

Database Systems

Date: 16-9-22.

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CS2005

Assignment #1

K20-1052

BSE-5B

S.M. Hassan Ali

Q.9

Branch.

In this table street and postcode is unique yet we can have multiple branches in a street having same postcode. So no other key as candidate key just primary key.

Staff.

There is no candidate key other than primary key because all those attributes can be repeated.

Property for Rent.

No other key as candidate key other than primary key, even if we take OwnerNo and propertyNo as composite key so it will become superkey.

Client

email can be taken as candidate key if made up of unique keywords.

Private Owner.

email can be taken as candidate key.

Viewing / Registration.

No candidate key, just primary key.

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Q.2

- Staff and Branch has branchNo as FK
- PropertyForRent and Staff has staffNo as FK that references Staff.
- PropertyForRent and Branch has branchNo as FK that references Branch.
- Viewing and PropertyForRent has propertyNo as FK that references PropertyForRent.
- Registration and Client has clientNo as FK that references Client.
- Registration and Branch has branchNo as FK that references Branch.
- Registration and Staff has staffNo as FK that references Staff.

Q3

- Primary key is violated as it cannot be repeated.
- domain constraint is violated as sex is a char not integer type.
- Since primary key is the composite of clientNo and BranchNo, we cannot leave it as null hence primary key violation.
- BranchNo = 'B002' is not used anywhere as FK hence no violation.
- The OwnerNo is FK in propertyForRent which uses OwnerNo of Tony Shaw, so referential integrity is violated.

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- The clientNo 'C897' does not exist in client table hence referential integrity violation.
- The Viewing table uses propertyNo = 'PA14' so it cannot be changed in Property For Rent, leading to referential integrity.
- Foreign key can be kept as null while referencing the table.

Q.4.

- first we need to make Branch table as branchNo is used as fk in Staff.

Create Table Branch(

branchNo Varchar(5) PRIMARY KEY,
street Varchar(20),
city Varchar(10),
PostCode Varchar(10);

Create Table Staff(

staffNo Varchar(5) PRIMARY KEY,
fName Varchar(10) NOT NULL,
lName Varchar(10) NOT NULL,
position Varchar(10) NOT NULL,
sex char NOT NULL

DOB Date NOT NULL, check('TO_CHAR(DOB, 'DD-MON-YY') >='09-OCT-1961'),

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Salary Number(6) NOT NULL Check(

Salary >= 9000 AND
Salary <= 3000),

BranchNo Varchar(5) NOT NULL

Foreign Key (branchNo) References Branch (BranchNo);

- In propertyForRent we have ownerNo, staffNo, branchNo. So first we need to make staff, private owner and branch along with their respective primary keys.

Staff and Branch tables are already made.

Create Table PropertyForRent(

propertyNo Varchar(5) PRIMARY KEY,

Street Varchar(20),

city Varchar(10),

Postcode Varchar(10),

Type Varchar(10) Default 'House',

Rooms Number(2) Check (Rooms >= 3),

Unit Number(15),

OwnerNo Varchar(5),

StaffNo Varchar(5),

BranchNo Varchar(5),

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Foreign Key (OwnerNo) references PrivateOwner (OwnerNo),
Foreign Key (StaffNo) references Staff (StaffNo),
Foreign Key (BranchNo) references Branch (BranchNo);

• Create Table PrivateOwner (. . .) ;

OwnerNo VarChar(5) PRIMARY KEY,
fname VarChar(12),
lname VarChar(10),
address VarChar(10),
telNo VarChar(20) UNIQUE,
Email VarChar(20) UNIQUE,
Password VarChar(10)

);

• for viewing table we need to have client property for Client table as foreign keys are used.

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Create Table Client (

```
ClientNo  Varchar(5)  PRIMARY KEY,  
FName    Varchar(10),  
Lname    Varchar(10),  
TelNo    Varchar(10),  
PrefType Varchar(10),  
maxRent  Number(4),  
Email    Varchar(20)  
);
```

Create Table Viewing (

```
clientNo  Varchar(5),  
PropertyNo Varchar(5),  
viewDate  Date,  
comment   Varchar(30),  
PRIMARY KEY (clientNo, propertyNo),  
Foreign Key (clientNo) references Client (clientNo),  
Foreign Key (propertyNo) references PropertyForRent  
(propertyNo)  
);
```

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Q.5

- a) Select PropertyNo from PropertyForRent where StaffNO In
(select StaffNO from Staff where sex = 'F');
- b) Select fName, lName from PrivateOwner where OwnerNO In
(select OwnerNo from PropertyForRent where type = 'House');
- c) Select fName, lName, (Salary + (Salary * 15) / 100) as "New Salary" from Staff where branchNO In
(select branchNo from Branch where city = 'London');
- d) Select * from PropertyForRent where PropertyNO In
(select PropertyNO from viewing where to_char(viewDate, 'Mon-yyy') = 'May-20/3');
- e) Select * from Staff where fName Like 'D%' OR lName Like 'W%';