Database Project Management

Hotel Reservation System

Project Content : ERD , Normalization, Constraints

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DATABASE TERMINOLOGY

- **Database**

  Database is an organized collection of structured data or the information**. Database** help to store and retrieve data in more efficient manner.

- **Entity**

  Entity is an object in the database that exists.

- **Attribute**

  Attribute refers to a database component, such as a table.

- **Mandatory Attributes**

  Mandatory Attributes are the attributes that are required for the table to function and must be contained in the table.

- **Optional Attributes**

Optional Attributes are the attributes that are not essential in the table to function but add some meaning to the table. ➢ **Cardinality**

Cardinality can be defined as the set of elements arranged in tables and rows.

- **Datatypes**

  A data type is an attribute associated with a piece of data that tells a computer system how to interpret its value. Data types mainly classified into three categories for every database.

  - **String Data types**
  - **Numeric Data types**
  - **Date and time Data types**

- **Constraint**

In SQL, a constraint is any rule applied to a column or table that limits what data can be entered into it. Some of Important Constraint are:

- **Primary Key**

A primary key is a unique identifier for each record in a database table.

- **Foreign Key**

  A foreign key is a column or a set of columns in one table that references the primary key columns in another table.

- **NOT NULL**

  NOT NULL is use to specify that a column in a database table must contain a value.

- **Unique Key**

  A unique key is a constraint that ensures the values within a column or group of columns are unique across all rows in a table

- **Candidate Key**

  A candidate key is a set of one or more columns in a database table that can uniquely identify each record (row) within that table.

- **ERD / Entity Relationship Digram**

  A is a visual representation of the entities, their attributes, and the relationships among them within a database or information system.

- **Column Level Constraint**

The Constraint that is implement in the column is known as column level constraint. It is done while creating the table.

- **Table Level Constraint**

The constraint that is implement in the whole table level is known as Table level Constraint. It can be implement into the table. Atler is use for table level constraint.

Entity Table

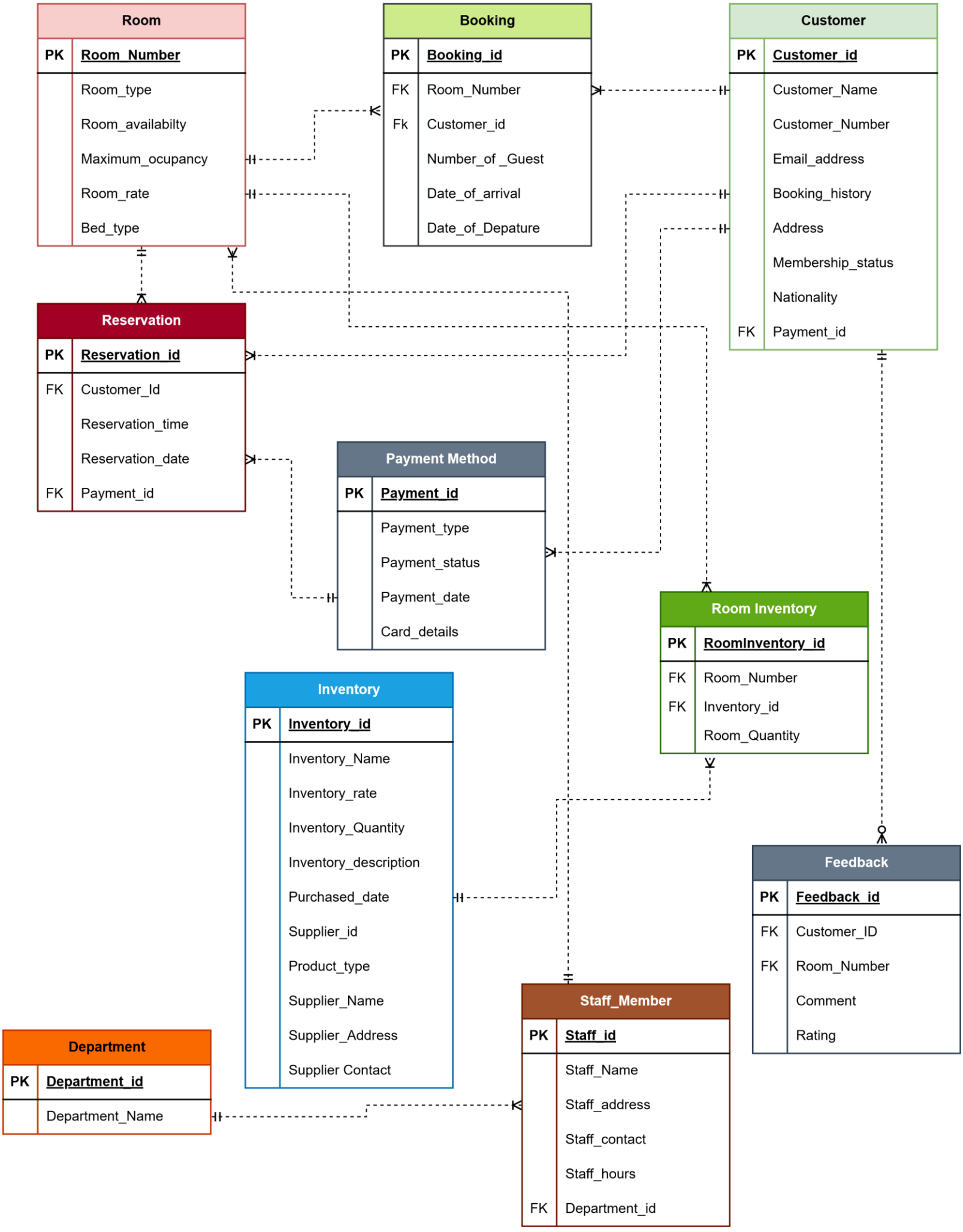
Entities	Required Attributes	Datatype	Optional Attribute	Data Type
Room	Room_Number	Int		
	Room_Type	Varchar(50)		
	Room_availabilty	Varchar(50)		
	Maximum_occupancy	Varchar(50)		
	Room_rate	Varchar(50)		
	Bed_Type	Varchar(50)		
Booking	Booking_id	Int		
	Room_Number	Varchar(50)		
	Customer_id	Int		
	Number_of_Guest	Varchar(50)		
	Date_of_arrival	Date		
	Date_of_Depature	Date		
Customer	Customer_id	Int	Booking_history	Varchar(10)
	Customer_Name	Varchar(50)	Membership_status	Varchar(10)
	Customer_Number	Varchar(50)		
	Email_address Address	Varchar(50)		
	Nationality	Varchar(50)		
	Payment_id	Int		
Reservation	Reservation_id	Int		
	Customer_Id	Int		
	Reservation_Time	Varchar(50)		
	Reservation_date	Date		
	Payment_id	Int		

