RESTAURANT BILLING SYSTEM

A Report Submitted in Partial Fulfillment
of the Requirements
for the Degree of

Bachelor of
Technology in
Computer science

By

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STUDENT'S DECLARATION

I /WE hereby declare that the work being presented in this report entitled **"RESTAURANT BILLING SYSTEM"** is an authentic record of my/our work carried out under the supervision of assistant professor "**Dr. Shalini Gupta**".

The matter embodied in this report has not been submitted by me/us for the award of any other degree.

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Dated

Sign of HOD	**Sign of supervisor**
Dr. Shubha Jain	Dr. Shalini Gupta

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ABSTRACT

This project is aimed at developing a Restaurant Billing System. The purpose of the project is to develop a user-friendly GUI-based billing system. The application can be accessed and effectively used by the user. The billing system contains the menu which is available in the restaurant. The owner or the cashier has to check the item ordered by the customer and enter the number of orders given for a particular item in the menu. Once the items are selected, the cashier can automatically get the total and the receipt will be generated. A simple GUI is provided for easy access. The system's design is so simple that users won't find it difficult to use and understand

A billing system can be very useful within a business environment. Instead of making bills manually or summing up the total manually, it is very much time-consuming and also may have some human errors like adding up the wrong total or adding wrong items to the bill. When making a handwritten bill the owner and customer both have to repeatedly check the total, items added, etc. It also sometimes results in a Bad Impression of the Restaurant from a Customer. Ideally, users should be able to generate bills without any mistakes and quickly, enabling them to fasten or improve their process. To overcome this problem, we have come up with this project, that is, Restaurant Billing System Using Python.

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TITLE PAGE: RESTAURANT BILLING SYSTEM USING PYTHON

1- INTRODUCTION

The “Restaurant Billing System” or “RBS” is an application to automate the process of information recording and billing of a restaurant. This desktop based application is designed to administer its users and customers. RBS is a billing system, made for the effective utilization of modern technology in the organization. It is an automated software that can handle a lot of information about the restaurant’s employees, order history, reservation data. It has the capability to process bills and gather information about its employees and billing history. It is designed for the sole purpose of efficiency, speed and accuracy. Waterfall Model is used to develop this software where different requirements are identified at first, analyses the requirements then design the software using various tools and techniques and using the development language the software is developed. Different testing like unit testing and integration testing are done during the development process.

1.1 BACKGROUND

A restaurant is a business which prepares and serves food and drinks to customers in exchange for money, either paid before the meal, after the meal, or with an open account. Meals are generally served and eaten on premises. Restaurants vary greatly in appearance and offerings, including a wide variety of cuisines and service models ranging from inexpensive fast food restaurants to high-priced luxury establishments. Restaurants are one of the growing business in recent times. In Nepal, many restaurants are doing very well by providing quality service to its customers. It has to deal with a lot of information about its client and employees, all of which are kept 3 and recorded manually and physically in a drawer or a room. Due to this situation, finding any reliable data when required and in time is not possible.

1.2 OBJECTIVE OF THE PROJECT

The main objective of this software is a computerized working environment. This system is made on the assumption that the organization is fully requires manual work for any task. This project will serve the following objectives:

- To add and maintain records of available menu.
- To add and maintain employee details.
- To add and maintain description of new menu.
- To provide view of transaction to the owner.
- To provide a convenient solution of billing pattern.
- To make an easy to use environment for users.
- Easy to use system.

1.3 PROBLEM DEFINITION

The billing process is done manually by manpower. It results in delayed time for the consumer and to the organization while the bill is being processed. So, there is a room for improvement here. A certain computer based billing system could aid the organization to utilize its resources better. Computerized Billing System provide capabilities for entering client, employee and payment information, building a record and managing other related data needs in the organization.

The currently used system contains the following problems which are listed below:

- Inability of modification of data
- Manual operator control
- Lots of paperwork
- Difficult to record information systematically
- Difficult to retrieve information in time

1.4 PROJECT OVERVIEW

Restaurant Billing System is a computer based billing system with user friendly interface which automatically manages the billing process of the customer very easily taking only a short period of time. The system can large amount of data and also generates bill for the customer. Billing history, reservation information and staff information can also be obtained with the use of RBS. It is an automated desktop based software which has a simple design and very easy to use also. This project's main focus is on proper management of information regarding the staffs, billing and reservation records. It is also specialized in automatically processing the customer bills and discounts. The proposed system either does not require paper work or very few paper works are required. All the data is fetched into the computer immediately and various bills can be generated through computers. Since all the data is kept in a database, no data of the organization can be destroyed. Moreover works become very easy because there is no need to keep data on papers

1.5 SCOPES AND LIMITATIONS

The software has a lot of features and advantages over the paper based billing system. It has the following scopes:

- This project will help the employee in fast billing.
- The project will enable to see free reservation available.
- Quality and faster service can be given to the customers.
- Easy to maintain in future prospect.
- This project enable employees to maintain a great database of information regarding the billing and reservation

The limitations of this system are as follows:

- It is a desktop based software. A wider reach of customers cannot be obtained.
- Insufficient time for development.
- Need further more improvements for high class restaurants
- Employees/staff should be trained at first to use this system

2-SYSTEM REQUIREMENTS

2.1SOFTWARE REQUIREMENTS

- **OPERATING SYSTEM:** Windows 10
- **TOOLS**: Python idle

2.2 Hardware Requirements

- **PROCESSOR** : Any Processor above Intel Core due 2
- **RAM :** 2GB
- **HARD DISK** : 512gb
- **INPUT DEVICE**: 104 Keys standard keyboard
- **OUTPUT DEVICE:** Display Screen

3- GENERAL ARCHITECTURE

The general architecture of the application is shown in the figure below.

