PROJECT REPORT

HOTEL MANAGEMENT SYSTEM

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Contents

1. **Abstract:**

This project is concerned with developing a flexible, open-ended design for hotel management information system that incorporates well-known design patterns and a lucid design style using UML diagrams. Our Hotel Management System consists of two users:

1. Customer

a. Individual Customer

b. Company Customer

2. Staff

a. Manager

b. Other Employees

Customers can avail various services provided by the hotel like room reservation, restaurant, sauna, pool, casino etc. The system keeps a record of the customer details and previous visits of current and past customers so that privileges and points can be awarded based on their history. To keep the system history database to acceptable levels of data, excessive records are automatically purged at regular intervals. A Customer's history consists of his/her previous visits, only one of which can be active (not completed) at any point in time. If no visits are active, then a new visit instance need to be created that can contain the various services that the customer need to avail during a new visit. If a visit instance is active, then any services availed are considered as part of that visit. Each visit is a composition of services that the customer uses. Any particular service usage consists of a single resource (e.g.

Room No 110) that belongs to a particular service (e.g. Room Service). When a customer requests a resource, the system checks for that availability of the resource and adds that resource to the list of availed services during that visit. At the end of the visit, when all the service usages are finished, system automatically calculates the cost of the visit and also any points that need to be awarded based on this visit is computed as well. The customer has provision to redeem any in-house points that the customer has been awarded. Manager(s) is (are) concerned with the overall functioning of the system. He/she has the provision to add new services or resources for any particular service. The system keeps track of the expenditure incurred by the various services which can be viewed by the manager. The manager's decision making can be assisted based on the various service's usage, total expenditure, total income etc., all of which the system automatically keep track of.

2. **Introduction:**

INTRODUCTION TO PYTHON

History

• Python was created by Guido Van Rossum when he was working at CWI (Centrum Wiskunde & Informatica), which is a National Research Institute for Mathematics and Computer Science in Netherlands. The language was released in I991. Python got its name from a BBC comedy series from seventies- "Monty Python's Flying Circus". Python can be used to follow both Procedural approach and Object Oriented approach of programming. It is free to use.

Why is Python designed?

• Python is a widely used general-purpose, high-level programming language. Its design philosophy emphasizes code readability, and its syntax allows programmers to express concepts in fewer lines of code than would be possible in languages such as C++ or Java. The language provides constructs intended to enable clear programs on both a small and large scale. Python supports multiple programming paradigms, including object-oriented, imperative and functional programming or procedural styles. It features a dynamic type system and automatic memory management and has a large and comprehensive standard library.

Some of the features which make Python so popular are as follows:

• It is a general purpose programming language which can be used for both scientific and non-scientific programming.
• It is a platform independent programming language.
• It is a very simple high level language with vast library of addon modules
• It is excellent for beginners as the language is interpreted, hence gives immediate results.
• The programs written in Python are easily readable and understandable.
• It is suitable as an extension language for customizable applications.

Standard library

Python has a large standard library, commonly cited as one of Python's greatest strengths, providing tools suited for many tasks. For inter-facing applications, a large number of standard formats and protocols (such as MIME and HTTP) are supported. Modules for creating graphical user interfaces, connecting to relational databases, pseudorandom number generators, arithmetic with arbitrary expressions, and doing unit testing is also included. Some parts of the standard library are covered by specifications, but the majority of the modules are not. They are specified by their code, internal documentation, and test suite (if supplied). However, because most of the standard library is cross-platform Python code, there are only a few modules that must be altered or completely rewritten by alternative implementations.

Development

Python's development is conducted largely through the Python Enhancement Proposal (PEP) process. The PEP process is the primary mechanism for proposing major new features, for collecting community input on an issue, and for documenting the design decisions that have gone into Python. Outstanding PEPs are reviewed and commented upon by the Python community and by Van Rossum, the Python project's BDFL. Enhancement of the language goes along with development of the Python reference implementation. The mailing list python-dev is the primary forum for discussion about the language's development; specific issues are discussed in the roundup bug tracker maintained at python.org. Development takes

place on a self-hosted source code repository running Mercurial.

