Project Report

COVID-19 Tracker

Team Name: **Twisting Tornadoes**

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1 Introduction

COVID-19 affects every person and society Awareness, getting live information, and best practices play critical roles for containing the virus. The most important factor in preventing the spread of the COVID-19 is to empower the people with the right information. There is an impulse to remain informed about the current situation, not only where we live but in other parts of the country as well. This project is motivated by the fact that quick access to correct information and best practices about COVID-19 will play an important role in public health.

This project provides a central and easy to interpret information repository for all districts in India. Using this project, a user can quickly access the latest information(local and national) and also the best practices about COVID-19. Furthermore, users can access the latest advisories such as awareness, behavioral, employees, inspirational, and citizen advisories provided by the government of India. In addition, this project provides a list of recently published academic papers regarding the COVID-19 virus.

2 Motivation

Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus in Wuhan, China in 2019. "The best way to prevent and slow down transmission is to be well informed about the COVID-19 virus, the disease it causes and how it spreads" [1]. Therefore, developing a website to provide updated local and national information plays a vital role in fighting COVID-19.

3 Problem Definition

The central idea behind this project was to create an intuitive, easy-to-understand system to capture all the pertinent information related to COVID-19 and present it in a single place.
We wanted to obtain data on multiple aspects of the COVID-19 pandemic and display it to an end user in a way which made it easy to understand. Due to the constantly changing scenario, it may be difficult to keep track of all the latest information and it is quite likely for someone to get overwhelmed with the amount of information which is present on the internet. This was the crux of the problem which we attempted to address by means of this project.

4 Dependencies

This is a web application which users can directly access it using any web browsers via a computer or mobile. Therefore, there is no dependencies from user points of view. However, if someone wants

to host it locally and extend its feature, the requirements are as following:

- Python
- Beautiful soup
- PHP
- Apache XAMPP server: https://www.apachefriends.org/download.html
- MySQL Database
- Tabulate
- Requests
- Bs4
- Chrome/Firefox/Web browser of your choice

In order to host it locally, please follow the following steps:

- Before execution:
  - Install XAMPP to your directory of choice (ignore warning message for UAC in Windows)
  - Verify that the above packages are installed in the current python environment
  - Download the .zip file from above git repository, extract it and rename the folder to 'Covid'
  - Place this folder inside 'htdocs' folder of your xampp installation directory
- To begin execution:
  - First, launch the Apache server and MySQL service from Xampp control panel
  - Run the python script covid_data.py. This will create the database entry and add all the different tables to it
  - After this, launch the web application by pasting this link in your browser and clicking on Go localhost/Covid/index.php
  - Now, you should see the web app come up on the screen
- Scheduling python job to run periodically in order to crawl the update data
  - Edit the crontab using the command: crontab e
  - Add the following line to the crontab (<PATH> is the location of covid_data.py file): 0,30 7-23 * * * cd /<PATH> /usr/bin/python3 covid_data.py
  - Save and exit the crontab
  - Restart the cron service usig the command: sudo service cron restart

5 Main Work and the User Interface

The main page provides the latest nation-wise as well as state-wise information regarding the COVID-19 cases. However, a user can easily check the status of a single state or a single district by using the provided top-down menus.

