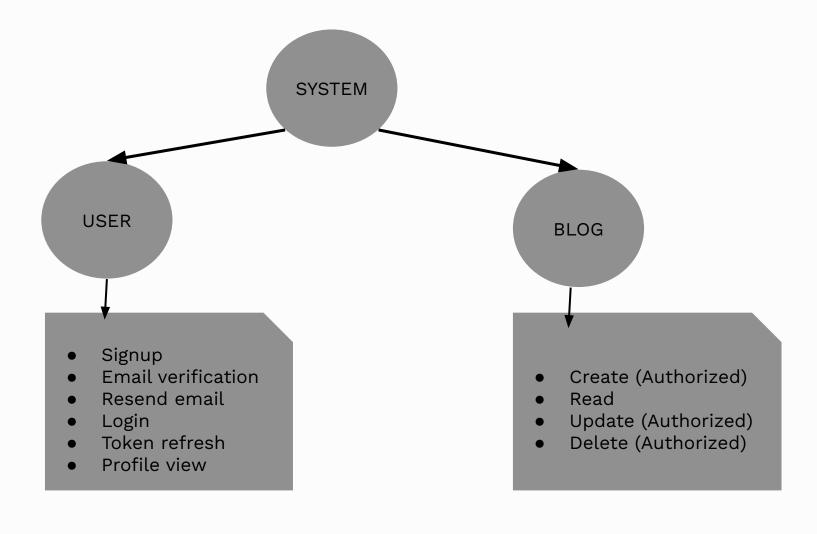
Django Rest Framework

A Project First approach



INSTALLATION

Place it into your <u>requirements.txt</u>

```
asgiref=3.8.1
Django=5.1.1
djangorestframework=3.15.2
djangorestframework-simplejwt=5.3.1
pillow=10.4.0
PyJWT=2.9.0
sqlparse=0.5.1
typing_extensions=4.12.2
```

- djangorestframework-simplejwt: for token management
- pillow: for handling image

Project setup

django-admin startproject src .

Run below commands into your terminal

django-admin startapp account blog

Register our apps in settings.py file

INSTALLED APPS = [

'django.contrib.admin',

'django.contrib.auth', 'django.contrib.contenttypes',

'django.contrib.sessions', 'django.contrib.messages',

'django.contrib.staticfiles',

our app 'account',

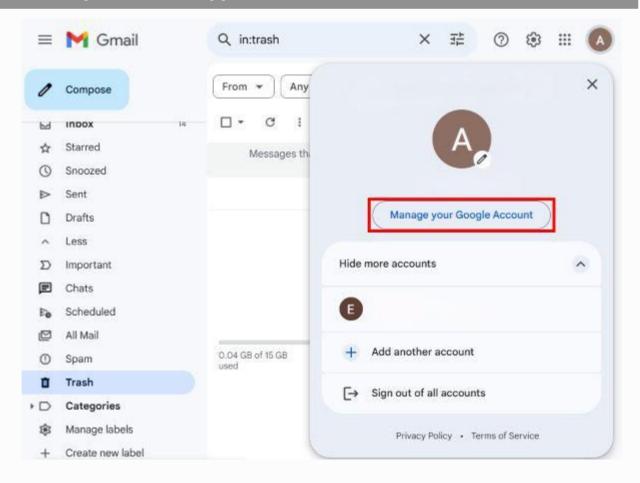
'Blog',

3rd party

'rest_framework',

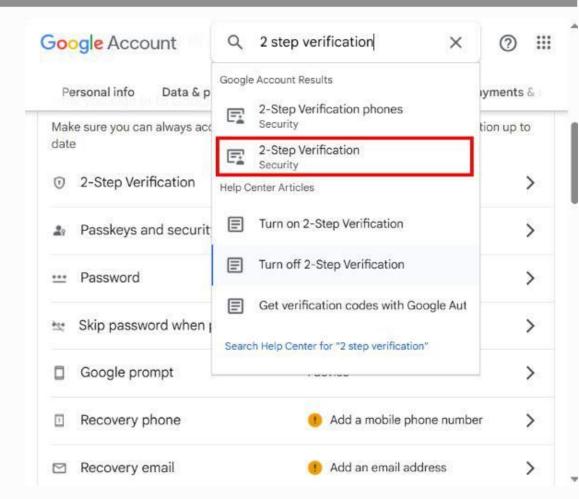
'rest_framework_simplejwt',

Step 1Sign in to your google account and click on Manage account.



