

Topic: 12. Nested Serializers for Related Models Part 1

Speaker: Personal | Notebook: API Development using Django Framework



For additional reference, use [RestAPI Documentation](#) on nested serializer.

You can use the [Online JSON Viewer](#) to see/view the code or text.

1. Create the new app BLOGS where each blog post may have several comments. In the terminal, use the create startapp command:

```
(env)
rosil@LearnCodeRepeat MINGW64 /c/Users/rosil/OneDrive/Documents/MyCodingCareer/Django Projects/API De
REST_APIProject
$ python manage.py startapp blogs
```

2. Register this new app in the SETTINGS.PY:

```
File Edit Selection View ... DjangoREST_APIProject

EXPLORER
DJANGOREST_APIPROJECT
  > api
  > blogs
    > migrations
    __init__.py
    admin.py
    apps.py
    models.py
    tests.py
    views.py
  > django_rest_main
    > __pycache__
    __init__.py
    asgi.py
    settings.py
    urls.py
    wsgi.py
  > employees
  > env
  > students
  db.sqlite3
  manage.py

settings.py
26 DEBUG = True
27
28 ALLOWED_HOSTS = []
29
30
31 # Application definition
32
33 INSTALLED_APPS = [
34     'django.contrib.admin',
35     'django.contrib.auth',
36     'django.contrib.contenttypes',
37     'django.contrib.sessions',
38     'django.contrib.messages',
39     'django.contrib.staticfiles',
40     'rest_framework',
41     'students',
42     'employees',
43     'api',
44     'blogs',
45 ]
46
47
48 MIDDLEWARE = [
49     'django.middleware.security.SecurityMiddleware',
```

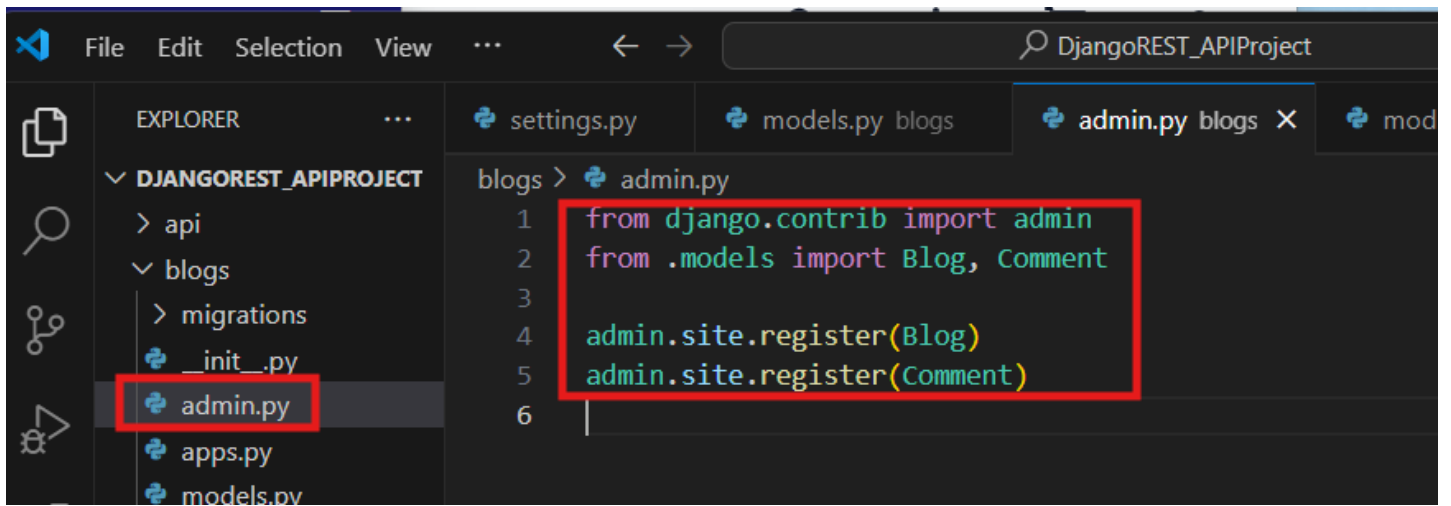
3. Create the models BLOG POST AND COMMENTS:

```
File Edit Selection View ... DjangoREST_APIProject

EXPLORER
DJANGOREST_APIPROJECT
  > api
  > blogs
    > migrations
    __init__.py
    admin.py
    apps.py
    models.py
    tests.py
    views.py
  > django_rest_main
    > __pycache__
    __init__.py
    asgi.py
    settings.py

models.py
1 from django.db import models
2
3 class Blog(models.Model):
4     blog_title = models.CharField(max_length=100)
5     blog_body = models.TextField()
6
7     def __str__(self):
8         return self.blog_title
9
10
11 class Comment(models.Model):
12     blog = models.ForeignKey(Blog, on_delete=models.CASCADE, related_name='comments')
13     comment = models.TextField()
14
15     def __str__(self):
16         return self.comment
```

