DEPARTMENT OF SOFTWARE ENGINEERING

ADVANCE SOFTWARE ENGINEERING (SE-406)

DELHI TECHNOLOGICAL UNIVERSITY

(Formerly Delhi College of Engineering)

MTE Project Report
on

COVID-19 CASES TRACKER USING WEB API

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1. INTRODUCTION

Coronavirus disease 2019 (COVID-19) is an infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). It was first identified in December 2019 in Wuhan, China, and has resulted in an ongoing pandemic. The first case was traced back to 17 November 2019. As of 01 May 2022, more than 51.3 crore cases have been reported worldwide, resulting in more than 62.3 lakh deaths. More than 4.67 million people have been recovered till now[2].

The virus is primarily spread between people during close contact, most often via small droplets produced by coughing, sneezing, and talking. The droplets usually fall to the ground or onto surfaces rather than travelling through air over long distances. Less commonly, people may become infected by touching a contaminated surface and then touching their face. It is most contagious during the first three days after the onset of symptoms, although spread is possible before symptoms appear, and from people who do not show symptoms[5].

In this project we dived deep into 'What does data say about COVID-19 situation in India and throughout the world?'. And with available data we came up with some observations and conclusions. We will be making an online website which tracks **COVID-19 cases using an online available API.** In this project, user can view total cases (of confirmed, active, recovered and deaths). It shows the data in three categories i.e., cases of whole world, India and each country of the world. It also contains information regarding Corona virus and its prevention. A tracker wbsite is useful for displaying the information in pictures, charts, and graphics to make the data easier to understand and use.

2. EXPERIMENTAL DESIGN

A. Data Collection

For the COVID-19 data we have scrapped https://api.covid19api.com/ which is a volunteer-driven, crowdsourced database for COVID-19 stats across the globe.
Documentation of this API : https://documenter.getpostman.com/view/10808728/SzS8rjbc[1]

B. Data Description

We have used only one API:

i. https://api.covid19api.com/summary
It contains a summary of new and total cases of all the countries and it updates daily.
It has raw-data(in the form of JSON) that contains multiple data which includes Global Data and Countries data[3].


```
{
  "Global": {
    "NewConfirmed": 100282,
    "TotalConfirmed": 1162857,
    "NewDeaths": 5658,
    "TotalDeaths": 63263,
    "NewRecovered": 15405,
    "TotalRecovered": 230845
  },
"Countries": [
    {
      "Country": "Afghanistan",
      "CountryCode": "AF",
      "Slug": "afghanistan",
      "NewConfirmed": 18,
      "TotalConfirmed": 299,
      "NewDeaths": 1,
      "TotalDeaths": 7,
      "NewRecovered": 0,
      "TotalRecovered": 10,
      "Date": "2020-04-05T06:37:00Z"
    },
    {
      "Country": "India",
      "CountryCode": "IN",
      "Slug": "india",
      "NewConfirmed": 515,
      "TotalConfirmed": 3082,
      "NewDeaths": 14,
      "TotalDeaths": 86,
      "NewRecovered": 37,
```

```
    "TotalRecovered": 229,
    "Date": "2020-04-05T06:37:00Z"
  },
]
```


C. Tools and Technologies Used

i. **HTML and CSS:** Hypertext Markup Language (HTML) is the standard markup language for documents designed to be displayed in a web browser. It can be assisted by technologies such as Cascading Style Sheets for improving the UI of the webpage and for making more interactive and beautiful website.

ii. **Javascript:** JavaScript is a text-based programming language used both on the client-side and server-side that allows us to make web pages interactive.

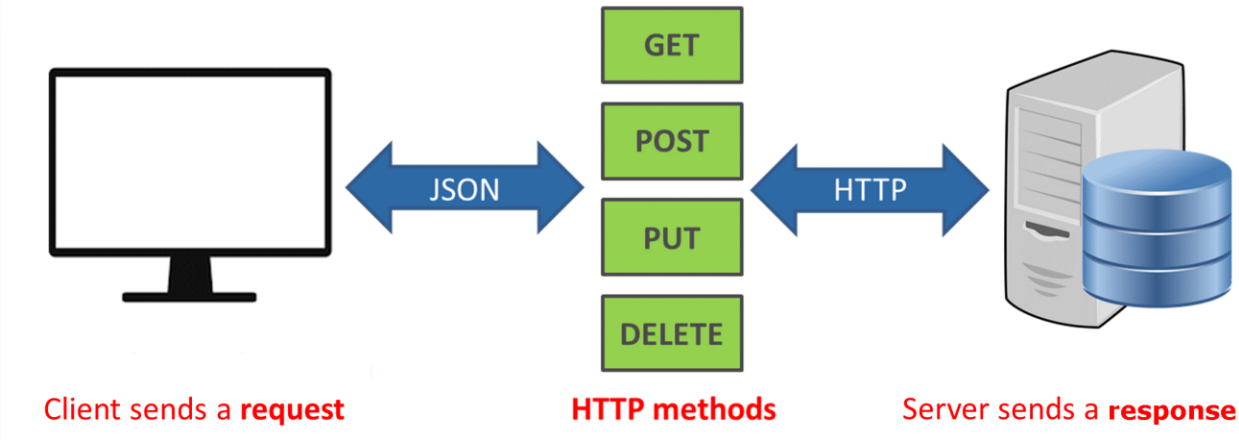
iii. **Bootstrap:** Bootstrap is a free and open-source CSS framework directed at responsive, mobile friendly front-end web development. It contains CSS and JavaScript-based design templates for typography, forms, buttons, navigation, and other interface components.