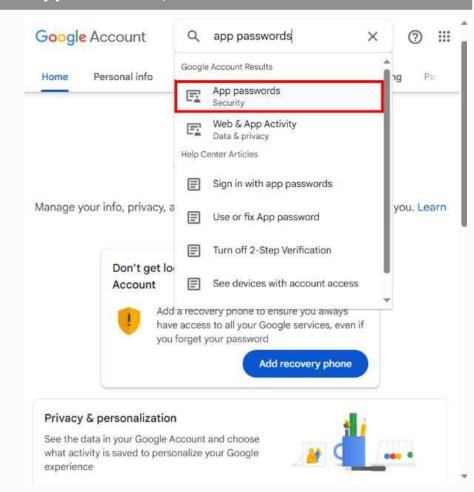
Step 2

Enable two factor authentication by typing "2 step verification" on the search bar.



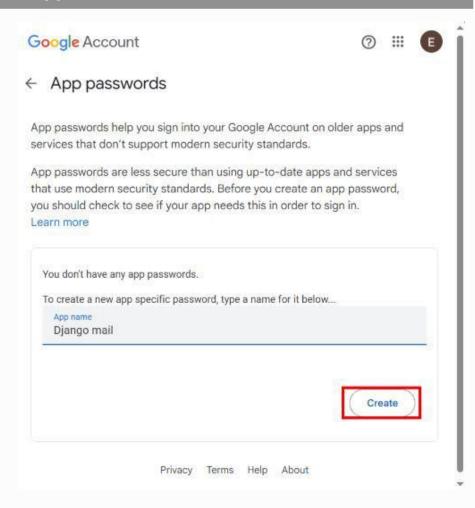
Step 3

After enabling 2FA, type "App passwords" on the search bar.

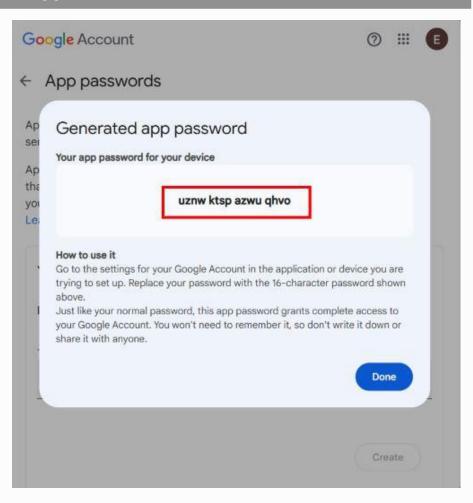


Step 4

Enter a project name and your unique password will be provided to use it in your project. Note that the password is only shown once, and it is valid until it is manually removed from the app passwords tab. Hence copy the password when it is shown and use it as EMAIL_HOST_PASSWORD in the Django settings.py file.



Copy this



Email setup in settings.py

```
# Email settings (enable 2FA in gmail , generate app password)
EMAIL_BACKEND = 'django.core.mail.backends.smtp.EmailBackend'
EMAIL_HOST = 'smtp.gmail.com'
EMAIL_PORT = 587
EMAIL_USE_TLS = True
EMAIL_HOST_USER = 'amirul.islam@vivasoftltd.com'
EMAIL_HOST_PASSWORD = 'uzorvsdphegmirnm'
```

Authentication settings for token management (settings.py)

```
REST_FRAMEWORK = {
    'DEFAULT_AUTHENTICATION_CLASSES': (
        'rest_framework_simplejwt.authentication.JWTAuthentication',
    )
}
SIMPLE_JWT = {
    "ACCESS_TOKEN_LIFETIME": timedelta(minutes=60),
```

"REFRESH TOKEN LIFETIME": timedelta(days=1),

Media settings (settings.py)

Where the uploaded images will go? We will setup this into settings.py file

```
# Media settings
MEDIA_URL = '/media/'
MEDIA_ROOT = os.path.join(BASE_DIR, 'media/')
```

Create our models: User

```
# accounts/models.py
from django.db import models
from django.contrib.auth.models import AbstractUser

class CustomUser(AbstractUser):
    is_verified = models.BooleanField(default=False)
    verification_token = models.CharField(max_length=32, blank=True, null=True)
    bio = models.TextField(blank=True)
    image = models.ImageField(upload_to='profle_images/', blank=True, null=True)
```

Set the CustomUser as default auth model (settings.py)

```
# User Model
AUTH_USER_MODEL = 'account.CustomUser' # 'app_name.ModelName'
```

