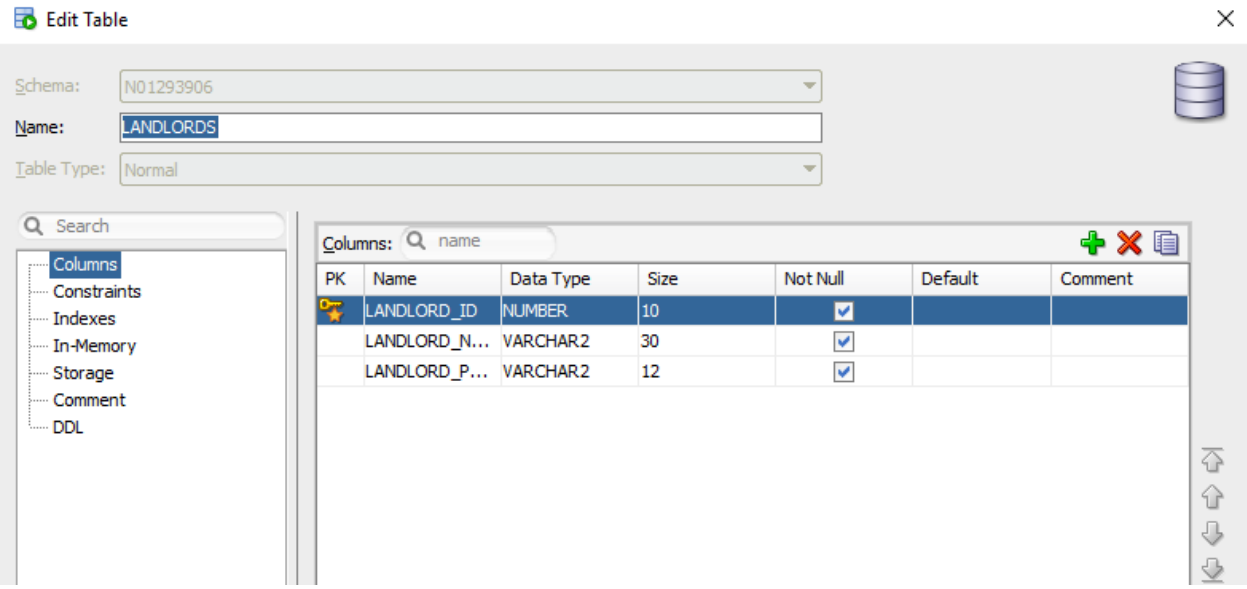
Assignment 5 - Database Architecture

1) Create a table Landlords which has the following information
- Landlord id
- Landlord Name
- Landlord Phone




```
CREATE TABLE "N01293906"."LANDLORDS"
  (     "LANDLORD_ID" NUMBER(10,0) NOT NULL ENABLE,
        "LANDLORD_NAME" VARCHAR2(30 BYTE) NOT NULL ENABLE,
        "LANDLORD_PHONE" VARCHAR2(12 BYTE) NOT NULL ENABLE,
         CONSTRAINT "LANDLORD_ID" PRIMARY KEY ("LANDLORD_ID")
  ) ;
```

Note: If we forgot to add constraint on column then it can be done in following way
Table Name -> Right Click->Constraint->Add Primary Key->select Column

