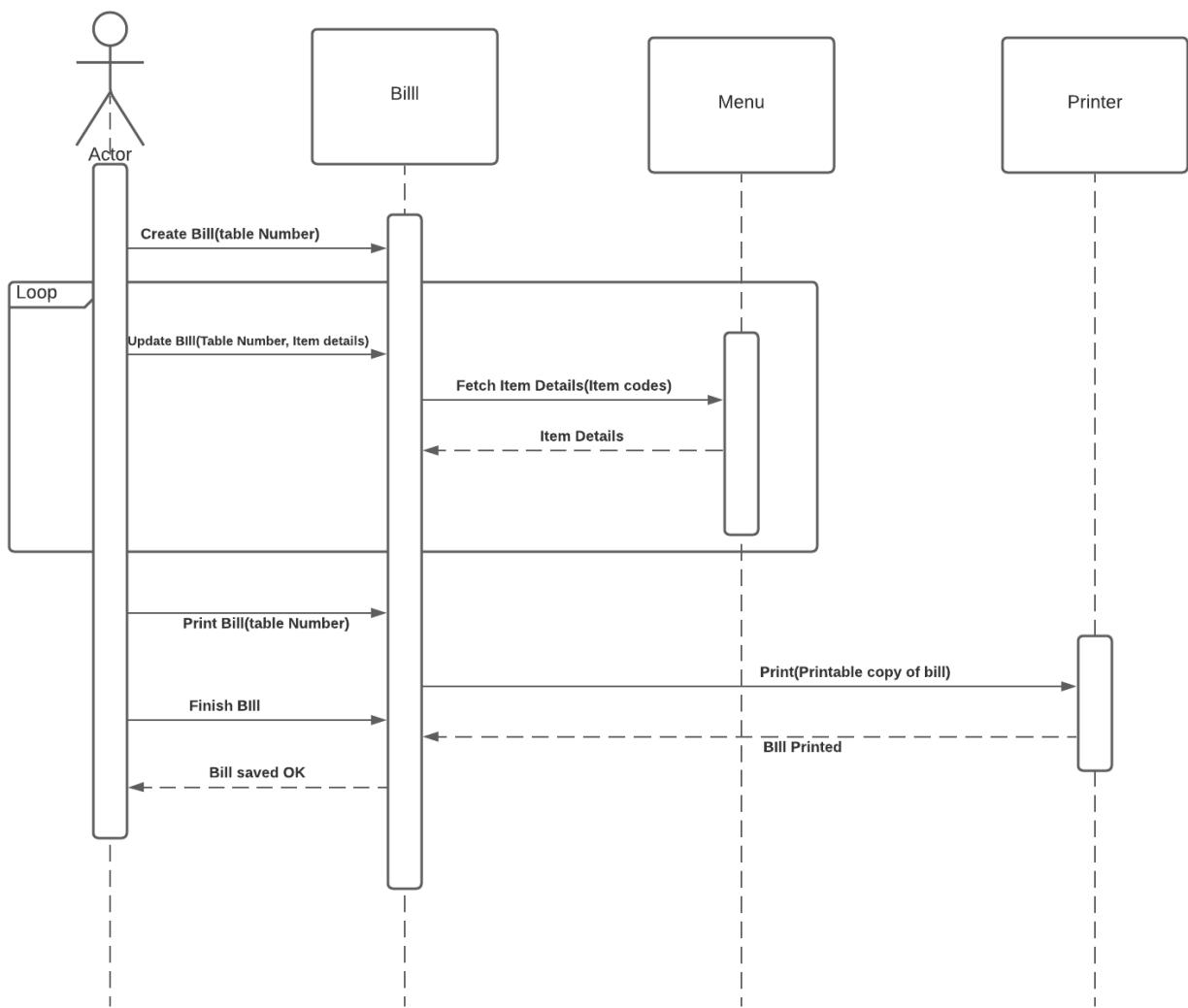


4. Structure Chart

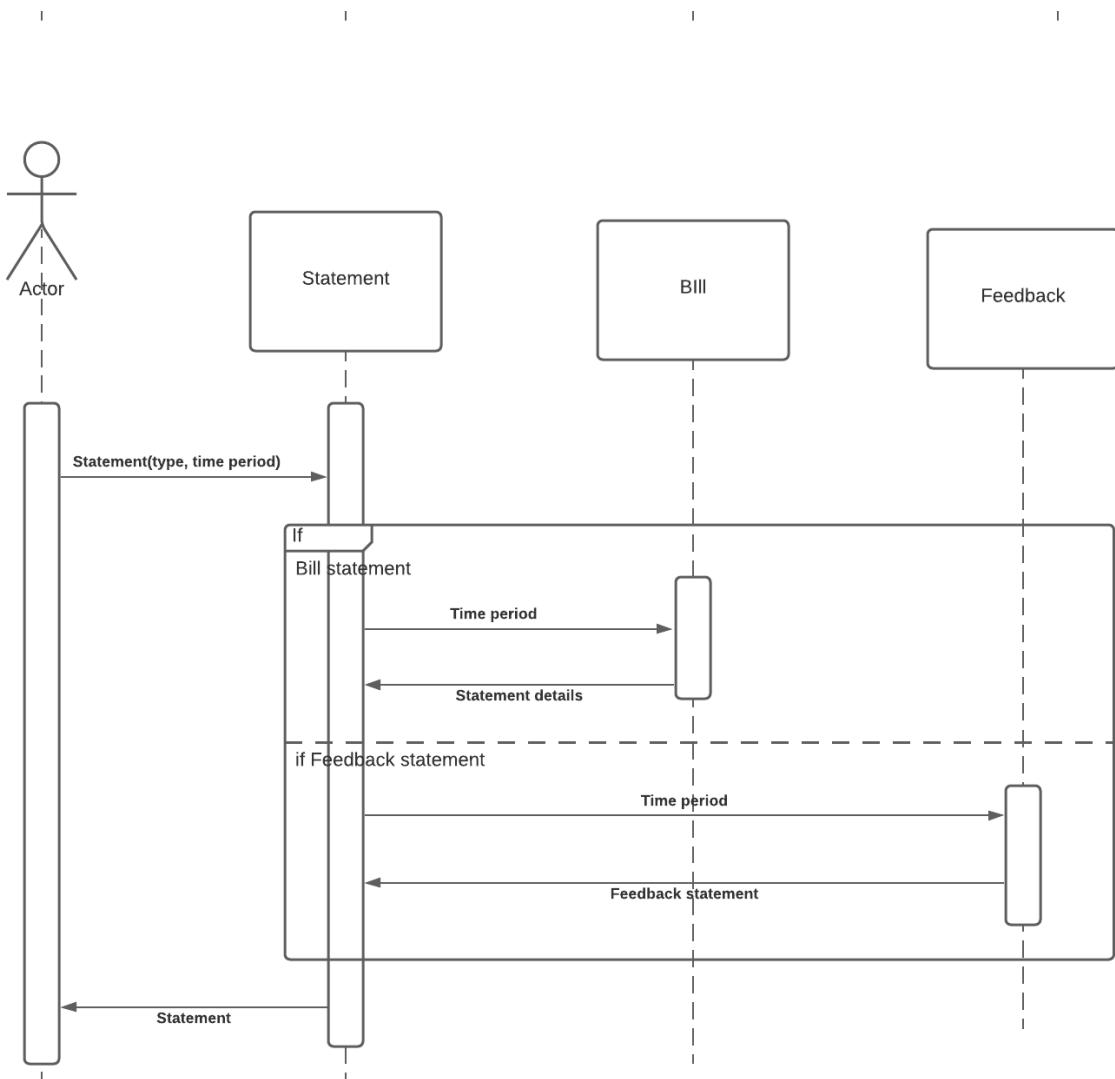


5. Sequence Diagram :

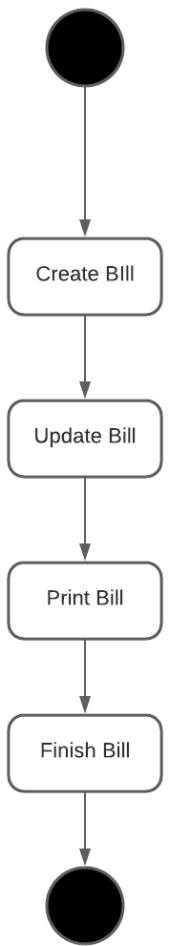
1. Manage Bill :



2. Statement :



6. Activity diagram :



5. Data Dictionary :

User								
Sr No	Field Name	Data Type	Width	Required	Unique	PF/FK	Refer red Table	Description
1	Id	int	11	YES	YES	YES	-	Auto Increment
2	username	varchar	150	YES	YES	YES	-	
3	email	varchar	254	YES	YES	NO	-	
4	password	varchar	128	YES	NO	NO	-	
5	last_login	datetime	16	YES	NO	NO	-	
6	is_superuser	boolean	1	YES	-	-	-	
7	first_name	varchar	30	YES	NO	NO	-	-
8	last_name	varchar	150	YES	NO	NO	-	-
9	date_joined	datetime	6	YES	NO	NO	-	
10	is_staff	boolean	1	YES	NO	NO	-	Default NO

Menu								
Sr No	Field Name	Data Type	Width	Required	Unique	PF/F K	Refe rred Tabl e	Description
1	Id	int	11	YES	YES	YES	-	Max Length 3
2	Item_name	varchar	150	YES	YES	NO	-	
3	Item_category	choice	254	YES	YES	NO	-	Choice from Category list
4	Item_price	int	11	YES	NO	NO	-	

Bill								
Sr No	Field Name	Data Type	Width	Required	Unique	PF/FK	Referred Table	Description
1	Id	int	11	YES	YES	YES	-	Auto Increment
2	table_no	int	2	YES	YES	NO	-	Max value 17
3	Total	int	11	YES	NO	NO	-	
4	Discount	int	3	YES	NO	NO	-	Max value 100
5	Bill_date	datetime	16	YES	NO	NO	-	
6	is_printed	boolean	1	YES	NO	NO		Default NO
7	is_active	boolean	1	YES	NO	NO		Default YES

