**DATABASE ASSIGNMENT#01**

**ID: 19K-0354**

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**SECTION: H**

**QUESTION#01:**

Assumptions are made according to the values given in the tables.

* **Branch**: street is a candidate key because there can be only a one branch in one street, another possible candidate key is postcode because all the values in this attribute are unique.
* **Staff**: DOB, Fname, Lname are all candidate keys since they all have unique values in the table.
* **PropertyForRent**: street is a candidate key because there can be only a one branch in one street, another possible candidate key is postcode because all the values in this attribute are unique.
* **Client**: Fname, Lname, TelNo, and eMail are all candidate keys since they all have unique values in the table.
* **PrivateOwner**: Fname, Lname, Address, TelNo, eMail are all candidate keys since they all have unique values in the table.
* **Viewing**: no other candidate key
* **Registration**: no other candidate key

**QUESTION#02:**

1. **branchNo** of Branch table is a foreign key in the following tables: Staff, Registration, and PropertyForRent, because they all have the same attribute name and also they have the same values that belong to branchNo in Branch table.
2. **staffNo** of Staff tableis a foreign key in the following tables: Registration, and PropertyForRent, because they all have the same attribute name and also they have the same values that belong to staffNo in Staff table.
3. **ownerNo** of PrivateOwner tableis a foreign key in the PropertyForRent table because it has the same attribute name and also the same values that belong to ownerNo in PrivateOwner table.
4. **propertyNo** of PropertyForRent tableis a foreign key in the Viewing because it has the same attribute name and also the same values that belong to propertyNo in PropertyForRent table.
5. **clientNo** of Client tableis a foreign key in the following tables: Registration, and Viewing because they both have the same attribute name and also the same values that belong to clientNo in Client table.

**QUESTION#03:**

* Insert <SA9, 'Scott', 'Jeff', 'Clerk', 1, '1977-10-01', 58000, B007> into STAFF

**Constraints Violated**: Key constraint and Domain constraint

**Explanatoin**: Since staffNo is a primary key it’s automatically unique and as SA9 already exists in the Staff table we cannot enter the same value again. The fourth which is a number is being entered into sex column will give an error too because the data type of sex is char while the number that is being entered has a data type of wither int or number. The fromat of the DOB is worng since date data type is in date-month-year format, and B007 should be ‘B007’.

* Insert <CR56, '', '', '1990-12-07'> into REGISTRATION

**Constraints Violated**: Entity integrity constraint and Domain constraint

**Explanatoin**: Since we don’t know which column the values are being entere to, all these values will be entered in the same order they’re written in. First the branchNo value which is “,” will give an error because branchNo key is not only a foregin key but a primary key and primary key cannot be null hence it’ll give an error. Also CR56 should be ‘CR56’.

* Delete the Branch tuple with branchNo = ‘B002’

**Constraints Violated**: None

**Explanatoin**: No error because this brancNo with this value does not exist in any other table. If this same value was also in other tables where it’s being used as a foreign key, then we would’ve has to either replace those values with NULL or delete them from other table where it’s being used as a foreign key.

* Delete the PrivateOwner tuple with the Name = ‘Tony Shaw’

**Constraints Violated**: Referential integrity constraint

**Explanatoin**: If we delete the tuple with this name then ownerNo=CO93 will be deleted too which is a primary key in this table and a foreign key in PropertyForRent table. In order to delete this row successfully we need to first delete those values or replace them with NULL from PropertyForRent table first and then run this query.

* Modify the clientNo of the VIEWING tuple with clientNo = ‘CR62’ to ‘CR97’

**Constraints Violated**: Referential integrity constraint

**Explanatoin**: ClientNo in Viewing table is foreign key referencing to Client table, and this partcular value that is ‘CR97’ does not exist in the Client table we need to first update Client table before modifying the Viewing table.

* Modify the propertyNo attribute of the PropertyForRent tuple with propertyNo = ‘PA14’ to‘PA16’

**Constraints Violated**: Referential integrity constraint

**Explanatoin**: PropertyNo is a primary key in PropertyForRent table and a foreign key in Viewing table. Which means that before editing or modifying the PropertyForRent table, we need to either delete or replace the values with NULL for those the rows in Viewing table that has the this propertyNo and then modify PropertyForRent table.

* Modify the branchNo attribute of the PropertyForRent tuple with branchNo = ‘B007’ to NULL

**Constraints Violated**: None

**Explanatoin**: No error because a foreign key can be null.

**QUESTION#04:**

1. Create table Staff (staffNo varchar2 (20) primary key, fName varchar2 (20) not null, lName varchar2 (20) not null, position varchar2 (20) not null, sex char not null, DOB date not null check((extract(year from sysdate)-extract(year from DOB))<60), salary number (5) not null check(salary between 9000 and 3000), branchNo varchar2 (20) not null, foreign key (branchNo) references Branch(branchNo));
2. Create table PropertyForRent (propertyNo varchar2 (20) primary key, street varchar2 (20), city varchar2 (20), postcode varchar2 (20), type varchar2 (20) deafult ‘House‘, rooms number (3) check(room>=3), ownerNo varchar2 (20), staffNo varchar2 (20), branchNo varchar2 (20), foreign key (branchNo) references Branch(branchNo), foreign key (staffNo) references Staff(staffNo));
3. Create table PrivateOwner(ownerNo varchar2 (20) primary key, fName varchar2 (20), lName varchar2 (20), address varchar2 (30), telNo varchar2 (20) unique, email varchar2 (20) unique, password varchar2 (20));
4. Create table Viewing(cientNo varchar2 (20) ,propertyNo varchar2 (20), viewDate varchar2 (20), comment varchar2 (30), foreign key (clientNo) references Client(clientNo), foreign key (propertyNo) references PropertyForRent(propertyNo));

Alter table Viewing add primary key (clientNo,propertyNo);

**QUESTION#05:**

1. Select propertyNo from PropertyForRent where staffNo = (Select staffNo from Staff where sex=’F’);
2. Select \* from PrivateOwner where ownerNo = (Select ownerNo from PopertyFromRent where type=‘House’);
3. Select salary=(0.15\*salary)+salary from Staff where branchNo=(Select branchNo from Branch where city=’London’);
4. Select \* from Viewing where extract(month from viewDate)=’May’ and extract(year from viewDate)=2013;
5. Select \* from Staff where fName=‘D%’ and lName=‘W%’;