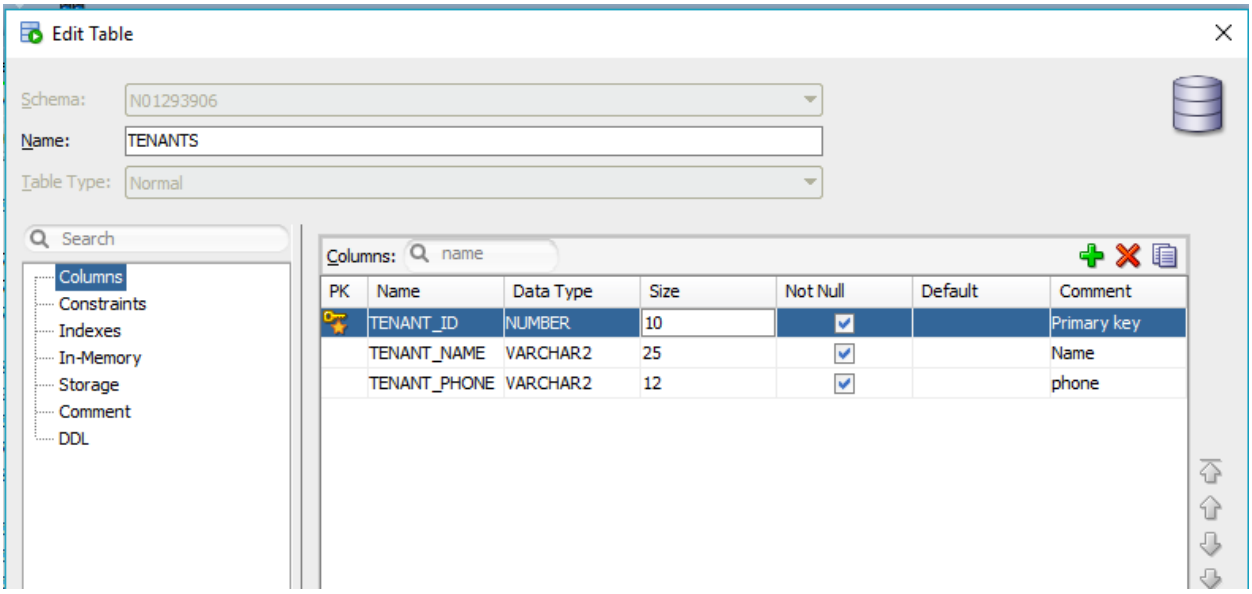
2) Create sequence on landlord_id

Create A Sequence For The Landlord Id Starting At 1 And Incrementing By 1;

Reason: - To auto increment the landlord_id.

Problem: - If we delete existing record then we can not add another data for that primary key.

3) Create another table Tenants which has the following information
- Tenant id
- Tenant Name
- Tenant Phone



4) Create sequence for tenant id

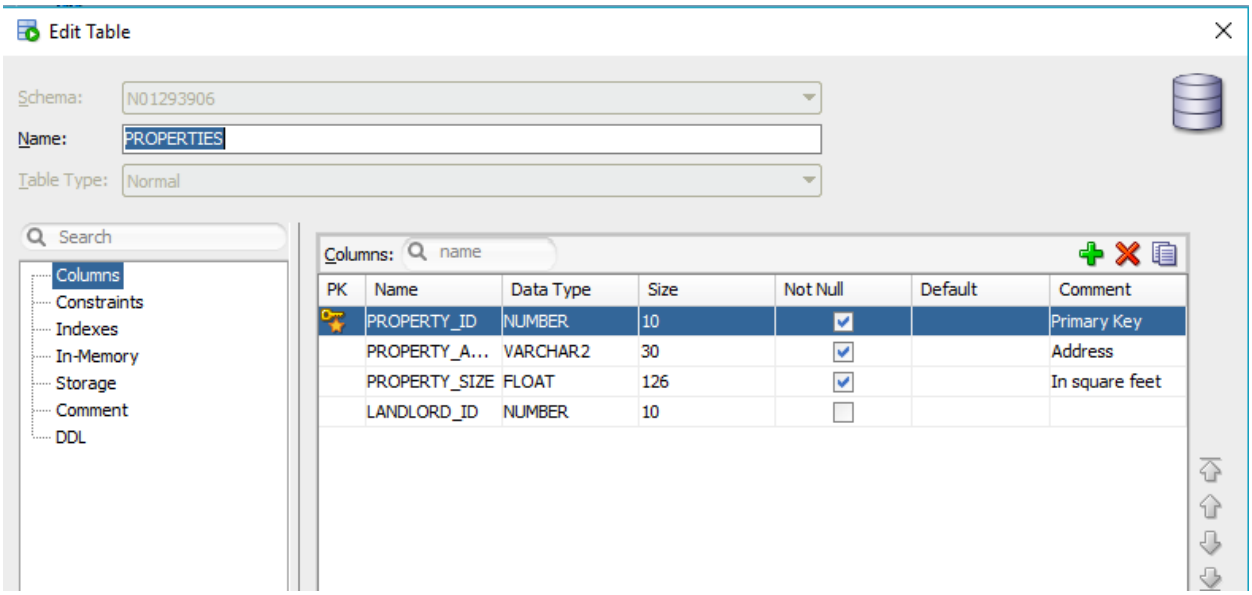
```
Create Sequence Tenant_Id_Seq START WITH 1 INCREMENT BY 1;
```

5) Create a third table properties

- Property id

- Property Address

- Property Size (in square feet)



Note: Data type of property_size is double precision. In this way we get precised.

