ERD for estate agency software development

Branch

PK	Branch_Code
	Name
	Address
	Contact_No.
	Email

Property

PK	Property_Code
FK	Branch_Code *
FK	Landloard_No *
	Area
	Address
	Postal_code
	Bedroom_count
	Bathroom_count
	Reception_room_count
	Garage_availability
	Property_type
	On_the_market_date
	Nature (Freehold / Leasehold)
	Property_rent_or_sell (R/S)

Landloard

PK	Landloard_No
	Name
	Address
	Postal_code
	Contact_No.
	Email
	Ownership_status_joint_or_sole

1..1 ◄ Deals with 0..*

1..* ◄ Owns 1..1

0..1 Manages ▲ 1..1

0..1 ▼ Employed 1..*

Staff

PK	Staff_ID
FK	Branch_Code *
	Name
	Designation
	Date_of_birth
	Address
	Contact_No.
	Appoinment_yes_or_no

1..1

1..1 Assigned to ▼ 0..*

1..1 View ▲

R   S

Property_Rent

FK	Staff_ID *
	Rental
	Availability (Yes/No)
	Preference_families_with_children
	Preference_for_pets
	Preference_for_rent_period

Property_Sell

	Advertise_price
	Current_state (Unsold / Sold)

1..1 ◄ Relates to

Selling_Agreement

	Property_Code *, **Buyer_No *.**
	Selling_Aggreement_date
	Agreed_price

1..1 ◄ relates to 0..1

1..* ◄ Sign for 1..1

Buyer

PK	Buyer_No.
	Name
	Address
	Postal_code
	Contact_No.
	Email

Allocate to ▶

0..*

0..*   **0..***

Appoinment

PK	Appoinment_no.
FK	Staff_ID *
FK	Property_Code *
FK	Potential_Client_ID *
	Date
	Time

0..*

Rental

Tenant_No.*
Property_Code *
Rent_Start_Date

	Advanced_fee_deposit
	Rental_due_date
	Rental_frequency (Weekly/Monthly/Quarterly/etc)
	Rent_deposited_date
	Past_rental
	Current_rentals
	Future_rentals

Potential_Client

PK	Potential_Client_ID
	Name
	Address
	Postal_code
	Contact_No.
	Email
	Prefference_rent
	Prefered_monthly_rental
	Prefference_buy
	Prefered_maximum_price
	Area
	Bedroom_count
	Bathroom_count
	Reception_room_count
	Garage_availability

1..1   **Places** ▶   **0..***

1..*   **1..1**

◀ **pay**

Tenant

PK	Tenant_No.
	Name
	Address
	Postal_code
	Contact_No.
	Email

Assumptions:

1. ERD was developed assuming all existing branches are currently functional. Hence, it is assumed that each branch employs or must have at least one branch staff member (except the branch manager). This is a Mandatory-participation in ERD. Further, it is assumed, that there may be staff members who do not assign to any of those branches, because there may be staff who engage in centralized general admin, HR and other functions at Peter Darwin. Hence, it is an Optional-participation in ERD.
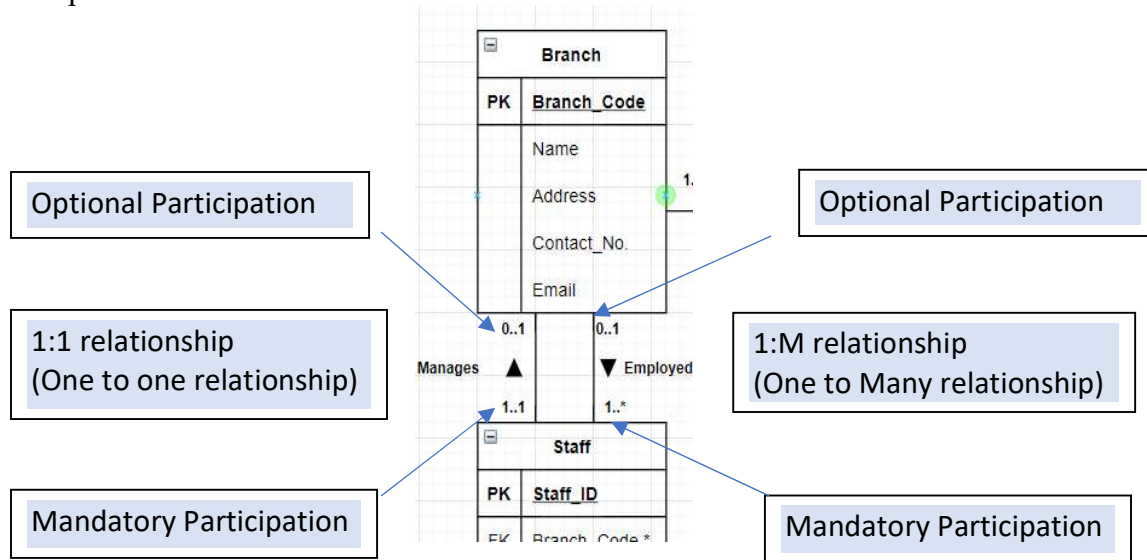
Figure 01