Create Our Model: Blog

```
# blog/models.pv
from django.db import models
from django.conf import settings
from django.utils.text import slugify
from datetime import datetime
class Blog(models.Model):
  title = models.CharField(max length=255)
  content = models.TextField()
  slug = models.SlugField(unique=True, blank=True) # New field for slug
  author = models.ForeignKey(settings.AUTH_USER_MODEL, on_delete=models.CASCADE, related_name='blogs')
  created at = models.DateTimeField(auto now add=True)
  updated at = models.DateTimeField(auto now=True)
  def str (self):
      return self.title
  def save(self, *args, **kwargs):
      # Automatically generate a slug if it is not set
      if not self.slug:
           self.slug = f"{slugify(self.title)}_{hash(datetime.now)}"
       super().save(*args, **kwargs)
```

Apply migration

python3 manage.py makemigrations

python3 manage.py migrate

Email Verification Template

Create 'templates/' folder under accounts/ Create 'emails/' folder under templates/ Create 'verification_email.html' under emails/ accounts ⊢ emails <!DOCTYPE html>

Click the below link to verify you account

If this is not you, then ignore this mail.

Verify

- <html lang="en"> <head>

 - <meta charset="UTF-8">

<h1>Hello {{user}}</h1>

</head> <body>

</body> </html>

- <title>Verify your email</title>
- <meta name="viewport" content="width=device-width, initial-scale=1.0">

BASE URL SETUP: for account

```
# src/urls.py
from django.conf.urls.static import static

urlpatterns = [
   path('admin/', admin.site.urls),
   path('api/account/', include('account.urls')),
]

urlpatterns += static(settings.MEDIA_URL, document_root=settings.MEDIA_ROOT)
```

Serializer Setup for (Signup)

Import these, in case of some serializers aren't implemented, then comment that line.

```
# accounts/serializers.py
```

from django.utils.crypto import get_random_string
from rest_framework import serializers
from .models import CustomUser
from django.urls import reverse

from django.urls import reverse from django.template.loader import render_to_string from django.core.mail import EmailMultiAlternatives

```
# accounts/serializers.py
class UserSerializer(serializers.ModelSerializer):
   class Meta:
       model = CustomUser
       fields = [
           'id',
           'username',
           'email',
           'password',
           'bio',
           'image'
       extra_kwargs = {"password" : {"write_only" : True}}
   def create(self, validated data):
       user = CustomUser(**validated data)
       user.set_password(validated_data['password'])
       user.verification token = get random string(length=32)
       user.save()
       self.send email(user=user)
       return user
```

send email mext slide

```
def send_email(self, user):
    # verification_link = f"http://127.0.0.1:8000/api/account/verify-email/{user.verification_token}/"
    # Prepare things for sending mail
    verification_link = self.context['request'].build_absolute_uri(
        reverse(
            viewname='verify_email', # the url-name that handle email verification
            kwargs = {'token' : user.verification token}
        ),
    # Render the email template
    subject = 'Verify you email'
    html_content = render_to_string('emails/verification_email.html', {
        "user": user.username.
        "verification_link" : verification link
    })
    # create an email message
    email = EmailMultiAlternatives(
                                                                                 This is the
        subject,
                                                                              template where
        "This is a plain text version of the email",
        "from@example.com",
                                                                              write our html
        [user.email]
                                                                                 template
    email.attach_alternative(html_content, "text/html")
    email.send(fail silently=False)
    return True
```

Writing our views for signup

```
# accounts/views,py
from rest_framework import generics
from .serializers import UserSerializer
```

class UserSignUp(generics.CreateAPIView):
 serializer_class = UserSerializer

Writing the urls

```
# accounts/urls.py

urlpatterns = [
   path('signup/', UserSignUp.as_view(), name='signup'),
]
```

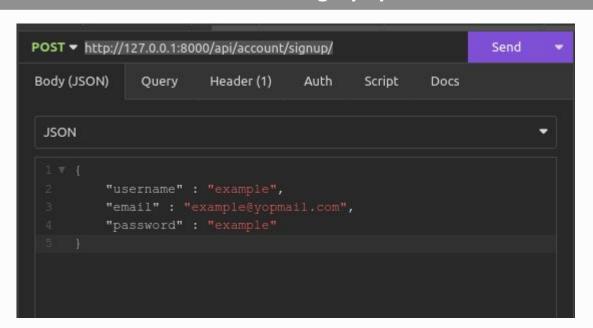
Write views for verifying the user email

```
from rest_framework import generics, status
from .serializers import UserSerializer
from .models import CustomUser
from rest framework.response import Response
class VerifyEmail(generics.GenericAPIView):
   swagger fake view = True # Bypass schema generation for this view
   def get(self, request , token):
       user = CustomUser.objects.filter(verification token=token).first()
       if user:
           if user.is verified:
               return Response({
                   "details" : "Email already verified!",
               }, status=status.HTTP 400 BAD REQUEST)
           user.is verified = True
           user.verification_token = None
           user.save()
           return Response({
               "details" : "Successfully verified!",
           }, status=status.HTTP 200 OK)
       return Response({
           "details": "Invalid token".
       }, status=status.HTTP 400 BAD REQUEST)
```