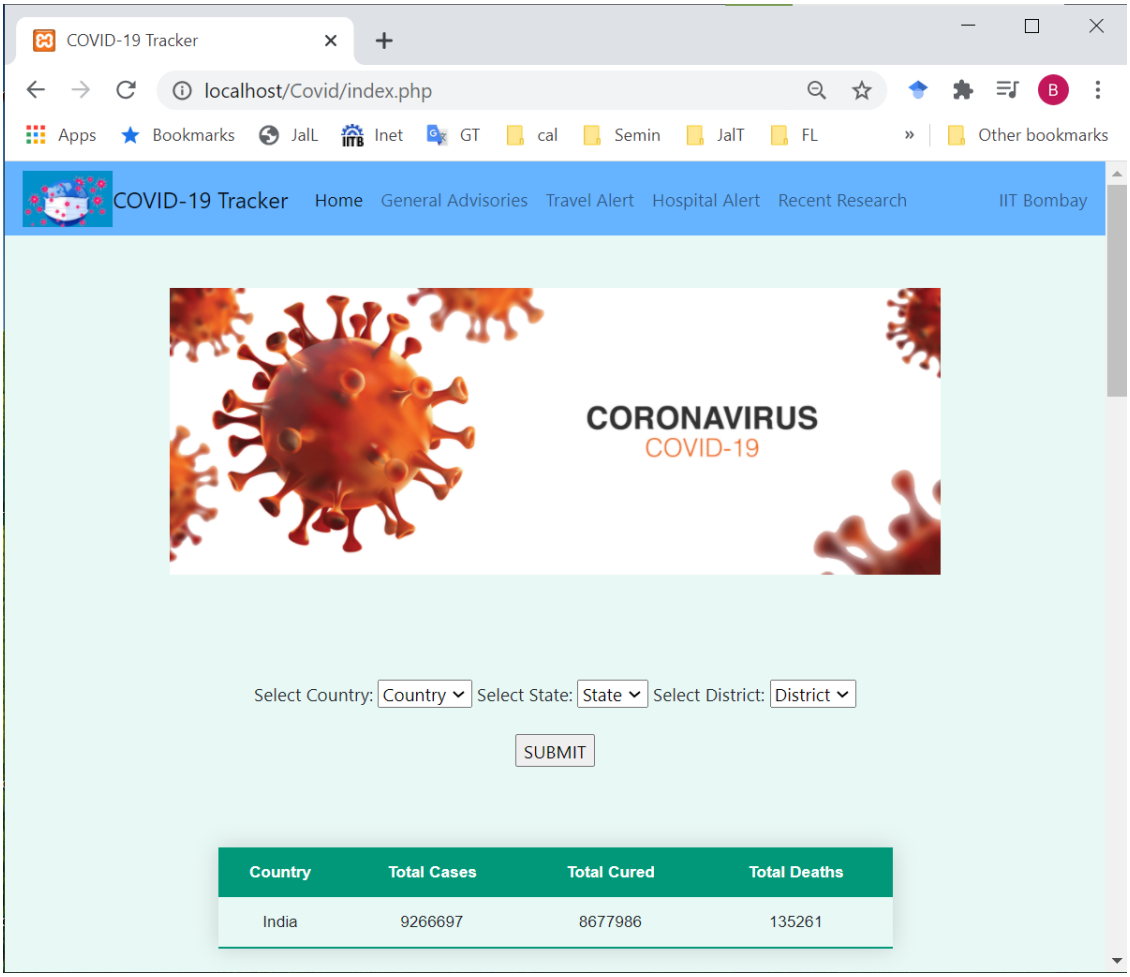

Figure 1: Home page.

The Bootstrap technology is used to provide more responsiveness on small screens.

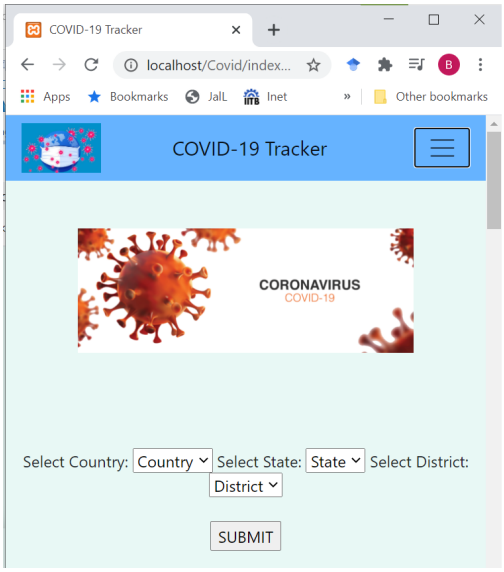

Figure 2: Home page on smaller screens.

