

1. Name of Your Company

World's Moon Real Estate Management Database

2. Project Title

Real Estate Management Database

3. Team

- Member 1 full name (MySQL Expert): Mahdis Rezaei Tamijani
- Member 2 full name (MS SQL Server Expert): Gurjyot Singh Bajwa

4. Weekly Meeting Hours

We will meet and work on the project every Thursday from 3:30 pm to 4:30 pm

5. Project Description

This database will keep the record of all properties listed for sale, rent, or bought by buyers.

This database stores data about properties. A property can be a Detached House, Land, Condo, Recreational, Agriculture, Parking on sale in different cities of different provinces in Canada. They have some attributes such as Property ID, Address (follow Standard Canada Address), Price, Ownership, Listed Since, Description, many photos... Some property types may have specific attributes. For example, condos may have condo fee while Detached House may not have this attribute. (Find those attributes on websites such as realtor.ca)

A Realtor or Agents will have First Name, Last Name, License Number, Address, Years of experience, Phone number, email address.

A realtor works for a realty company. A realty company has a name, address, and phone number.

There can be Renters, Buyers, or Sellers. Their attributes are First Name, Last Name, Address, Phone number, occupation.

Banks provide mortgage for buying houses. We need to store the name of the bank and the amount of mortgage.

If a property has been rented, information about the tenant(s), renter and his/her dependents, the start and end time of rent, amount of monthly rent is stored.

6. Assumptions about Cardinality and Participations

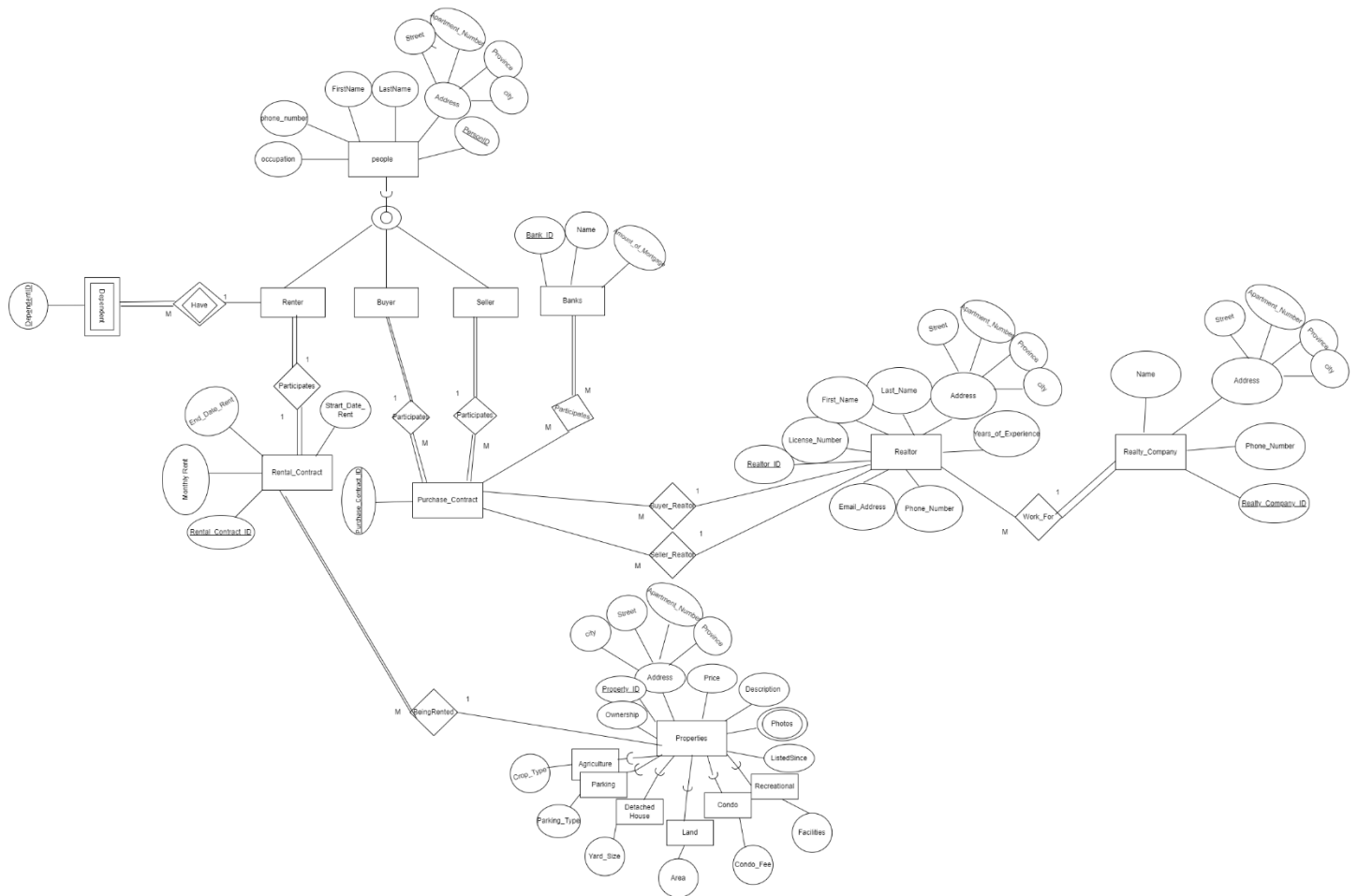
You can write all the assumptions about Cardinality and Participations (total/partial) here.

