MINOR-1 PROJECT

END TERM REPORT

For

Covid Vaccination
(Runtime Allotment Process)

Submitted By

Specialization	SAP ID	Name
B. Tech CS CCVT	**500087716**	Tanvi Panchal
B. Tech CS CCVT	**500088204**	Krishnraj Raini
B. Tech CS CCVT	**500088209**	Krishnanshu Sinha
B. Tech CS CCVT	**500087519**	Rishabh Anand

Department of Systemics

School Of Computer Science

UNIVERSITY OF PETROLEUM & ENERGY STUDIES,

DEHRADUN- 248007. Uttarakhand

Mr. Varun Sapra
Project Guide

Dr.Neelu J. Ahuja
Cluster Head

School of Computer Science
University of Petroleum & Energy Studies, Dehradun

Project Title

Covid Vaccination (Runtime Allotment Process)

Abstract

This Covid era has seriously been a tough time for every human. To overcome this pandemic various research were made and our scientist finally made the vaccination to this Covid-19 virus. The main challenge to vaccinate each and every person of the world was a big issue. So, there comes a monitoring system which not only register the person ID but do remind them for every dose but do update on the server and count the number of populations vaccinated and the remaining once. This system helped governments of various nations to get the ratio of vaccination.

ACKNOWLEDGEMENT

We wish to express our deep gratitude to our mentor Dr.Varun Sapra, for all advice, encouragement, and constant support he has given us throughout our project work. This work would not have been possible without his support and valuable suggestions.

We sincerely thank to our cluster head, Prof. (Dr.) Neelu J. Ahuja, for her great support in doing our project at SoCS.

We are also grateful to Dr. Ravi S. Iyer Dean, SoCS, UPES for giving us the necessary facilities to carry out our project work successfully.

We would like to thank all faculties from UPES for their help and constructive criticism during our project work. Finally, we have no words to express our sincere gratitude to our parents who have shown us this world and for every support they have given us.

(Krishnanshu Sinha)
(Tanvi Panchal)
(Rishabh Anand)
(Krishnaraj Raini)

TABLEOFCONTENTS

LIST OF FIGURES

LIST OF TABLES

Introduction

As we have passed through a very rough phase of our life. Also came across to face many of the problems during this pandemic. We all have waited a lot for the vaccination to be developed. As we all know that with new things, we always welcome new problems. So, as we did this time too, it was a big issue vaccinating everyone with proper scheduling and assigning them the location of vaccination and maintaining proper records of them. To overcome this problem, we build a program system which is responsible to maintain proper functioning of the procedure is this program. We have generated a program which takes the input from the user and collect all other information and verify them. Later according they are given a time slot and provide them the location of vaccination as per their preferred choice. This also help to maintain the count of vaccinated and non-vaccinated. Also, there is a section of the program which will be responsible to sand aalertmessage on the date of registration, this is all done as the information is stored on the server of every individual. The whole scheduling of the vaccination is cross updated and verified from the hospital.

Literature Review

Since the outbreak of the COVID-19 pandemic, there has been a rapid expansion in vaccine research focusing on exploiting the novel discoveries on the path physiology, genomics, and molecular biology of the severe acute respiratory syndrome corona virus 2 (SARS-CoV-2) infection. Although the current preventive measures are primarily socially distancing by maintaining a 1 m distance, it is supplemented using facial masks and other personal hygiene measures. However, the induction of vaccines as primary prevention is crucial to eradicating the disease to attempt restoration to normalcy. This literature review aims to describe the physiology of the vaccines and how the spike protein is used as a target to elicit an antibody-dependent immune response in humans. [1]

Furthermore, the overview, dosing strategies, efficacy, and side effects will be discussed for the notable vaccines: BioNTech/Pfizer, Moderna, AstraZeneca, Janssen, Gamaleya, and SinoVac. In addition, the development of other prominent COVID-19 vaccines will be highlighted alongside the sustainability of the vaccine-mediated immune response and current contraindications. As the research is rapidly expanding, we have looked at the association between pregnancy and COVID-19 vaccinations, in addition to the current reviews on the mixing of vaccines. Finally, the prominent emerging variants of concern are described, and the efficacy of the notable vaccines toward these variants has been summarized. [2]

Problem Statement

As we have been passed the pandemic few months back. The government of various nations are providing the facility for the vaccination to everyone, dividing the population into different age groups. This also keeps counting the number of vaccinated through the registration and verification. Every individual is provided with the self-choice options so that he can find suitable location for his vaccination.