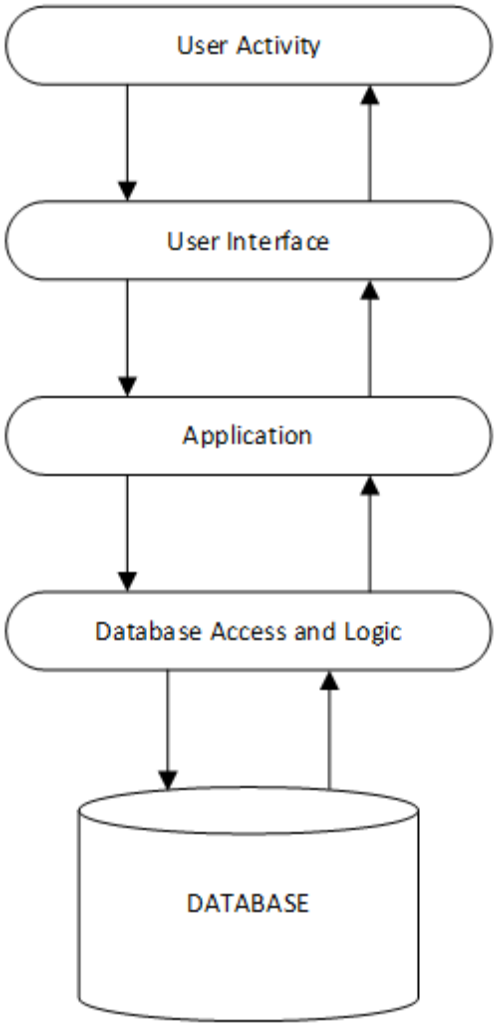


Figure 1: General Architecture of the system.

3.1 Unified Modelling language (UML)

Unified Modelling language (UML) is a standardized modelling language enabling developers to specify, visualize, construct and document artefacts of a software system. Thus, UML makes these artefacts scalable, secure and robust in execution. UML is an important aspect involved in object-oriented software development. It uses graphic notation to create visual models of software systems.

3.2 Use case diagram

A use case diagram is a graphical representation of the interaction among the elements of a system. A use case is a methodology used in a system analysis to identify, clarify and organize system requirements.

