

Implement a URL Shortener with Expiry and Analytics

This project is a Django-based URL shortener system that allows users to shorten URLs, set expiration times, and track usage analytics.

Features

1. Core Functionality:
 - Create a shortened URL for any given long URL.
 - Each shortened URL is unique and idempotent.
2. Expiry:
 - Users can specify an expiration time (in hours).
 - Default expiration time is 24 hours if not specified.
 - Expired URLs no longer redirect to the original URL.
3. Analytics:
 - Tracks the number of times each shortened URL is accessed.
 - Logs the timestamp and IP address of each access.
4. Storage:
 - Uses SQLite to store:
 - Original URL
 - Shortened URL
 - Creation and expiration timestamps
 - Access logs (timestamp and IP address).
5. API Endpoints:
 - `POST /shorten/`: Create a shortened URL.
 - `GET /<short_url>/`: Redirect to the original URL if not expired.
 - `GET /analytics/<short_url>/`: Retrieve analytics data for a specific shortened URL.

Installation

1. create a virtual environment using the below command:

-> py -m venv env

```
D:\project\UrlShorten>py -m venv env  
D:\project\UrlShorten>_
```

2. Activate the environment:

-> go to Scripts folder with this command: cd env/Scripts

-> To activate the env type: activate.bat

```
D:\project\UrlShorten>cd env/Scripts  
D:\project\UrlShorten\env\Scripts>activate.bat  
(env) D:\project\UrlShorten\env\Scripts>_
```

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3. After activating the env, go to the project directory where requirements.txt present and install all the necessary package using below command.

-> pip install -r requirements.txt

```
(env) D:\project\UrlShorten\env\Scripts>cd..
(env) D:\project\UrlShorten\env>cd..
(env) D:\project\UrlShorten>pip install -r requirements.txt
```

4. Go to inside project directory where manage.py file is present and run the below command to create database and required table:

-> py manage.py makemigrations

```
(env) D:\project\UrlShorten\asnmnt>py manage.py makemigrations
Migrations for 'urlshortner':
  urlshortner\migrations\0001_initial.py
    + Create model URL
    + Create model Analytics
```

-> py manage.py migrate

```
(env) D:\project\UrlShorten\asnmnt>py manage.py migrate
Operations to perform:
  Apply all migrations: admin, auth, contenttypes, sessions, urlshortner
Running migrations:
  Applying contenttypes.0001_initial... OK
  Applying auth.0001_initial... OK
  Applying admin.0001_initial... OK
  Applying admin.0002_logentry_remove_auto_add... OK
  Applying admin.0003_logentry_add_action_flag_choices... OK
  Applying contenttypes.0002_remove_content_type_name... OK
  Applying auth.0002_alter_permission_name_max_length... OK
  Applying auth.0003_alter_user_email_max_length... OK
  Applying auth.0004_alter_user_username_opts... OK
  Applying auth.0005_alter_user_last_login_null... OK
  Applying auth.0006_require_contenttypes_0002... OK
  Applying auth.0007_alter_validators_add_error_messages... OK
  Applying auth.0008_alter_user_username_max_length... OK
  Applying auth.0009_alter_user_last_name_max_length... OK
  Applying auth.0010_alter_group_name_max_length... OK
  Applying auth.0011_update_proxy_permissions... OK
  Applying auth.0012_alter_user_first_name_max_length... OK
  Applying sessions.0001_initial... OK
  Applying urlshortner.0001_initial... OK
(env) D:\project\UrlShorten\asnmnt>
```

