

Islamic University Of Technology

CSE-4308
Database Management Systems Lab
Lab-6 Report

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Description of the Task :

Bhalo Basha Chai (BBC) is a housing agent in Bangladesh that publishes advertisements of properties that can be rented. Previously they stored all their information on paper. Recently they have decided to use a database. They have come up with the following requirements:

1. There are many branches of BBC throughout the country. Each branch is located in a street of a city and has a postcode.
2. Every branch is maintained by many employees. Upon joining the company, they provide their first name, last name, gender, and date of birth. They have also appointed a position (like a manager, salesperson, etc.) in a specific branch. Their salaries are recorded for tax purposes.
3. Numerous clients rent houses from BBC. They register by going to a certain branch and providing their first name, last name, telephone number, email, preferred accommodation type, and the maximum amount of rent they can afford. At that time, s/he is also assigned a staff member who is their contact person. A client can register in multiple branches.
4. BBC stores information about the property owners who actually own the houses. The owners register by providing their first name, last name, telephone number, email, and password.
5. BBC has multiple houses for rent under them. These houses are denoted by street, city, post code, type, number of available rooms, and rent. Each property is associated with one owner, one contact person who is also a staff member, and the branch the staff works in.
6. Each client can visit properties multiple times, but not twice in a day. A client can make some comments about the property during their visit. The date of their visit is also documented.

Analysis :

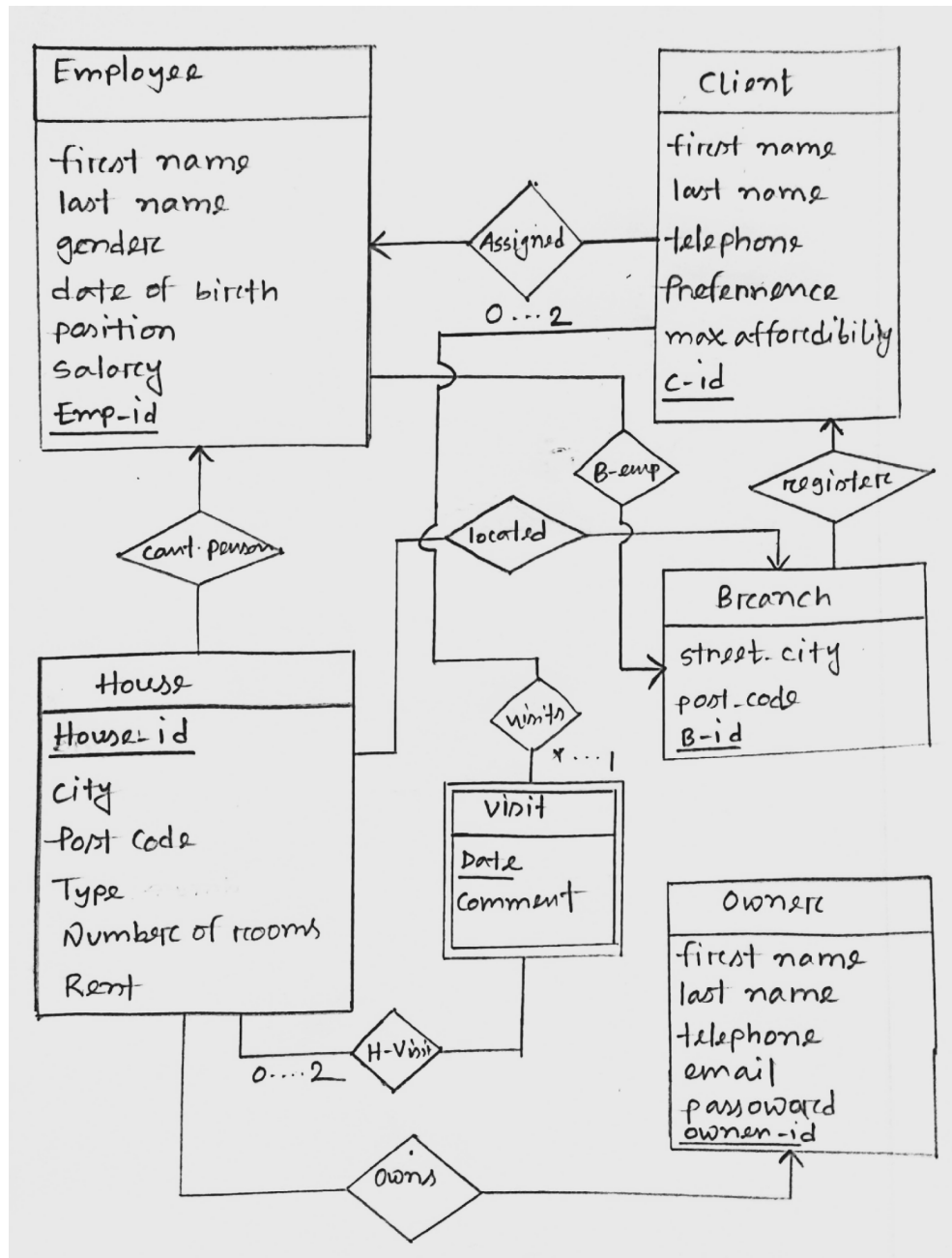
Analyzing the given scenario, I decided to keep 6 entities to cover the whole scenario. These entities are -

- House
- Branch
- Owner
- Employee
- Client
- Visit

I have depicted the relation between entities in the ER Diagram .