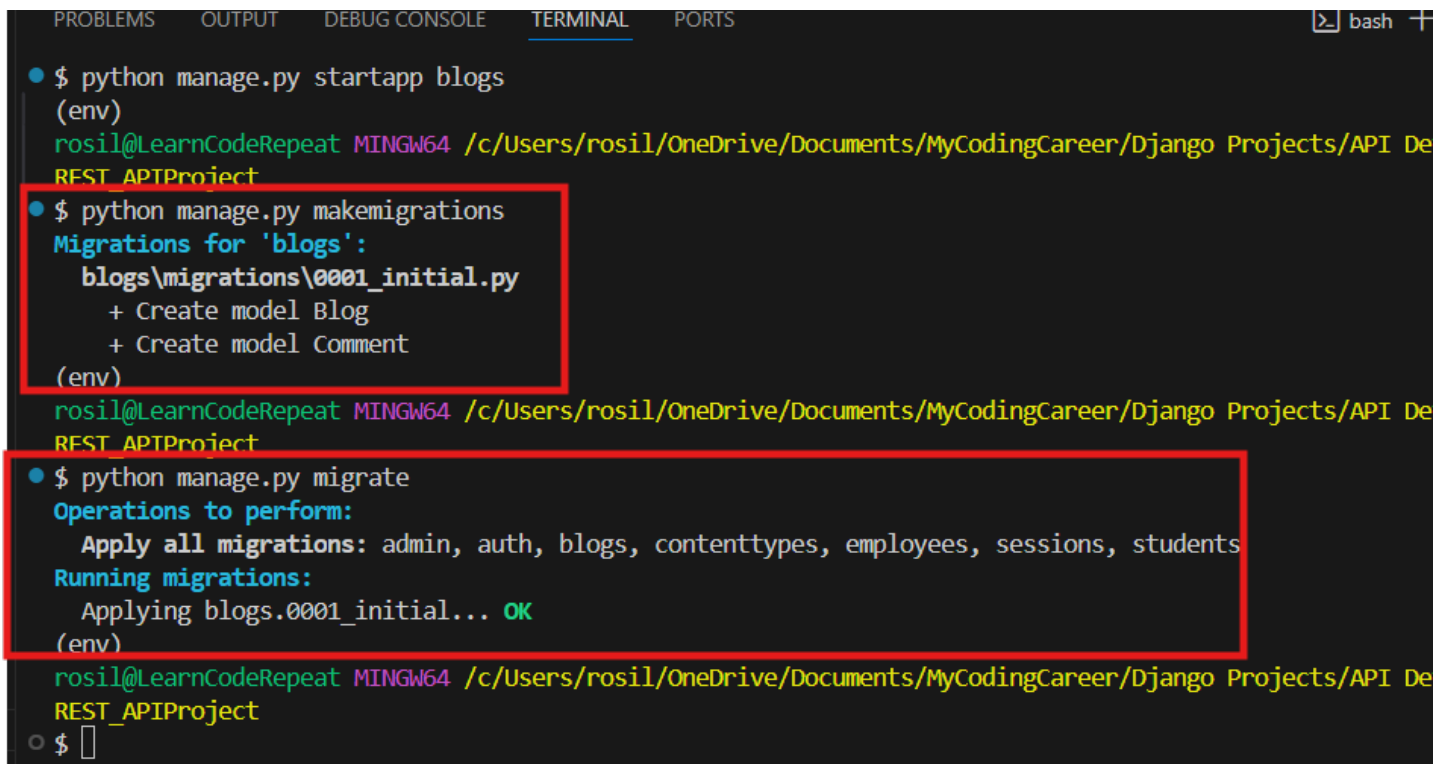
4. Register the models in ADMIN.PY:



The screenshot shows the Visual Studio Code editor interface. The Explorer pane on the left shows the project structure for 'DJANGOREST_APIPROJECT', with 'admin.py' selected under the 'blogs' folder. The main editor window displays the content of 'admin.py' with the following code highlighted in a red box:

```
1 from django.contrib import admin
2 from .models import Blog, Comment
3
4 admin.site.register(Blog)
5 admin.site.register(Comment)
6
```

5. Make the migrations.



The screenshot shows a terminal window with the following commands and output, with the migration and migrate steps highlighted in red boxes:

```
$ python manage.py startapp blogs
(env)
rosil@LearnCodeRepeat MINGW64 /c/Users/rosil/OneDrive/Documents/MyCodingCareer/Django Projects/API De
REST_APIProject
$ python manage.py makemigrations
Migrations for 'blogs':
  blogs\migrations\0001_initial.py
  + Create model Blog
  + Create model Comment
(env)
rosil@LearnCodeRepeat MINGW64 /c/Users/rosil/OneDrive/Documents/MyCodingCareer/Django Projects/API De
REST_APIProject
$ python manage.py migrate
Operations to perform:
  Apply all migrations: admin, auth, blogs, contenttypes, employees, sessions, students
Running migrations:
  Applying blogs.0001_initial... OK
(env)
rosil@LearnCodeRepeat MINGW64 /c/Users/rosil/OneDrive/Documents/MyCodingCareer/Django Projects/API De
REST_APIProject
$
```

6. Use the admin dashboard to add a new record.

7. Create a new file SERIALIZER in the BLOG FOLDER. You may also use the serializer.py in the API folder. This may work so add the serializers.py where you want it. For organization, have it in the app you want to use the serializer with.

```
serializers.py blogs X models.py employees admin.py students
DJANGOREST_APIPROJECT
  api
  blogs
  __pycache__
  migrations
  __init__.py
  admin.py
  apps.py
  models.py
  serializers.py
  tests.py
  views.py
  django_rest_main

blogs > serializers.py > BlogSerializer > Meta
1 from rest_framework import serializers
2 from .models import Blog, Comment
3
4 class CommentSerializer(serializers.ModelSerializer):
5     class Meta:
6         model = Comment
7         fields = "__all__"
8
9 class BlogSerializer(serializers.ModelSerializer):
10    class Meta:
11        model = Blog
12        fields = "__all__"
```

8. Create the path in the APIURLS.PY:

```
models.py employees admin.py students urls.py django_rest_main urls.py api X
DJANGOREST_APIPROJECT
  api
  __pycache__
  migrations
  __init__.py
  admin.py
  apps.py
  models.py
  serializers.py
  tests.py
  urls.py
  views.py
  blogs
  django_rest_main
  __pycache__
  __init__.py
  asgi.py
  settings.py
  urls.py
  wsgi.py
  employees
  env
  students
  db.sqlite3

api > urls.py > ...
1 from django.urls import path, include
2 from . import views
3 from rest_framework.routers import DefaultRouter
4
5 # uses the Viewsets for CRUD
6 router = DefaultRouter()
7 router.register('employees',views.EmployeeViewSet,basename='employee')
8
9 urlpatterns = [
10    #uses the function-based views
11    path('students/',views.studentsView),
12    path('students/<int:pk>/',views.studentDetailView),
13
14    #uses the class-based views, mixins, generics
15    # path('employees/',views.Employees.as_view()),
16    # path('employees/<int:pk>/',views.EmployeeDetail.as_view()),
17
18    # uses viewsets
19    path('',include(router.urls)),
20
21    # uses nested serializers
22    path('blogs/',views.BlogsView.as_view()),
23    path('comments/',views.CommentsView.as_view()),
24
25 ]
```

