

## **ABSTRACT**

The whole world is fighting the Coronavirus pandemic currently, this pandemic has caused many problems in our life and at the same time has taught us a lot many things. After a long research, wait and learning, we as a nation have been able to develop the vaccine for our citizens, to immunize them against the Covid. After the development of vaccine, the next problem we are facing these days is to ensure proper distribution of vaccine among the general public, considering India has such a huge population and with such a huge population it is very challenging to decide and prioritize, who should be vaccinated first ?

This project deals with this challenge. The project can be used to know the priority order and urgency for a person to get vaccinated on the basis of - Age, Health Status, Current Covid Cases in the region where the person's resident is located and his profession.

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# CHAPTER 1

## INTRODUCTION

**Vaccination Priority Registration Portal** is a registration portal that can be used to judge the urgency of a volunteer to get vaccinated. The Portal can be used by organisations to find the priority of volunteer to get vaccinated on the basis of a priority score that will be generated by the code on the basis of four factors that are - Age, Profession, Health Status and Current Covid Cases in the area in which the volunteer's resident is located.

### 1.1 MOTIVATION

The motivation behind doing this project was to use computing skills to solve a real time problem that is affecting the whole world. Apart from this, an interest in undertaking a challenging task in an exciting area of research was another reason that gave the push to do this project. The project also gave an opportunity to learn new things and implementing them into the project at the same time



provided a perfect practice, gave a wider perspective and concept clarity on various programming tools.

## **1.2 OBJECTIVE**

The goal of this project is to provide a systematic way to ensure the proper distribution of vaccines, with structured registrations of volunteer's details through organisations that are involved with vaccination, and on basis of these details the urgency of volunteers to be vaccinated will be analysed through priority score.

## **1.3 LANGUAGE**

The language used to write the code for the project is **C LANGUAGE**.

## **1.4 ORGANIZATION OF THESIS**

The rest of the thesis is divided into following Chapters.

**Chapter 2** explains the methodology used to make the project, which includes approach and implementation details. **Chapter 3** discusses the code flow with detailed discussion on header files used, function details with proper attachment of output result screenshot to give better understanding of the code. **Chapter 4** concludes the project work with inferences drawn from analysis, discusses limitations and gives directions for future work. **Chapter 5** mentions the references that are used in the current research work.

# CHAPTER 2

## METHODOLOGY

### 2.1 APPROACH

1. Use of functions to add, search, delete and list view volunteers.
2. Use of file handling to record data in .dat extension file.
3. Use of switch case and decision making statements to calculate priority score on basis of conditions written in the code.

### 2.2 IMPLEMENTATION DETAILS

Code::Blocks 20.03 editor has been used for writing the code & MinGW's GNU GCC compiler has been used to compile the code.