Payment Method	Payment_id Payment_type Payment_status	Int Varchar(50) Varchar(50) Date		

	Payment_date Card_details	Varchar(50)		
Room Inventory	RoomInventory_id Room_Number Inventory_id Room_Quantity	Int Varchar(50) Int Varchar(50)		
Supplier	Supplier_id Supplier_Name Supplier_Address Supplier_Contact Product_type	Int Varchar(50) Varchar(50) Varchar(50) Varchar(50)		
Inventory	Inventory_id Inventory_Name Inventory_rate Inventory_Quantity Inventory_description Purchased_date Supplier_id Inventory_Cost Purchased_date	Int Varchar(50) Varchar(50) Varchar(50) Varchar(50) Date Int Varchar(50) Date		
Department	Department_id Department_Name	Int Varchar(50)		

Staff_Member	Staff_id Staff_Name Staff_address Staff_contact Staff_hours Department_id	Int Varchar(50) Varchar(50) Varchar(50) Varchar(50) Int		
Feedback	Feedback_id Customer_ID	Int Int Varchar(50)		
	Room_Number Comment Rating	Varchar(50) Varchar(50)		

ERD BEFORE NORMALIZATION


Room
PK Room_Number
Room_type
Room_availabilty
Maximum_ocupancy
Room_rate
Bed_type
Booking
PK Booking_id
FK Room_Number
Fk Customer_id
Number_of _Guest
Date_of_arrival
Date_of_Depature
Customer
PK Customer_id
Customer_Name
Customer_Number
Email_address
Booking_history
Address
Membership_status
Nationality
FK Payment_id
Reservation
PK Reservation_id
FK Customer_Id
Reservation_time
Reservation_date
FK Payment_id
Payment Method
PK Payment_id
Payment_type
Payment_status
Payment_date
Card_details
Room Inventory
PK RoomInventory_id
FK Room_Number
FK Inventory_id
Room_Quantity
Inventory
PK Inventory_id
Inventory_Name
Inventory_rate
Inventory_Quantity
Inventory_description
Purchased_date
Supplier_id
Product_type
Supplier_Name
Supplier_Address
Supplier Contact
Feedback
PK Feedback_id
FK Customer_ID
FK Room_Number
Comment
Rating
Staff_Member
PK Staff_id
Staff_Name
Staff_address
Staff_contact
Staff_hours
FK Department_id
Department
PK Department_id
Department_Name

ERD AFTER NORMALIZATION