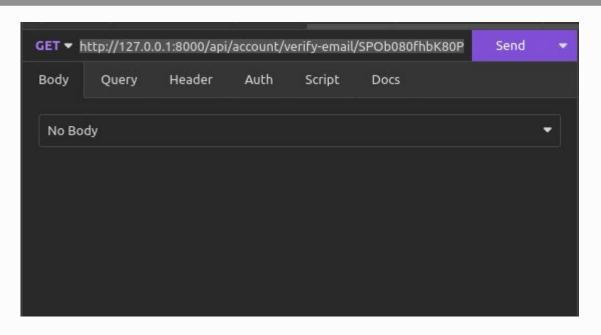
Writing urls for verify email

```
# accounts/urls.py
urlpatterns = [
   path('signup/', UserSignUp.as view(), name='signup'),
   path('verify-email/<str:token>/', VerifyEmail.as_view() , name='verify_email'),
                                                            This name should
                                                             be same as what
                                                             we wrote in the
                                                            send email section
```

Test the signup api



Test the verify account api



Complete import for views

```
# accounts/views.py
from django.shortcuts import render
from rest framework import generics, status
from .serializers import (
  UserSerializer,
  UserLoginSerializer,
   UserUpdateSerializer
from .models import CustomUser
from rest framework.response import Response
from django.core.mail import EmailMultiAlternatives
from django.template.loader import render to string
from django.utils.crypto import get_random_string
from django.urls import reverse
from rest framework simplejwt.tokens import RefreshToken
from rest framework.permissions import IsAuthenticated
```

Some import may not work for now, just comment that part, when we implement those, comment out then

Views for 'Resend Verification Email'

There's no need to implement a serializer here. Just some functionality needed to be implement in a view function.

```
class ResendVerificationEmail(generics.GenericAPIView):
 swagger fake view = True # Bypass schema generation for this view
 def post(self, request, *args, **kwargs):
    email = request.data.get('email')
    if email:
      user = CustomUser.objects.filter(email=email).first()
      if not user:
        return Response({
           "details": "User with this email doesn't exist!",
         }, status=status.HTTP 404 NOT FOUND)
      if user.is verified:
         return Response({
           "details": "Email already verified!",
         }, status=status.HTTP 400 BAD REQUEST)
      user.verification token = get random string(length=32)
      user.save()
      # Prepare things for sending mail
      verification link = request.build absolute uri(
         reverse(
           viewname='verify email',
           kwargs = {'token' : user.verification token}
      # rest of the code at the same indentation layer
```

ResendVerificationEmail Views Rest code

```
# Render the email template
subject = 'Verify you email'
html_content = render_to_string('emails/verification_email.html', {
  "user": user.username,
  "verification link" : verification link
})
# create an email message
email = EmailMultiAlternatives(
  subject,
  "This is a plain text version of the email",
  "from@example.com",
  [user.email]
email.attach alternative(html content, "text/html")
email.send(fail_silently=False)
return Response({
     "details": "Verfication email sent!",
  }, status=status.HTTP 200 OK)
```

Make the Url for resent email verification

```
# accounts/urls.py
from django.urls import path
from .views import (
   UserSignUp,
   ResendVerificationEmail,
   VerifyEmail,
urlpatterns = [
   path('signup/', UserSignUp.as_view(), name='signup'),
   path('verify-email/<str:token>/', VerifyEmail.as_view() , name='verify_email'),
   path('resend-verification/', ResendVerificationEmail.as_view(), name= 'resend_verification'),
```

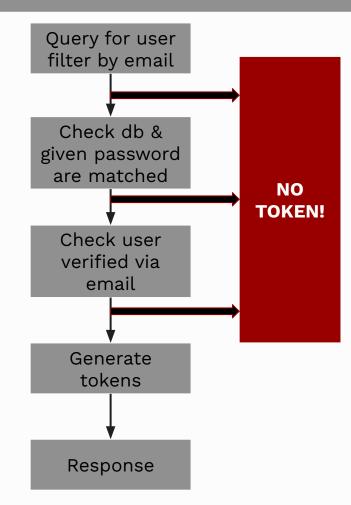
Write the Serializer for User Login

Look, this is just 'serializers. Serializer' instead of 'serializers. Model Serializer'. Just because these serializer just an schema to take user input for login, No relationship with a model.