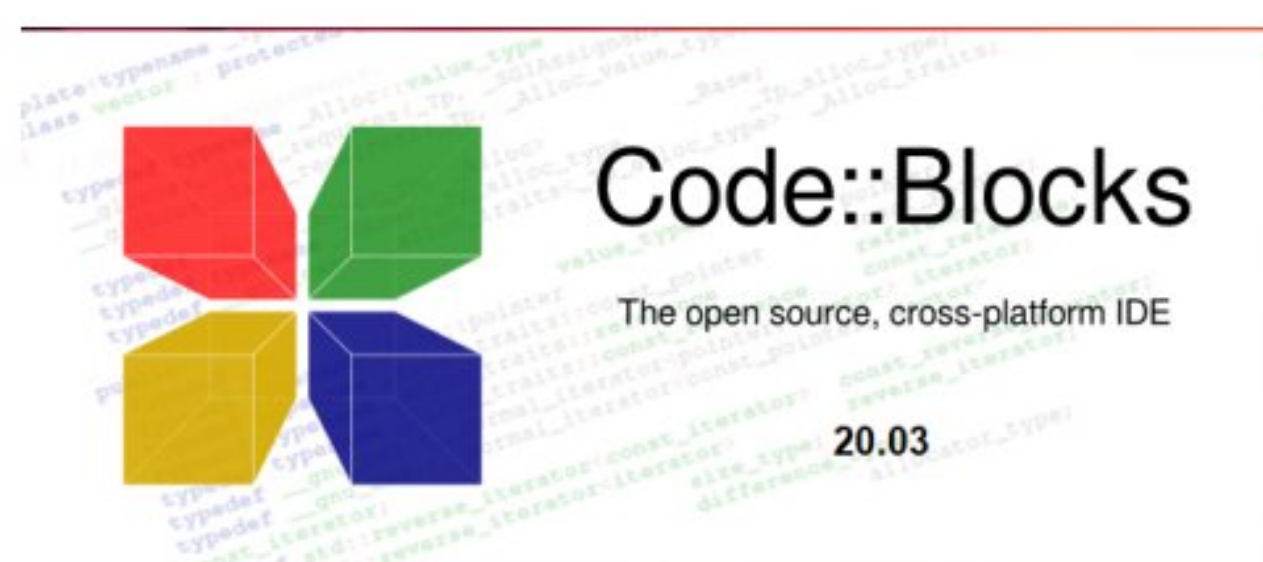


Figure -1 : Code:: Editor Information



The code is of total 600 lines, while lines compiled are 1472 due to multiple calls to various functions.

```
Main file: ..\PROJECTS\UACCINE.C
Compiling: EDITOR → UACCINE.C

                Total    File
Lines compiled: 1472    1472
```

Figure -2 : Compilation Information

The record data of volunteers is being saved in Record2.dat file of memory size 2KB.

# CHAPTER 3

## CODE DETAILS & OUTPUT RESULTS

### 3.1 HEADER FILES

```
#include<stdlib.h>
#include<stdio.h>//standard I/O Operation
#include<windows.h>//gotoxy()
#include<conio.h>//getch()
#include<ctype.h>//toupper(), tolower(),etc
#include<string.h>//strcmp(),strcpy(),strlen(),etc
```

Figure -3 : Header Files Used In The Code

The Header Files are used in the code are -

- **stdlib.h** - This Header file contains standard library definitions. Some of the common macros defined in header file are-

exit\_Failure - Unsuccessful termination for exit(); evaluates to a non zero value.

exit\_Success - Successful termination for exit(); It evaluates to zero.

null- It is a null pointer

- **stdio.h** - This Standard input output header file contains major functions involved in input and output operations. Some important functions of this header file are -

printf ()- Used to print character, string, float, integer, etc onto output screen.

scanf()- This function is used to character, string, numeric data from a keyboard.

All major file handling functions are defined in stdio.h header file

fopen() - Used to open file to perform operations.

fclose()- Closes an open file.

- **windows.h** - It is a Windows-specific header file which contains declarations for all of the functions in the Windows API, all the common macros used by window programmers.

This header file is used in this project for proper functioning of gotoxy() function in code blocks editor. Gotoxy() function places the cursor at desired location on screen and hence we can change cursor position.



- **conio.h** - This header file is used to provide console input/output. Some of the important functions in this header file are-  
clrscr()- This function is used to clear output screen  
getch()- It reads character from the keyboard.
- **ctype.h** - This header file declares several functions that are useful for testing and mapping characters. Some important functions of this header file are-  
tolower()- Converts uppercase letters to lowercase.  
toupper()- Converts lowercase letters to uppercase.
- **string.h** - This header file contains function to perform operations on string. Some of the functions of this header file are -  
strlen() - Used to calculate length of the string.  
  
strcpy() - This function is used to copy one string into another.  
strcmp()- Used to compare two strings character by character. If strings are equal, the function returns zero value.

## 3.2 FLOW OF CODE & OUTPUT RESULTS -

**WELCOME SCREEN FUNCTION (WelcomeScreen())-**

This is the very first user defined function to run in `int main()`, and hence the first output screen that displays on the run of the program is a welcome screen. Basic `printf` is used to display the text and `getch()` is used to hold the screen.