Q) Why not Number?

Answer: - Value in property_size can have data in decimal values and number does not store data in decimal values.

Q) Why not Float?

Answer: - Float allows to store data in decimal value but it allows to only one decimal point.

6) Create a sequence for property id starting at 1 and incrementing by 1.

```
Create Sequence Property_Id_Seq START WITH 1 INCREMENT BY 1;
```

7) A tenant can own multiple properties. Create a foreign key on the properties table to include a

reference to the landlord id.

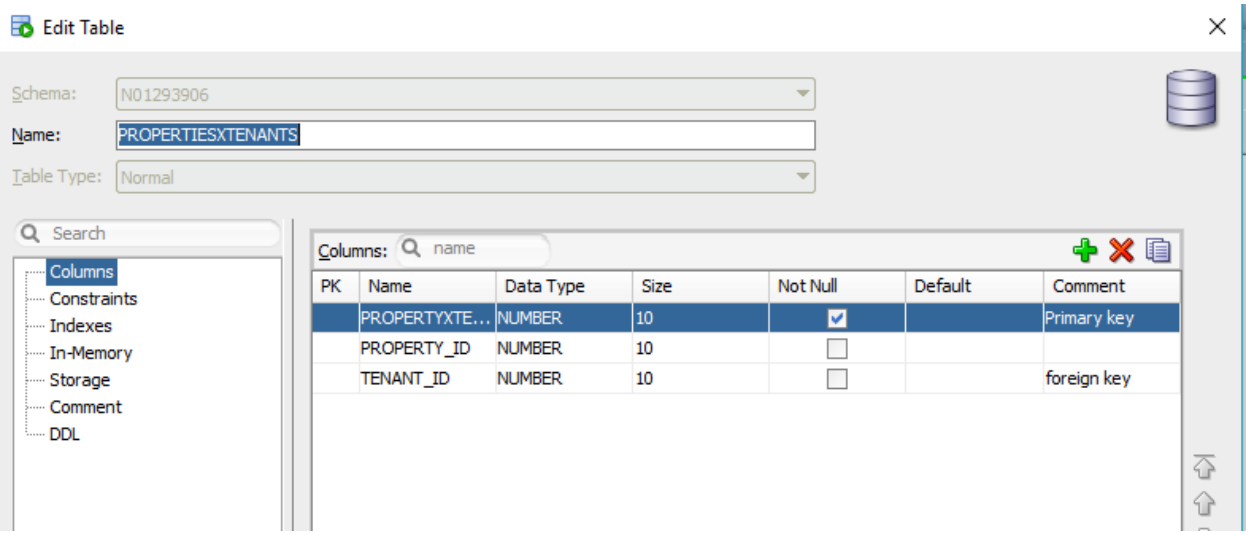
```
Alter Table Properties Add Constraint Properties_Fk_Landlord_Id Foreign Key (LANDLORD_ID) References Landlords (LANDLORD_ID);
```

8) Create a fourth table propertiesxtenants (this describes a lease)