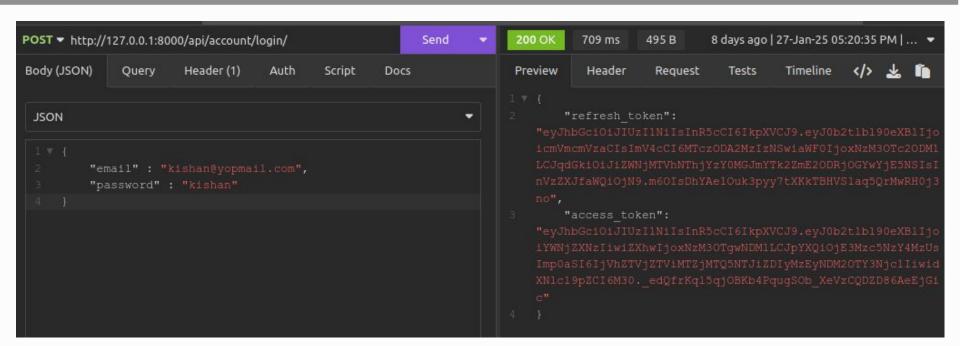
```
# accounts/serializers.py
class UserLoginSerializer(serializers.Serializer):
   email = serializers.EmailField()
   password = serializers.CharField()
```

Write the View for User Login

```
class UserLogin(generics.GenericAPIView):
   serializer class = UserLoginSerializer
  def post(self, request):
       email = request.data.get('email')
       password = request.data.get('password')
       user = CustomUser.objects.filter(email=email).first()
       if user:
           matched_password = user.check_password(password)
           if matched_password:
               if not user.is verified:
                   return Response({
                       "details": "Email is not verified yet!",
                   }, status=status.HTTP 401 UNAUTHORIZED)
               refresh = RefreshToken.for user(user)
               return Response({
                   "refresh_token" : str(refresh),
                   "access_token" : str(refresh.access_token)
               })
      return Response({
           "details": "Invalid credentials",
       }, status=status.HTTP 401 UNAUTHORIZED)
```



Test User Login



Profile Update & Get

What do we need now?

- We will create a serializer for profile update
- The profile get and update must be authenticated
- Now we can take two approach
 - Approach-1: Create two separate router say for example (get_profile/) & (update_profile/) as well as two separate view functions that will handle two routers
 - <u>Approach-2:</u> Create single router and one single view function to handle both task (get the profile details and also update the profile). Yes! Django Rest Framework has this power. And I prefer to choose this approach for now.

Serializer for profile update

```
# accounts/serializers.py
class UserUpdateSerializer(serializers.ModelSerializer):
   class Meta:
       model = CustomUser
       fields = ["bio", "image"]
   def update(self, instance ,validated data):
       instance.bio = validated data.get('bio' , instance.bio)
       instance.image = validated data.get('image', instance.image)
       instance.save()
       return instance
```

update() method is being overridden as we inherit ModelSerializer()

Views for profile update and get the details

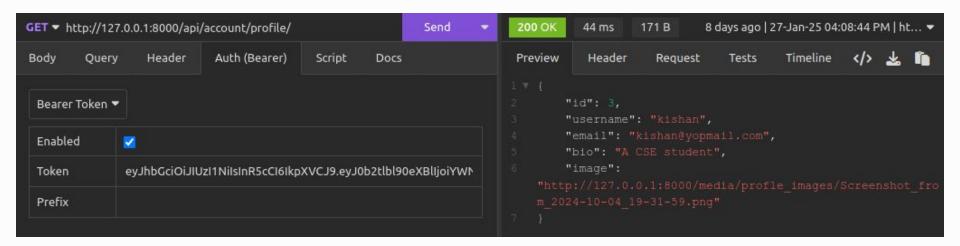
```
# accounts/views.py
class RetrieveUpdateProfile(generics.RetrieveUpdateAPIView):
   queryset = CustomUser.objects.all()
   permission classes = [IsAuthenticated]
   def get_object(self):
       return self.request.user
   def get serializer class(self):
       if self.request.method in ['PUT' , 'PATCH']:
           return UserUpdateSerializer
       return UserSerializer
```

get_object() & get_serializer_class() methods are being overridden as we inherit from generics

