

# **Punjabi University, Patiala**

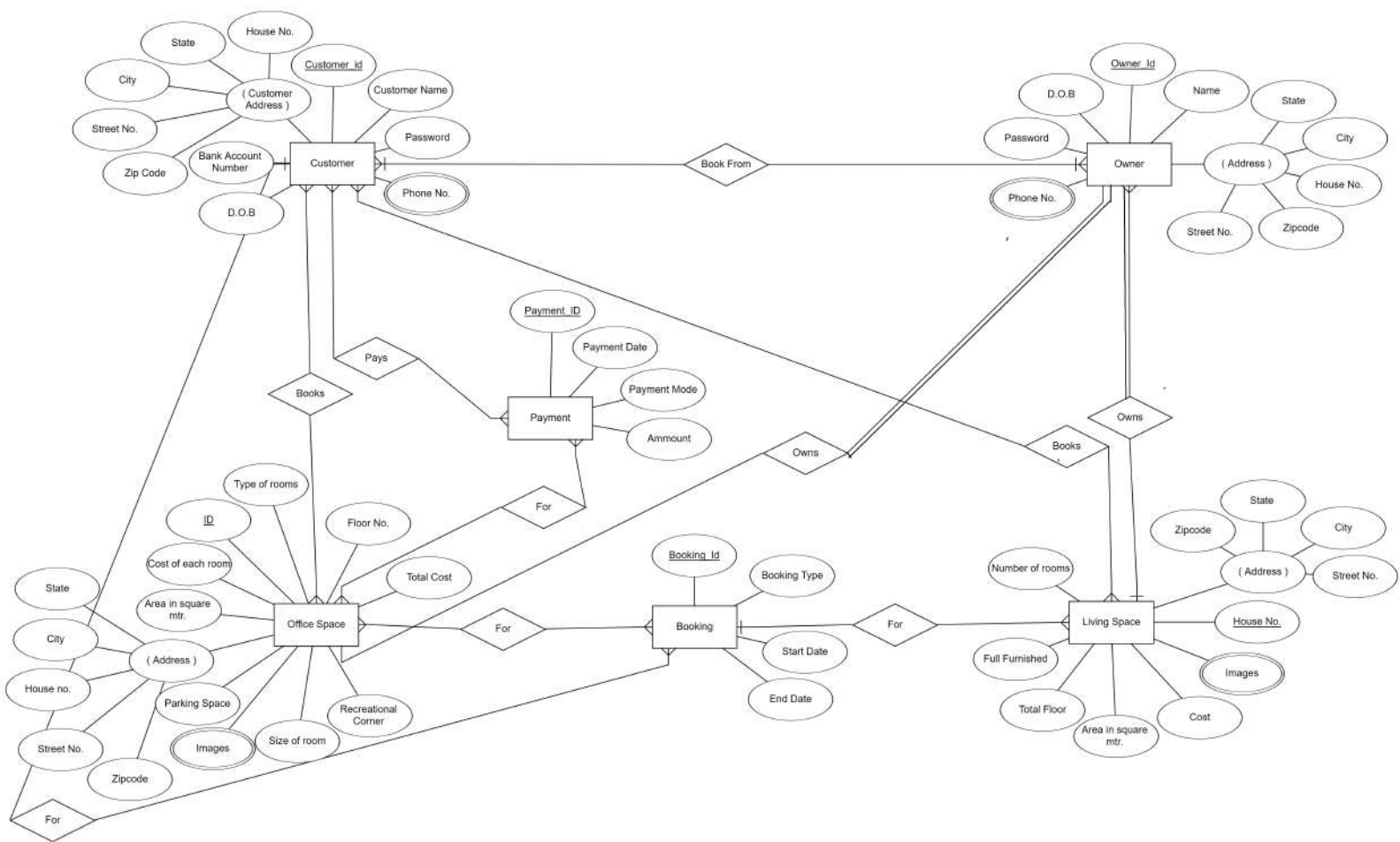
## **Department Of Computer Science**

### **ER Diagram Of Cospace Management System**

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## **ENTITIES**

Co space management system has total 6 entities.

1. Owner
2. Customer
3. Payment
4. Booking
5. Office Space
6. Living Space

### **1. Owner Entity**

There are total of six attributes in owner entity. Let us see each one of attribute and its useful.

- **Owner Id** – It is a key attribute which save the ID of owner. Each owner has unique ID.
- **Name** – Attribute which save the name of owner
- **Phone number** – It is a multivalued attribute; it allows owner to save multiple contacts.
- **Address** – Composite attribute which includes {House no, Street no, City, Zip code, State} attributes. This attribute used to save owner address.
- **D.O.B** – Date of Birth. This attribute is used to save date of birth of each owner.