- Propertyxtenantid

- Propertyid

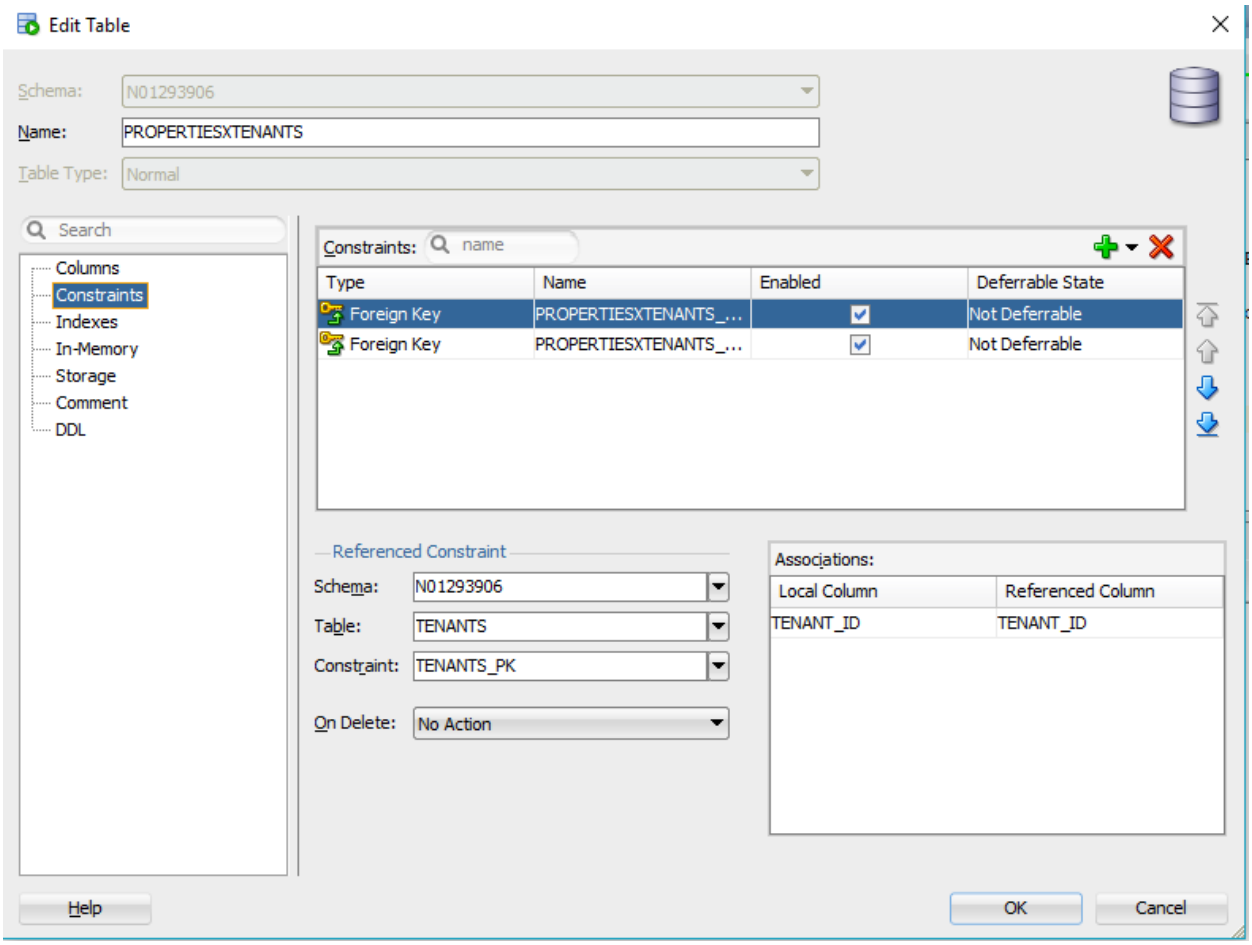
- Tenantid



9) Create a sequence for propertyxtenantid starting at 1 and incrementing by 1.

Create Sequence Propertyxtenant_Id_Seq START WITH 1 INCREMENT BY 1;

10) Create two foreign keys on the propertiesxtenants table to reference propertyid and tenantid.



11) Data into properties table

Insert Into Properties (Property_Id, Property_Address, Property_Size) Values (Property_Id_Seq.Nextval, '103 Hillcrest Mt',2300);

Insert Into Properties (Property_Id, Property_Address, Property_Size) Values (Property_Id_Seq.Nextval, '566 East Esplanade',1600);

Insert Into Properties(Property_Id, Property_Address, Property_Size) Values(Property_Id_Seq.Nextval, '912 Montgomery Road',2600);

Insert Into Properties(Property_Id, Property_Address, Property_Size) Values(Property_Id_Seq.Nextval, '55 Starter Dr Unit 3',1200);

Insert Into Properties(Property_Id, Property_Address, Property_Size) Values(Property_Id_Seq.Nextval, '3022 Providence Circle',2000);

12) Data into landlords table

```
Insert Into Landlords(Landlord_Id, Landlord_Name, Landlord_Phone)
Values(Landlord_Id_Seq.Nextval, 'Charles Montgomery','905 174 2121');

Insert Into Landlords(Landlord_Id, Landlord_Name, Landlord_Phone)
Values(Landlord_Id_Seq.Nextval, 'Richmond Pennybags','647 222 8749');
```