1. One realtor works for only one realty company.
2. One realty company is being worked by many realtors.
3. Some of the realtors may work for a realty company.
4. All realty companies are worked by at least one realtor.
5. One renter may rent many properties.
6. One property may be rented by many renters.
7. All renters rent at least one property.
8. Some properties are rented by renters.
9. One buyer may buy many properties.
10. One property may be bought by many buyers.
11. All buyers buy at least one property.
12. Some properties may be bought.
13. One seller may sell many properties.
14. One property may be sold by many sellers.
15. All sellers sell at least one property.
16. Some properties are sold by sellers.
17. One bank may provide mortgage for many buyers.
18. One buyer can get a mortgage from one bank.
19. All banks provide mortgage for at least one person.
20. Some buyers get mortgage from a bank.

21. One tenant may have many dependents.
22. One dependent depends on only one tenant.
23. One tenant rent one place.
24. One place may have many tenants.
25. All tenants are renting a place.
26. Some properties have tenants.
27. A buyer or seller can be associated with one or more rental contracts.
28. Each rental contract is associated with many sellers.
29. Each rental contract is associated with many buyers.
30. Each rental contract is associated with many tenants.

7. EER Modeling Diagram

In the following drawing canvas, EER Modeling shapes have been provided. You can copy and replicate them (Ctrl+C to copy and Ctrl+V to paste. You can also select a shape, then press Ctrl button and drag and drop to copy a shape) and edit them to build your diagram.



8. ER-Model Mapping to Database Relational Schema

The relational Schema is written here

Properties(PropertyID,ListedSince, OwnerShip, Price, Description,City,Street,App_Number,PostalCode, Province)

Properties_Photos (PropertyID, Photos)

Recreation (PropertyID, Facilities)

Condo (PropertyID, CondoFee)

Land (PropertyID, Area)

DetachedHouse (PropertyID, YardSize)

Parking (PropertyID, PakingType)

Agriculture (PropertyID, CropType)

Realtor(RealtorID,PhoneNumber,FirstName,LastName,LicenseNumber,Years-of-Experience,Email_Address,App_Number,City,Street, PostalCode, Province)

Realty_Company (RealtyCompanyID, Name, PhoneNumber, App_Number, City,Street, PostalCode, Province)

Realtor_WorksFor_Realty_Company (RealtorID,RealtyCompanyID)

People (PersonID, Occupation, Phone_Number, First_Name, Last_Name, Street, Apartment_Number, Province, City)

Banks (BankID, Name, Amountof Mortgage)

Purchase_Contract (Purchase_Contract_ID)

Bank_ParticipatesIn_PurchaseContract (BankID Purchase, Contract_ID)

Seller (SellerID)

Seller_ParticipatesIn_PurchaseContract (Purchase_Contract_ID, SellerID)

Buyer (BuyerID)

Buyer_ParticipatesIn_PurchaseContract (Purchase_Contract_ID, BuyerID)

Renter (RenterID)

Renter_Dependent (RenterID, DependentID)

Rental_Contract (Rental_Contract_ID, MonthlyRent, End_Date_Rent, Start_Date_Rent, RenterID)

Buyer_Realtor_ParticipationIn_PurchaseContract (Purchase_Contract_ID, RealtorID)

Seller_Realtor_ParticipationIn_PurchaseContract (Purchase_Contract_ID, RealtorID)

Properties_beingRented_by_RentalContract (Rental_Contract_ID, PropertyID)

9. Normalization

All relations must be normalized up to BCNF. You must explain why you believe every relation in your database is normalized.

1NF (First Normal Form):

To convert the data model into 1NF, we need to ensure that each column contains atomic values and there are no repeating groups. It already satisfies 1NF since each table has a primary key and no repeating groups.

2NF (Second Normal Form):

In 2NF, we want to eliminate partial dependencies, which occur when non-key attributes depend on only a portion of the primary key. Since there are no partial dependencies in any of the tables, the schema is already in 2NF.

3NF (Third Normal Form):

In 3NF, we aim to eliminate transitive dependencies, where non-key attributes depend on other non-key attributes. Since there are no transitive dependencies in any of the tables, the schema is already in 3NF.

BCNF (Boyce-Codd Normal Form):

BCNF ensures that every determinant (attribute determining another attribute) is a candidate key. Since, there are no violations of BCNF in the provided schema. Therefore, the schema is already in BCNF.

10.Determining Data Types (Domain) and Constraints

You explain why you choose a certain data type for a field and why you apply certain constraints

11.Creating Database and Tables - SQL DDL

You do not need to copy SQL commands here. Save your SQL commands in a script file and just mention the name of the file here. Make sure the script file is stored besides this document within the same folder.

12.Inserting Values in Tables

You do not need to copy SQL commands here. Save your SQL commands in a script file and just mention the name of the file here. Make sure the script file is stored beside this document within the same folder.

13.SQL Queries

You do not need to copy SQL commands here. Save your SQL commands in a script file and just mention the name of the file here. Make sure the script file is stored beside this document within the same folder.

14.Views

You do not need to copy SQL commands here. Save your SQL commands in a script file and just mention the name of the file here. Make sure the script file is stored beside this document within the same folder.