Make the url

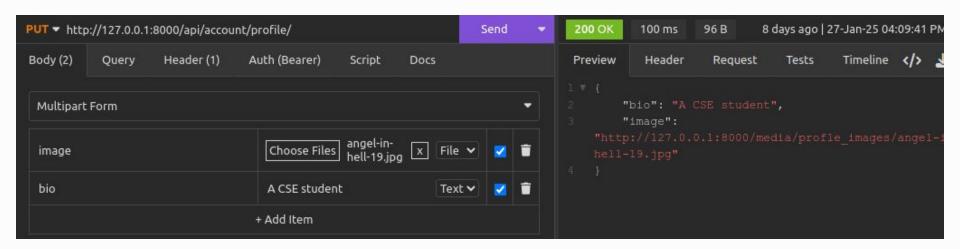
```
from django.urls import path
from .views import (
  UserSignUp,
   ResendVerificationEmail,
   VerifyEmail,
  UserLogin,
   RetrieveUpdateProfile
urlpatterns = [
   path('signup/', UserSignUp.as view(), name='signup'),
   path('verify-email/<str:token>/', VerifyEmail.as_view() , name='verify_email'),
   path('resend-verification/', ResendVerificationEmail.as view(), name= 'resend verification'),
   path('login/', UserLogin.as_view(), name='login'),
   path('profile/', RetrieveUpdateProfile.as_view(), name='profile'),
```

Test this endpoint (get the profile details)



Make sure to pass Token (access_token) as the Auth(Bearer) to get the data

Test this endpoint (update the profile details)



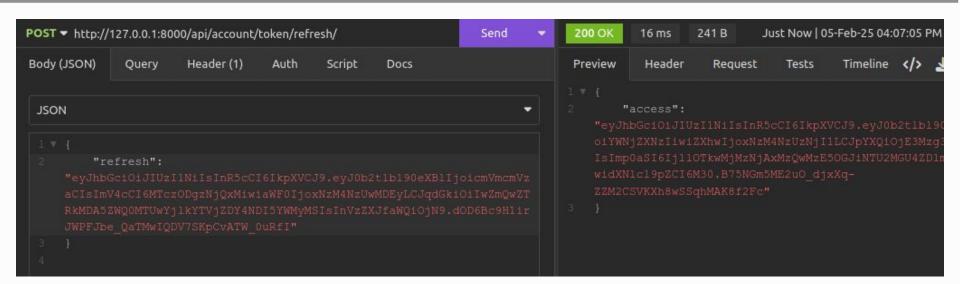
In Body, now we have to set Multipart Form instead of JSON

Refresh the token

For User module we have one router left! Which is refresh the token. Luckily, we don't need any serializers or views to handle this. DRF simple-jwt is helpful to handle this for us. We just need to implement the url.

```
from django.urls import path
from .views import (
  UserSignUp,
  ResendVerificationEmail.
  VerifyEmail,
  UserLogin,
  RetrieveUpdateProfile
from rest_framework_simplejwt.views import TokenRefreshView
urlpatterns = [
   path('signup/', UserSignUp.as view(), name='signup'),
  path('verify-email/<str:token>/', VerifyEmail.as view(), name='verify email'),
  path('resend-verification/', ResendVerificationEmail.as_view(), name= 'resend verification'),
   path('login/', UserLogin.as_view(), name='login'),
  path('profile/', RetrieveUpdateProfile.as view(), name='profile'),
  path('token/refresh/', TokenRefreshView.as_view(), name='token_refresh')
```

Test the url (refresh the token)



Let's Design our **Blog** crud endpoints (Serializers)

```
# blog/serializers.pv
from rest framework import serializers
from .models import Blog
class BlogSerializer(serializers.ModelSerializer):
   class Meta:
       model = Blog
       fields = ['id', 'title', 'content', 'slug', 'author', 'created at',
'updated at']
       read only fields = ['author', 'created at', 'updated at']
class BlogCreateUpdateSerializer(serializers.ModelSerializer):
   class Meta:
       model = Blog
       fields = ['title', 'content']
```

Blog Views (imports)

```
from rest_framework import generics, permissions
from .models import Blog
from .serializers import BlogSerializer, BlogCreateUpdateSerializer
from rest_framework.permissions import IsAuthenticated
from rest_framework.response import Response
from rest_framework import status
from rest_framework.pagination import PageNumberPagination
from django.http import Http404
```

Blog Views (List)

```
# blog/views.py
class BlogPagination(PageNumberPagination):
    page_size = 5  # You can adjust this as needed
    page_size_query_param = 'page_size'
    max_page_size = 10

class BlogListView(generics.ListAPIView):
    queryset = Blog.objects.all().order_by('-created_at')
    serializer_class = BlogSerializer
    pagination_class = BlogPagination
```

Blog Views (Detail / Single get)

```
# blog/views.py
class BlogDetailView(generics.RetrieveAPIView):
   queryset = Blog.objects.all()
   serializer_class = BlogSerializer
   lookup_field = 'id'
```