Vaccination is done on the following basis:

1. Registration of a new User :The user is prompted to enter his personal details. Here we check if the user is eligible for the vaccination depending upon his age. If he is eligible, the user is passed onto the enqueue function.

2. Assign priority to the user upon registration and enqueue him: The user is enqueued according to his vaccination priority. get_priority() is a helper function which calculates the priority of the user depending upon his age.

Eg.A person with the highest age amongst the current registered users will have the highest priority and will be appended to the front.

3. Run time slot allotment process: Admin is prompted to enter his password and upon authentication has access to various functionalities of the Admin Class.
He can set an available_slots variable depending on the vaccines that the vaccination center is going to receive and also change the age eligibility for the vaccination depending on the government guidelines. The most important functionality of the Admin class is run_process().

4. Login functionality for the User and Administrator: This function enables the user to login and check his allotted time slot. He is expected to log in on the day of his vaccination and confirm his vaccination.
Upon being vaccinated he is dequeued.

If a user fails to do so, he is demoted to the end of the queue and his priority decremented. This process is implemented with the help of dequeue() and remove() functions respectively.

5. Get self data (for user): In this the data of the user is collected like the personal id number, age of the person, place of vaccination.

6. Get data of any citizen (for admin): Admin is prompted to enter his password and upon authentication has access to various functionalities of the Admin Class.

