



Module Code & Title

CS6P05 Final Year Project MAD

Food Share - Android App

Artifact – Login Authentication

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1. Authentication

What is Login Authentication?

By [Vishal Sharma](#)

Login authentication is the most common scenario where we're asked to authenticate ourselves. Let's look at some aspects and challenges of implementing a seamless authentication mechanism and learn how businesses can deliver a seamless user experience through a CIAM.

Figure 1: About the authentications.

What is the Difference Between Authentication and Login?

Authentication and login are often used interchangeably, but they serve distinct purposes in the realm of digital security.

Authentication

Authentication is the broader process of verifying a user's identity before granting access to a system or platform. It involves confirming that the user is who they claim to be. This verification can occur through various methods, such as passwords, biometrics, security tokens, or multifactor authentication (MFA).

Login

Login, on the other hand, is the specific act of gaining access to a system or application using verified credentials. It is a subset of authentication, representing the moment when a user enters their credentials (username and password, for example) to access their account.

In essence, authentication is the overall process of confirming identity, while login is the specific action taken to enter a system using authenticated credentials.

Figure 2: Difference between authenticating

Overview

Django provides an authentication and authorization ("permission") system, built on top of the session framework discussed in the [previous tutorial](#), that allows you to verify user credentials and define what actions each user is allowed to perform. The framework includes built-in models for `Users` and `Groups` (a generic way of applying permissions to more than one user at a time), permissions/flags that designate whether a user may perform a task, forms and views for logging in users, and view tools for restricting content.

Note: According to Django the authentication system aims to be very generic, and so does not provide some features provided in other web authentication systems. Solutions for some common problems are available as third-party packages. For example, throttling of login attempts and authentication against third parties (e.g. OAuth).

Figure 3: Overview of authentication.

Enabling authentication

The authentication was enabled automatically when we [created the skeleton website](#) (in tutorial 2) so you don't need to do anything more at this point.

Note: The necessary configuration was all done for us when we created the app using the `django-admin startproject` command. The database tables for users and model permissions were created when we first called `python manage.py migrate`.

The configuration is set up in the `INSTALLED_APPS` and `MIDDLEWARE` sections of the project file (`django-locallibrary-tutorial/locallibrary/settings.py`), as shown below:

Figure 4: Enabling authentication.

```
PYTHON

INSTALLED_APPS = [
    # ...
    'django.contrib.auth', # Core authentication framework and its default
models.
    'django.contrib.contenttypes', # Django content type system (allows
permissions to be associated with models).
    # ...

MIDDLEWARE = [
    # ...
    'django.contrib.sessions.middleware.SessionMiddleware', # Manages sessions
across requests
    # ...
    'django.contrib.auth.middleware.AuthenticationMiddleware', # Associates
users with requests using sessions.
    # ...
```

Figure 5: Implementation of the Django framework

```
PYTHON

from django.contrib.auth.models import User

# Create user and save to the database
user = User.objects.create_user('myusername', 'myemail@crazymail.com',
'mypassword')

# Update fields and then save again
user.first_name = 'Tyrone'
user.last_name = 'Citizen'
user.save()
```

Figure 6: create a new user for the authentication check

Note however that it is highly recommended to set up a *custom user model* when starting a project, as you'll be able to easily customize it in the future if the need arises. If using a custom user model the code to create the same user would look like this:

PYTHON



```
# Get current user model from settings
from django.contrib.auth import get_user_model
User = get_user_model()

# Create user from model and save to the database
user = User.objects.create_user('myusername', 'myemail@crazymail.com',
'mypassword')

# Update fields and then save again
user.first_name = 'Tyrone'
user.last_name = 'Citizen'
user.save()
```

Figure 7: create the register of the new user.