9. Update the VIEWS.PY.

Add the models BLOG & COMMENT:

```
File Edit Selection View ... DjangoREST_APIProject  
EXPLORER  
DJANGOREST_APIPROJECT  
  api  
    > __pycache__  
    > migrations  
    > __init__.py  
    > admin.py  
    > apps.py  
    > models.py  
    > serializers.py  
    > tests.py  
    > urls.py  
    > views.py  
  > blogs  
  > django_rest_main  
    > __pycache__  
models.py employees admin.py students urls.py django_rest_main urls.py ap  
api > views.py > ...  
1 from django.shortcuts import render, get_object_or_404  
2 # from django.http import JsonResponse  
3 from students.models import Student  
4 from employees.models import Employee  
5  
6 from .serializers import StudentSerializer, EmployeeSerializer  
7 from rest_framework.response import Response  
8 from rest_framework import status  
9 from rest_framework.decorators import api_view  
10 from rest_framework.views import APIView  
11 from django.http import Http404  
12  
13 from rest_framework import mixins, generics, viewsets  
14 from blogs.models import Blog, Comment  
15 from blogs.serializers import BlogSerializer, CommentSerializer  
16  
17
```

Create the classes in the VIEWS.PY:

```
File Edit Selection View ... DjangoREST_APIProject  
EXPLORER  
DJANGOREST_APIPROJECT  
  api  
    > __pycache__  
    > migrations  
    > __init__.py  
    > admin.py  
    > apps.py  
    > models.py  
    > serializers.py  
    > tests.py  
    > urls.py  
    > views.py  
  > blogs  
  > django_rest_main  
    > __pycache__  
    > __init__.py  
    > asgi.py  
models.py employees admin.py students urls.py django_rest_main  
api > views.py > CommentsView  
200  
207  
208 # uses Viewsets the easier way  
209 class EmployeeViewSet(viewsets.ModelViewSet):  
210     queryset = Employee.objects.all()  
211     serializer_class = EmployeeSerializer  
212  
213  
214 # uses nested serializers  
215 class BlogsView(generics.ListCreateAPIView):  
216     queryset = Blog.objects.all()  
217     serializer_class = BlogSerializer  
218  
219 class CommentsView(generics.ListCreateAPIView):  
220     queryset = Comment.objects.all()  
221     serializer_class = CommentSerializer
```

10. View the BLOG and COMMENT models:

Api Root / Blogs

Blogs

OPTIONS GET

GET /api/v1/blogs/

```
HTTP 200 OK
Allow: GET, POST, HEAD, OPTIONS
Content-Type: application/json
Vary: Accept
[]
```

Raw data HTML form

Blog title

Blog body

POST

Api Root / Comments

Comments

OPTIONS GET

GET /api/v1/comments/

```
HTTP 200 OK
Allow: GET, POST, HEAD, OPTIONS
Content-Type: application/json
Vary: Accept
[]
```

Raw data HTML form

Comment

Blog

POST

11. Add new records.

→ ↻ 127.0.0.1:8000/api/v1/blogs/ 🔍 ☆ 📄 🗑️ 📄 🌐

Django REST framework api_djangoadmin

Api Root / Blogs

Blogs

OPTIONS GET ▾

POST /api/v1/blogs/

```
HTTP 201 Created
Allow: GET, POST, HEAD, OPTIONS
Content-Type: application/json
Vary: Accept

{
  "id": 1,
  "blog_title": "this is a blog 1",
  "blog_body": "this is a blog body 1"
}
```