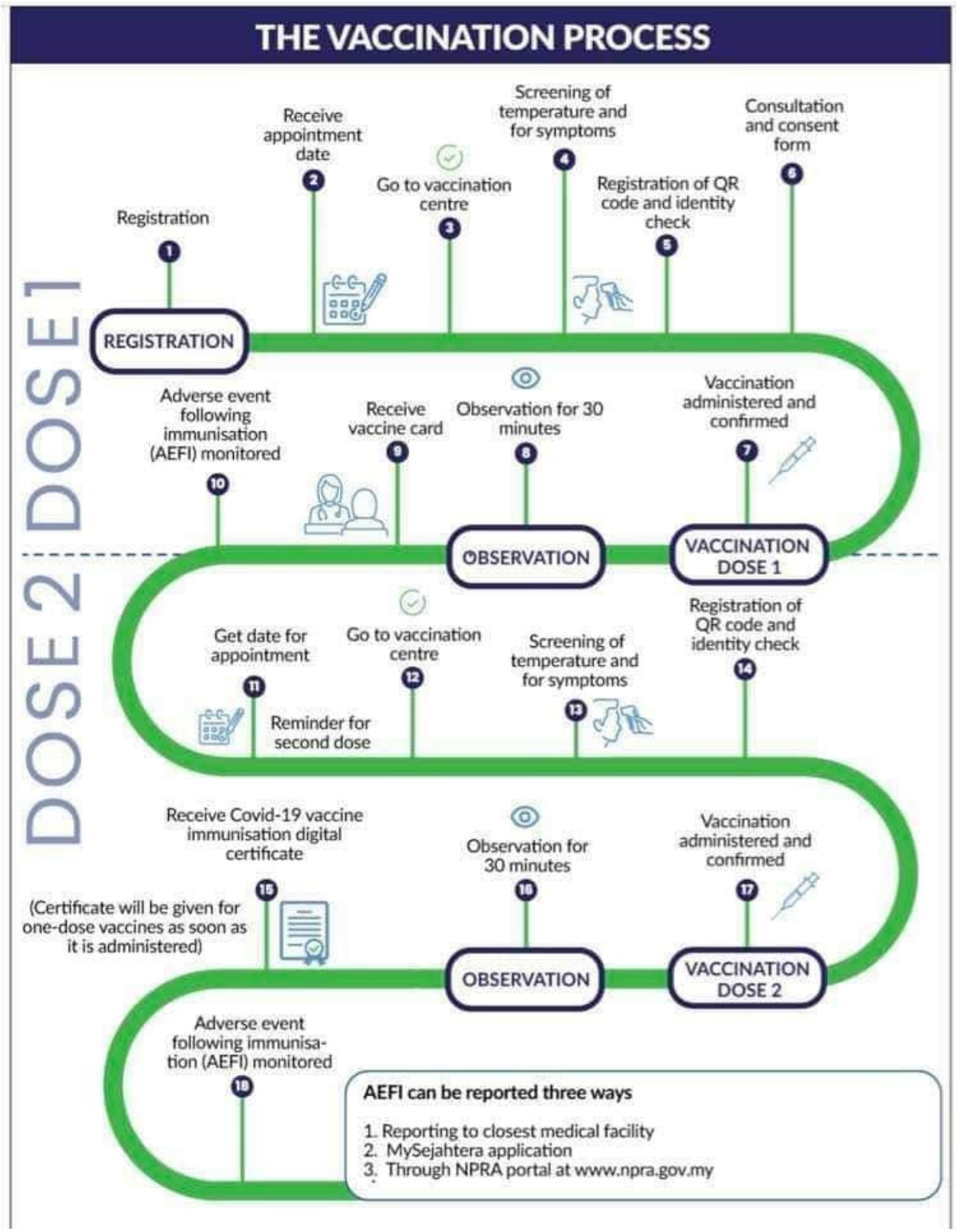
Objectives

- To verify the population and register them for the vaccination to their preferable location.
- To keep count and get the perfect ratio of vaccinated over non vaccinated
- To store the information data is stored on the server.

Methodology

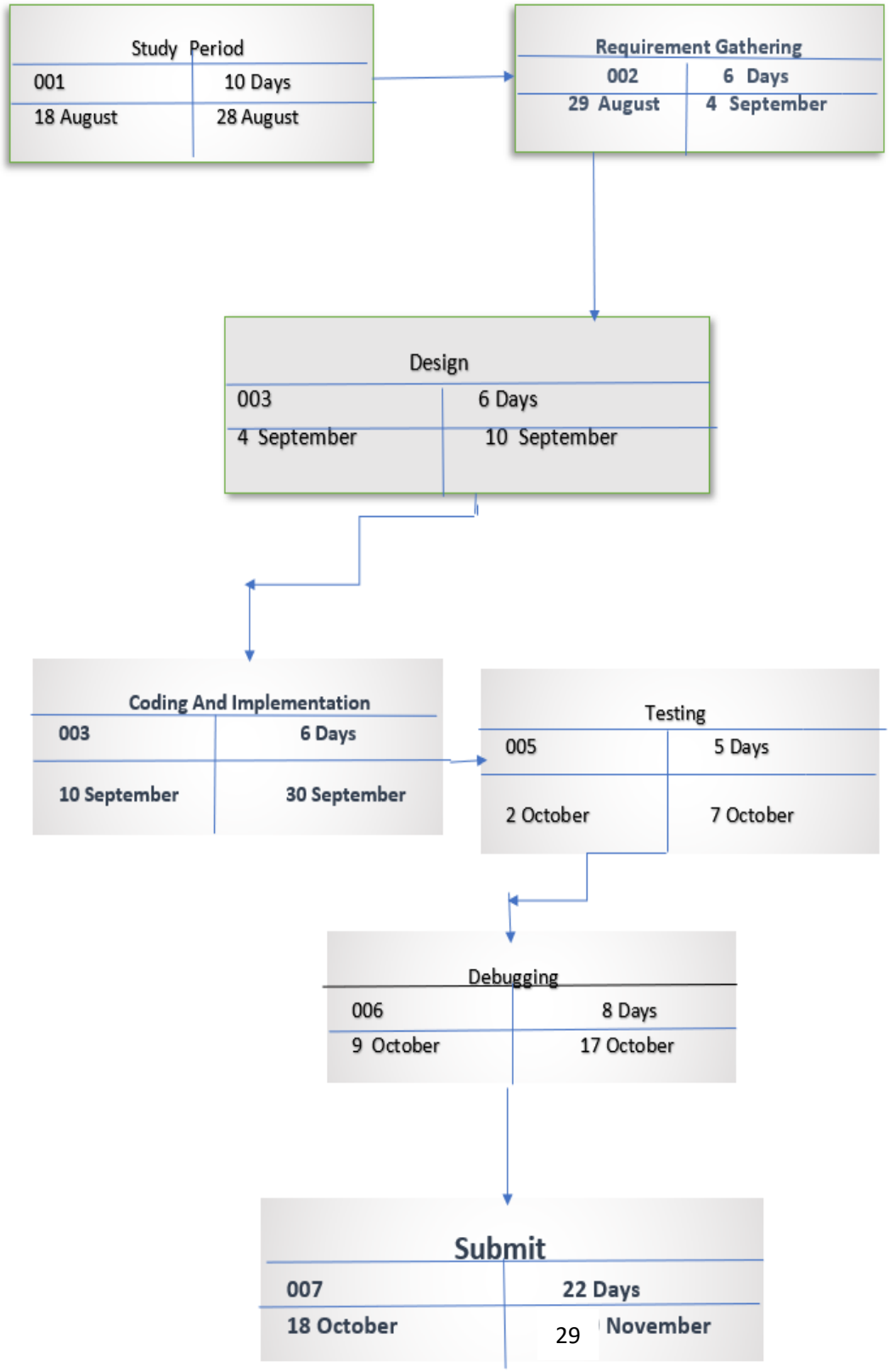
- Registration and verification is made of the person through government IDs,
- Person gets the right to access to set the date and the location for his vaccination as per his/her preference.
- When the slot is booked by the patient it is confirmed at the hospital and later, they get vaccinated.

