URL Shortener Project

# Overview

The URL Shortener project is a web application built using FastAPI, SQLAlchemy, and PostgreSQL. The application provides a simple interface for users to enter a long URL, which is then shortened and stored in a database. Users can access the shortened URL to be redirected to the original long URL. The project also includes a basic frontend, allowing users to interact with the URL shortener service via a web form.

# Features

• Shorten Long URLs: Users can input a long URL and receive a shortened version.

• Redirection: Accessing the shortened URL redirects the user to the original long URL.

• Basic Frontend: A simple web interface allows users to easily interact with the service.

# Prerequisites

Before running the project, ensure you have the following installed on your machine:

• Python 3.7 or higher

• PostgreSQL

• Git (optional, for version control)

You will also need to install the required Python packages and set up a PostgreSQL database.

# Project Setup

1. Clone the Repository  
If you have Git installed, you can clone the project repository. Otherwise, download the project files.

git clone https://github.com/deveshksh/URL-Shortener-FastAPI.git  
cd URL-Shortener-FastAPI

2. Set Up a Virtual Environment  
It is recommended to use a virtual environment to manage project dependencies.

python -m venv venv  
source venv/bin/activate # On Windows: venv\Scripts\activate

3. Install Dependencies  
Install the necessary Python packages using pip.

pip install -r requirements.txt

4. Set Up the PostgreSQL Database  
Create a PostgreSQL database:  
Log in to your PostgreSQL database and create a new database named url\_shortener.  
Use the provided script to create the necessary tables in your database.

5. Create the FastAPI Application  
Ensure that the main.py file is correctly set up to handle the backend logic, including URL shortening and redirection.

6. Create the Frontend HTML File  
The index.html file should be placed in the project directory. This file provides the web interface for users to input long URLs and receive shortened URLs.

7. Run the Application  
Start the FastAPI server using Uvicorn:

uvicorn main:app --reload

8. Access the Application  
Open your web browser and navigate to http://127.0.0.1:8000/. You should see the URL shortener frontend, where you can input a long URL to shorten.

9. Testing the Application  
Enter a long URL in the form on the frontend and click "Shorten".  
Copy and visit the shortened URL to ensure it correctly redirects to the original long URL.

# Future Enhancements

• Custom Short Codes: Allow users to specify a custom short code.  
• Analytics: Track the number of clicks and other metrics for each shortened URL.  
• User Accounts: Add user authentication to allow users to manage their shortened URLs.