Python Operators

Python operators work for built-in classes. But same operator can behave differently with different types. This feature in Python that allows same operator to have different meaning according to the context is called as operator overloading.

Introduction to MySQL

MySQL, the most popular Open Source SQL database management system, is developed, distributed, and supported by Oracle Corporation.

- ***MySQL is a database management system.***
  A database is a structured collection of data. It may be anything from a simple shopping list to a picture gallery or the vast amounts of information in a corporate network. To add, access, and process data stored in a computer database, you need a database management system such as MySQL Server. Since computers are very good at handling large amounts of data, database management systems play a central role in computing, as standalone utilities, or as parts of other applications.

- ***MySQL databases are relational.***
  A relational database stores data in separate tables rather than putting all the data in one big storeroom. The database structures are organized into physical files optimized for speed. The logical model, with objects such as databases, tables, views, rows, and columns, offers a flexible programming environment. You set up rules governing the relationships between different data fields, such as one-to-one, one-to-many, unique, required or optional,

and “pointers” between different tables. The database enforces these rules, so that with a well-designed database, your application never sees inconsistent, duplicate, orphan, out-of-date, or missing data.

The SQL part of “MySQL” stands for “Structured Query Language”. SQL is the most common standardized language used to access databases. Depending on your programming environment, you might enter SQL directly (for example, to generate reports), embed SQL statements into code written in another language, or use a language-specific API that hides the SQL syntax.

SQL is defined by the ANSI/ISO SQL Standard. The SQL standard has been evolving since 1986 and several versions exist. In this manual, “SQL-92” refers to the standard released in 1992, “SQL: 1999” refers to the standard released in 1999, and “SQL: 2003” refers to the current version of the standard. We use the phrase “the SQL standard” to mean the current version of the SQL Standard at any time.

- ***MySQL software is Open Source.***

  Open Source means that it is possible for anyone to use and modify the software. Anybody can download the MySQL software from the Internet and use it without paying anything. If you wish, you may study the source code and change it to suit your needs. The MySQL software uses the GPL (GNU General Public License), to define what you may and may not do with the software in different situations. If you feel uncomfortable with the GPL or need to embed MySQL code into a commercial application, you can buy a commercially licensed version from us.

- ***The MySQL Database Server is very fast, reliable, scalable, and easy to use.***

If that is what you are looking for, you should give it a try. MySQL Server can run comfortably on a desktop or laptop, alongside your other applications, web servers, and so on, requiring little or no attention. If you dedicate an entire machine to MySQL, you can adjust the settings to take advantage of all the memory, CPU power, and I/O capacity available. MySQL can also scale up to clusters of machines, networked together.

MySQL Server was originally developed to handle large databases much faster than existing solutions and has been successfully used in highly demanding production environments for several years. Although under constant development, MySQL Server today offers a rich and useful set of functions. Its connectivity, speed, and security make MySQL Server highly suited for accessing databases on the Internet.

- ***MySQL Server works in client/server or embedded systems.***
  The MySQL Database Software is a client/server system that consists of a multithreaded SQL server that supports different back ends, several different client programs and libraries, administrative tools, and a wide range of application programming interfaces (APIs).

  We also provide MySQL Server as an embedded multithreaded library that you can link into your application to get a smaller, faster, easier-to-manage standalone product.

- ***A large amount of contributed MySQL software is available.***
  MySQL Server has a practical set of features developed in close cooperation with our users. It is very likely that your

favourite application or language supports the MySQL Database Server.

3. Literature Survey:

In hotels in the United States at the beginning of the twentieth century, the classic European hotel organization model was predominant.

This structure was built around two major hotel managerial personalities: the chef and the maître d'hôtel. The chef was the chief or king of the kitchen. In many ways, he represented a feudal lord on his estate who held sway over everything that had to do with selection and preparation of food in the hotel. This structure recognized the importance of the role that food and its preparation played in the hotels of the time.

Similarly, the maître d'hôtel was the master of all service in the hotel. It was his responsibility to manage the interaction of the hotel's staff and guests such that guests were always served promptly, properly, and in line with the hotel's policy. Even the titles chef and maître d'hôtel, translated from the French as "chief" and "master of the hotel," suggest a strong European influence. That these terms are still in use today attests to a continuing influence, but the roles have changed and evolved. In several places in this book, we consider the ways in which people, organizations, and jobs have changed in the hotel industry.