(CI/CD PIPELINE)



(Figure-a)

PERT Chart



(Figure-b)

IMPLEMENTATION

1. **Registration of a new User.**

2. **Assign priority to the user upon registration and enqueue him.**

3. **Run time slot allotment process.**

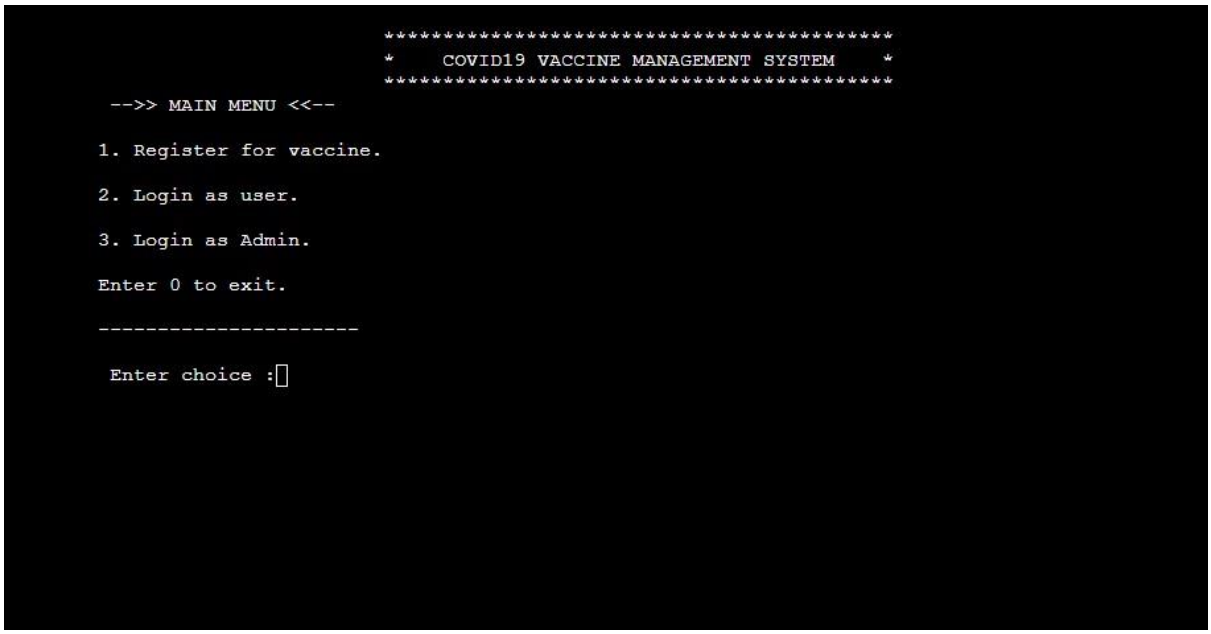
4. **Dequeue the User upon vaccination.**

5. **Login functionality for the User and Administrator.**

6. **Get self data (for user)**

7. **Get data of any citizen (for admin)**

- ## SEQUENCE DIAGRAM



(figure-1)