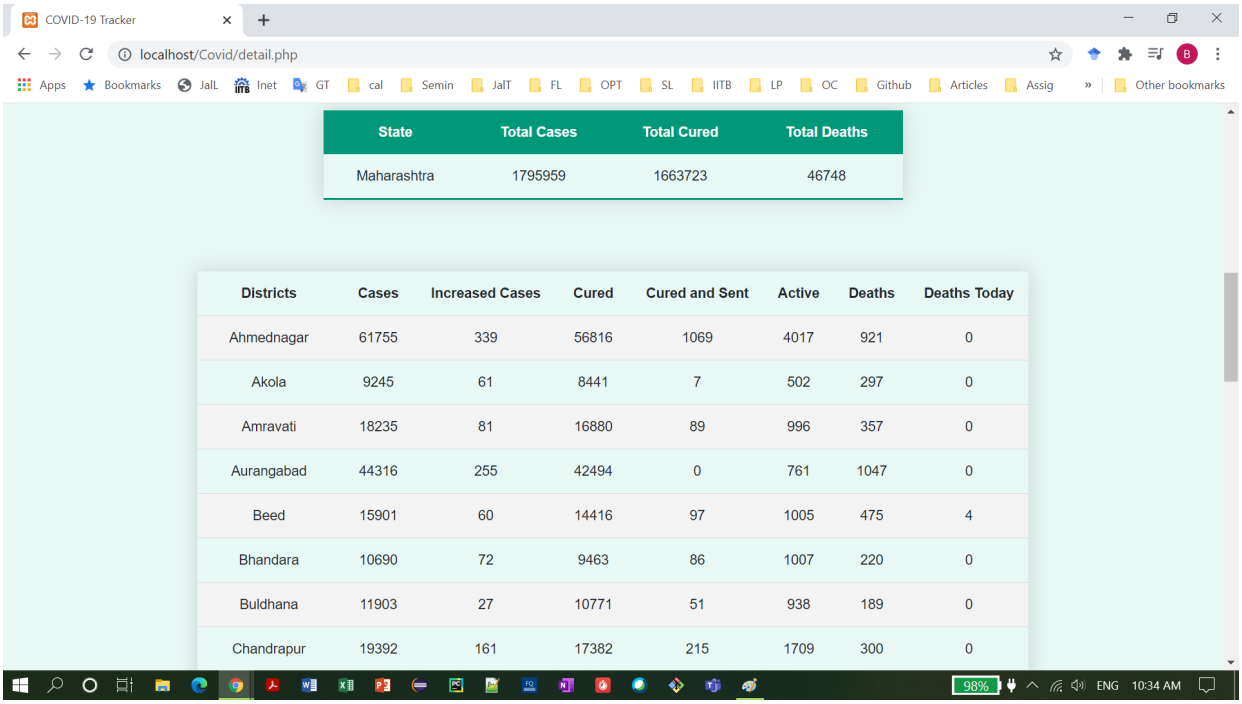

Figure 3: Home page displaying national and state-wise results.