Bill-Menu								
Sr No	Field Name	Data Type	Width	Required	Unique	PF/FK	Referred Table	Description
1	Id	int	11	YES	YES	YES	-	Max Length 3
2	bid	int	11	YES	NO	YES	Bill	On_delete = CASCADE
3.	item_id	varchar	3	YES	NO	YES	Menu	On_delete = Restricted
4	item_name	varchar	150	YES	YES	NO	-	
5	quantity	int	11	YES	YES	NO	-	Default 1
6	Item_price	int	11	YES	NO	NO	-	

Feedback								
Sr No	Field Name	Data Type	Width	Required	Unique	PF/FK	Refer red Table	Description
1	Id	int	11	YES	YES	YES	-	Auto Increment
2	Feedback	varchar	150	YES	NO	NO	-	
3	ratings	int	1	YES	NO	NO	-	Max Value 5
4	date	datetime	11	YES	NO	NO		

6. Implementation :

Modules :

1. User
2. Feedback
3. Menu
4. Bill

1. **User** : This module handles all user activities and data. Login, logout and register are the main functionalities of this module.
2. **Feedback** : Functions related to feedback are part of the Feedback module. Receive feedback from the user and display it to the manager(user) are main functionalities of this module.
3. **Menu** : Adding new item, updating item, deleting item and displaying available items from menu are functionalities included in Menu module. Menu is also connected with bill via Bill menu relation.
4. **Bill** : Bill module contains bills related to all functionalities. Creating new bill, updating current bill, generating pdf of bill and printing bill, finish bill are functionalities in bill module. To provide a bill statement of a given time period is also a function of the bill module. Bill module is connected with the menu module via bill-menu relation.

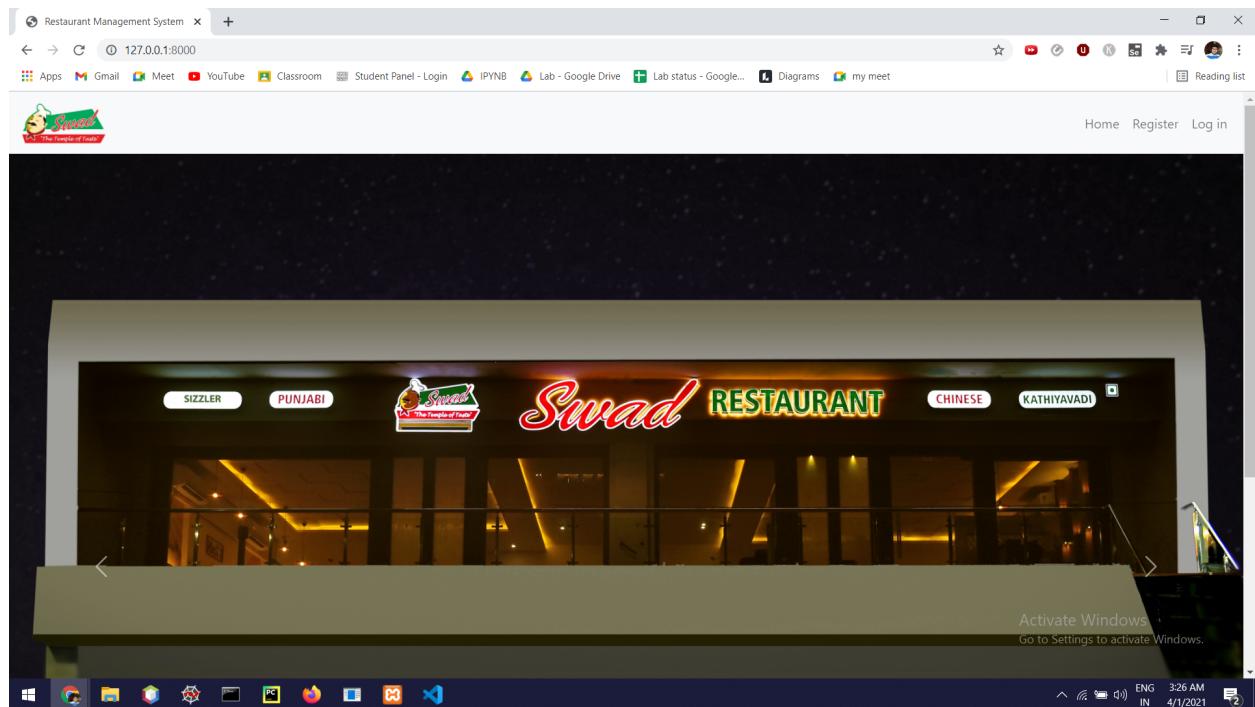
7. Testing :

Test Case	Expected Output	System Output	Result
User Module			
Input simple password while registering	Should not proceed further for the registration process.	Not accepting simple passwords. Must contain certain parameters.	PASS
Providing different password for registering	Should not proceed further for the registration process.	Sends message : “Password Does Not Match”	PASS
Wrong credential for login	Should not proceed for the login process.	Send Messages : “Wrong Credentials.”	PASS
Menu Module			
Change Availability of particular item	Should not display in display menu	Not displaying in display Menu	PASS
Adding same ID of item	Should not accept item	Sends Message : “Item ID Exists.”	PASS
Adding same item name	Should not accept item	Sends Message : “Item name already exists.”	PASS
Deleting Item	Restricted action if item in use in any bills	Throws Exception	FAIL