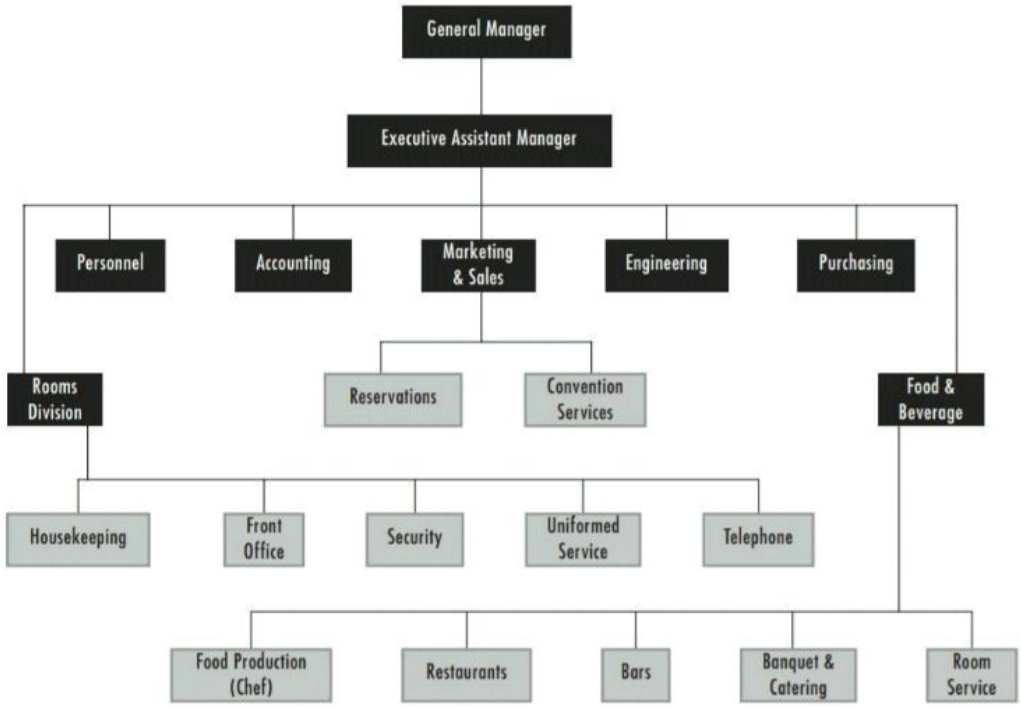
For many of the same reasons cited in the introduction as to why the management of hotels has changed, hotel organization structures have also changed. As our knowledge of our guests and the markets they represent grew and became more precise, specialization within the hotel organizational structure increased the effectiveness with which the organization managed and delivered its services.

Hotel organization structures are not immune to the influences of the economy and business cycles, so the difficulties that be fall business in general during economic downturns also affect hotel organizations. Downsizing and reengineering are terms used to describe the changes hotel companies have undergone. In the early 1990s, some hotels eliminated entire levels of management or combined managerial responsibilities to flatten the organization. In the typical functional chart, the executive assistant manager was often eliminated, making division heads directly responsible to the general manager (GM). Some hotels eliminated separate managers at the division level, with all department managers reporting directly to the GM.

However the restructuring looks, organizations are still formed around principles such as those outlined by Stoner and Wankel (1986). They said that the organizing process involves balancing a company's need for both stability and change. They go on to comment on "organizing" as a multi-step process based on that proposed by Dale (1967):

- Organizing details all of the work that must be done to attain the organization's goals.

Figure 2.1 **Typical Hotel Organization Chart**



4. **Tools and Methodologies:**

Tools:

i) Pycharm for Python

ii) Xampp or MySQL

i) Pycharm for Python:

PyCharm is an integrated development environment (IDE) used in computer programming, specifically for the Python language. It is developed by the Czech company JetBrains. It provides code analysis, a graphical debugger, an integrated unit tester, integration with version control systems (VCSes), and supports web development with Django.

PyCharm is cross-platform, with Windows, macOS and Linux versions. The Community Edition is released under the Apache License, and there is

also Professional Edition released under a proprietary license - this has extra features.

