Logo

Description automatically generated

**College of Professional Studies**

**Northeastern University San Jose**

**MPS Analytics**

**Course: ITC 6000 - Database Management Systems**

**Assignment:**

Final Project: Introduction and Business Analysis

**Submitted to:**  **Submitted by:**

Professor: VENKATA DUVVURI NIKSHITA RANGANATHAN

**Project Name: Generation of a Machine learning data model to predict the cancellations for hotel booking using an Autonomous Database in Oracle Cloud**

A hotel booking management system is utilized by hotels to manage bookings and reservations.

The significance of this system is based on several factors.

* Firstly, it is helpful in keeping track of all guest reservations. This is necessary to prevent the hotel from overbooking its rooms.
* The check-in and check-out procedures can be made more efficient with the help of a hotel booking management system. This can save a lot of time and hassle for both guests and hotel staff.
* The system can assist in maintaining a record of visitor preferences. This information can be used to improve the guest experience by offering amenities and services that are tailored to their needs.
* Lastly, a hotel reservation system can also support tracking revenue and occupancy rates. Hotel management needs this information to make decisions regarding pricing, marketing, and other aspects of the company.

**About the dataset:**

We extracted the Hotel Booking demand dataset from Kaggle and the dataset consists of hotel booking details for both city hotels and resort hotels from July 2015-Aug 2017. The data set contains data such as booking date, reservation status, length of stay, customer type, country, required car parking spaces, number of special requests, etc.

**Why this dataset:**

I make sure to travel at least once a year and I have always used online methods for booking trips and stays. It interests me because it is convenient, gives access to various offers, and has many options to choose from. I wanted to understand the insights and trends too.

**Data Entities**: Hotel, Customer, Booking, Room, Service, and Payment.

**Attributes:** The attributes are the characteristics we will deal with above data entities.

1. ***Hotel Entity:*** hotel\_ID, hotel\_name, hotel\_type, hotel\_rent, hotel\_address
2. ***Customers Entity:*** Customer\_ID, Customer\_name, Customer\_mobile, Customer\_email, Customer\_username, Customer\_password, Customer\_address
3. ***Booking Entity:*** booking\_ID, booking\_title, booking\_type, booking\_date, booking\_description
4. ***Room Entity:*** room\_ID, room\_hotel\_ID, room\_number, room\_category, room\_type, room\_description
5. ***Services Entity:*** service\_ID, service\_hotel\_ID, service\_name, service\_type, service\_description
6. ***Payments:*** payment\_ID, customer\_ID, payment\_date, payment\_amount, payment\_description.

**Primary Keys & Foreign Keys:** Here, hotel\_ID, room\_ID, service\_ID, Customer\_ID, booking\_ID, and payment\_ID are the primary keys & foreign keys used in this system.

**User types of this system:**

* Customers
* Hotel managers/staff
* Other travel agencies.

**Use cases for Hotel Booking system:**

* Customer Log-in to the Program
* Gathering customer information
* Booking & Confirming reservations
* Check-in customers
* Check-out of customers
* Room Allocation
* Customer Billing & Invoices
* Income Statement

**Cost model - Paid version**

**We would propose an Aggregator Model**for the Hotel system as it is a direct model which is connected to a few online booking services. As a result, the app displays a selection of hotels with a variety of price tags when clients search for rooms. Customers could easily compare prices and choose the best deal on hotel rooms during busy times. They are directed to the websites of the preferred booking platforms via the aggregator application. For clients to locate and compare costs to get bookings at the greatest deals, this is the ideal model. An Aggregator Application development is an individual entity that gathers customer information and organizes all the information, so it can be presented on a single website. Therefore, the users get lots of benefits by developing this model called Aggregator application as it saves a lot of time by visiting websites. This application model can be developed based on either a Search aggregator / Social aggregator / Review aggregator

The cost of such an aggregator application is based on the features of the application, region, and competition that the model is made. Cost is involved in Services, Membership of the customers, and 3rd party payment systems.

**Business challenges**

1. It is difficult to create an online reservation system that provides a variety of booking options on a single platform.
2. To prevent bookings at times when rooms are being renovated or repaired, a system that allows for the closure of particular periods is necessary.
3. There is a challenge to manage online booking cancellations.
4. The online booking system must be able to display different slot pricing for the same booking product on several dates in order to have a flexible price for each booking.
5. The system to integrate with any online calendar where the customer can receive the calendar link on the confirmation of each booking. Thus, both the hotel and the customers can manage bookings accordingly.
6. Knowing the customer's concerns, recognizing their issues, and offering them a suitable resolution to their issues is the challenge.
7. Building up customer loyalty is a great challenge.