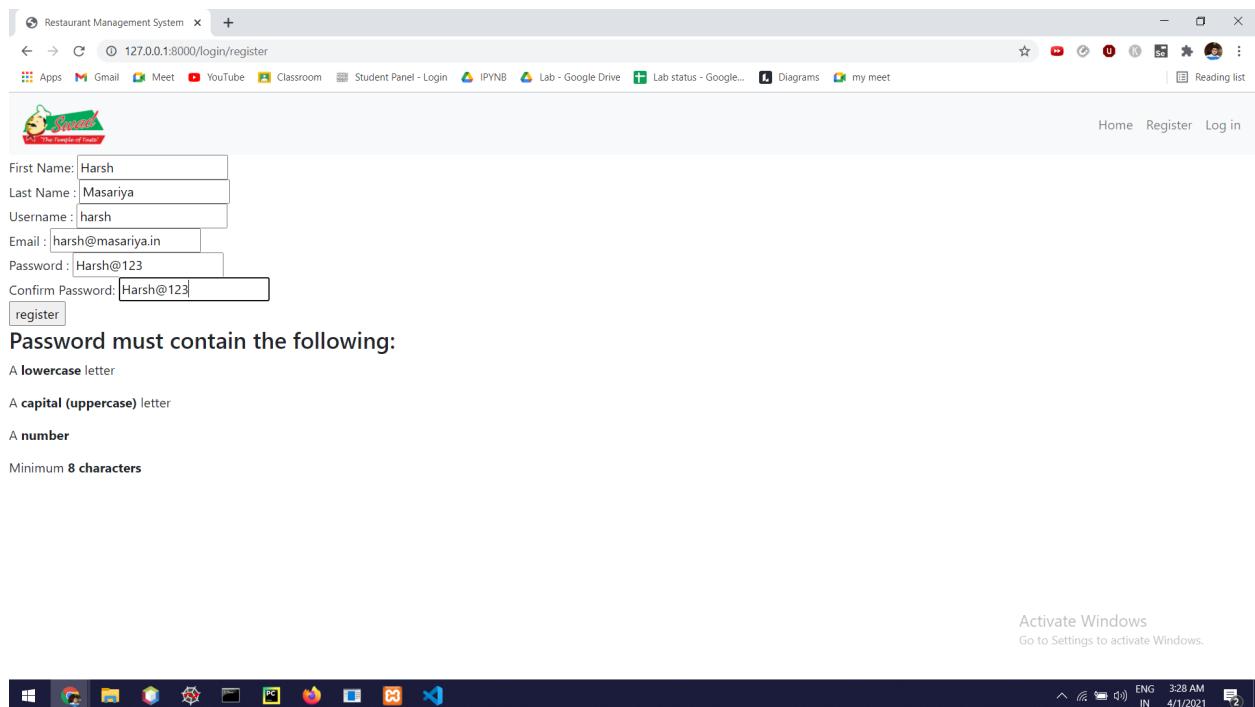
Bill Module			
Trying to create new bill for active table	Should not create new table	Send Message : “Something went Wrong”	PASS
Update bill	Should work according to instructions	Working completely fine	PASS
Printing Empty Bill	Should not print empty bill	Prints bill with one item	FAIL
Statement with reverse dates	Should not accept	Displays no sales	Partially PASS
Feedback Module			
Empty feedback	Should not accept	Redirects to home page and no entries to database	Partially PASS
User Authentication			
All functionalities via urls by different users	Anyone should not access all files or functionalities	Redirecting to according pages for logged in or not logged in users	PASS

8. Screen-shots :

1. New User view :



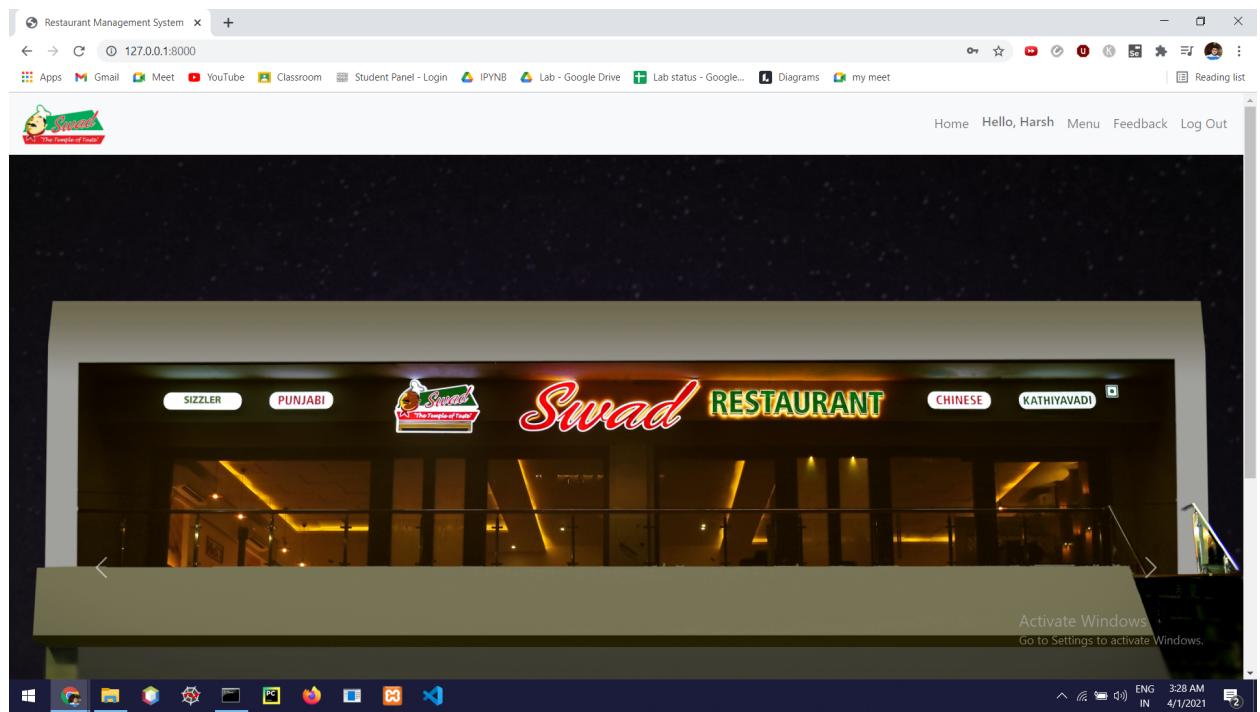
2. Register :