Features

- Coding assistance and analysis, with code completion, syntax and error highlighting, linter integration, and quick fixes
- Project and code navigation: specialized project views, file structure views and quick jumping between files, classes, methods and usages
- Python refactoring: including rename, extract method, introduce variable, introduce constant, pull up, push down and others
- Support for web frameworks: Django, web2py and Flask
- Integrated Python debugger
- Integrated unit testing, with line-by-line code coverage
- Google App Engine Python development
- Version control integration: unified user interface for Mercurial, Git, Subversion, Perforce and CVS with change lists and merge

It competes mainly with a number of other Python-oriented IDEs, including Eclipse's PyDev, and the more broadly focused Komodo IDE.

ii) Xampp:

XAMPP is a free and open-source cross-platform web server solution stack package developed by Apache Friends, consisting mainly of the Apache HTTP Server, MariaDB database, and interpreters for scripts written in the PHP and Perl programming languages. Since most actual web server deployments use the same components as XAMPP, it makes transitioning from a local test server to a live server possible.

XAMPP requires only one zip, tar, 7z, or exe file to be downloaded and run, and little or no configuration of the various components that make up the web server is required. The Windows' version of XAMPP requires Microsoft Visual C++ 2017 Redistributable.

XAMPP is regularly updated to the latest releases of Apache, MariaDB, PHP and Perl. It also comes with a number of other modules including OpenSSL, phpMyAdmin, MediaWiki, Joomla, WordPress a nd more. Self-contained, multiple instances of XAMPP can exist on a single computer, and any given instance can be copied from one computer to another. XAMPP is offered in both a full and a standard version (Smaller version).

Officially, XAMPP's designers intended it for use only as a development tool, to allow website designers and programmers to test their work on their own computers without any access to the Internet. To make this as easy as possible, many important security features are disabled by default. XAMPP has the ability to serve web pages on the World Wide Web. A special tool is provided to password-protect the most important parts of the package.

XAMPP also provides support for creating and manipulating databases in MariaDB and SQLite among others.

Once XAMPP is installed, it is possible to treat a localhost like a remote host by connecting using an FTP client. Using a program like FileZilla has many advantages when installing a content management system (CMS) like Joomla or WordPress. It is also possible to connect to localhost via FTP with an HTML editor.

Methodologies:

DBMS Hotel Management System has two modes in it - User Mode and Admin Mode

Admin Mode :

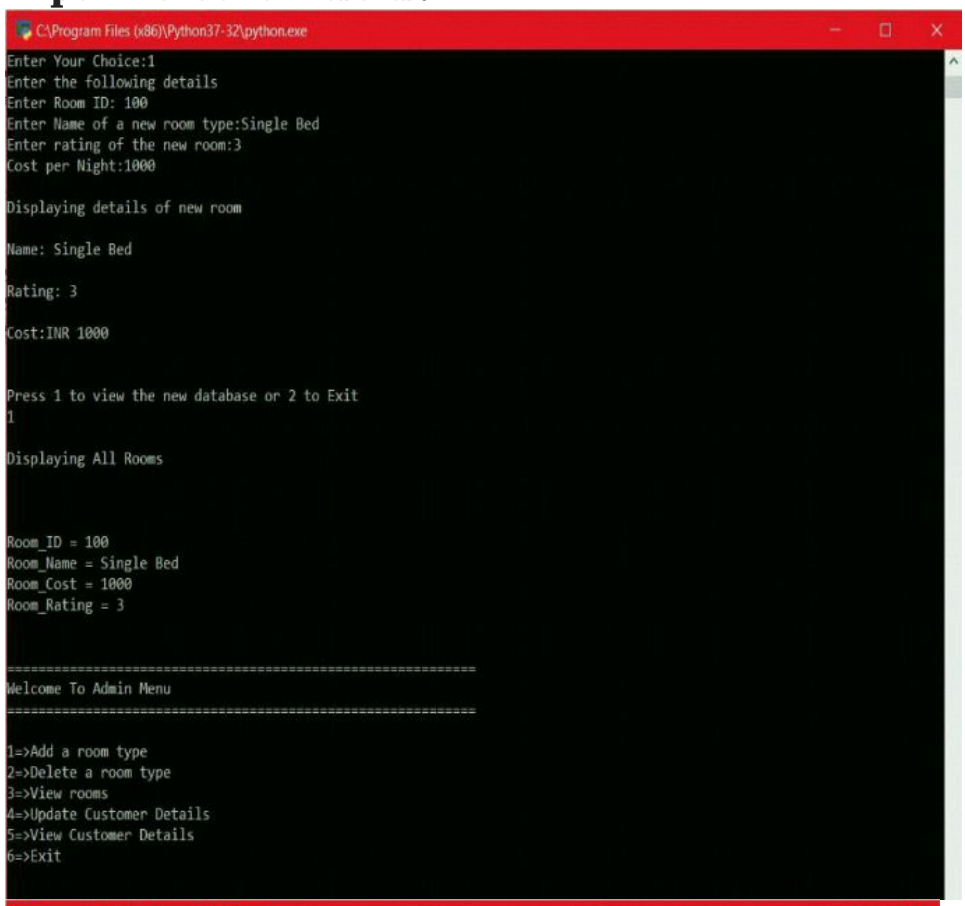
1. The admin has to login with his name and type the password, if username matches with the one provided in the program and password matches too, then he is given access to the Admin Mode where he can

