# URL Shortener API - Project Documentation

## 1. Introduction

This project is a simple URL Shortener API built using FastAPI and PostgreSQL.  
It allows users to:  
- Submit a long URL and receive a shortened URL  
- Use the short URL to be redirected to the original long URL.

## 2. Technologies Used

- Python 3.10  
- FastAPI  
- SQLAlchemy  
- PostgreSQL  
- Uvicorn

## 3. Setup Instructions

3.1 Create and Activate a Virtual Environment:  
 python3 -m venv venv  
 source venv/bin/activate  
  
3.2 Install Required Libraries:  
 pip install fastapi uvicorn psycopg2-binary sqlalchemy  
  
3.3 Setup PostgreSQL:  
- Start PostgreSQL server:  
 brew services start postgresql@14  
- Create Database:  
 CREATE DATABASE url\_db;  
- Connect and create table:  
 \c url\_db  
 CREATE TABLE urls (  
 id SERIAL PRIMARY KEY,  
 long\_url TEXT NOT NULL,  
 short\_code VARCHAR(10) UNIQUE NOT NULL  
 );

## 4. How to Run the API

Run the following command from your project folder:  
 uvicorn main:app --reload  
  
Server will be available at:  
 http://127.0.0.1:8000  
  
Interactive API Docs will be available at:  
 http://127.0.0.1:8000/docs

## 5. API Endpoints

5.1 POST /shorten  
- Description: Accepts a long URL and returns a shortened URL.  
- Request:  
 - Query Parameter: long\_url  
- Response:  
 - JSON with short\_url.  
  
Example Response:  
{  
 "short\_url": "http://localhost:8000/PTf1cR"  
}  
  
5.2 GET /{short\_code}  
- Description: Redirects to the original long URL.  
- Path Parameter: short\_code  
  
Example:  
Accessing http://localhost:8000/PTf1cR will redirect you to https://www.google.com.

## 6. Files Included

- main.py (Main FastAPI app)  
- database.py (Database connection setup)  
- models.py (SQLAlchemy ORM models)  
- utils.py (Helper for short code generation)