13) Data into properties table

Charles Montgomery owns 912 Montgomery Road, 55 Starter Dr, 103 HillCrest

Richmond Pennybags owns 566 East Esplanade, 3022 Providence Circle;

```
update properties set landlord_id=1 where property_id IN (3,4,1);

update properties set landlord_id=2 where property_id IN (2,5);
```

14) Data into tenants table

```
Insert Into Tenants(Tenant_Id, Tenant_Name, Tenant_Phone)
Values(Tenant_Id_Seq.Nextval, 'Alexander Pierce',9067832394);

Insert Into Tenants(Tenant_Id, Tenant_Name, Tenant_Phone)
Values(Tenant_Id_Seq.Nextval, 'David Dunlap','416 783 1830');

Insert Into Tenants(Tenant_Id, Tenant_Name, Tenant_Phone)
Values(Tenant_Id_Seq.Nextval, 'Patricia Sweeney','905 336 7819');

Insert Into Tenants(Tenant_Id, Tenant_Name, Tenant_Phone)
Values(Tenant_Id_Seq.Nextval, 'Kimberly Johnson','647 838 1121');

Insert Into Tenants(Tenant_Id, Tenant_Name, Tenant_Phone)
Values(Tenant_Id_Seq.Nextval, 'Wayne Collins','647 383 0333');

Insert Into Tenants(Tenant_Id, Tenant_Name, Tenant_Phone)
Values(Tenant_Id_Seq.Nextval, 'John Reed','416 880 3013');
```

15) Data into propertiesxtenants table

```
Insert Into Propertiesxtenants(Propertyxtenantid, Property_Id, Tenant_Id)
Values(Propertyxtenant_Id_Seq.Nextval, 1,2);

Insert Into Propertiesxtenants(Propertyxtenantid, Property_Id, Tenant_Id)
Values(Propertyxtenant_Id_Seq.Nextval, 1,1);
```

Insert Into Propertiesxtenants(Propertyxtenantid, Property_Id, Tenant_Id) Values(Propertyxtenant_Id_Seq.Nextval, 2,5);

Insert Into Propertiesxtenants(Propertyxtenantid, Property_Id, Tenant_Id) Values(Propertyxtenant_Id_Seq.Nextval, 3,1);

Insert Into Propertiesxtenants(Propertyxtenantid, Property_Id, Tenant_Id) Values(Propertyxtenant_Id_Seq.Nextval, 3,5);

Insert Into Propertiesxtenants(Propertyxtenantid, Property_Id, Tenant_Id) Values(Propertyxtenant_Id_Seq.Nextval, 3,3);

Insert Into Propertiesxtenants(Propertyxtenantid, Property_Id, Tenant_Id) Values(Propertyxtenant_Id_Seq.Nextval, 4,4);

Insert Into Propertiesxtenants(Propertyxtenantid, Property_Id) Values(Propertyxtenant_Id_Seq.Nextval, 5);

16) How would you find all of the tenants of 912 Montgomery?

```
Select T.* From Tenants T
Inner Join Propertiesxtenants Pt On T.Tenant_Id = Pt.Tenant_Id
Inner Join Properties P On Pt.Property_Id = P.Property_Id
Where P.Property_Id = 3;
```

This is when we don't know the property_id

```
Select T.* From Tenants T
Inner Join Propertiesxtenants Pt On T.Tenant_Id = Pt.Tenant_Id
Inner Join Properties P On Pt.Property_Id = P.Property_Id
Where P.Property_Address Like '%Montgomery%';
```

17) How would you find the total square footage of properties owned by Charles Montgomery?

```
Select Landlord_Name, Sum(Property_Size)
From Landlords Inner Join Properties
On Landlords.Landlord_Id = Properties.Landlord_Id
Where Landlords.Landlord_Id = 1
```

```
Group By Landlords.Landlord_Id, Landlord_Name;
```

18) How would you find the average square footage of property owned by Richmond PennyBags?

```
Select Landlord_Name, Avg(Property_Size)
From Landlords Inner Join Properties
On Landlords.Landlord_Id = Properties.Landlord_Id
Where Landlords.Landlord_Id = 2
Group By Landlords.Landlord_Id, Landlord_Name;
```

19) How would you find every property that is leased by Alexander?;

```
Select Tenant_Name, Property_Address
From Tenants
Inner Join Propertiesxtenants
On Tenants.Tenant_Id = Propertiesxtenants.Tenant_Id
Inner Join Properties
On Propertiesxtenants.Property_Id = Properties.Property_Id
Where Tenants.Tenant_Id = 2;
```