3. Login:

The screenshot shows a web browser window titled "Restaurant Management System". The URL bar displays "127.0.0.1:8000/login/". The page content includes a logo for "Swad - The Temple of Taste", a login form with fields for "Username" (containing "harsh") and "Password" (containing "*****"), and a "Login" button. Below the form, there is a link "New User ?" and another link "Register Here". A message "User Created" is displayed at the bottom.

4. Logged in user view :



5. Display menu :

The screenshot shows a web browser window titled "Restaurant Management System" at the URL "127.0.0.1:8000/menu/". The page header includes links for Home, Hello, Harsh, Menu, Feedback, and Log Out. A logo for "Savory - The Temple of Taste" is visible. The main content is a table titled "Menu" with the following data:

Category	ID	Name	Price
Dessert	GJ	Gulab Jamun	30
Dessert	RM	Ras Malai	50
Punjabi	VB	Veg Bhature	250
Punjabi	VKD	Veg Kadai	180
Punjabi	PT	Paneer Tadka	200
Punjabi	PMI	Paneer Malai	200
Punjabi	DB	Dum Biryani	300
Punjabi	DF	Dal Fry	150
Punjabi	PF	Punjabi Fix Lunch	140
Punjabi	JR	Jeera Rice	100

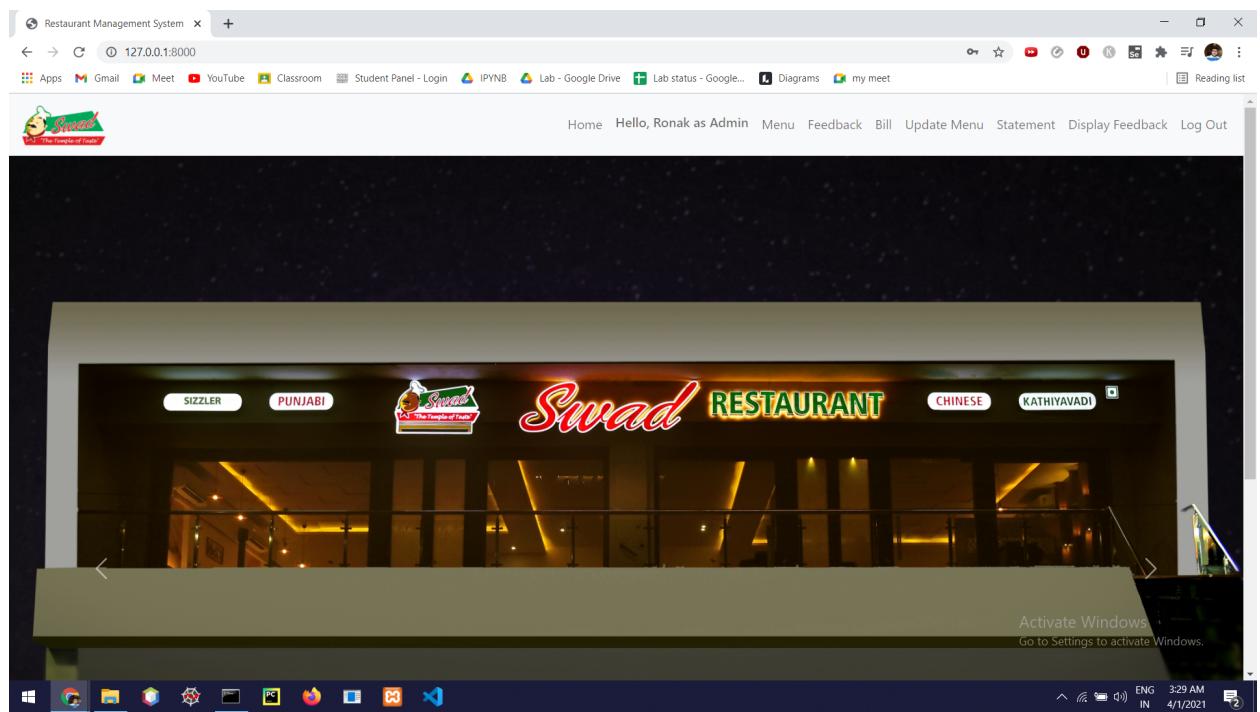
6. Feedback :