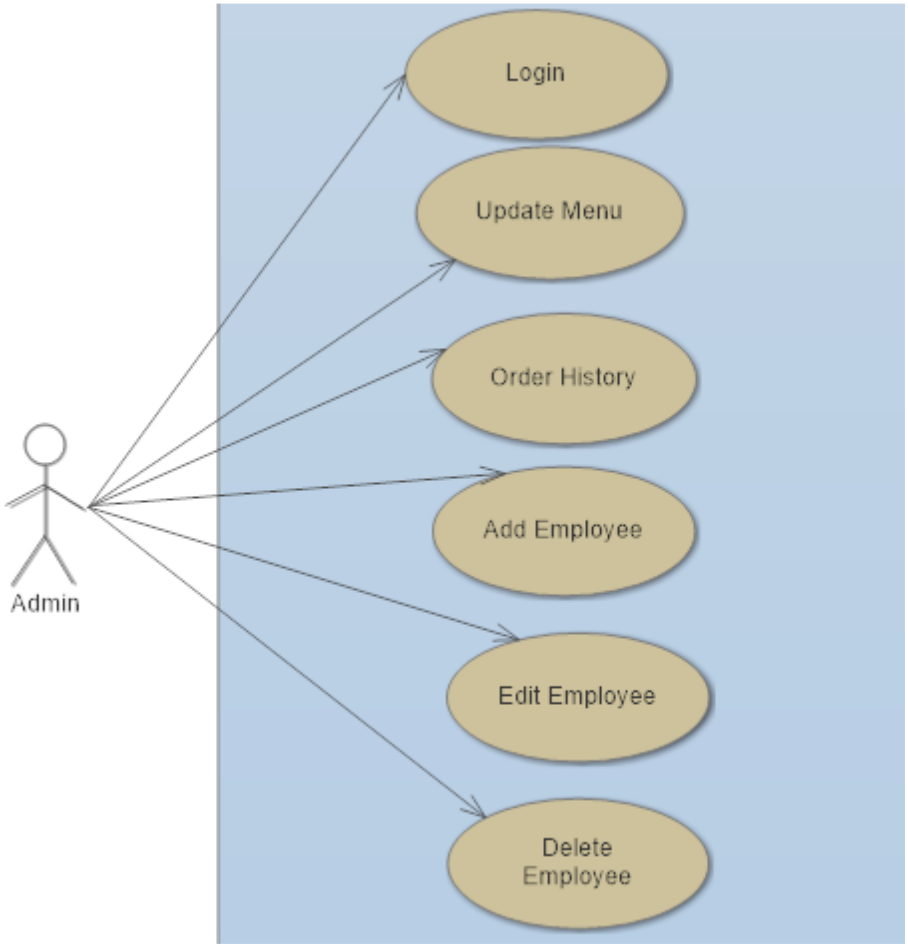


Figure 2: Admin Function

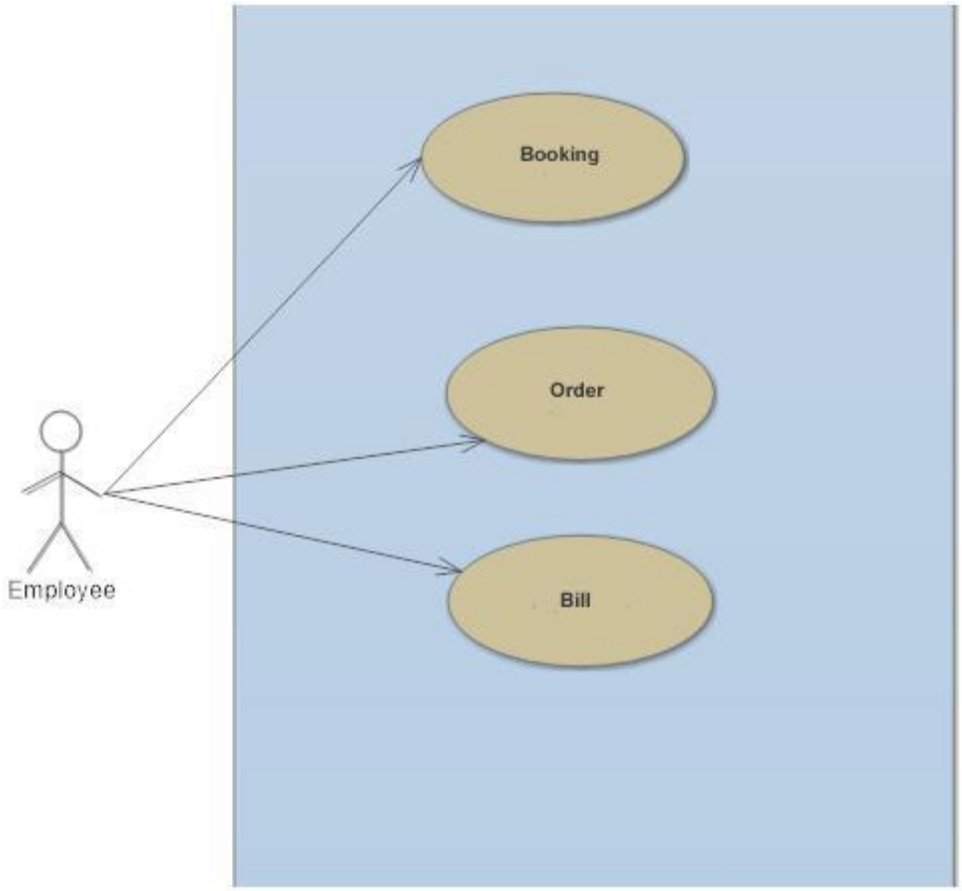


Figure 3: Employee Function

3.3 CLASS DIAGRAM

A class diagram is an illustration of the relationship and source code dependencies among the classes in the Unified Modelling Language (UML). In this context, a class defines the methods and variables in an object, which is specific entity in a program or the unit code representing the entity.