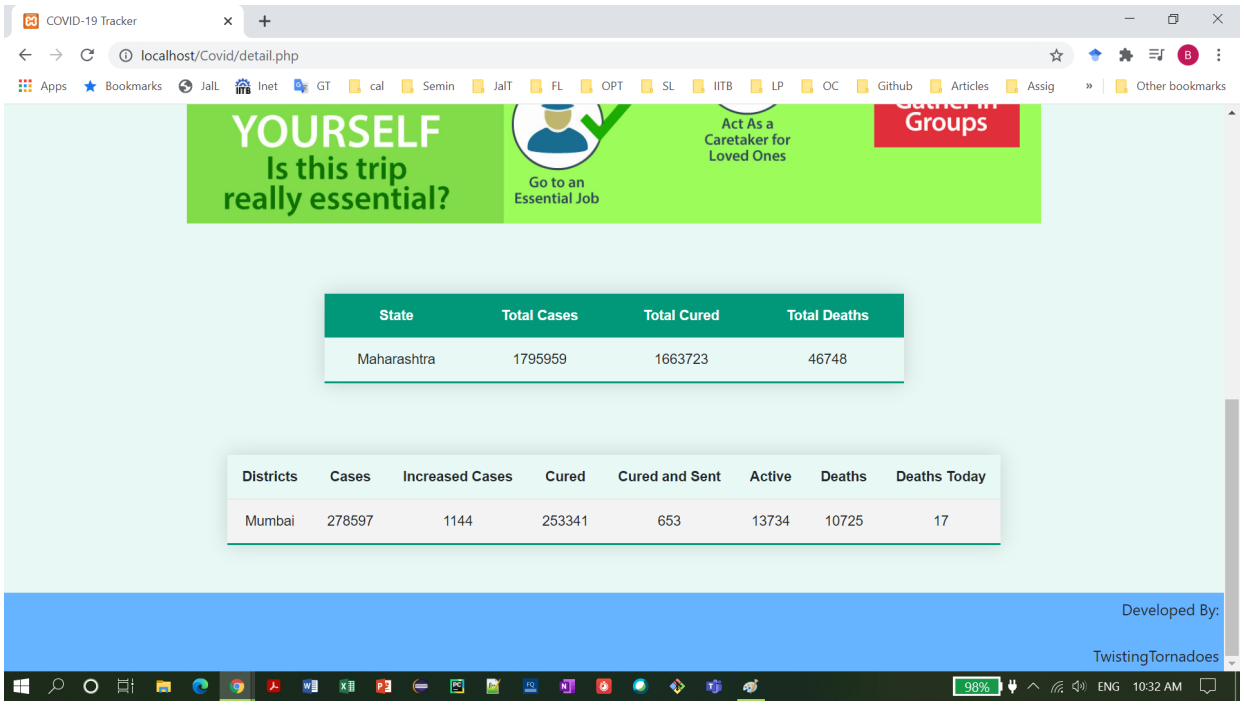

Figure 4: Home page displaying result for a district.

The following figures show the advisories related pages.

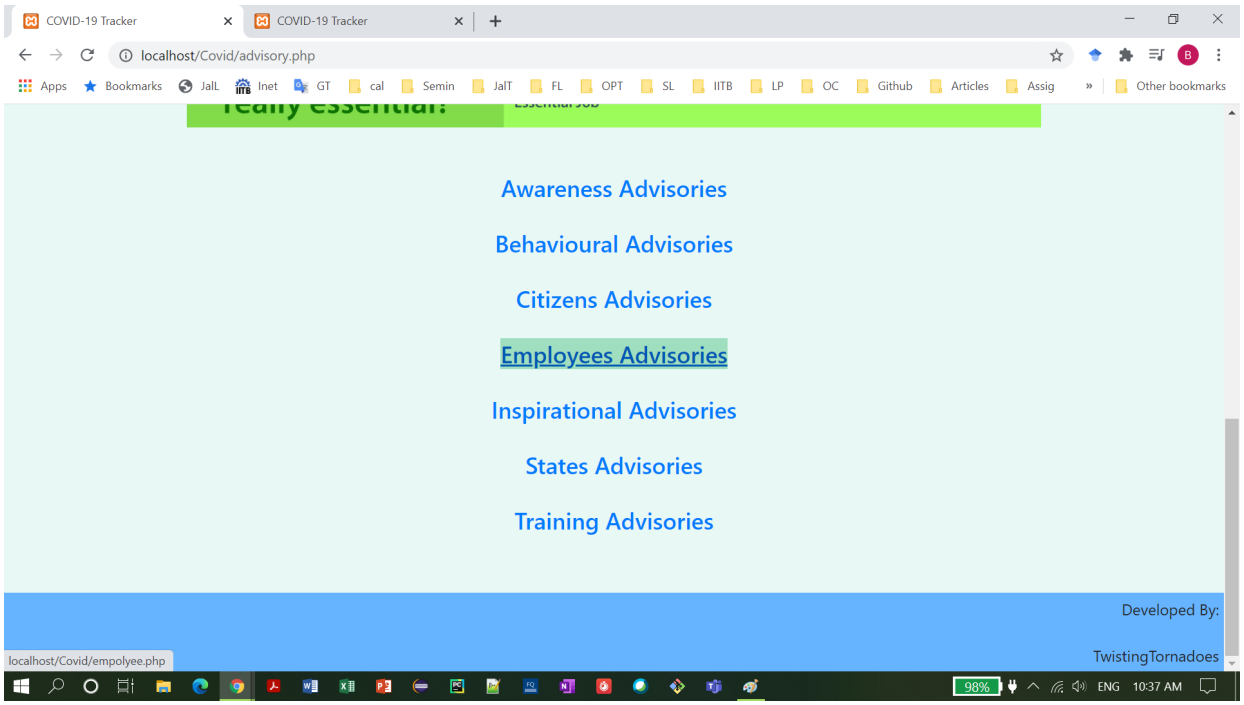

Figure 5: General Advisory page.