The screenshot shows a web browser window titled "Restaurant Management System" at the URL "127.0.0.1:8000/feedback/". The page header includes links for Home, Hello, Harsh, Menu, Feedback, and Log Out. A logo for "Savory - The Temple of Taste" is visible. The main content is titled "HTML Forms" and contains the following form fields:

Your kind Workds

Ratings
 Provide ratings out of 5

7. Staff User login view :



8. Updating Menu :

A screenshot of a web browser window titled "Restaurant Management System" at address "127.0.0.1:8000/menu/update". The page shows a "Menu" section with the sub-headline "We have lot of dishes to satisfy your hunger." Below this is a "Add Item" form. A table lists various food items with columns for Category, Name, ID, Price, Update, Delete, and Is Available?. The table includes rows for Beverages, Bread, Dessert, Punjabi, and other categories. The "Update" and "Delete" buttons are located in each row. The "Is Available?" column contains "No Change" or "Yes Change" buttons. A watermark for "Activate Windows" is visible in the bottom right corner of the page.

9. Adding/updating item :

Update Item x +

127.0.0.1:8000/menu/additem

Apps Gmail Meet YouTube Classroom Student Panel - Login IPYNB Lab - Google Drive Lab status - Google... Diagrams my meet

Reading list

You are adding item to menu.

Item Name :

Item ID :

Item Category : Punjabi ▼

Item Price :

Is Available ?

ADD

10. Display Feedbacks :

Restaurant Management System × +

127.0.0.1:8000/feedback/display

Apps Gmail Meet YouTube Classroom Student Panel - Login IPYNB Lab - Google Drive Lab status - Google... Diagrams my meet

Reading list

 Home Hello, Ronak as Admin Menu Feedback Bill Update Menu Statement Display Feedback Log Out

Feedbacks

Description	Ratings	Date
Food was Good	4	March 4, 2021, 12:55 p.m.
Nice service, food average	3	March 4, 2021, 12:55 p.m.
Worst Experience	1	March 4, 2021, 12:55 p.m.
25	3	March 4, 2021, 5:31 p.m.
Nice food. Loved it	5	March 4, 2021, 5:33 p.m.
Nice food. Loved it. Awesome	4	March 4, 2021, 6:14 p.m.
Hello foodie	7	March 4, 2021, 6:21 p.m.
Hello foodie	7	March 4, 2021, 6:22 p.m.
jkl	5	March 5, 2021, 7:24 a.m.
Hi I am Ronak	5	March 11, 2021, 5:09 a.m.

Activate Windows
Go to Settings to activate Windows.

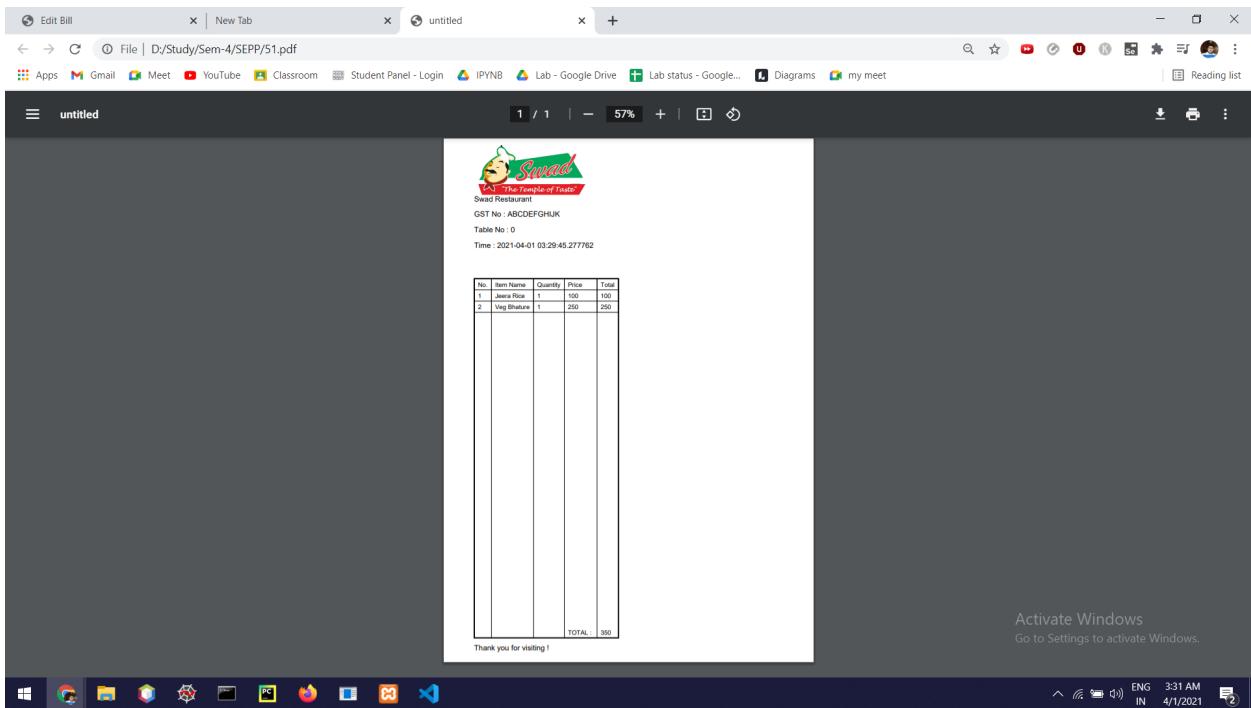
11. Bills view :

