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CS396

# Project 3 Report

## Project Description and Requirements

This project required the development of a web application which could be accessed by users to display data regarding environmental air quality information for cities, as well as pollution data for vehicles and power plants. This was to be accomplished through the use of multiple charts and graphs. The web application was to be implemented through the use of a web development framework Django and is intended to be accessed through an internet browser.

## Functions Implemented

The functions implemented in this iteration of the project mostly involve the use of displaying charts and graphs which are generated from the data stored in the website's database. In order to implement this, I designed a graphs page which simply displays links to various charts and graphs regarding different kinds of pollution data.

## Technical Details

As mentioned before, Django is a web framework which is implemented in Python. Therefore, the only two languages which were used in the development of the web application were HTML, which was used for the web page templates and python, which was used to implement all other features. The database used is SQLLite, which comes standard with Django. Because Django offers a means of database manipulation through the use of Python, no SQL was actually written in the development of the web application. Furthermore, the web server used in the project's development was that which comes standard with Django. In addition, certain Javascript elements were used in conjunction with the HTML templates to create desired effects in the web page implementation. In order to complete the charting and graphing required for the project, I made use of a python library called matplotlib which can be used with Django to produce charts and graphs, which can then be displayed by the website.

## Features to Highlight

While the majority of the website's features were designed strictly to correspond to the requirements of the project, there are certain features which are worthy of being highlighted on their own. The first is the friendly interface of the web application. Despite being developed very quickly, the web application was designed to be very usable and easy to understand. In order to achieve this, I began by creating a new large link on the navigation bar of the website. This link displays a page containing links to all the required graphs and charts for this project. The data for these charts and graphs is pulled from the database and used by matplotlib to produce an image to be displayed. The information used can be altered in the backend of the source code.

## Discussion

Due to the nature of this portion of the project, I necessarily ran into a lot of trouble attempting to properly integrate two tools: Django and Matplotlib. However, once I figured out how to properly produce charts and graphs, the project became a lot clearer. The largest issue I have run into throughout the course of this project is providing proper input ability from the user. I have focused my effort into displaying the information correctly so user input unfortunately had to be left for last. Due to time limitations, the input portion was not properly completed and therefore is not implemented in any form in the final product. However, I believe that it would be a simple matter to add it in later. For the time being, the data that is being used to generate the graphs and charts on the website can be altered in the website's source code, which can be used to demonstrate how user input would work when added to the product.