### **2. Customer Entity**

There are total of seven attributes in Customer entity. Let us see each one of attribute and its useful.

- **Customer Id** – It is a key attribute which save the ID of Customer. Each Customer has unique ID.
- **Bank Account No** – Attribute which save the Account no of customer
- **Phone number** – It is a multivalued attribute; it allows customer to save multiple contacts.
- **Customer Address** – Composite attribute which includes {House no, Street no, City, Zip code, State} attributes. This attribute used to save owner address.
- **D.O.B** – Date of Birth. This attribute is used to save date of birth of each Customer.
- **Customer Name** – Attribute which save customer name.
- **Password** – Attribute which used to save the Password information.

### 3. Payment Entity

There are total of four attributes in Payment entity. Let us see each one of attribute and its useful.

- **Payment Id** – It is a key attribute which save the ID of each payment. Each payment has unique ID.
- **Amount** – Attribute which save the total amount paid by Customer for one transaction.
- **Payment Date** – Attribute which save the date when transaction or payment has done.
- **Payment Mode** – Attribute which save the mode of transaction. We don't saved as composite attribute because payment mode is depend on third part API.

### 4. Booking Entity

There are total of four attributes in Booking entity. Let us see each one of attribute and its useful.

- **Booking Id** – It is a key attribute which save the ID of each booking. Each booking has unique ID.
- **Start Date** – Attribute which save starting date of when customer need to start using the space.
- **End Date** – Attribute which save the date when is the end-time of customer using the space.
- **Booking Type** – Attribute which save either the booking is of office or living space. This attribute can save the booking type.

### 5. Office Space Entity

There are total of eleven attributes in Office space entity. Let us see each one of attribute and its useful.

- **Id** – It is a key attribute which save the ID of each office Space. Each office Space has unique ID.
- **No of rooms** – Is a Composite Attribute which also has cost of each room attribute.
- **Floor number** – Attribute which saves the floor number Information.
- **Address** – Composite attribute which includes {House no, Street no, City, Zip code, State} attributes. This attribute used to save office space address.
- **Parking Space** – Attribute which can have either yes/no information for parking space.
- **Total Cost** – Attribute which saves the total cost of each office space
- **Images** – Multivalued Attribute which saves image information.
- **Size of room** – Attribute which saves the room size.

- **Recreational Corner** – Attribute which can have either yes/no information for recreational corner.
- **Area in sqrmtr** – Attribute which saves the total area of office space in a square meter
- **Type of rooms** – Attribute which saves room's type.

## 6. Living Space Entity

There are total of eight attributes in living space entity. Let us see each one of attribute and its useful.

- **House No** – It is a key attribute which save the ID of each Living Space. Each Living Space has unique ID.
- **Address** – Composite attribute which includes {Street no, City, Zip code, State} attributes. This attribute used to save Living space address.
- **Images** – Multivalued Attribute which saves image information.
- **Cost** – Attribute which saves the total cost of each office space.
- **Area in sqrmtr** – Attribute which saves the total area of office space in a square meter.
- **Total Floor** – Attribute which saves the total Floors in a living space.
- **Full Furnished room** – Attribute which can have either yes/no information for full furnished room attribute.
- **No of rooms** – Is a Composite Attribute which also has cost of each room attribute.

## RELATIONSHIP

Let us describe the relation of each entity in Co space management system.

### A. Owner Entity

#### **Many-to- Many Relationship**

- Many numbers of owners(partners) can own nth numbers of office space.
- Many numbers of owners(partners) can own nth numbers of living space.
- Many owners can receive booking from nth customers.

## **B. Customer Entity**

### **One-to-Many**

- One customer can be allowed for multiple booking.
- One customer can pay multiple payments.

### **Many-to-Many**

- Many customers can book many livings space.
- Many customers can book many offices space.
- Many customers can be managed from many owners.

## **C. Payment Entity**

### **Many-to-One**

- Multiple payments can be done for one living space.
- Multiple payments can be done for one office space.
- Multiple payments can be paid from one customer.

## **D. Booking Entity**

### **Many-to-Many**

- Many bookings can be for many livings space.
- Many bookings can be for many offices space.

### **Many-for-One**

- Many Bookings can be managed from one customer

## **E. Office Space Entity**

### **Many-to-Many**

- Nth office space can be booked by many customer
- Many offices space can be owned by many owners

### **One-to-Many**

- One office space can be for many booking.
- One office space can have for many payment

### **F. Living Space Entity**

#### **Many-to-Many**

- Nth living space can be booked by many customer
- Many livings space can be owned by many owners

#### **One-to-Many**

- One living space can be for many booking.
- One living space can have for many payment

### **TOTAL PARTICIPANT**

Total participant of Owner in Own

- Owner owns living space.
- Owner owns office space.