2. It was assumed that each branch must manage by one branch manager (Mandatory-participation in ERD). Because, there could be managers who overlooking the centralized functions like Admin and HR (Assumption 1), who do not have assigned to an any branch (Optional-participation in ERD).

3. It was mentioned, each property is only dealing with one branch, which means each existing property must be assigned to a branch (Mandatory-participation in ERD). However, there could be newly opened branches, in which properties might not been allocated to that branch yet. Therefore, it is an Optional participation.
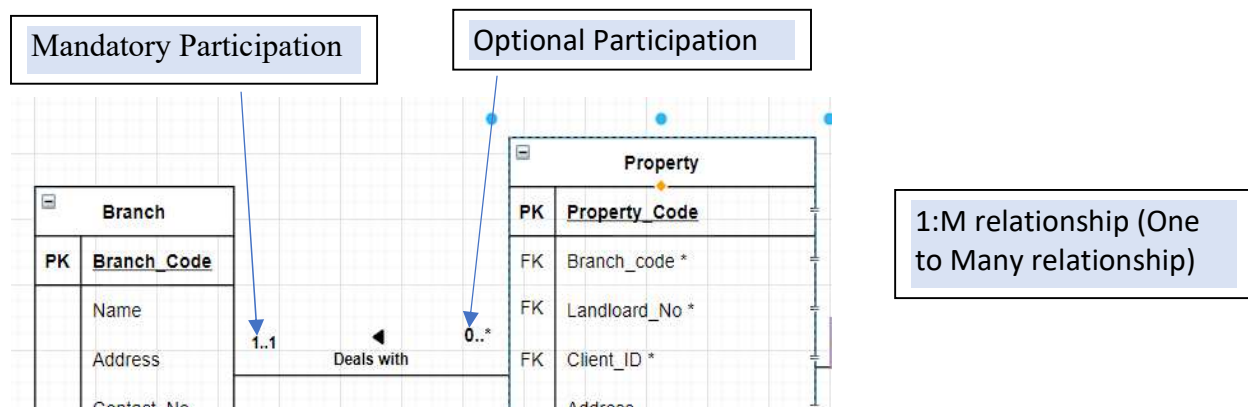
Figure 02

4. It was mentioned that each property either is for sale (Property_Sell) or rent (Property_Rent), but not both at the same time. This **mutually exclusive** relationship between sale and rent properties has been indicated as follows in the ERD.

Property

Property for Sale (Property_Sell)   Property for Rent (Property_Rent)
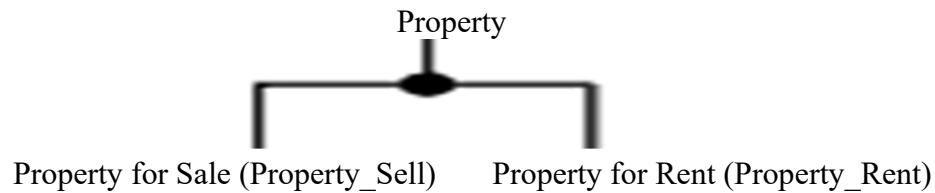
Figure 03