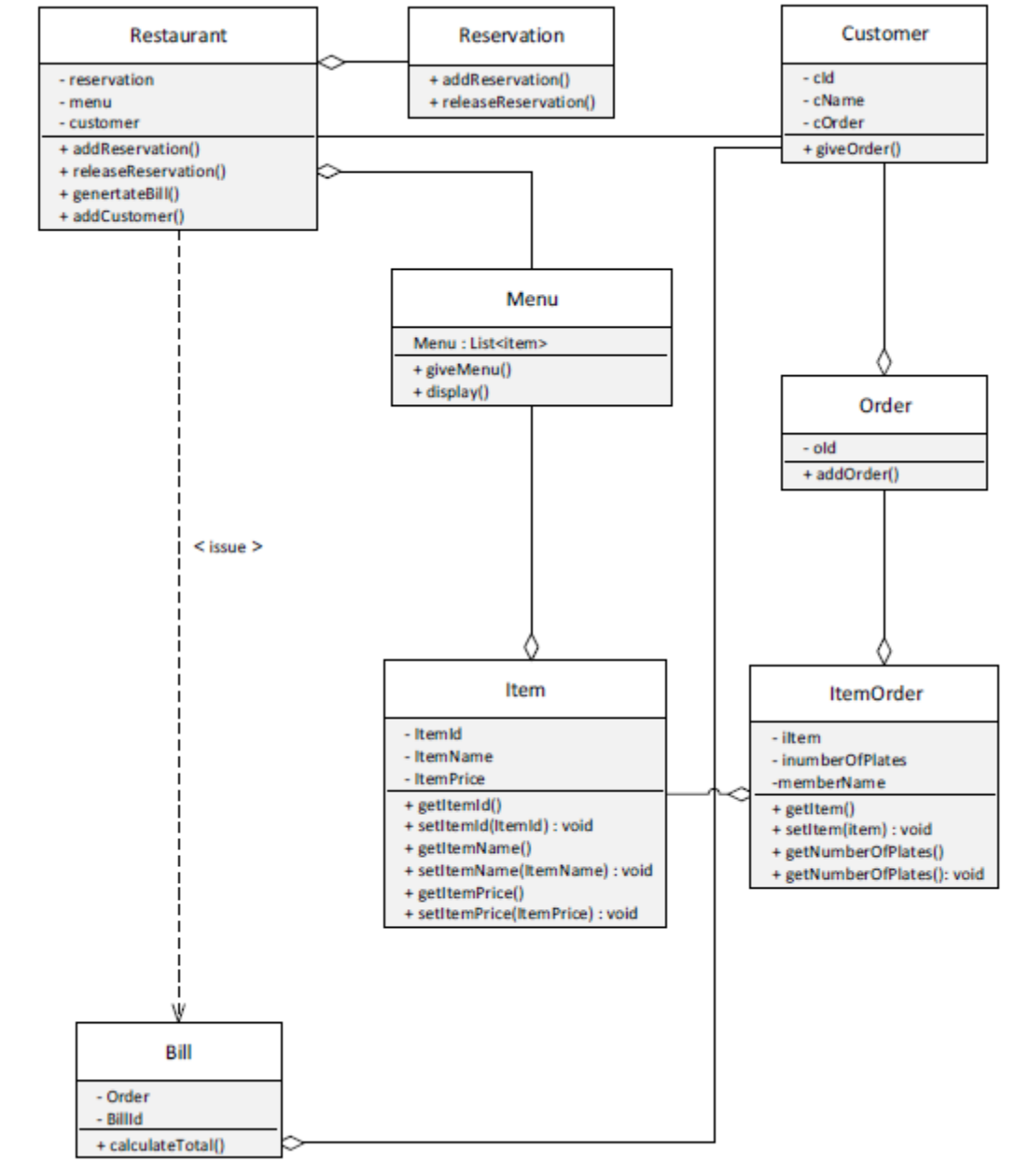


Figure 4: Class Diagram

4. SOFTWARE DESIGN AND CODING

4.1 SOFTWARE DESIGN

The design phase of software development deals with transforming the customer requirements as described in the SRS documents into a form implementable using a programming language. The software design process can be divided into the following three levels of phases of design:

1. Interface Design
2. Architectural Design
3. Detailed Design

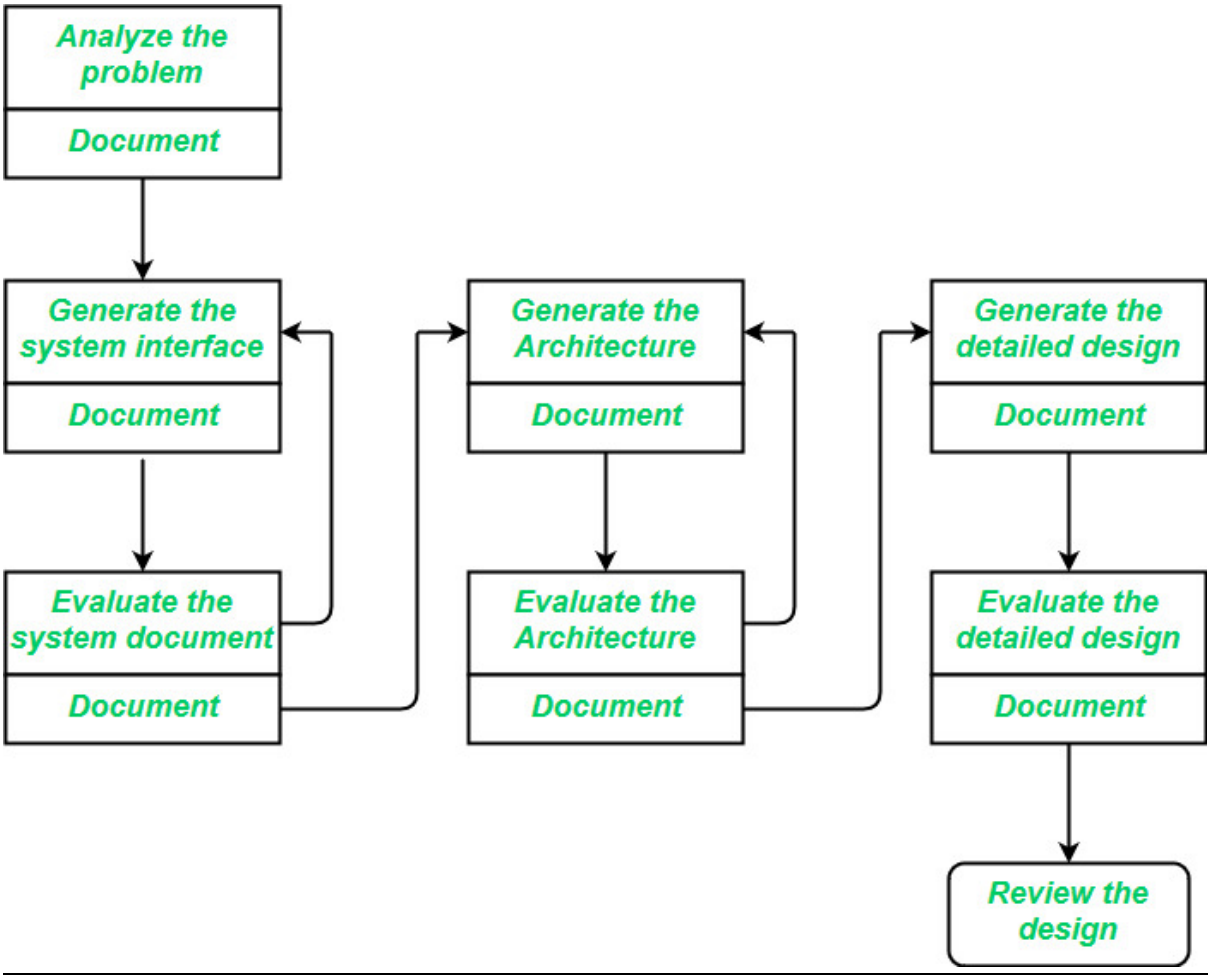


Figure 6: SOFTWARE DESIGN

4.2 PROPOSED METHEDOLOGY

The proposed system imports tkinter, random, time and date time for the implementation of the system. The frames are created for the title, menu (beverages & food) and the receipt. These frames have several suitable buttons and checkboxes. Title contains the title of the project. The menu contains the details of the items available in the restaurant. Receipt contains the bill which will be generated.

The manager, cashier or the owner will first check the box of the ordered items and mention the number of orders of each item in the menu. The manager then clicks on total button to get the total, subtotal, tax, service charges etc. Then will click on the receipt button to get the automatically generated bill. To place the next order, reset option can be clicked to clear the text fields.

Since many restaurant or café owners make bills for their customers manually with a pen paper. This sometimes results into an error of total or wrong items added or some items missing in bill or extra items added. This may end up by building up a bad impression of customer towards the Café or restaurant. So, to overcome this problem we've come up with this helpful project named Restaurant Billing System Using Python. We all love going to cafes or restaurants but when it takes time for them to make a bill or if they Make wrong bill then it's time consuming. So, to avoid all such chaos our project will help in all possible terms.

4.2 ER DIAGRAM

An entity relationship diagram (E-R diagram) is a graphical representation of an information system that shows the relationship between people, objects, concepts or events within that system. An E-R diagram is a data modelling technique that helps define business process and can be used as the foundation of the relational database, This ER (Entity Relationship) Diagram represents the model of Restaurant Billing System Entity. The entity relationship diagram of Restaurant Billing System shows all the visual instrument of data base tables and the relations between Order, update, item, item quality etc.it used structure data and to define the relationship between structured data groups of Restaurant Billing System functionalities. The main entities of the Restaurant Billing System are Item, Order, Confirm Order, Update, Customer and Item Quality. Entity relationship model is a database modelling method used to represent the conceptual data. Conceptual data model is prepared when an information system is based on a database, which

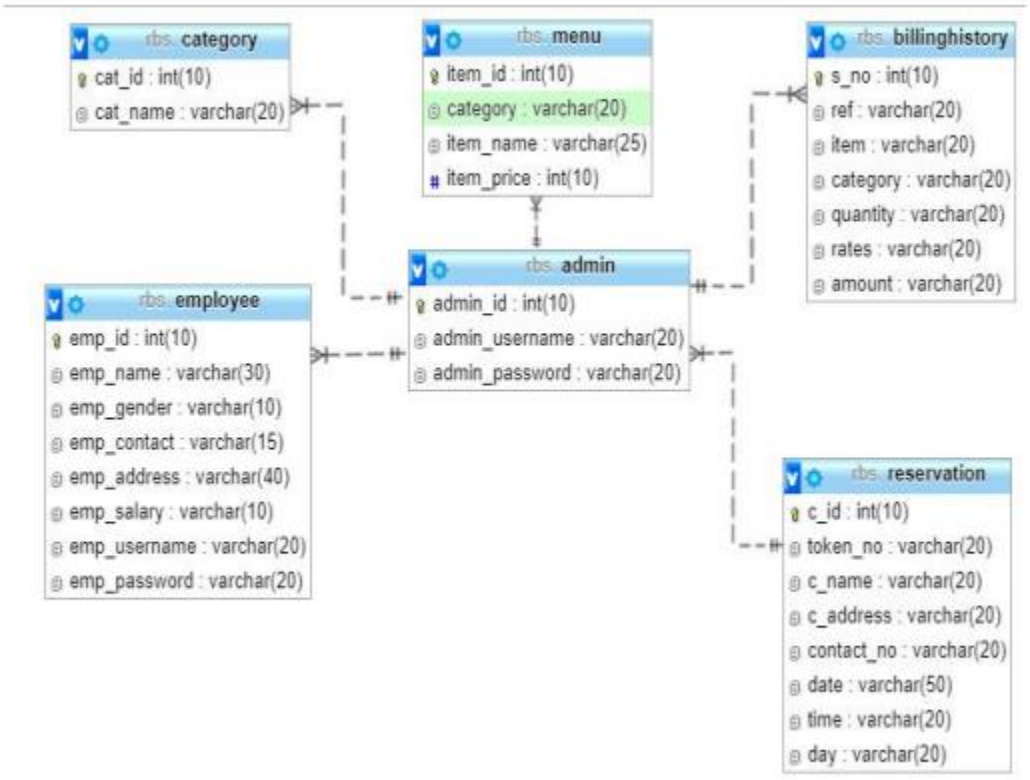


Figure 6: ER Diagram

4.4 CODING TOOLS

There are various tools available for the development of a project. Our Restaurant Billing System software has been developed using python and MySQL. The following tools are used for the restaurant billing system project.

