Django Models Concept:

Q) What is model ?

- A model is a python class which is used to manage the database.
- Using models we can interacting the database and perform the CURD operations on our application database.

Q) Creating a model

- We use class keyword to create a model.
- models.Model is base class for every user defined models
- We can write one or more models in models.py file.
- Whenever we run the commands , the **model name** converted as a **tablename into db**, the **model class field names** converted as a table **column names** and the **model field datatypes** convert as a **table column datatypes**.

Now goto models.py file to create a required model

If we want to create a model class then we have to follow some procedures

1. We have a to import models module
2. We have to create Userdefined model class by using Predefined model class
3. We have to create Userdefined model class Fields with required Field Datatype classes.

For example:

```
from django.db import models
class Employee(models.Model):
    eno  = models.IntegerField()
    ename = models.CharField(max_length=20)
    salary = models.IntegerField()
```

What is use of makemigrations command ?

Whenever we run "**makemigrations**" then django will goto **models.py** file and it takes all recent ORM language code (migrations) and it converts into SQL language code and goes to migrations folder.

It will save the SQL code in a seperate python migration file in the migrations folders.

For example, 0001_initial.py

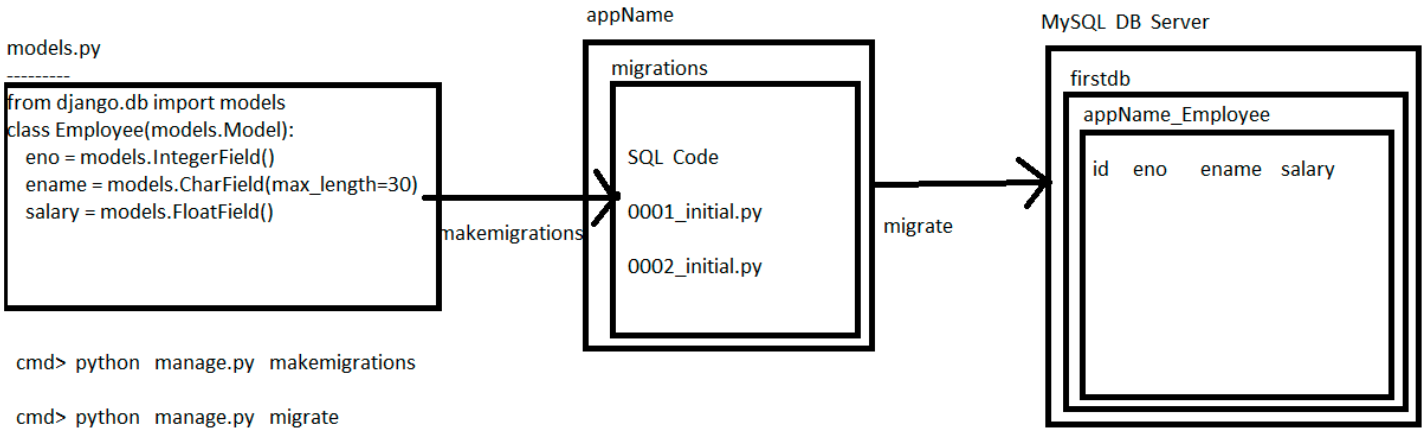
cmd > python manage.py makemigrations

What is use of migrate command ?