5. Each property for rent (Property_Rent) must be assigned to a particular staff member (Mandatory participation in ERD). Thus, one staff member could have assigned many properties to rent. However, it is assumed, that all the staff members are not assigned to renting properties (Property_Rent) only. Hence, there could be some staff members dealing with Property_Sell portfolio, such as staff assigned to accompany prospective buyers to each viewing appointments. Further, there could be newly joined staff members who do not assigned to any properties yet and also staff who engage in central functions like Admin, HR, etc who do not deal with properties. Thus, it is an Optional participation.
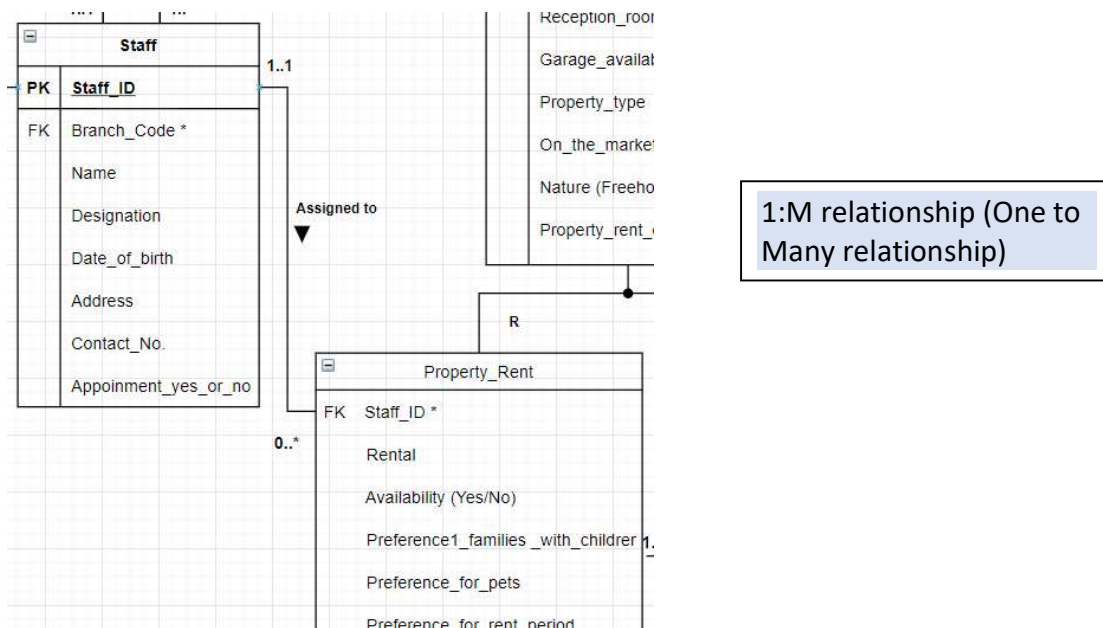
Figure 04

6. It is assumed, that all the staff members are not assigned to property viewing appointments. because, there could be staff who has joined recently and do not assigned to viewing appointments. Further, the staff who engage in central functions like Admin, HR, etc may not assigned to viewing appointments. Thus, it is a Optional participation. Further, It was mentioned, that each Appointment of selling property (Property_Sell) must assigned to a staff member (Mandatory participation in ERD). Further, it is assumed, that one staff member is dealing with many appointments. Hence, there is a one-to-many relationship between two entities.

Figure 05

7. It is assumed, that a one appointment is for viewing of one property only. Both properties to rent and sell require appointments separately for each of the viewing. Therefor, there could be some properties without any viewing appointments being placed (Optional participation in ERD) in the portfolio. However, every viewing appointment there must be a property (Mandatory participation in ERD).
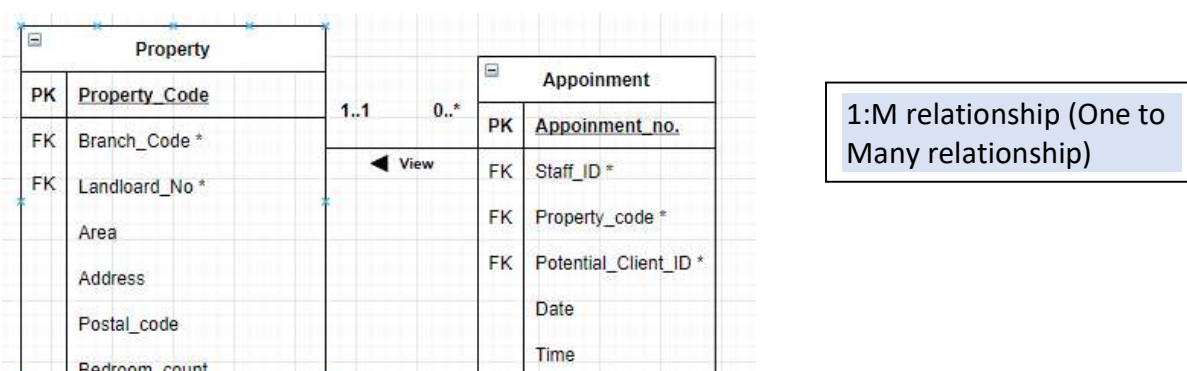