The screenshot shows a web browser window titled "Restaurant Management System" at the URL "127.0.0.1:8000/bill/". The page displays a list of tables numbered 0 through 7. Table 4 is highlighted with a blue background and labeled "This is active". The browser's address bar shows the URL "127.0.0.1:8000/bill/". The top navigation bar includes links for Home, Hello, Ronak as Admin, Menu, Feedback, Bill, Update Menu, Statement, Display Feedback, and Log Out. The bottom status bar shows system information like battery level, language (ENG), time (3:30 AM), date (4/1/2021), and a taskbar with various application icons.

12. Updating bill :

The screenshot shows a web browser window titled "Edit Bill" at the URL "127.0.0.1:8000/bill/updatebill/0". The page displays a table with bill items. The table has columns for ID, Name, Quantity, Price, Item Total, Save/update, and Delete. The first two rows show items "Jeera Rice" and "Veg Bhature" with their details. The third row is for "Dum Biryani" with quantity 1, price 300, item total 300, and a "Save" button. At the bottom, there are "Print", "Finish", and "Save" buttons. The browser's address bar shows the URL "127.0.0.1:8000/bill/updatebill/0". The top navigation bar includes links for Home, Hello, Ronak as Admin, Menu, Feedback, Bill, Update Menu, Statement, Display Feedback, and Log Out. The bottom status bar shows system information like battery level, language (ENG), time (3:30 AM), date (4/1/2021), and a taskbar with various application icons.

13. Printing Bill :

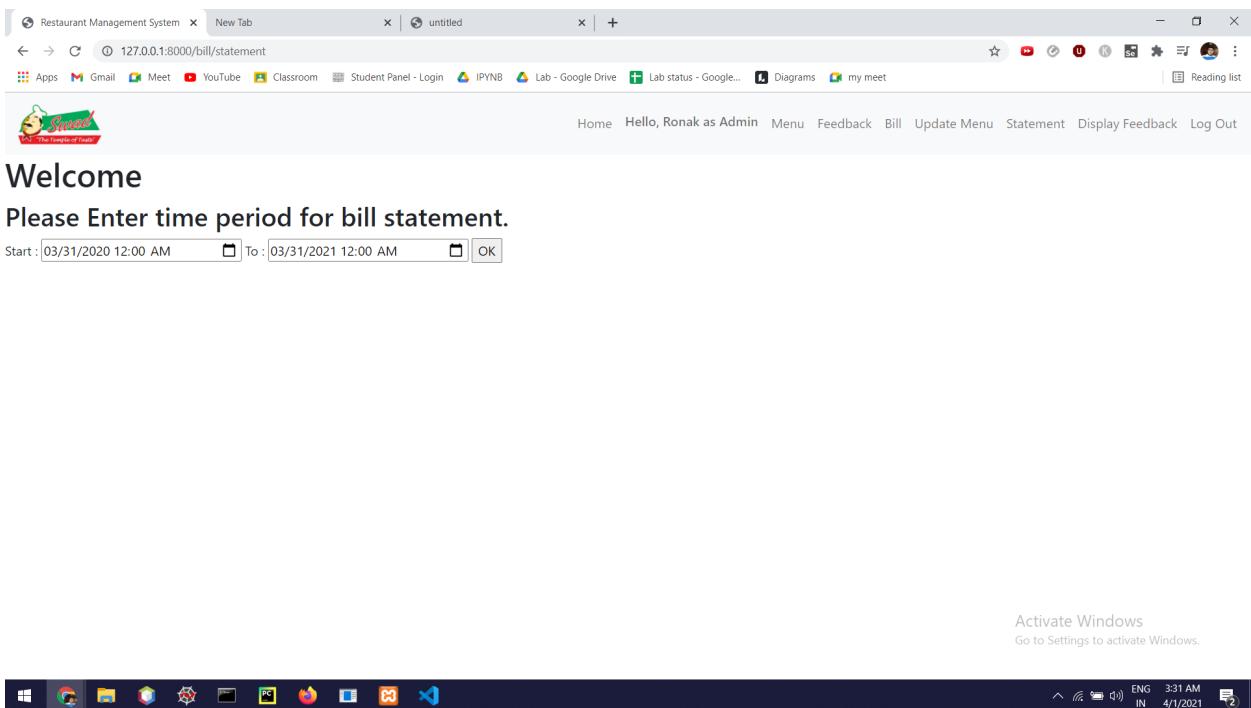


The screenshot shows a web browser window titled "untitled". The address bar indicates the file is located at D:/Study/Sem-4/SEPP/51.pdf. The page content displays a bill from "Swad Restaurant" with the tagline "The Temple of Taste". The bill includes the following details:

No.	Item Name	Quantity	Price	Total
1	Amrit Rice	1	100	100
2	Veg Bhature	1	250	250
				TOTAL : 350