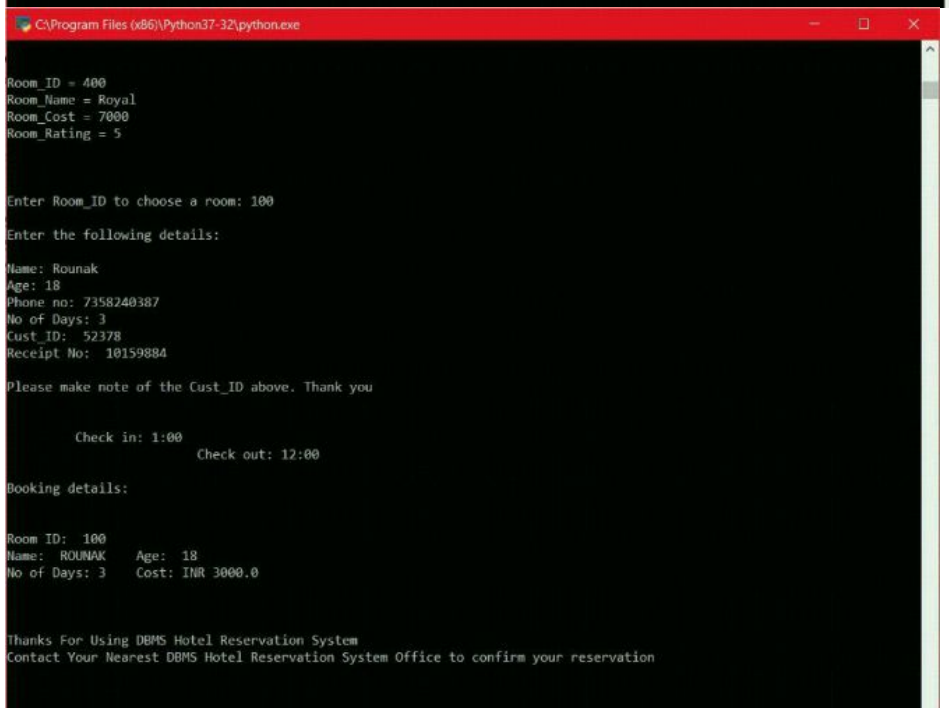
1. ADD ROOM
2. DELETE ROOM
3. VIEW ROOM
4. UPDATE CUSTOMER
5. VIEW CUSTOMERS
6. EXIT

