DATABASE ASSIGNMENT 01

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Question 01

1. Branch

    No Candidate Key (Although street and postcode is unique in this table but can't be said Candidate key because there can be multiple branches in the same street with similar postcode)

2. Staff

    No Candidate Key (No Candidate key other than Primary key because every value can be duplicated)

3. PropertyForRent

    OwnerNo (Because every Owner has a unique value)

4. Client

    eMail and telNo (Every client has a unique telNo and eMail so this can be a Candidate key)

5. PrivateOwner

    eMail and telNo (These 2 can be Candidate key because every owner has unique telNo and eMail)

6. Viewing

    No Candidate key other than Primary key

7. Registration

    No Candidate key other than Primary Key because all attribute can be duplicated.

Question 02

- ☐ Branch and Staff can have branchNo as Foreign Key, Staff will be referencing to Branch Table.
- ☐ PropertyForRent and Staff can have StaffNo as Foreign Key, Staff will be the base Table.
- ☐ Branch and PropertyForRent have branchNo as Foreign Key, Branch will be the base Table.
- ☐ PropertyForRent and Viewing can have propertyNo as Foreign Key, PropertyForRent will be the base Table.
- ☐ Viewing and Client can have ClientNo as Foreign Key, Client will be the base Table.
- ☐ Staff and Registration will share staffNo as Foreign key, Staff will be the base table.
- ☐ Registration and Client share ClientNo, Client will be the base Table.

Question 03

1. Entity integrity constraint and Domain constraint will be violated because a duplicate primary key is entered also sex is of char not INT data type.
2. Primary key constraint will be violated because primary key is from both ClientNo and BranchNo, so neither of the keys can be NULL.
3. No constraint is violated because tuple's primary key not used as foreign key in any table.
4. Referential integrity constraint is violated as ownerNo is foreign key in PropertyForRent which uses the ownerNo of (Tony Shaw).
5. It will violate the referential integrity constraint as PropertyNo CR97 doesn't exist in the base table.
6. It will violate the referential integrity constraint because PropertyNo PA14 is used as Foreign Key in the View Table.
7. No constraint is violated as Foreign key kept NULL in the referencing table.

Question 04

```
CREATE TABLE Branch (
    branchNo VARCHAR2(5 byte) PRIMARY KEY,
    street VARCHAR2(40 byte),
    city VARCHAR2(10 byte),
    postcode VARCHAR2(10 byte));

CREATE TABLE Staff (
    staffNo VARCHAR2(5 byte) PRIMARY KEY,
    fname VARCHAR2(20 byte) NOT NULL,
    lname VARCHAR2(20 byte) NOT NULL,
    position VARCHAR2(40 byte) NOT NULL,
    sex CHAR(1 byte) NOT NULL,
    DOB DATE NOT NULL CHECK (TO_CHAR(DOB,'DD-MON-YYYY') >
'09-OCT-1961'),
    salary NUMBER(10) NOT NULL CHECK (salary >= 9000
        AND salary <= 30000),
    branchNo VARCHAR2(10 byte) REFERENCES Branch(branchNo));

CREATE TABLE PrivateOwner(
    ownerNo VARCHAR2(10) PRIMARY KEY,
    fName VARCHAR2(10),
    lName VARCHAR2(10),
    address VARCHAR2(20),
    telNo VARCHAR2(20) UNIQUE,
    eMail VARCHAR2(20) UNIQUE,
    password VARCHAR2(15));



CREATE TABLE PropertyFoRent(
    propertyNo VARCHAR2(5 byte) PRIMARY KEY,
    street VARCHAR2(20 byte),
    city VARCHAR2(20 byte),
    postcode VARCHAR2(40 byte),
    type VARCHAR2(5 byte) DEFAULT 'HOUSE',
```

```
    rooms NUMBER(5) CHECK (rooms >= 3),
    rent NUMBER(5),
    ownerno VARCHAR2(4 byte) REFERENCES PrivateOwner(ownerNo),
    staffNo VARCHAR2(4 byte) REFERENCES Staff(staffNo),
    branchNo VARCHAR2(4 byte) REFERENCES Branch(branchNo));


CREATE TABLE Client (
    clientNo VARCHAR2(4 byte) PRIMARY KEY,
    fName VARCHAR2(4 byte),
    lName VARCHAR2(4 byte),
    telNo VARCHAR2(15 byte),
    prefType VARCHAR2(6 byte),
    maxRent INT,
    eMail VARCHAR2(30 byte));


CREATE TABLE Viewing (
    clientNo VARCHAR2(10),
    propertyNo VARCHAR2(10),
    viewDate DATE,
    commment VARCHAR2(20),
    PRIMARY KEY(clientNo,propertyNo),
    FOREIGN KEY (clientNo) REFERENCES client(clientNo),
    FOREIGN KEY (propertyNo) REFERENCES PropertyForRent(propertyNo));
```

Question 05

```
1.
SELECT propertyNo
FROM PropertyForRent
WHERE staffNo IN (SELECT staffNo
    FROM Staff
    WHERE sex = 'F');
```

2.
```sql
SELECT fName, lName
FROM privateOwner
WHERE ownerNo IN (SELECT ownerno
    FROM PropertyFoRent
    WHERE type = 'House');
```

3.
```sql
SELECT fName, lName,
    salary AS Old_Salary,
    salary + (salary*0.15) AS New_Salary
FROM staff
WHERE branchNo IN (SELECT branchNo
    FROM Branch
    WHERE city = 'London');
```

4.
```sql
Select *
FROM PropertyForRent
WHERE propertyNo IN (SELECT propertyNo
    FROM Viewing
    WHERE to_char(viewDate,'Mon-yyyy') = 'May-2013');
```

5.
```sql
SELECT *
FROM Staff
WHERE fName LIKE 'D%'
    OR lName LIKE 'W%';
```