Raw data HTML form

Blog title

Blog body

POST

Api Root / Comments

Comments

OPTIONS GET

GET /api/v1/comments/

```
HTTP 200 OK
ALLOW: GET, POST, HEAD, OPTIONS
Content-Type: application/json
Vary: Accept

[
  {
    "id": 1,
    "comment": "this is comment #1",
    "blog": 1
  },
  {
    "id": 2,
    "comment": "this is comment #2",
    "blog": 1
  }
]
```

Raw data HTML form

Comment

Blog ▼

POST

12. Our COMMENTS model shall be:

Comments

OPTIONS

GET

GET /api/v1/comments/

```
HTTP 200 OK
Allow: GET, POST, HEAD, OPTIONS
Content-Type: application/json
Vary: Accept

[
  {
    "id": 1,
    "comment": "this is comment #1",
    "blog": 1
  },
  {
    "id": 2,
    "comment": "this is comment #2",
    "blog": 1
  },
  {
    "id": 3,
    "comment": "this is comment #3",
    "blog": 1
  },
  {
    "id": 4,
    "comment": "this is comment #1",
    "blog": 2
  },
  {
    "id": 5,
    "comment": "this is comment #2",
    "blog": 2
  }
]
```

Raw data

HTML form

Comment

Blog

this is a blog 1

POST

Our BLOGS shall be:

Blogs

GET /api/v1/blogs/

HTTP 200 OK
Allow: GET, POST, HEAD, OPTIONS
Content-Type: application/json
Vary: Accept

```
[  
  {  
    "id": 1,  
    "blog_title": "this is a blog 1",  
    "blog_body": "this is a blog body 1"  
  },  
  {  
    "id": 2,  
    "blog_title": "this is a blog 2",  
    "blog_body": "this is a blog body 2"  
  }  
]
```

Blog title

Blog body

13. To also show the comments under BLOGS model, update the SERIALIZERS.PY:

```
File Edit Selection View ... DjangoREST_APIProject  
EXPLORER  
DJANGOREST_APIPROJECT  
  api  
    __pycache__  
    migrations  
  __init__.py  
  admin.py  
  apps.py  
  models.py  
  serializers.py  
  tests.py  
  urls.py  
  views.py  
  blogs  
    __pycache__  
    migrations  
    serializers.py  
    admin.py  
    models.py  
blogs > serializers.py > BlogSerializer > Meta  
1 from rest_framework import serializers  
2 from .models import Blog, Comment  
3  
4 class CommentSerializer(serializers.ModelSerializer):  
5     class Meta:  
6         model = Comment  
7         fields = "__all__"  
8  
9 class BlogSerializer(serializers.ModelSerializer):  
10    # comments is the related_name in MODELS.PY  
11    comments = CommentSerializer(many=True, read_only=True)  
12  
13    class Meta:  
14        model = Blog  
15        fields = "__all__"
```

To view the BLOGS pa

127.0.0.1:8000/api/v1/blogs/

Django REST framework

api_djangoadmin

Api Root / Blogs

Blogs

OPTIONS GET

GET /api/v1/blogs/

HTTP 200 OK
Allow: GET, POST, HEAD, OPTIONS
Content-Type: application/json
Vary: Accept

```
[
  {
    "id": 1,
    "comments": [
      {
        "id": 1,
        "comment": "this is comment #1",
        "blog": 1
      },
      {
        "id": 2,
        "comment": "this is comment #2",
        "blog": 1
      },
      {
        "id": 3,
        "comment": "this is comment #3",
        "blog": 1
      }
    ]
  },
  {
    "id": 2,
    "comments": [
      {
        "id": 4,
        "comment": "this is comment #1",
        "blog": 2
      },
      {
        "id": 5,
        "comment": "this is comment #2",
        "blog": 2
      }
    ]
  }
],
{
  "blog_title": "this is a blog 1",
  "blog_body": "this is a blog body 1"
},
{
  "blog_title": "this is a blog 2",
  "blog_body": "this is a blog body 2"
}
]
```

Raw data HTML form

Blog title

14. So now, copy and paste the sample records to ONLINE JSON VIEWER:

TEXT MODE:

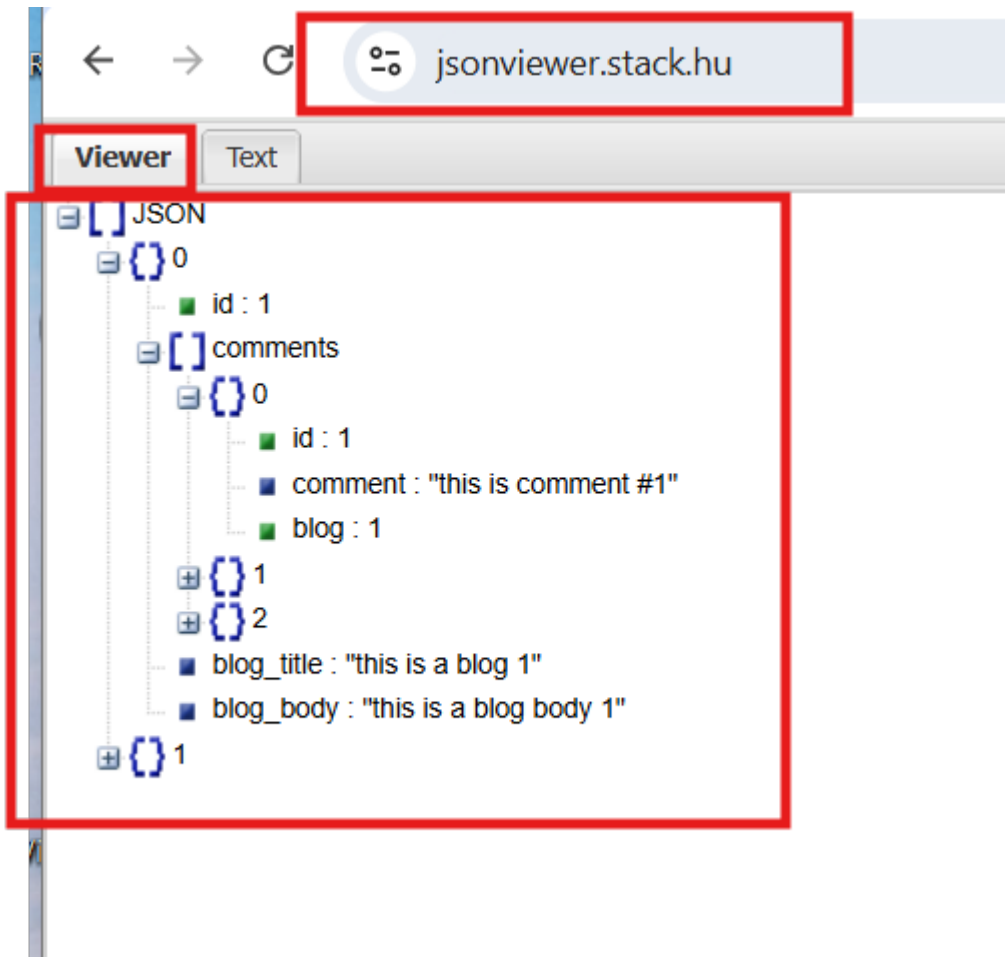
← → ↻ jsonviewer.stack.hu

Viewer **Text**

Paste Copy | Format Remove white space | Clear | Load JSON data

```
[
  {
    "id": 1,
    "comments": [
      {
        "id": 1,
        "comment": "this is comment #1",
        "blog": 1
      },
      {
        "id": 2,
        "comment": "this is comment #2",
        "blog": 1
      },
      {
        "id": 3,
        "comment": "this is comment #3",
        "blog": 1
      }
    ],
    "blog_title": "this is a blog 1",
    "blog_body": "this is a blog body 1"
  },
  {
    "id": 2,
    "comments": [
      {
        "id": 4,
        "comment": "this is comment #1",
        "blog": 2
      },
      {
        "id": 5,
        "comment": "this is comment #2",
        "blog": 2
      }
    ],
    "blog_title": "this is a blog 2",
    "blog_body": "this is a blog body 2"
  }
]
```

VIEWER MODE:



15.