Figure 06

8. It is assumed, that a one landlord might have at least one or several properties and also, a one property could be under a sole or joint ownership. Hence, in the scenario of joint landlords to a one particular property, all the landlords of that property has been **grouped to a one set** and that is indicated by 'Landloard_No.' of the property in the ERD. If the property has a sole ownership, then a single landlord is represented by 'Landloard_No.'. An additional field was added as 'Ownership_status_joint_or_sole' to indicate the nature of ownership. Further, each property must have at least one landlord (Mandatory participation in ERD) and vis versa.
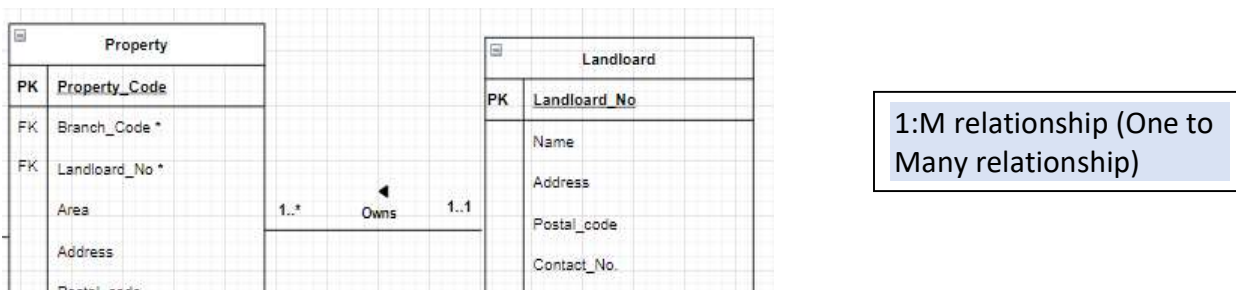

Figure 07

9. It is assumed, that one tenant could rent at least one or several properties at a time and a renting property could also have at least one or joint several tenants. This is a many-to-many relationship. Therefore, link entity has been included as Rental. A composite key was allocated with the combination of 'Tenant_No., Property_Code, Rent_Start_Date' to eliminate duplications.

    Accordingly, a Rental relates to a one rented property and one rented property could have several Rentals (one-to-many relationship). Further, each rental must have a Rented property (Mandatory participation) and each property to rent may not have rentals (Optional participation) since there may be properties that are not yet rented.

    Tenant might have several Rentals, and each rent should be paid by a particular Tenant (One to many relationship). Further, each Tenant must have a Rental and each Rental must have a Tenant (Mandatory relationship).
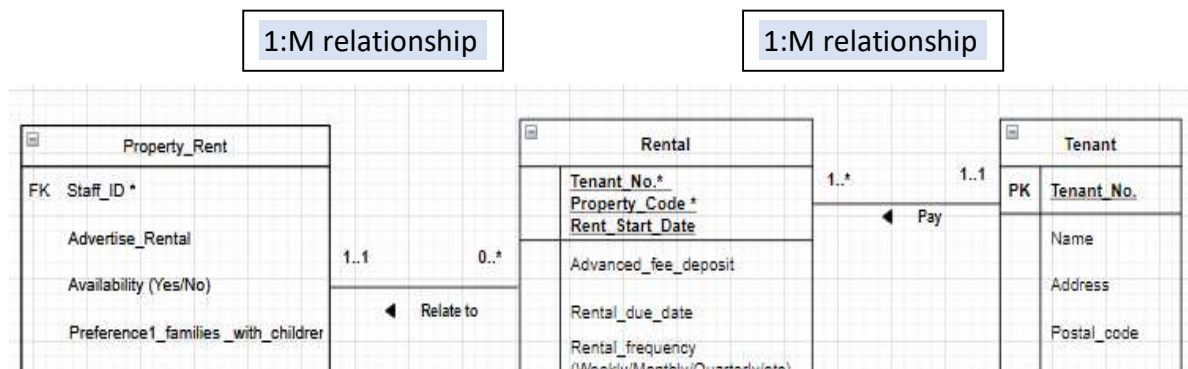

Figure 08

10. It is assumed, that the one property for sale might have at leat one or several joint buyers and one buyer could purchase several properties. This is a many-to-many relationship. Hence, link entity was included in-between as 'Selling_Agreement'.