Blog view (Create)

```
# blog/views.py
class BlogCreateView(generics.CreateAPIView):
    serializer_class = BlogCreateUpdateSerializer
    permission_classes = [IsAuthenticated]

def perform_create(self, serializer):
    serializer.save(author=self.request.user)
```

Blog view (Update)

```
# blog/views.py
class BlogUpdateView(generics.UpdateAPIView):
   queryset = Blog.objects.all()
   serializer class = BlogCreateUpdateSerializer
   permission classes = [IsAuthenticated]
   lookup field = 'id'
   def get object(self):
       blog = super().get object()
       if blog.author ≠ self.request.user:
           raise Http404
       return blog
```

Blog view (Delete)

```
# blog/views.py
class BlogDeleteView(generics.DestroyAPIView):
   queryset = Blog.objects.all()
   permission classes = [IsAuthenticated]
   lookup field = 'id'
   def get_object(self):
       blog = super().get object()
       if blog.author ≠ self.request.user:
           raise Http404
       return blog
```

Blog view (My blogs)

```
# blog/views.py
class MyBlogsView(generics.ListAPIView):
    serializer_class = BlogSerializer
    permission_classes = [IsAuthenticated]
    pagination_class = BlogPagination

def get_queryset(self):
    return Blog.objects.filter(author=self.request.user)
```

Blog URL

```
from django.urls import path
from .views import (
   BlogListView,
   BlogDetailView,
   BlogCreateView,
   BlogUpdateView,
   BlogDeleteView,
   MvBlogsView
urlpatterns = [
   path('', BlogListView.as_view(), name='blog-list'),
   path('create', BlogCreateView.as_view(), name='blog-create'),
   path('<int:id>', BlogDetailView.as view(), name='blog-detail'),
   path('update/<int:id>', BlogUpdateView.as_view(), name='blog-update'),
   path('delete/<int:id>', BlogDeleteView.as view(), name='blog-delete'),
   path('my-blogs/', MyBlogsView.as_view(), name='my-blogs'),
```

blog/urls.pv

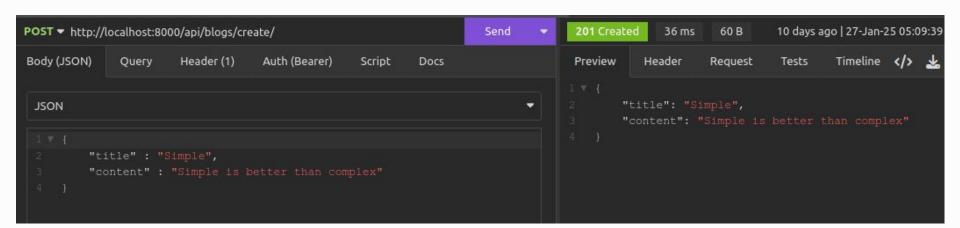
BASE URL SETUP: for blog

```
# src/urls.py
from django.conf.urls.static import static

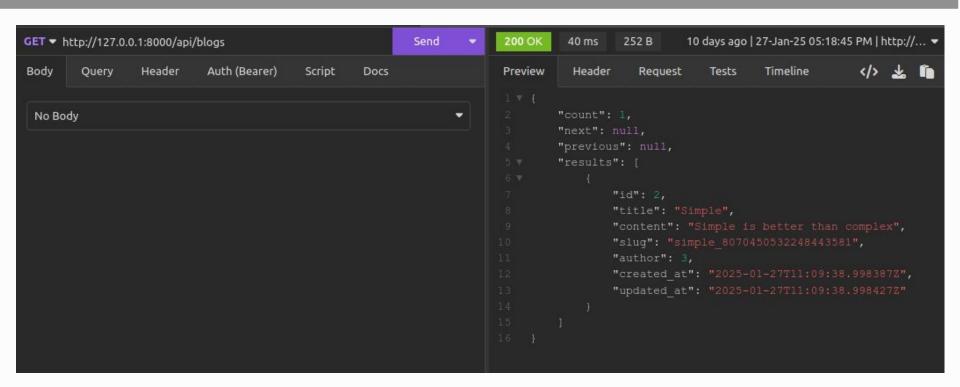
urlpatterns = [
   path('admin/', admin.site.urls),
   path('api/account/', include('account.urls')),
   path('api/blogs/', include('blog.urls')),
]

urlpatterns += static(settings.MEDIA_URL, document_root=settings.MEDIA_ROOT)
```