Task-1:

The Entity Relationship Diagram-



Description:

Here, some of the entities are interconnected and some are not. There are also some variations in the relation of the entities. Also I found out that, among 6 entities-House, Branch, Employee, Client and Owner are strong entities and "Visit" is a weak entity.

The relations between entities are-

1. One Client is assigned to one employee of the BBC and also One employee can handle many clients so the relation between Employee and Client is One to Many.

2. One House can have one contact person who is the employee of BBC and one employee can be assigned to many houses as a contact person. So the relation is One to Many.
3. One House can be located in only one branch (geographical location) and there can be multiple houses in a branch so , this is one to many relation as well.
4. One Client can register at more than one branches so this relation is one to many.
5. One Employee can only work in one branch at a time but one branch can have multiple employees. So the relation here is also one to many.
6. One house can have one owner but an owner can also own multiple houses at a time. The relation stays one to many also.
7. One Client can visit multiple houses but a particular house can be visited by a client only twice a day. The relation is many to one and 0 to 2. The “Visit” entity is a weak entity here because, there are not enough attributes to identify that uniquely thus it does not contain any primary key.

Findings:

The “Visit” can be a strong entity if we maintained some Visit_ID instead of Visit_Date. To make the design more solid, I decided the Primary Keys, Foreign Keys according to their use cases and tried to avoid data redundancy.

Problems:

I faced a little confusion while working with “House” and “Owner”. I just covered the scenario considering that one house can only have one owner. But there also can be case, there are more than one stakeholder for a house. I did not consider this particular case.

Task-2:

Description and Analysis :

To implement the previously designed ER Diagram properly, I had to select various Primary Keys and Foreign Keys to fulfill the requirements. Here Foreign Keys are the main contributing factor to set up the relations we wanted.

DDL Statements:

```
CREATE TABLE EMPLOYEE(  
    EMP_ID VARCHAR2(10) NOT NULL,  
    FIRST_NAME VARCHAR2(10),  
    LAST_NAME VARCHAR2(10),  
    GENDER VARCHAR2(6),  
    DATE_OF_BIRTH DATE NOT NULL,  
  
    CONSTRAINT PK_EMPID PRIMARY KEY(EMP_ID);  
    CONSTRAINT FK_BID FOREIGN KEY(BRANCH_ID) REFERENCES  
BRANCH(BRANCH_ID)  
);  
  
CREATE TABLE BRANCH(  
    BRANCH_ID VARCHAR2(10) NOT NULL,  
    POSTCODE INT NOT NULL,  
    STREET_CITY VARCHAR2(10) NOT NULL,  
  
    CONSTRAINT PK_BID PRIMARY KEY(BRANCH_ID),  
);  
  
CREATE TABLE HOUSE(  
    HOUSE_ID VARCHAR2(10) NOT NULL,  
    CITY VARCHAR2(10) NOT NULL,  
    POSTCODE INT NOT NULL,  
    HOUSE_TYPE VARCHAR2(15) NOT NULL,  
    NUM_ROOMS INT,  
    RENT INT,  
  
    CONSTRAINT PK_HID PRIMARY KEY(HOUSE_ID),  
  
    CONSTRAINT FK_EID FOREIGN KEY(EMP_ID) REFERENCES EMPLOYEE(EMP_ID),  
    CONSTRAINT FK_OID FOREIGN KEY(OWNER_ID) REFERENCES  
HOUSEOWNER(OWNER_ID),  
    CONSTRAINT FK_VID FOREIGN KEY(VISIT_DATE) REFERENCES  
VISIT(VISIT_DATE),  
);
```

```
CREATE TABLE CLIENT(  
    CLIENT_ID VARCHAR2(10) NOT NULL,  
    FIRST_NAME VARCHAR2(10),  
    LAST_NAME VARCHAR2(10),  
    TELEPHONE INT(11),  
    PREFERENCE VARCHAR2(20),  
    MAX_AFFORDIBILITY INT(15),  
  
    CONSTRAINT PK_CID PRIMARY KEY(CLIENT_ID),  
    CONSTRAINT FK_BID FOREIGN KEY(BRANCH_ID) REFERENCES  
BRANCH(BRANCH_ID),  
    CONSTRAINT FK_EID FOREIGN KEY(EMPLOYEE_ID) REFERENCES  
EMPLOYEE(EMP_ID)  
);
```

```
CREATE TABLE HOUSEOWNER(  
    OWNER_ID VARCHAR2(10) NOT NULL,  
    FIRST_NAME VARCHAR2(10),  
    LAST_NAME VARCHAR2(10),  
    TELEPHONE INT(11),  
    EMAIL VARCHAR2(25) NOT NULL,  
    OWNER_PASSWORD PASSWORD NOT NULL,  
  
    CONSTRAINT PK_OID PRIMARY KEY(OWNER_ID),  
);
```

```
CREATE TABLE VISIT(  
    VISIT_DATE DATE NOT NULL,  
    COMMENT VARCHAR2(150),  
  
    CONSTRAINT PK_VDATE PRIMARY KEY(VISIT_DATE),  
    CONSTRAINT FK_HID FOREIGN KEY(HOUSE_ID) REFERENCES HOUSE(HOUSE_ID)  
);
```