Software for Digital Innovation
In-Course Assessment

FREEDOM OF INFORMATION

Data Visualization with Python

Mohana Kamanooru
A0223038@live.tees.ac.uk

15/01/2021

MODULE TUTOR

Martin Kane

m.kane@tees.ac.uk

MODULE LEADER

James Fairbairn

j.fairbairn@tees.ac.uk

Table of Contents

Acknowledgment

Thanks to my Professors Mr. James Fairbairn and Mr. Martin Kane, for their continual guidance and advice throughout the research process. I want to thank my parents Mr. Ramanachari Kamanooru, Mrs. Vijayalakshmi Kamanooru, and husband, Mr. Santhosh Kanakam, for their continued encouragement and support in my career, and I am very grateful for everything I could learn from all the support received.

Purpose

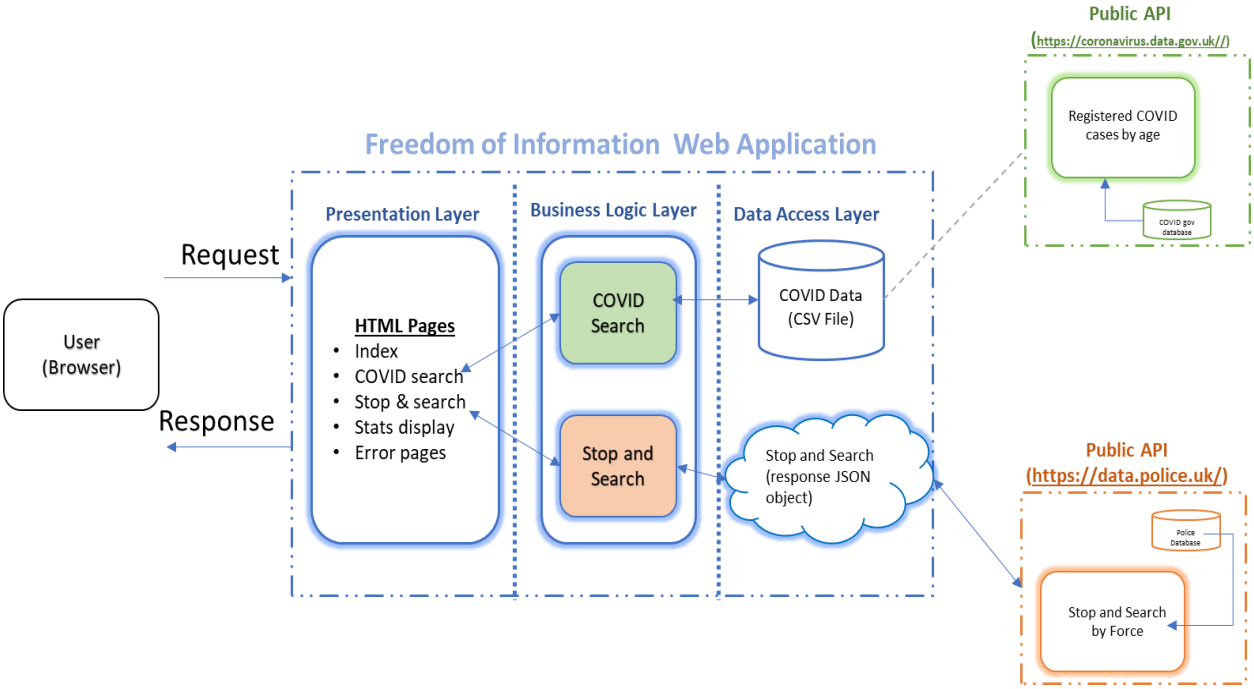
This document provides an overview of the application '**Freedom of Information**', and its modules.

Application Overview

The project Freedom of Information is developed using the Flask web framework. As per the given requirements mentioned in the ICA2 specification document, the application enables the user to access information quicker from two different APIs and aids to visualize BIG Data graphically. Hence, improves the user's ability to draw the information from the hugely available data.

Application Architecture

Freedom of Information web application is designed based on three tier web architecture. Application contains , presentation layer, business logic layer and Database layer.



Application Modules

The two different search modules are COVID search, Stop, and Search. The first module COVID search helps to visualize the cases registered for the user-selected area and dates. The information of cases is captured from the API. The information displayed using the Stop and Search module is being fetched from the police database using API.

1. COVID Search

This module processes the COVID cases information from the given CSV file and provides different plots to visualize.

- Capture Data: process_COVIDdata.py (reads data from CSV and generates plots using aggregations and other libraries)
- Pre-process Data: format_COVIDdata.py (Formats the data types, columns, and returns processed data ready to be visualized)
- Visualize the Data: display_cases.html (displays the respective plots for the user given inputs)

2. Stop and Search

This module processes the stop and search by force information from API and presents graphical data using various python libraries

- Capture Data: process_SSdata.py (gets the data as JSON object from API and processes it to provide Plots to the user.)
- Pre-process Data: process_SSdata.py (Formats the data types, columns, matplotlib, pandas, and other libraries)
- Visualize the Data: display_plots.html (displays the respective plots for the user given inputs)

3. Unit Testing

The unit test cases for the module are provided in the provided source code. The unit test files are provided one for each module to test the methods existing in the respective python files.

- test_info_app.py
- test_process_COVID.py
- test_process_SSdata.py

Black Box Testing:

Complete test document with test cases, test scenario, and results are provided in the following excel document.

System Testing.xlsx