iv. **REST API:** A REST API (also known as RESTful API) is an application programming interface (API or web API) that conforms to the constraints of REST architectural style and allows for interaction with RESTful web services[8]. An API is a set of definitions and protocols for building and integrating application software.

I have used VS Code IDE to write code.

Visual Studio Code is an open source code editor which runs on desktop and is available for Windows, macOS and Linux. It comes with built-in support for JavaScript, Typescript and Node.js and has a rich ecosystem of extensions for other languages (such as C++, C#, Java, Python, PHP, Go) and runtimes (such as .NET and Unity).

D. Client/ Server Architecture for our project:



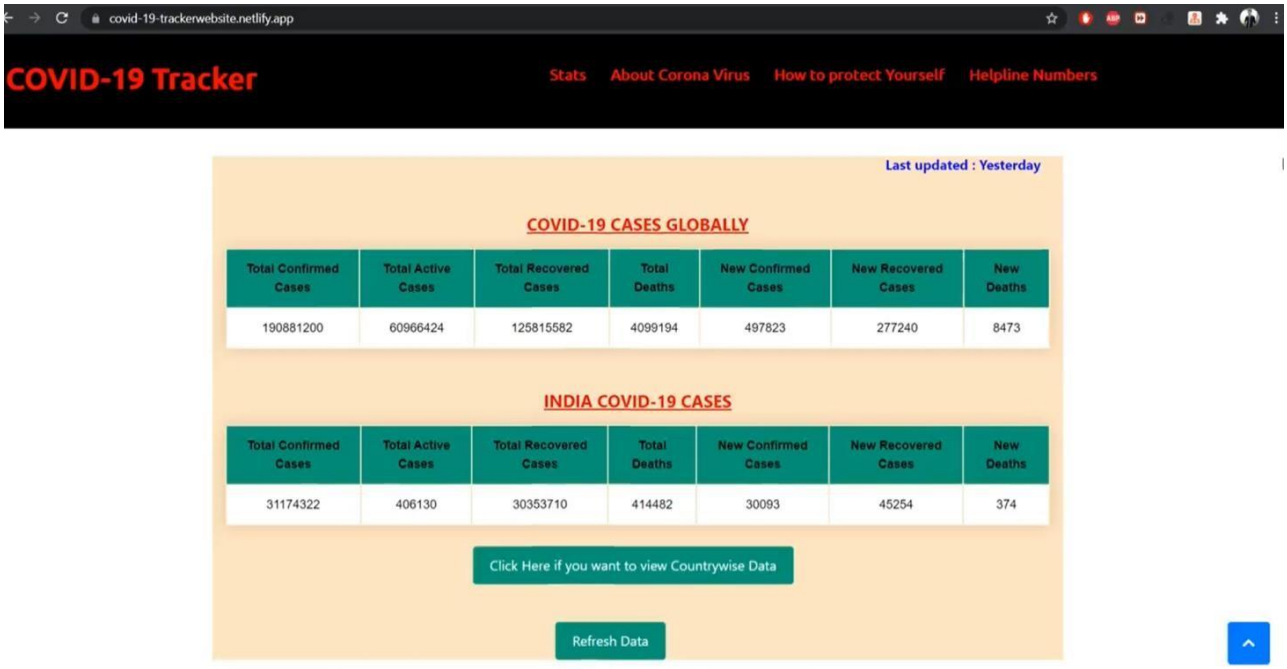
E. Advance Software Engineering Concept used

There is a concept of "CLIENT/SERVER SOFTWARE ENGINEERING" in unit 5 of ASE syllabus[6]. In a C/S structure, the computer that resides above another computer is called the server, and the computer(s) at the level below is called the client. The client requests services and the server provides them. This same concept is applicable on API (Application Programming Interface). Whenever someone uses an application on mobile phone, the application connects to the Internet and sends data to a server. The server then retrieves that data, interprets it, performs the necessary actions and sends it back to phone(i.e. client). The application then interprets that data and presents you with the information you wanted in a readable way. This is what an API is and we used this advantage of API to make this project.