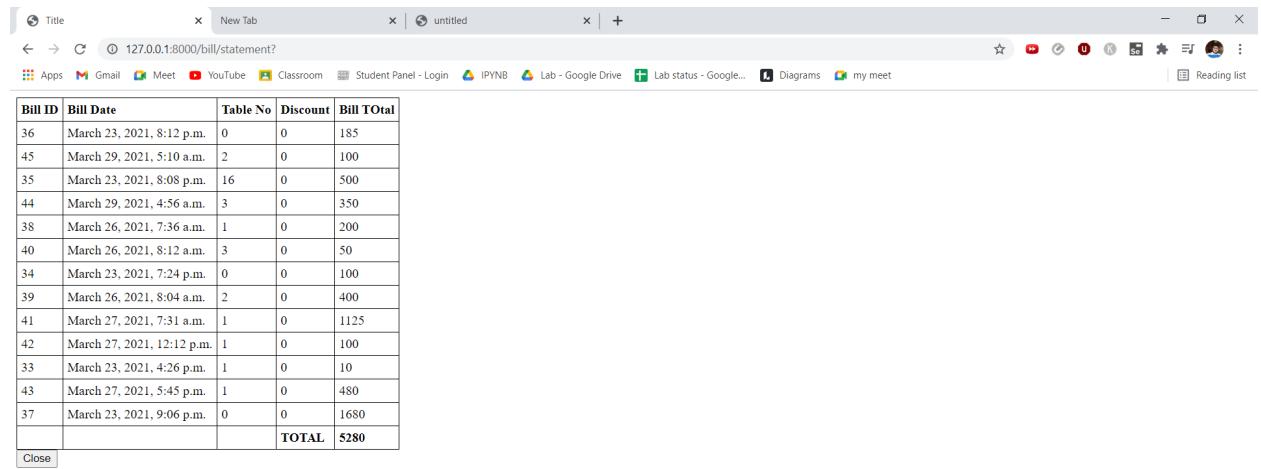
At the bottom of the bill, it says "Thank you for visiting !". On the right side of the browser window, there is a message: "Activate Windows Go to Settings to activate Windows." The system tray at the bottom shows standard icons for battery, signal, and date/time (4/1/2021, 3:31 AM).

14. Statement :



The screenshot shows a web browser window titled "Restaurant Management System". The address bar shows the URL 127.0.0.1:8000/bill/statement. The page content displays a welcome message and a prompt for entering a time period for the bill statement. Below the prompt are two input fields: "Start : 03/31/2020 12:00 AM" and "To : 03/31/2021 12:00 AM", each with a calendar icon, followed by an "OK" button. On the right side of the browser window, there is a message: "Activate Windows Go to Settings to activate Windows." The system tray at the bottom shows standard icons for battery, signal, and date/time (4/1/2021, 3:31 AM).

15. Statement for given time period :



A screenshot of a web browser window titled "untitled". The address bar shows the URL "127.0.0.1:8000/bill/statement?". The page content is a table with the following data:

Bill ID	Bill Date	Table No	Discount	Bill Total
36	March 23, 2021, 8:12 p.m.	0	0	185
45	March 29, 2021, 5:10 a.m.	2	0	100
35	March 23, 2021, 8:08 p.m.	16	0	500
44	March 29, 2021, 4:56 a.m.	3	0	350
38	March 26, 2021, 7:36 a.m.	1	0	200
40	March 26, 2021, 8:12 a.m.	3	0	50
34	March 23, 2021, 7:24 p.m.	0	0	100
39	March 26, 2021, 8:04 a.m.	2	0	400
41	March 27, 2021, 7:31 a.m.	1	0	1125
42	March 27, 2021, 12:12 p.m.	1	0	100
33	March 23, 2021, 4:26 p.m.	1	0	10
43	March 27, 2021, 5:45 p.m.	1	0	480
37	March 23, 2021, 9:06 p.m.	0	0	1680
			TOTAL	5280

Activate Windows
Go to Settings to activate Windows.



9. Conclusion :

The Restaurant Management System is quite a big project, helped to learn a lot about real time programming issues and difficulties. Most functionalities work properly. List of implemented functionalities is below :

- User registration
- User login
- Staff login
- User authentication
- Accepting Feedback
- Displaying all feedbacks
- Displaying menu
- Update menu
- Adding item to menu
- Updating existing items in menu
- Deleting Items
- Creating new bill
- Updating current bills
- Print bills
- Finish bill
- Statement

10. Limitations and Future Extensions :

The Restaurant Management System needs effective internet connection as well as trained and educated staff. This system is implemented for only one restaurant. Functionality implemented is not sufficient, it needs more extension in future.

Future extensions :

- Stock Management
- Staff Management
- Manager & Staff different functionalities
- Kitchen supervisor view
- Customer Ordering

11. Bibliography :

Mentioned documents referred while developing system :

Python documentation : <https://docs.python.org/3/>

Django Documentation : <https://docs.djangoproject.com/en/3.1/>

Stackoverflow : <https://stackoverflow.com/>

Bootstrap : <https://getbootstrap.com/>

Reportlab PDF generating :

<https://www.reportlab.com/docs/reportlab-userguide.pdf>

For HTML/CSS references : <https://www.w3schools.com/html/> &

<https://www.geeksforgeeks.org/html-tutorials/>