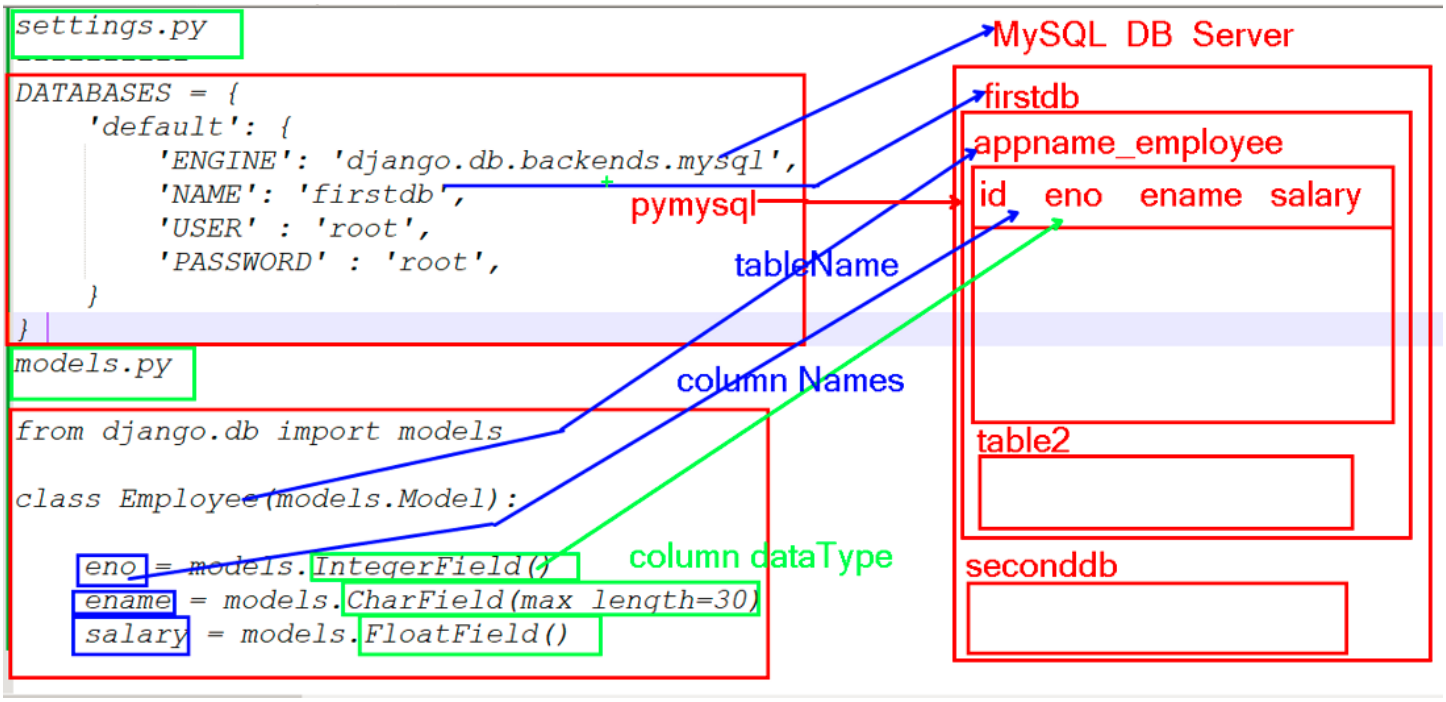
Whenever we run "**migrate**" command then django will goto migrations folder and it takes the **SQL code** from the recent **migration file** and then it goto database and executes the SQL code in the database, so the tables will be created or modified

cmd> python manage.py migrate

Converting models code into SQL code and SQL code into Database tables:



Django Project To MySQL Database Conncetion Structure:



What is use of sqlmigrate command ?

This sqlmigrate command is used to see the SQL code of any specific migration file which is availble in the migrations folder.

Syntax : python manage.py sqlmigrate appName migrationFileName

cmd > python manage.py sqlmigrate modelapp 0001

Now it will return response like below

```
CREATE TABLE `modelapp_employee` (
                    `id` integer AUTO_INCREMENT NOT NULL PRIMARY KEY,
                    `eno` integer NOT NULL,
                    `ename` varchar(20) NOT NULL,
                    `salary` integer NOT NULL);
```

Here,

1 . Every model has one default **id** field, it is **auto_increament** that means we dont require to pass values to id field, it takes automatically when we create or giving data to the table.

2. id field is primary key field that means it will not take duplicate values.

3. All fields are NOT NULL fields by default that means the fields will not allow null values. required fields.

4. the table name is the combination of "appName and "modelName" by seperating with "underscore"

Syntax : ApplicationName_ModelName

Now we have an empty table in the database we can Perform CURD operations on Existing database tables.

We can perform CURD operations in different ways,

1. By using admin site
2. By using python shell |console with ORM queries
3. By using browser(Templates)
4. By using database SQL commands.

How to generating a table using model:

If we want to generate a table related to our models then we have to execute makemigrations and migrate commands

What is use of __str__():

- By default the django models data is hidden data in the admin site, browser and also in the python shell
- If we want to display the data then we have to add string represenation in the model like below,

Syntax : **def __str__(self):**
return self.name

What are the General Models Concepts

1. What is model ?
2. What is use of model ?
3. How to creating models and where to creating models ?
4. How to generating tables for models. ?
    - What is use of makemigrations command ?
    - What is use of migrate command ?
    - What is use of sqlmigrate command ?
5. How to perform CURD operations on model tables. ?
    - By using admin site
    - By using python shell |console with ORM queries
    - By using browser(Templates)
    - By using database SQL commands.

6. Django Model Relationships.
    - One - To - One Model Relationships
    - Many - To - One Model Relationships
    - Many - To - Many Model Relationships
7. Django Model Inheritances.
    - Abstract Model Inheritance
    - Proxy Model Inheritance
    - Multilevel Model Inheritance
    - Multiple Model Inheritance