2. login authentication Implementation in the system

```
# login authentication
class LoginUser(APIView):
    authentication_classes = [TokenAuthentication]
    permission_classes = [AllowAny]

    def post(self, request):
        try:
            email = request.data.get('email')
            password = request.data.get('password')

            if email and password:
                auth_user = authenticate(request, username=email, password=password)
                if auth_user:
                    user = Users.objects.filter(email=email).first()
                    if auth_user.is_active and not user.is_delete: # Fix the condition
                        refresh = RefreshToken.for_user(auth_user)
                        access_token = str(refresh.access_token)

                        serializer = UserSerializer(user)
                        profile = user.photo_url.url if user.photo_url else None

                        response_auth = {
                            'id': serializer.data['id'],
                            'username': serializer.data['username'],
                            'email': serializer.data['email'],
                            'profile': profile,
                            'role': serializer.data['role'],
                            'access_token': access_token,
                        }
                        return Response({'message': 'Login successful', 'is_success': True, 'status': 200, "auth": response_auth})
                    else:
                        return Response({'message': 'Your account is not activate', 'is_success': False, 'status': 401})
                else:
                    return Response({'message': 'The account does not have authentication permission.', 'is_success': False, 'status': 401})
            else:
                return Response({'message': 'Please provide email and password', 'is_success': False, 'status': 400})
        except Exception as e:
            return Response({"message": "Sorry, something went wrong on our end. Please try again later.", 'is_success': False, 'status': 500})
```

Figure 8: Implementation of the authentication function

3 JWT access token

```
pip install djangorestframework-simplejwt
```

The djangorestframework-simplejwt package provides a simple way to implement JWT authentication in Django REST framework applications. It includes views and serializers for generating and refreshing JWT tokens, as well as a built-in token authentication backend for validating tokens.

Next we can then include it in the installed apps and add it to the settings:

```
INSTALLED_APPS = [  
  
    'rest_framework_simplejwt.token_blacklist',  
]
```

Figure 9: Django rest framework simple jwt implement

```

SIMPLE_JWT = {
    'ACCESS_TOKEN_LIFETIME': timedelta(minutes=180),
    'REFRESH_TOKEN_LIFETIME': timedelta(days=50),
    'ROTATE_REFRESH_TOKENS': True,
    'BLACKLIST_AFTER_ROTATION': True,
    'UPDATE_LAST_LOGIN': False,

    'ALGORITHM': 'HS256',

    'VERIFYING_KEY': None,
    'AUDIENCE': None,
    'ISSUER': None,
    'JWK_URL': None,
    'LEEWAY': 0,

    'AUTH_HEADER_TYPES': ('Bearer',),
    'AUTH_HEADER_NAME': 'HTTP_AUTHORIZATION',
    'USER_ID_FIELD': 'id',
    'USER_ID_CLAIM': 'user_id',
    'USER_AUTHENTICATION_RULE': 'rest_framework_simplejwt.authentication

    'AUTH_TOKEN_CLASSES': ('rest_framework_simplejwt.tokens.AccessToken'
    'TOKEN_TYPE_CLAIM': 'token_type',
    'TOKEN_USER_CLASS': 'rest_framework_simplejwt.models.TokenUser',

    'JTI_CLAIM': 'jti',

    'SLIDING_TOKEN_REFRESH_EXP_CLAIM': 'refresh_exp',
    'SLIDING_TOKEN_LIFETIME': timedelta(minutes=5),
    'SLIDING_TOKEN_REFRESH_LIFETIME': timedelta(days=1),
}

```

Figure 10: JWT token implementation.

```

7
8 SIMPLE_JWT = {
9     "ACCESS_TOKEN_LIFETIME": timedelta(days=7),
10    "REFRESH_TOKEN_LIFETIME": timedelta(days=7),
11    "ROTATE_REFRESH_TOKENS": False,
12    "BLACKLIST_AFTER_ROTATION": False,
13    "UPDATE_LAST_LOGIN": False,
14    "AUTH_TOKEN_CLASSES": ("rest_framework_simplejwt.tokens.AccessToken",),
15 }

```

Figure 11: JWT implemented in the projects