- **OUTPUT SCREEN**

(figure-2)

```
--------------------------
 -->> ADMIN MENU <<--

1.Execute time allotment process

2.Display registrations.

3.Change number of available shots.

4.Change minimum age requirement for vaccination

Enter 0 to logout.

Enter your choice: 2

--------------------------
 Display menu

Enter 1 for displaying n entries

Enter 2 for displaying citizens in today's slot

Enter 0 to return to main Admin Menu.

Enter choice :1

How many entries are to be displayed ?1

1)        CitizenID: 12345
          Name:tanvi
          Slot Date:28/11/2022

--------------------------
 Display menu

Enter 1 for displaying n entries

Enter 2 for displaying citizens in today's slot

Enter 0 to return to main Admin Menu.

Enter choice :
```

(figure-3)

CI/CD:-

Integration

```
                          ******************************************
                          *     COVID19 VACCINE MANAGEMENT SYSTEM    *
                          ******************************************
      -->> MAIN MENU <<--

     1. Register for vaccine.

     2. Login as user.

     3. Login as Admin.

     Enter 0 to exit.

     ----------------------

      Enter choice :0

             Thank you for using App.


..Program finished with exit code 0
ress ENTER to exit console.
```

(figure-4)

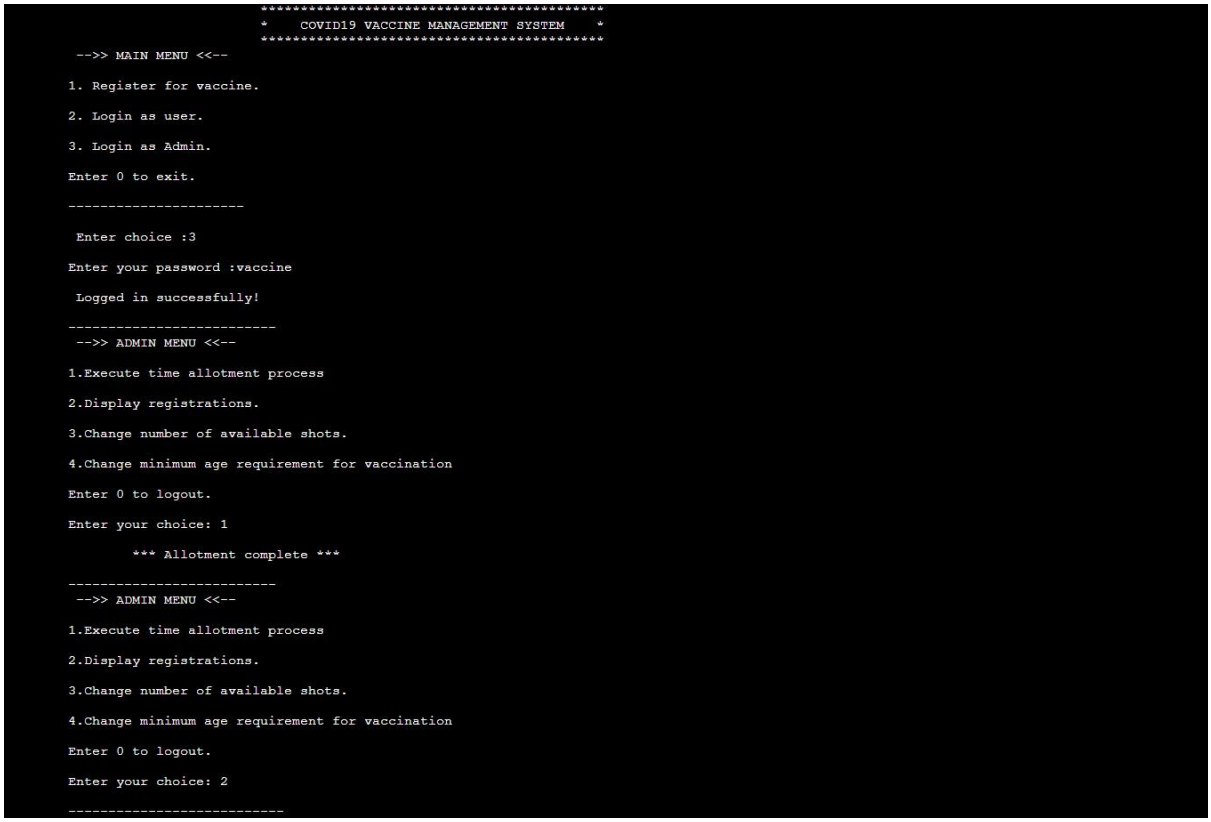
Deployment

(figure-5)