3. RESULTS AND DISCUSSION

We are successful in making an online website and here are the screenshots of it:

1. **Stats of Covid cases:** It consists a table which contains 7 columns comprising Total cases and new cases.
   It contains a button on pressing which the user is able to view countrywise data.

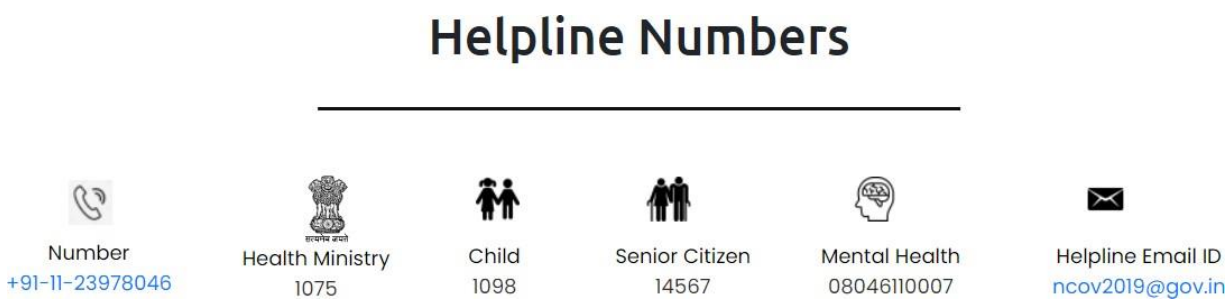


2. **About corona virus** has been explained here and there is a button on pressing which the user is able to view COVID-19 guidelines issued by the Government of India.

3. **Prevention measures:**
   It consists informations about how an individual can protect themselves from Corona virus[4]. To make it more user friendly, GIF and short videos has been used.

4. Helpline numbers:

To avoid unnecessary surfing on the internet regarding emergency contacts, a helpline section has been provided for user convenience.



Here is the link to the website: http://tiny.cc/covid-19-tracker
and code: https://github.com/ashishch164/COVID-19-TRACKER

Till now India records 4.31 crore confirmed cases and 5.24 lakh deaths and stands 2nd position[2]on reported corona cases that means India has suffered a lot due to corona virus for last 2 years. We developed an online web application that keeps track of corona virus cases all around the world. The information is clearly shown on the table, so that an individual may look at it properly and can predict their respective country's condition and take appropriate safety precautions accordingly.

4. CONCLUSION & FUTURE WORK

From this project, it can be deduced that it is imperative for the public to have awareness and knowledge about the current situation of covid in a country as well as worldwide. So for trackingCOVID cases, a COVID tracker is needed which should be available on the internet for free so that any person can view it and after visualizing, it helps in cautioning people and urges them to take precautions accordingly. Our project provides a platform to do so by constantly updating the current stats of covid cases around the world. All the necessary informations regarding corona virus from the user's point of view are presented on the website and thus minimizing the surfing duration of the user for getting relevant informations. However, the project can be a lot more informative and interesting if more stats such as the vaccination drive status, cases and recovers by district, positivity rate are added. Moreover, machine learning techniques can be used to showavailability of hospital and medical supplies in the area close to the user. Furthermore, visualization with the help of graphs and infographics should be added in order to make the website's interpretation more understandable and will help the users in gaining a better understand of the current scenario. Lastly, various techniques played a major role in the development of this project, the knowledge on how client/server architecture works and technical knowledge on Web Development helped us in forming and using the API to create and deploy the covid tracker website.

5. REFERENCES

We have used following websites as a reference for making this project:

1. https://documenter.getpostman.com/view/10808728/SzS8rjbc
2. https://www.worldometers.info/coronavirus/
3. https://api.covid19api.com/summary
4. https://www.who.int/emergencies/diseases/novel-coronavirus-2019/global-research-on-novel-coronavirus-2019-ncov
5. Krishna Mohan Agarwal, Swati Mohapatra, Prairit Sharma, Shreya Sharma, Dinesh Bhatia, Animesh Mishra, "Study and overview of the novel corona virus disease (COVID-19)",Sensors International, Volume 1,2020,100037, ISSN 2666-3511, https://doi.org/10.1016/j.sintl.2020.100037.
6. Roger Pressman. 2009. Software Engineering: A Practitioner's Approach (7th. ed.). McGraw-Hill, Inc., USA, pp. 747-768.
7. https://github.com/abhijitshow07/COVID-19-TRACKER
8. https://docs.github.com/en/rest
9. https://www.aarogyasetu.gov.in/
10. https://www.cowin.gov.in/