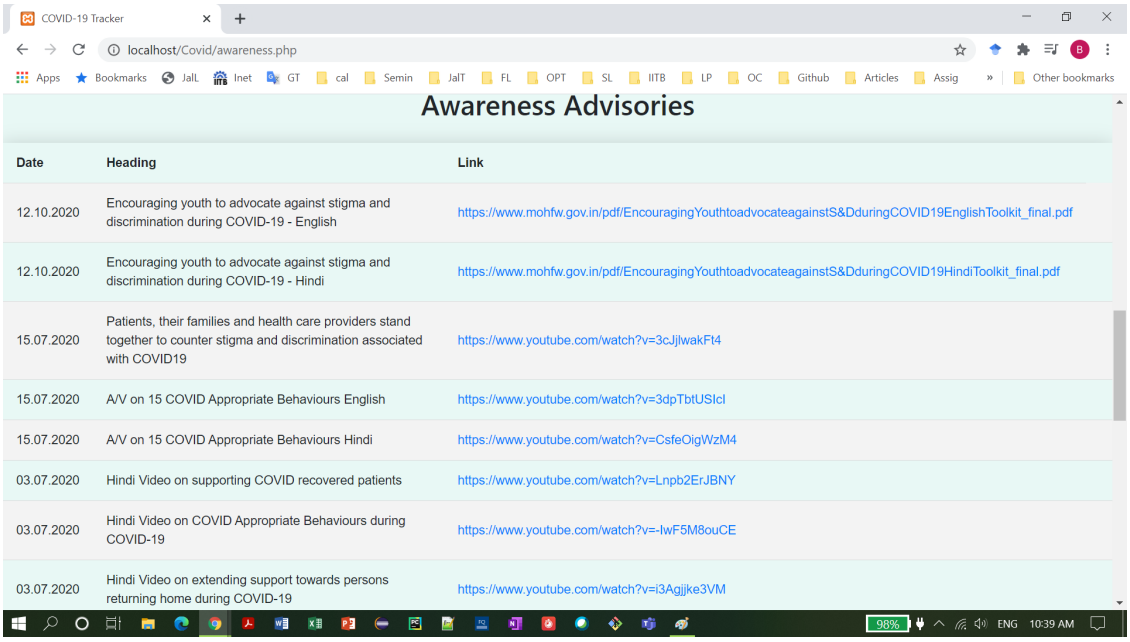

Figure 6: Awareness Advisory page.

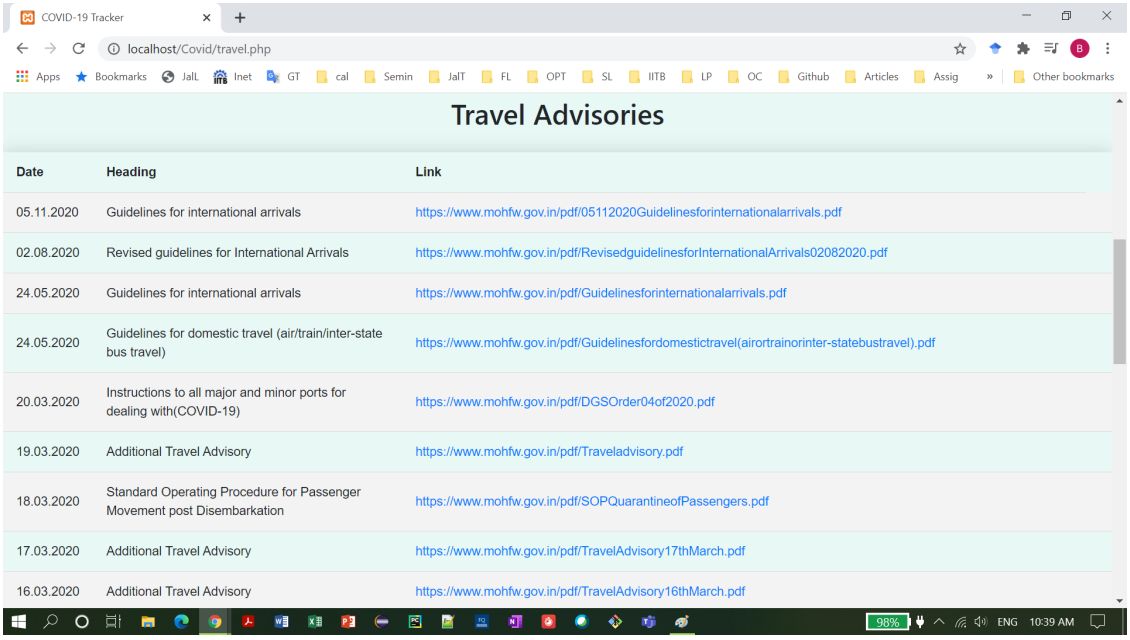

Figure 7: Travel Advisory page.