5. Now activate the server with the below command:

-> py manage.py runserver

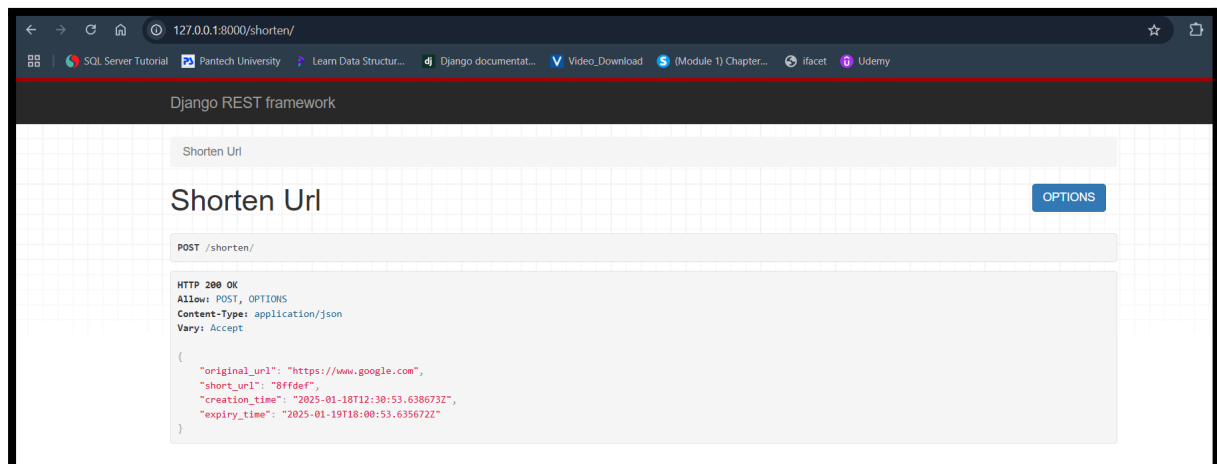
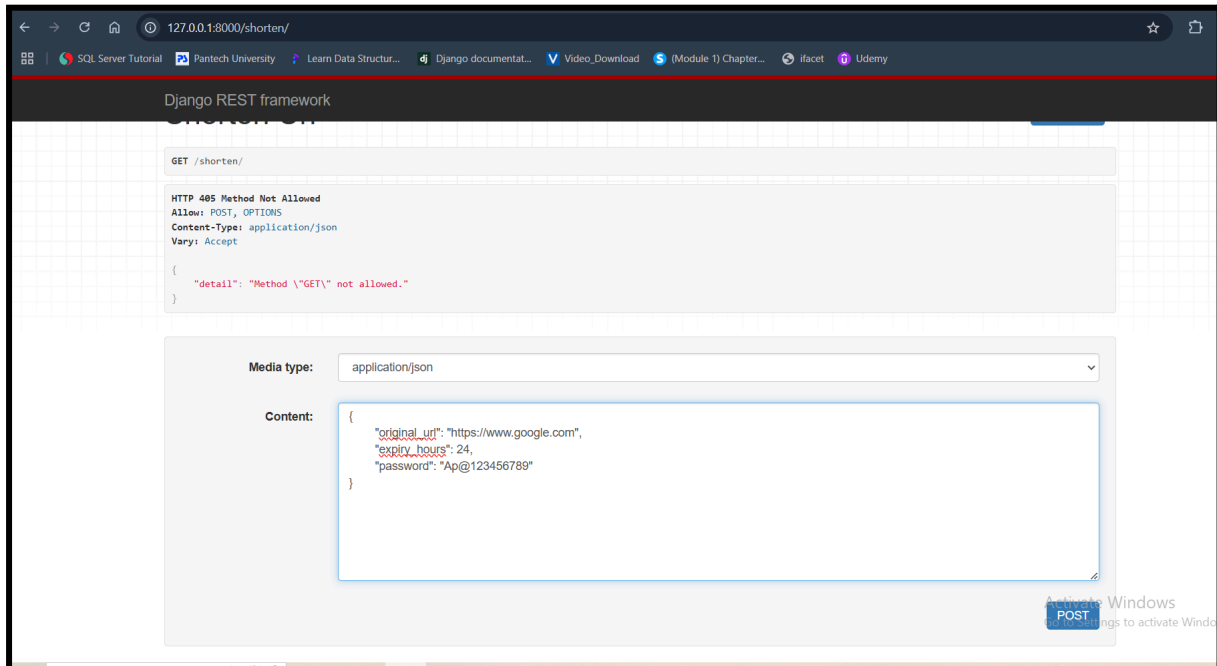
```
(env) D:\project\UrlShorten\asnmnt>py manage.py runserver
Watching for file changes with StatReloader
Performing system checks...

System check identified no issues (0 silenced).
January 18, 2025 - 17:49:28
Django version 5.1.5, using settings 'asnmnt.settings'
Starting development server at http://127.0.0.1:8000/
Quit the server with CTRL-BREAK.
```

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6. To test run the request.py file or go to browser and hit this url
<http://127.0.0.1:8000/shorten/> with the below data:

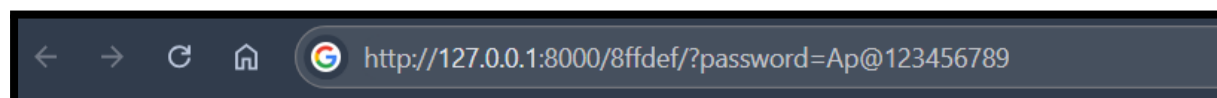
```
{  
  "original_url": "https://www.google.com",  
  "expiry_hours": 24,  
  "password": "Ap@123456789"  
}
```



→ To redirect to the original url:

Syntax : <baseurl>/<shorten_url>/?password=<password>

Ex: <http://127.0.0.1:8000/8ffdef/?password=Ap@123456789>



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→ To get the analytics

Syntax: **<base_url>/analytics/<shorten_url>**

Ex: **http://127.0.0.1:8000/analytics/8ffdef/**