Result and Evaluation

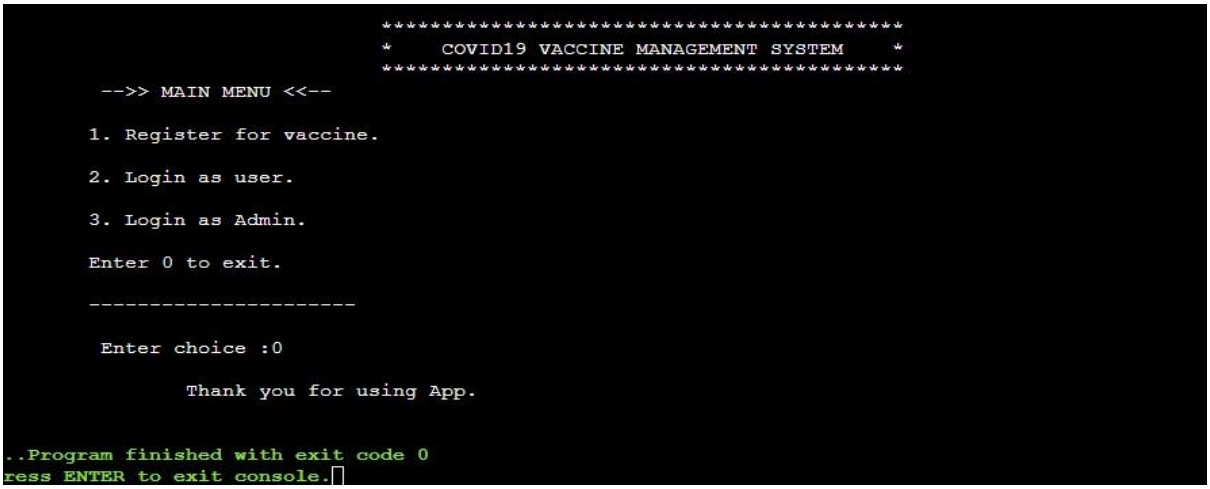
At the very first stage of code implementation, i.e. while building the front end part of the **application**, the compilation error was occurring frequently but through help of a somewhat similar code we found on GitHub, we came to know our mistake and improvise it.
We used various algorithms on our back-end interface for our application for e.g.**enqueuing and dequeuing** the respected the data according to our code implementation, also we used priority getting list(sorting algorithms) for our whole application.

Admin page:



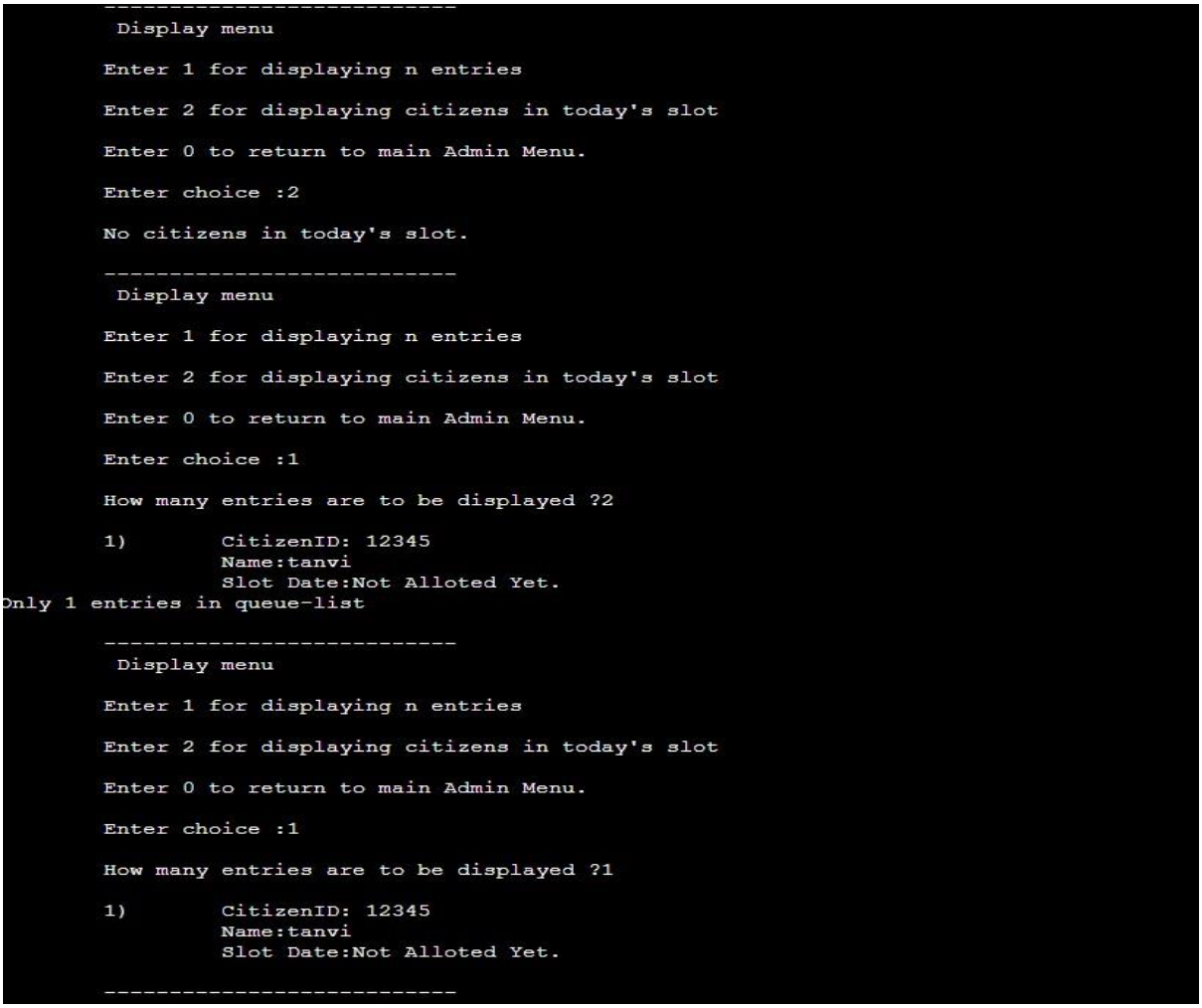
(Figure-6)