20) How would you find tenants without properties? Properties without Tenants?

```
Select Tenant_Name, Count(Properties.Property_Id)
From Tenants
Left Join Propertiesxtenants
On Tenants.Tenant_Id = Propertiesxtenants.Tenant_Id
Left Join Properties
On Propertiesxtenants.Property_Id = Properties.Property_Id
Group By Tenants.Tenant_Id, Tenants.Tenant_Name
Having Count(Properties.Property_Id) = 0;
```

21) How would you find Properties without Tenants?;

```
Select Property_Address, Count(Tenants.Tenant_Id)
From Properties
Left Join Propertiesxtenants
On Properties.Property_Id = Propertiesxtenants.Property_Id
Left Join Tenants
On Propertiesxtenants.Tenant_Id = Tenants.Tenant_Id
Group By Properties.Property_Id, Properties.Property_Address
Having Count(Tenants.Tenant_Id) = 0;
```

Table Management

1) Add a column that included the tenants date of birth. Set Kimberly's birthday to oct 30, 2018

```
Alter Table Tenants
        Add Birthday Date;
        Update Tenants Set Birthday = To_Date('30-10-2018', 'Dd-Mm-Yyyy')
Where Tenant_Id = 4;
```

2) Add a column which represents the monthly rent of a property and it's deposit amount. Set 55 Starter Dr unit 3 to $600CAD/month and deposit amount to $1200.

```
Alter Table Properties
  Add Monthly_Rent Number(10, 2)
  Add Deposit_Amt Number(10,2);

Update Properties Set Monthly_Rent = 600, Deposit_Amt = 1200
  Where Property_Id = 4;
```

5) Add a column which represented smoking and pets at a property. You can't smoke at properties owned by RichMond Pennybags. You can't have dogs at properties owned by Charles Montgomery.

```
Alter Table Properties
    Add Smoking Varchar(255) Default 'True'
    Add Pets Varchar2(255) Default 'True';

Update Properties Set Smoking = 'False'
    Where Landlord_Id = 2;

Update Properties Set Pets = 'False'
    Where Landlord_Id = 1;
```

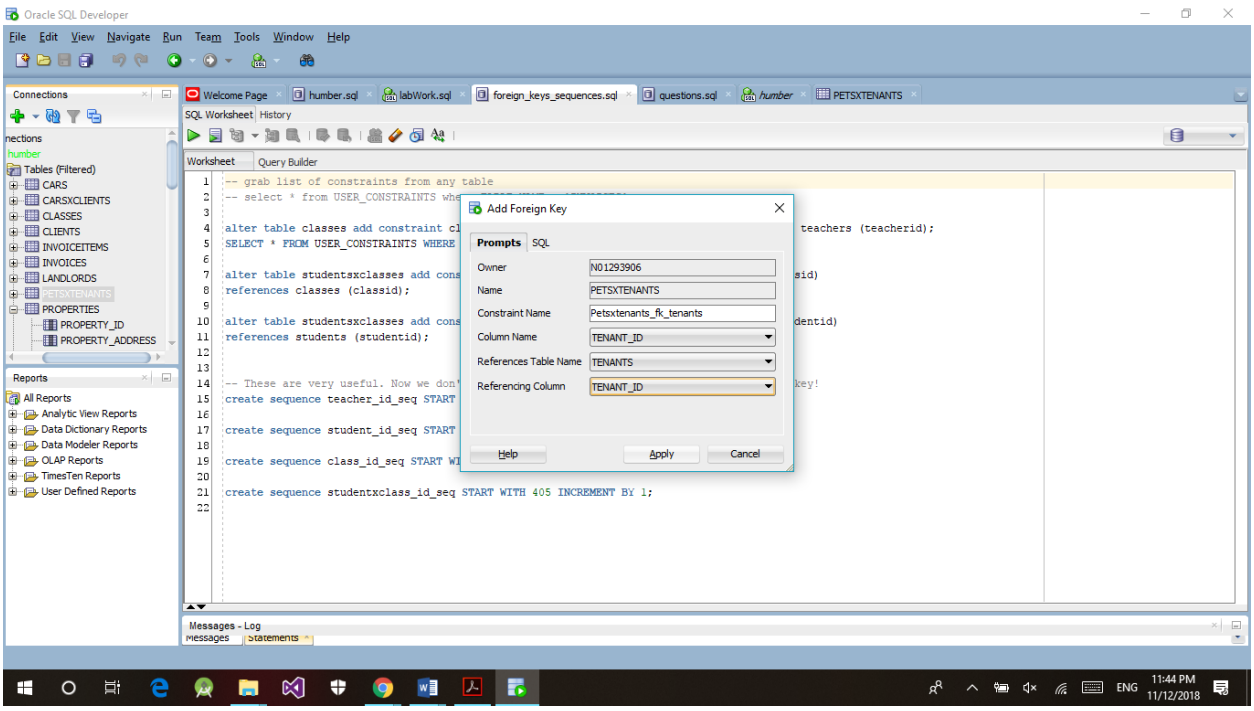
6) Add a column which represents the lease start date and end date for a particular tenant. Alexander's lease on 912 Montgomery Rd started last November and ends this November.

```
Alter Table Propertiesxtenants
    Add Lease_Start_Date Date
    Add Lease_End_Date Date;

Update Propertiesxtenants
    Set Lease_Start_Date = To_Date('01-11-2017', 'Dd-Mm-Yyyy'),
    Lease_End_Date = To_Date('30-11-2018', 'Dd-Mm-Yyyy')
    Where Propertyxtenantid = 4;
```