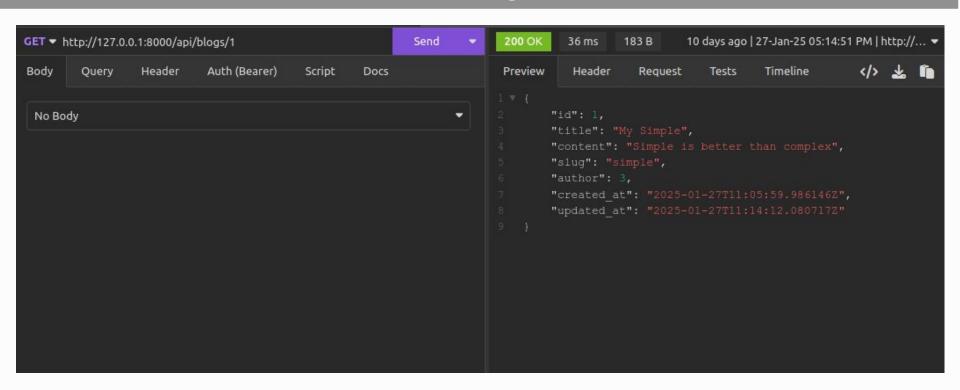
Let's test (Create)



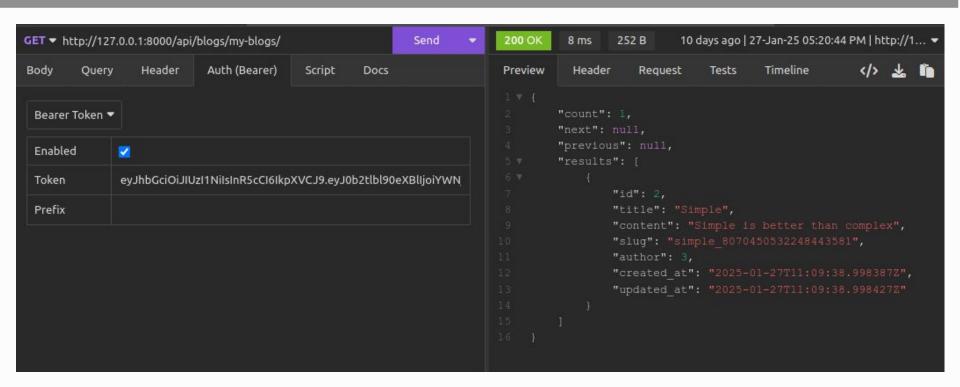
Let's test (List Get)



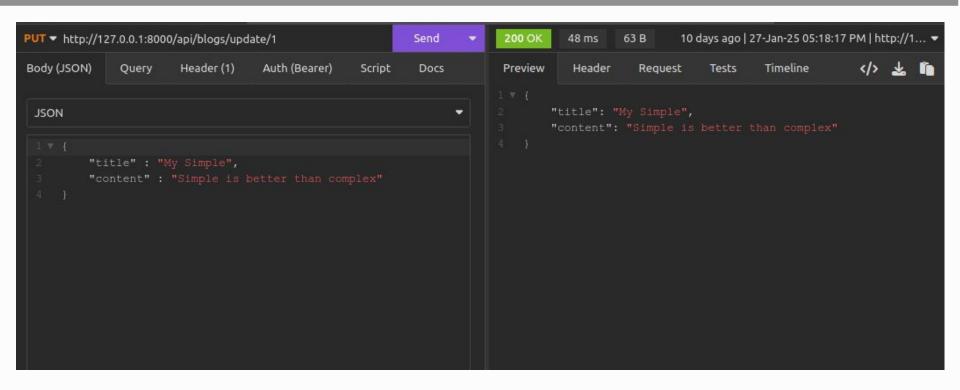
Let's test (Single Get)



Let's test (My Blogs)

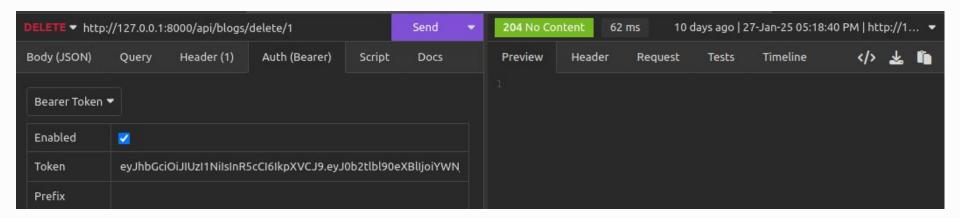


Let's test (Update blog)



Please pass, Auth(Bearer)

Let's test (Delete blog)



Please pass, Auth(Bearer)