

Punjabi University, Patiala

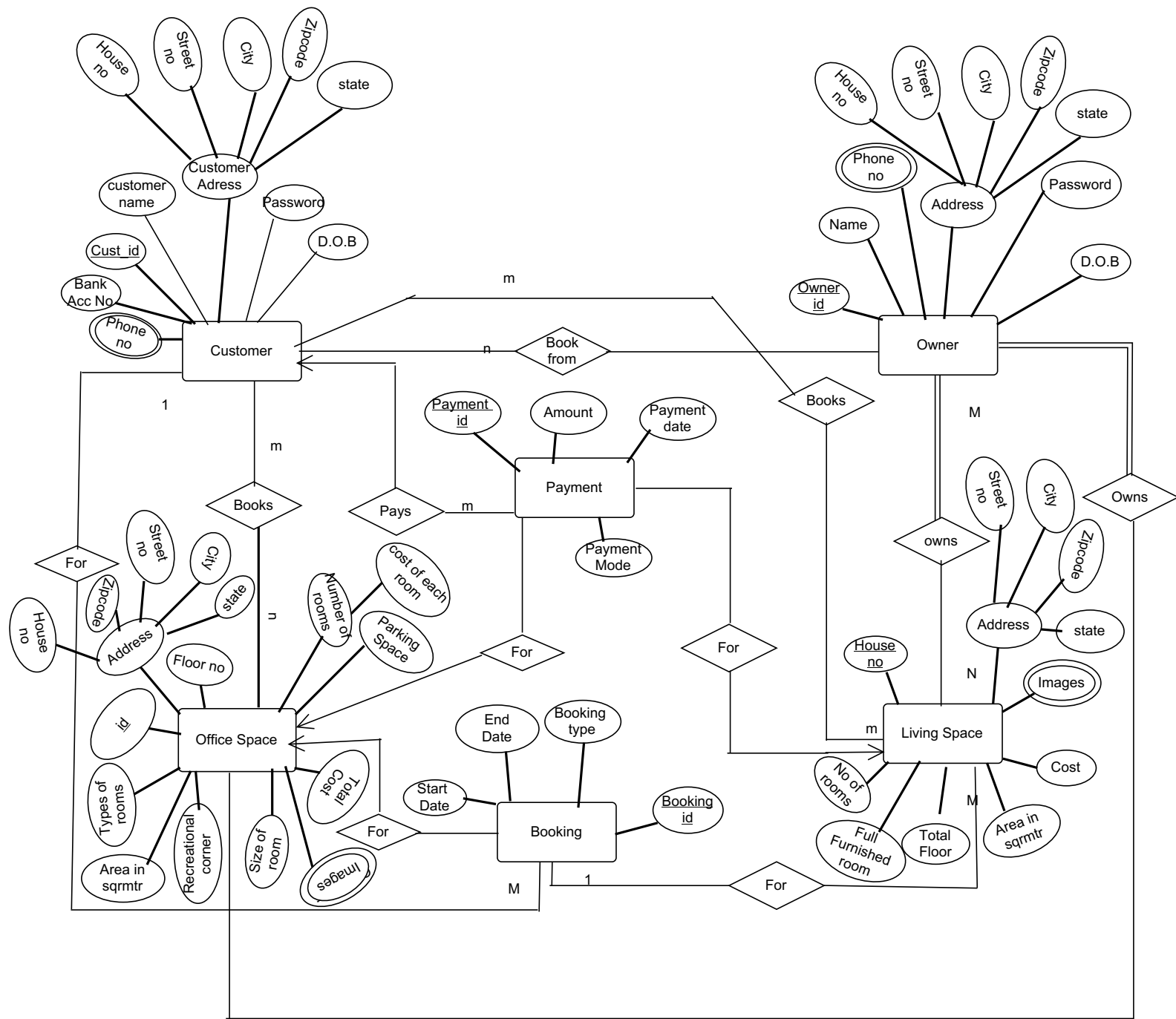
Department Of Computer Science

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.