Database Management

1) What if we wanted to include a list of pets that belonged to tenants? A copper spaniel named Rex belongs to Alexander & Patricia. A poodle named Bess belongs to John. A cat named Snuggles belongs to Kimberly.

```
Create Table Pets(
    Pet_Id Number(5) Primary Key,
    Pet_Name Varchar2(255) Not Null,
    Pet_Type Varchar2(255) Not Null,
    Pet_Breed Varchar2(255)
);


Create Sequence Pet_Id_Seq
    Start With 1
    Increment By 1;
Create Sequence Petsxtenants_Id_Seq
    Start With 1
    Increment By 1;
```



Why new table PETSXTENANTSXTENANTS?

Because of many to many relationship in two tables. To avoid data reduandancy.

```
Insert Into Pets Values(PET_ID_SEQ.Nextval, 'Rex', 'Dog', 'Copper Spaniel');
Insert Into Pets Values(PET_ID_SEQ.NEXTVAL+1, 'Bess', 'Dog', 'Poodle');
Insert Into Pets Values(PET_ID_SEQ.NEXTVAL+1, 'Snuggles', 'Cat', '');

Insert Into Petsxtenants Values(Petsxtenants_ID_SEQ.Nextval, 1,1);
Insert Into Petsxtenants Values(Petsxtenants_ID_SEQ.Nextval, 1,3);
Insert Into Petsxtenants Values(Petsxtenants_ID_SEQ.Nextval, 3,6);
Insert Into Petsxtenants Values(Petsxtenants_ID_SEQ.Nextval, 4,4);
```

2) What if we wanted to include a list of facilities that some properties have access to? Properties owned by Charles Montgomery have access to a Spa & Tennis Court. Properties owned by Richmond Pennybags have access to a Gym. There is a community pool facility as well as a dog park in the neighbourhood. There is an unopened basketball court that no property has access to.

```
Create Table Facilities(
   Facility_Id Number(5) Primary Key,
   Facility_Name Varchar2(255)
);
Create Sequence Facility_Id_Seq
   Start With 1
   Increment By 1;
```

3) What if we wanted to keep track of all payments by tenants to landlords on properties? 912 Montgomery road has a monthly rent of 1500 split evenly

among all tenants. It is paid on the tenth of every month starting in November of 2018 and ending in November of 2018.

```
Update Properties
   Set Monthly_Rent = 1500
   Where Property_Id = 3;

   Update Propertiesxtenants
   Set Lease_Start_Date = To_Date('01-11-2017', 'Dd-Mm-Yyyy'),
   Lease_End_Date = To_Date('30-11-2018', 'Dd-Mm-Yyyy')
   Where Property_Id = 3;

   Alter Table Propertiesxtenants
   Add Lease_Amt Number(10,2)
   Add Lease_Due Date;

Update Propertiesxtenants Set Lease_Amt = 1500/3, Lease_Due = '10'
   Where Property_Id = 5;
```