Portal/Login homepage:



(figure-7)

User Dashboard:



(figure-8)

SWOT ANALYSIS:-

As mentioned above we faced many problems while building our program for the application but we also overcame that problems accordingly with help of our mentor as well as through online information we can use.
A detailed analysis for our project can be followed as:-

Strength

- Every partner was a great help for each other, and as together we always come up with a solution to our problem
- Our mentor as well as our project's panel members were very helpful in construction of our project, and because of them we were able to improvise out mistakes and were able to find the technical faults in our source code or the application interface.

Weaknesses

- We were constantly unable to complete the project in the provided period for multiple reasons such as continuous errors and algorithm's error, other curricular activities and mid Semexams.
- We were unable to complete our application on our own, so we were constantly searching online for resources for our project

Opportunities

- After the 2nd phase of covid-19, we get so many data online based for our application
- The sources were easily implementable and accessible in all platforms we used.
- As usage of library was strictly prohibited, thus we learned something different through this project

Threats

- One of the major threat for our application was fear of our algorithm if doesn't work properly.
- Storage of the data we entered in our application might not save properly

CONCLUSION AND FUTURE SCOPE

The application we as a group designed was all programmed in C++ and implementing DSA in the code, the data is automatically enqueued and dequeued in a particular duration we allot and also priority is allotted as per the data we entered and what we are configuring as an admin in the admin page.

This API can be usefully sustained and can be implemented if we define its structure with full potential and minimum bug free as far as possible, and can be helped for various other application using same methodology.

References

1) Journal MallavalliSurendranath , Ravi Wankhedkar ,Pavitra Dewda*Infectious Diseases and Therapy* (2022)

https://doi.org/10.1007/s40121-021-00558-9

2) Journal Swarnali Das , Suvrendu Sankar Kar ,Sandeep Kumar Dash *Immunologic Research* (2022)

https://doi.org/10.1007/s12026-022-09265-0

3) Joint Committee on Vaccination and Immunisation. (2020). Joint Committee on Vaccination and Immunisation: advice on priority groups for COVID-19 vaccination, 2nd December 2020. Available from: https://www.gov.uk/government/publications/priority-groups-for-coronavirus-covid-19-vaccination-advice-from-the-jcvi-2-december-2020.

Appendix

Source code link:
https://drive.google.com/file/d/1YKjKQG8fxcnV3ez8wFze9wBZEfjcO1c1/view?usp=sharing

Plagiarism Report