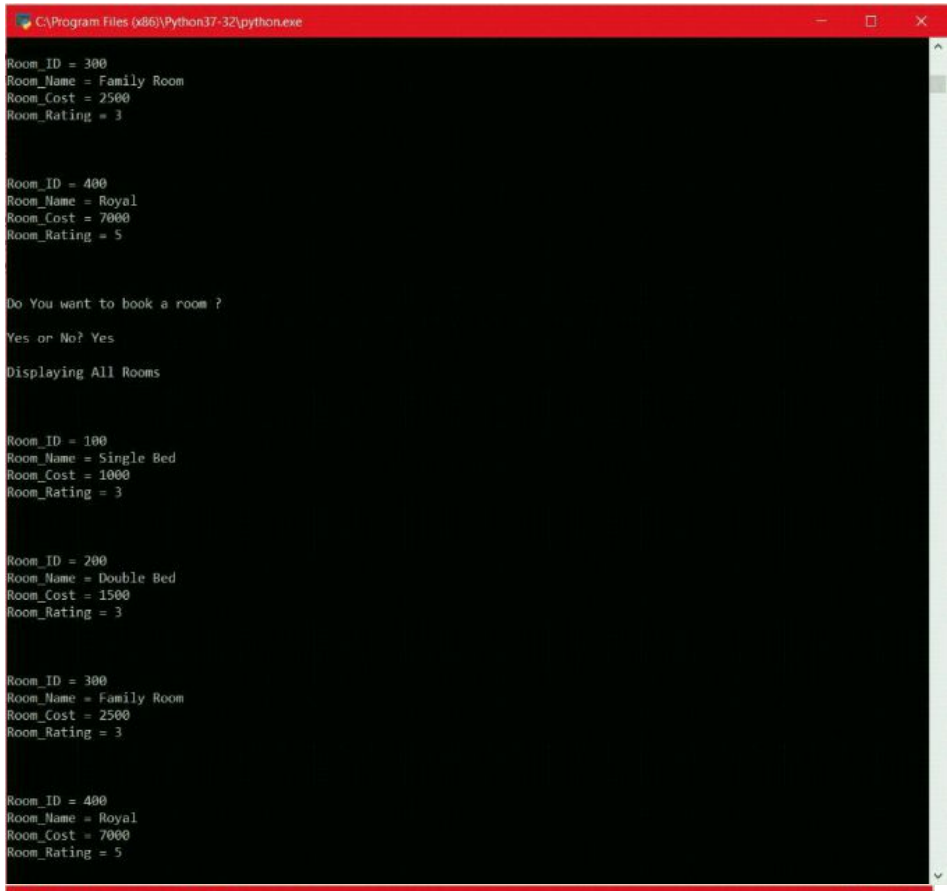
User Mode:

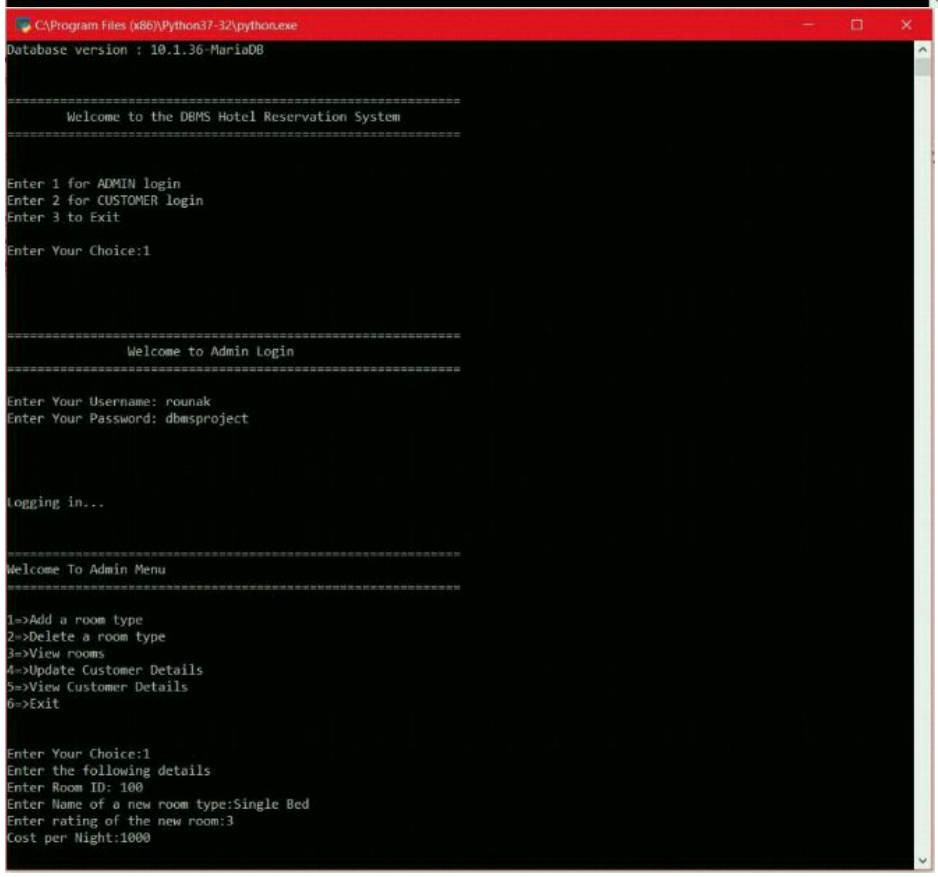
1. CHECK AVAILABILITY
2. BOOK ROOM
3. CHECKOUT
4. EXIT

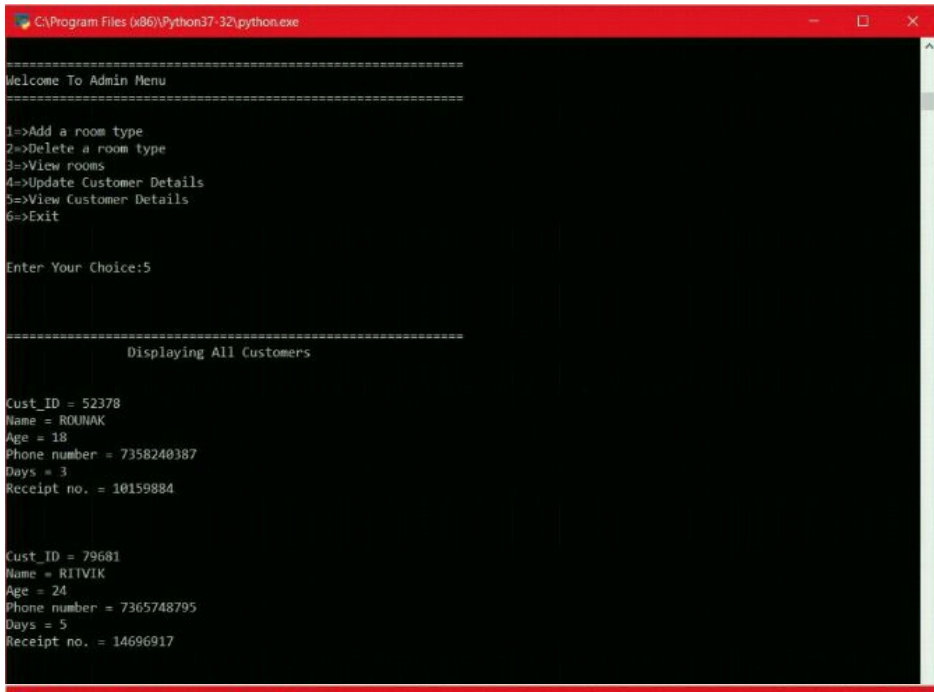
5. Experiment and Results:

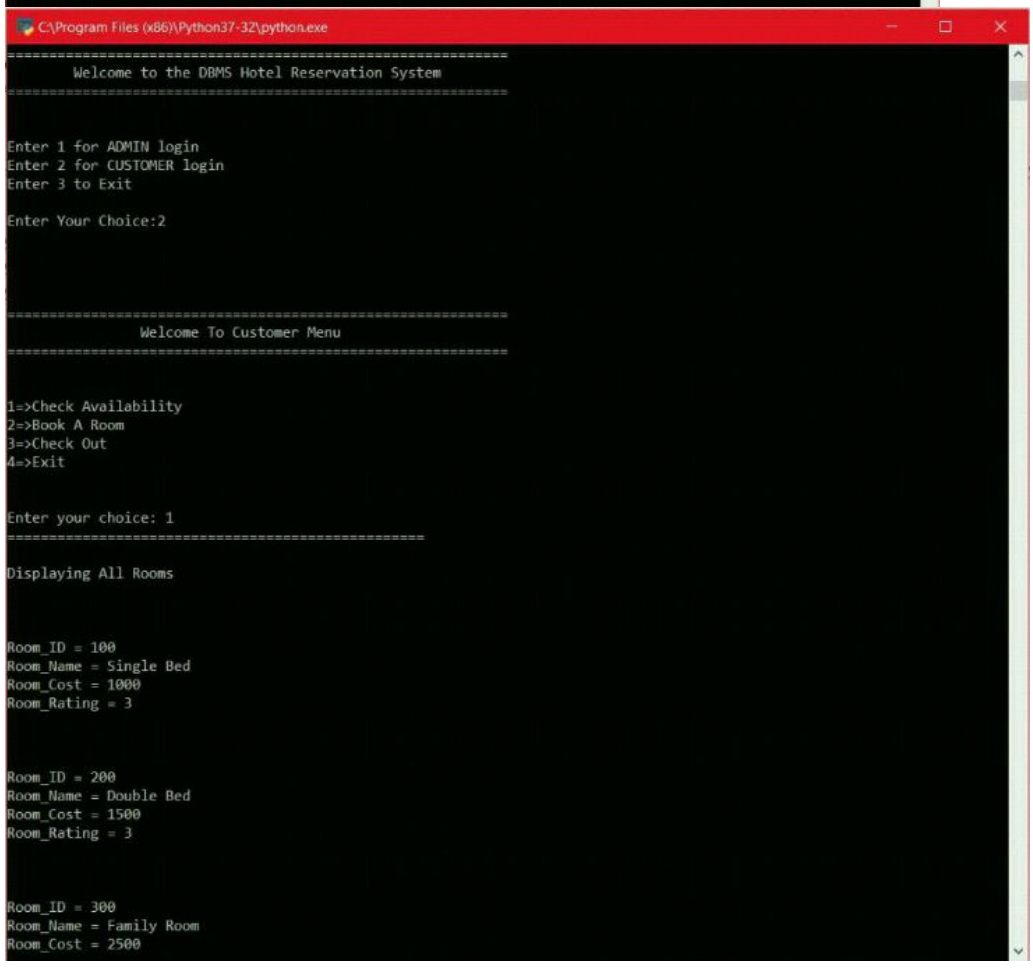





C:\Program Files (x86)\Python37-32\python.exe
Room_ID = 300
Room_Name = Family Room
Room_Cost = 2500
Room_Rating = 3
Room_ID = 400
Room_Name = Royal
Room_Cost = 7000
Room_Rating = 5
Do You want to book a room ?
Yes or No? Yes
Displaying All Rooms
Room_ID = 100
Room_Name = Single Bed
Room_Cost = 1000
Room_Rating = 3
Room_ID = 200
Room_Name = Double Bed
Room_Cost = 1500
Room_Rating = 3
Room_ID = 300
Room_Name = Family Room
Room_Cost = 2500
Room_Rating = 3
Room_ID = 400
Room_Name = Royal
Room_Cost = 7000
Room_Rating = 5


C:\Program Files (x86)\Python37-32\python.exe
Database version : 10.1.36-MariaDB
Welcome to the DBMS Hotel Reservation System
Enter 1 for ADMIN login
Enter 2 for CUSTOMER login
Enter 3 to Exit
Enter Your Choice:1
Welcome to Admin Login
Enter Your Username: rounak
Enter Your Password: dbmsproject
Logging in...
Welcome To Admin Menu
1=>Add a room type
2=>Delete a room type
3=>View rooms
4=>Update Customer Details
5=>View Customer Details
6=>Exit
Enter Your Choice:1
Enter the following details
Enter Room ID: 100
Enter Name of a new room type:Single Bed
Enter rating of the new room:3
Cost per Night:1000





6. Conclusion:

The project design can be considered more than a hotel management system design. The design can be extended as a design pattern for a general scenario where customers interact with a system for resources and the system keep track of customer history in the form of persistent storage and award points/privileges based on that history. For e.g. A Multi-user operating system environment where resources can be in the form of shared resources like printer, storage, CPU time etc. and users are awarded points for their greater use of the system. The system is flexible in the sense that resources or services can be added / removed easily. The system can easily adapt to any future advancements easily.

7. **References:**

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