    As such, it is assumed, that one selling agreement only relevant to one property sale or one property has one selling agreement (One-to-one relationship). Hence, one Selling_Agreement must have a Property to sell (Mandatory participation). However, all the property to sell may not have a selling agreement, since there could be unsold properties (Optional participation).

    In the same time, a buyer must have one or more selling agreements or a one selling agreement should have at least one buyer or several joint buyers (one-to-many relationship). Further, a buyer must have a selling agreement (mandatory participation) and one selling agreement must have at least one buyer or several joint buyers (Mandatory participation).

Figure 09

11. Potential clients include both categories of customers who search/interested in renting properties and buying properties. It is assumed that both of these categories are **mutually inclusive**, that is, one potential client could prefer on renting and buying different properties at the same time. Hence, two separate fields were added for the preference on rent (Preference_rent) and buy (Preference_buy).

Further, it is assumed, one potential client can place several appointments and one appointment must have a one potential client (One-to-many relationship). However, there could be potential clients who do not place any appointments among them (Optional participation). But each Appointment must have a potential client (Mandatory participation).
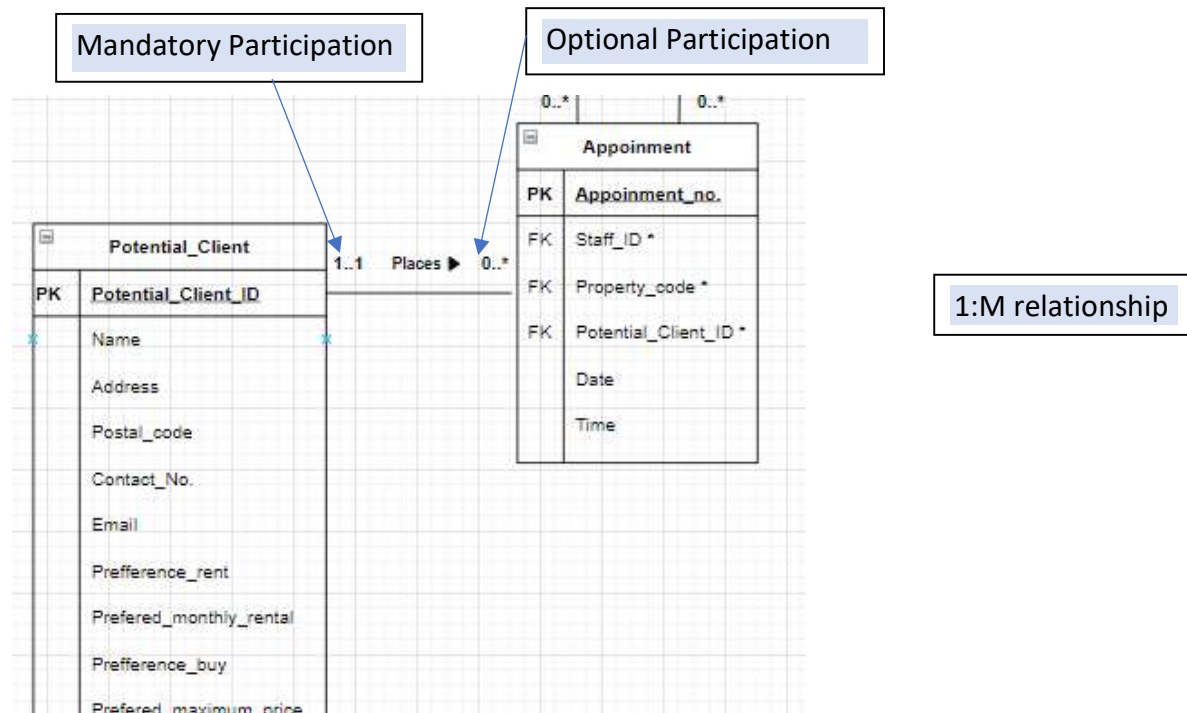

Figure 10

END.