1- **Python language:**

WHAT IS PYTHON?

Python is an interpreter, high-level, general-purpose programming language. Created by Guidovan Possum and first released in 1991, Python's design philosophy emphasizes code readability with its notable use of significant whitespace. Python is a high-level programming language designed to be easy to read and simple to implement. It is open source, which means it is free to use, even for commercial applications. Python can run on Mac, Windows, and UNIX systems and has also been ported to Javaand.NET virtual machines

Python is considered a scripting language, like Ruby or Pearland is often used for creating Web applications and dynamic Web content. It is also supported by a number of 2D and 3Dimaging programs, enabling users to create custom plug-ins and extensions with Python. Scripts written in Python (.PYfiles) can be parsed and run immediately. They can also be saved as a compiled programs (.PYCfiles), which are often used as programming modules that can be referenced by other Python programs.

2- **Tk-Inter:**

Python offers multiple options for developing GUI (Graphical User Interface). Out of all the GUI methods, tkinter is the most commonly used method. It is a standard Python interface to the Tk GUI toolkit shipped with Python. Python with tkinter is the fastest and easiest way to create the GUI applications. Creating a GUI using tkinter is an easy task.

To create a tkinter app:

Importing the module – tkinter

Create the main window (container)

Add any number of widgets to the main window

Apply the event Trigger on the widgets.

Importing tkinter is same as importing any other module in the Python code. Note that the name of the module in Python 2.x is ‘Tkinter’ and in Python 3.x it is ‘tkinter’.

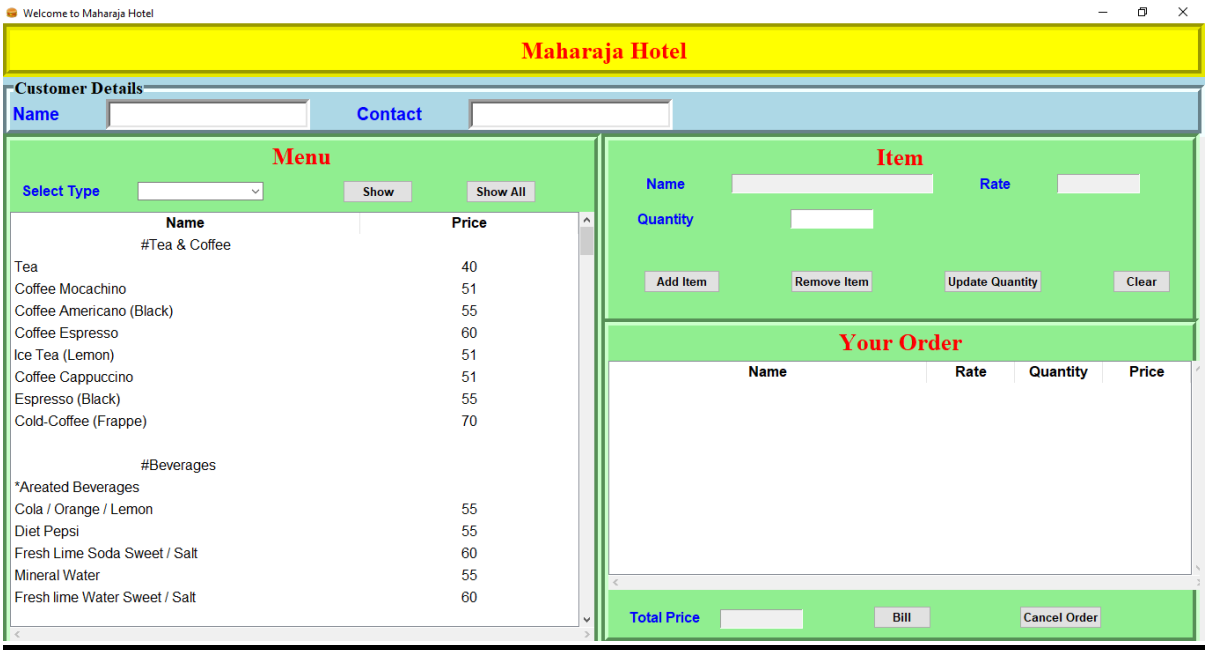
Import tkinter

There are two main methods used which the user needs to remember while creating the Python application with GUI.