This page shows the recent research papers published regarding the COVID-19 virus.

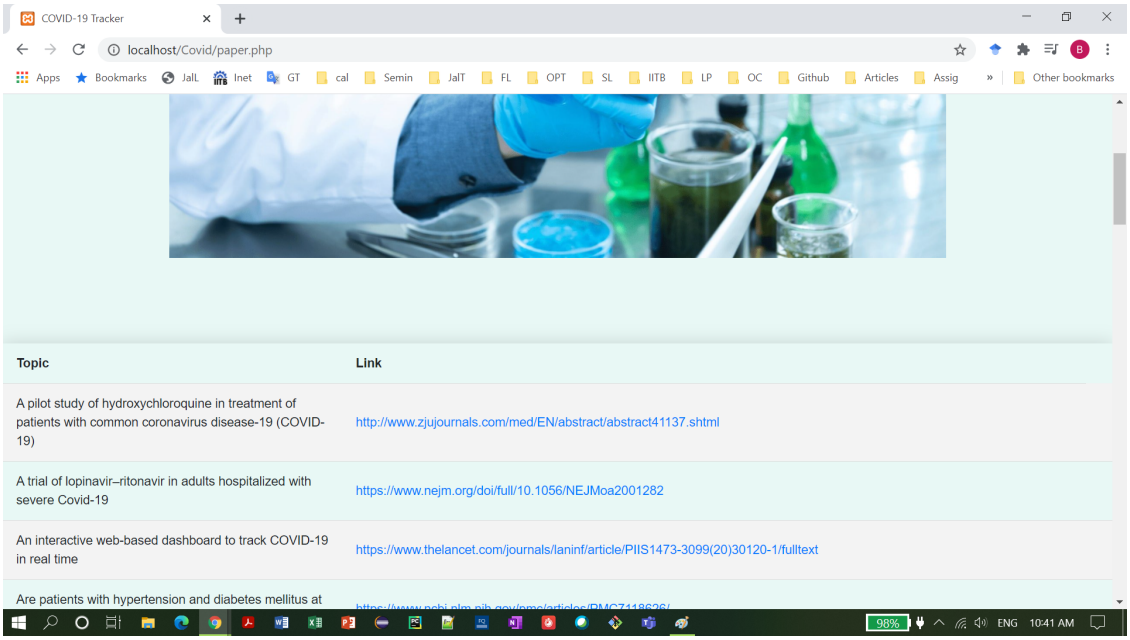

Figure 8: Recent research page.

6 Testing

Testing was primarily divided into two parts:

- The first part was to ensure that we were able to correctly fetch the data from the web and whether we were able to render it correctly in our frontend
- The second part was to ensure that both the frontend and backend were able to work in sync with each other

For the first phase, unit testing was done for both the python backend and PHP frontend separately. We ensured that we were getting the correct results by manually comparing the data fetched by the webcrawler with multiple sources on the web. When we were confident that there is no discrepancy in the data, we created our db files for the frontend and checked to make sure that all the results were being displayed correctly. We did extensive testing on the frontend, clicking all the links and navigating from every page to every other page, testing the back button functionality, as well as resizing the page and viewing it to make sure bootstrap was working correctly.
For integration testing in the second phase, we wrote our job scheduler using crontab and set it to refresh the database automatically. We then checked the results manually once more to make sure

we were not getting any spurious data.
The code was tested on linux as well as windows and no issues were reported in either environment.

7 Future Scope

This project can easily be extended to provide a central and quick repositories for all COVID-19 related information such as active cases, recent advisories and regulations, and most importantly the vaccination status in various areas and countries in the future.

References

[1] WHO, "Coronavirus," https://www.who.int/health-topics/coronavirus#tab=tab_1, 2020.