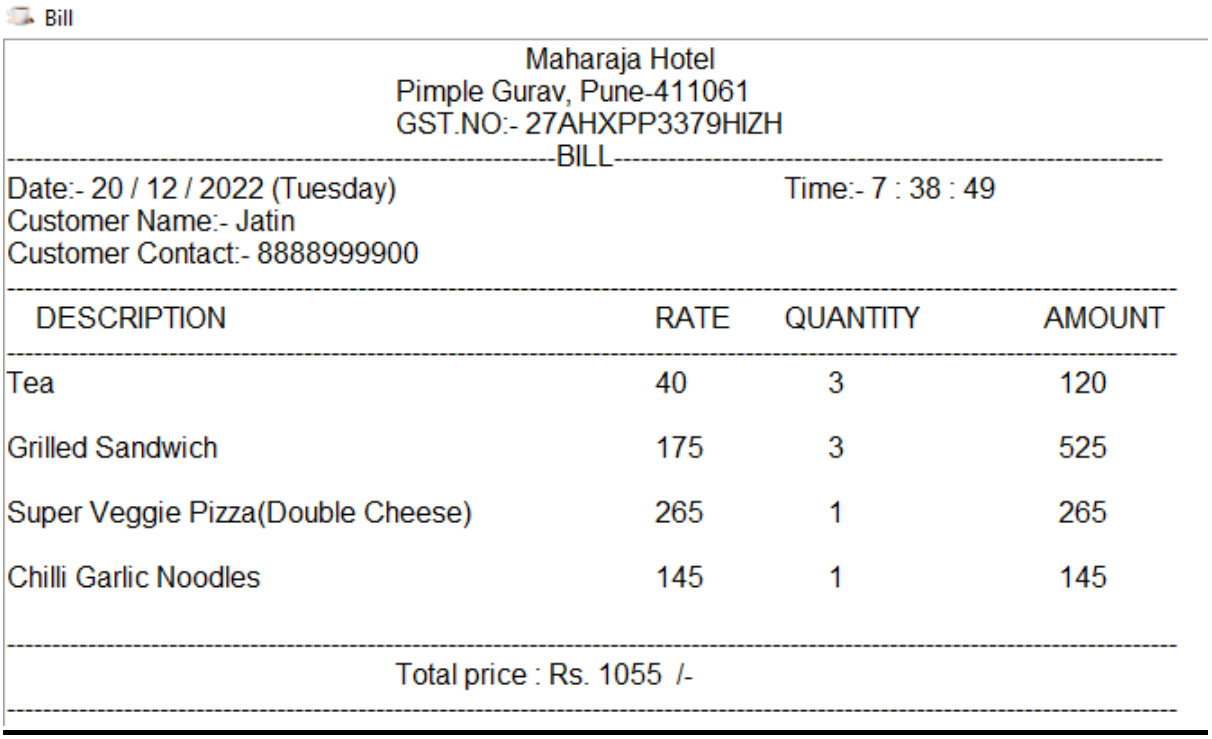
4.5 USER INTERFACE

This part provides a detail description of the user interface for the application

- **DASHBOARD UI:**



- **BILL OUTPUT:**



5. TEST AND RESULT

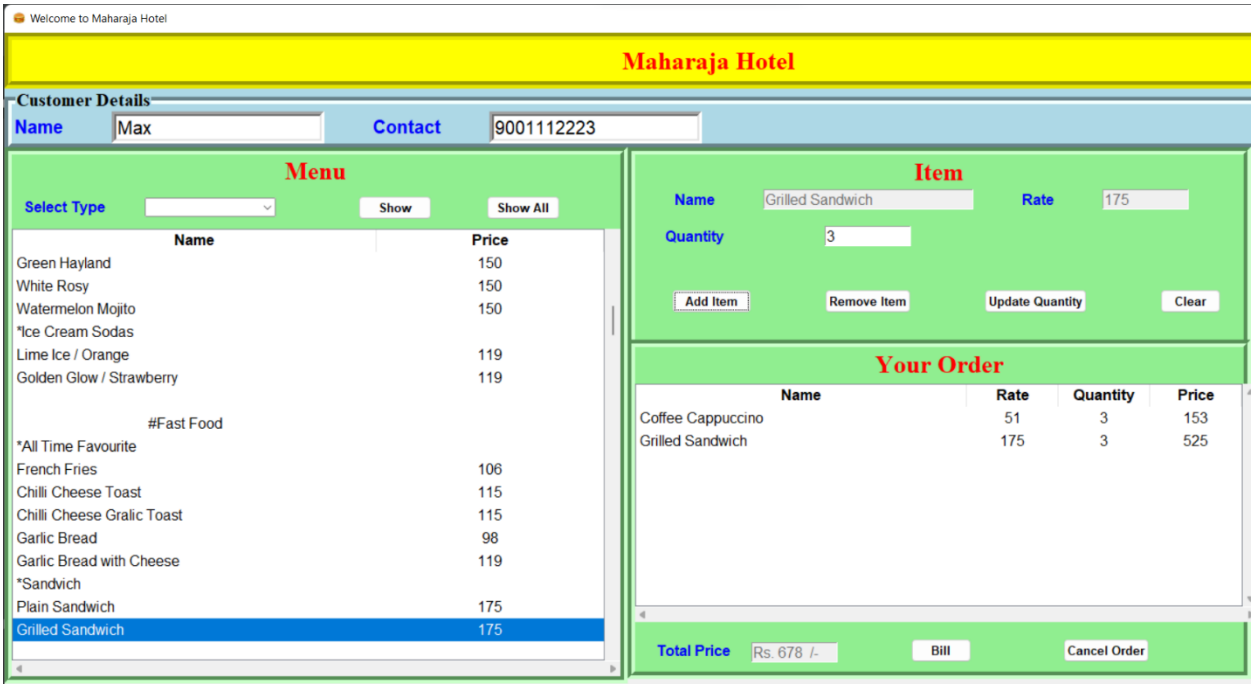
INPUT:

1- Name: Max

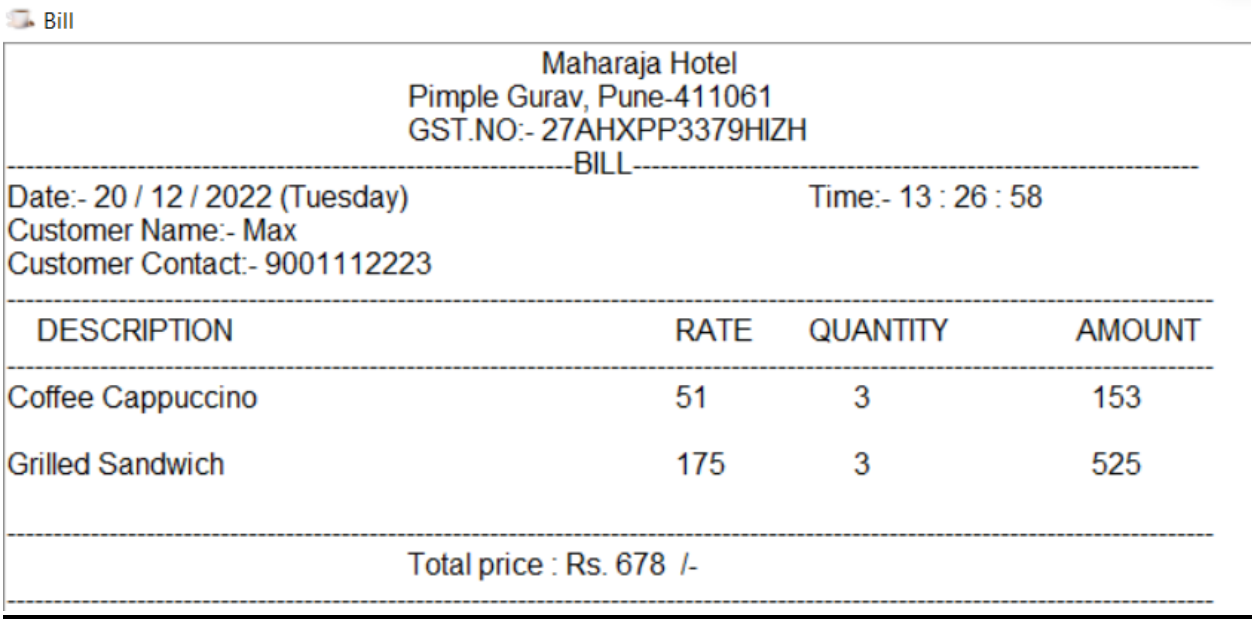
2- Contact no- 9001112223

3- Add order items: Coffee and Garlic Sandwich

4- Quantity of item: 3



OUTPUT:



6- CONCLUSION

The documentation includes all necessary information on the structure and the coding of the program created for Restaurant Billing system. Creating the pro-gram was an overwhelming task that required a lot of analyzing, research work and personal skills. Creating this report has been a great experience and numerous facts have been learned since the required tasks were very challenging. Tasks such as creating a system to a restaurant, needed research work as well as personal skills. Creating proper design and smooth flow of operation was a very tiring task that consumed a lot of time. The program has been created successfully with proper design and working flow of operation. The billing part was the most important and difficult part of this project. Retrieving data from database for the billing purpose was quite a tough task. Making changes on multiple data base using SQL queries was also a bit time consuming and though provoking task. In conclusion, many experiences have been gained specially in coding. Time management and teamwork is very important in the development system.

7- FUTURE WORK

RBS software offers various functionalities needed to effectively manage restaurant operations such as staff management, making orders, billing, menu management, reservation, viewing order history, to-do list and many more.

In the future, many enhancements/upgrades can be made to the existing software. Various enhancements such as inventory management and control, wireless table side ordering and payment, real-time alerts, online ordering, mobile management capabilities can help increase revenue and cut cost.

In future, this application can be updated with some more food items. Many other latest features will be added. Project will surely be enhanced with respect to looks and appearance and also as per user requirements. Many more functionalities will be added. Some enhancement can also be done with calculator. For now, this application generates the bill but with respect to future application it will be enhanced that it will also print a bill. It can also be used on a large scale. Many more modification can do with menu or prices or tax as well. It will be easy to use and bug free to all future or upcoming users. This can also be enhanced in future as per customer requirements. Many more features can be added. This will surely help users instead of making a bill manually

8-REFERENCES

1- Restaurant Billing System: Accessed 10.04.2017 https://www.scribd.com/doc/283903672/Online-Ordering-System- Project

2- Objective :Accessed 10.04.2017 https://www.scribd.com/document/36253350/04-Project-Billing- System

3- Scopes and Limitation: Accessed 10.05.2017 https://kungfumas.files.wordpress.com/2017/09/099.pdf

4- UML Diagram : Accessed 12.04.2017 https://www.techopedia.com/definition/3243/unified-modeling-language-uml/

5- Use Case Diagram: Accessed 12.04.2017 http://whatis.techtarget.com/definition/use-case-diagram

6- Class Diagram: Accessed 12.04.2017 http://searchmicroservices.techtarget.com/definition/class-diagram

7- SOFTWARE DESIGN https://www.geeksforgeeks.org/software-engineering-software-design-process/