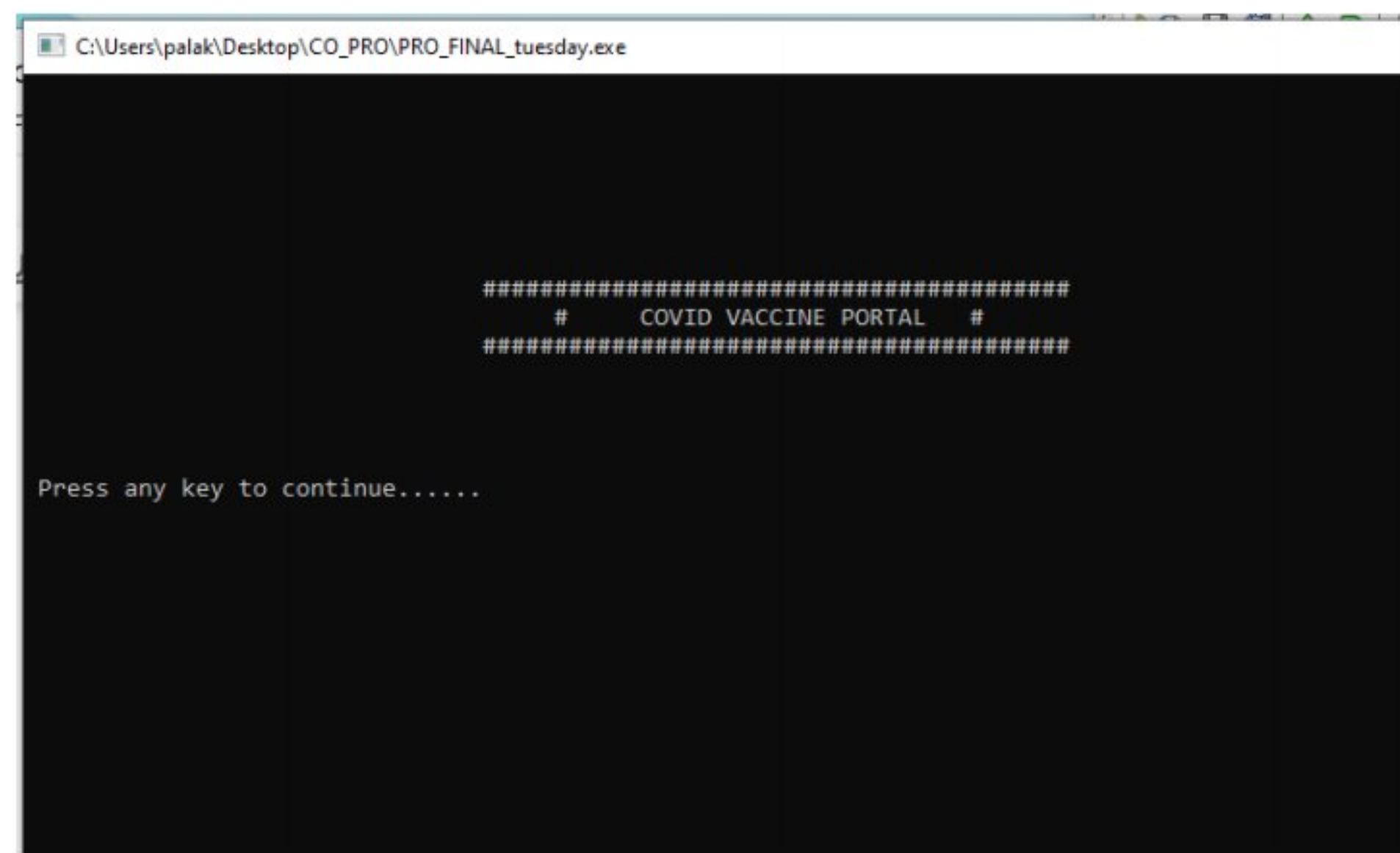


Figure -4 : Welcome Function Output Screenshot

### **TITLE FUNCTION (Title())-**

This function is used to give title to each output screen, after the welcome screen. It uses basic `printf` function to highlight the output.

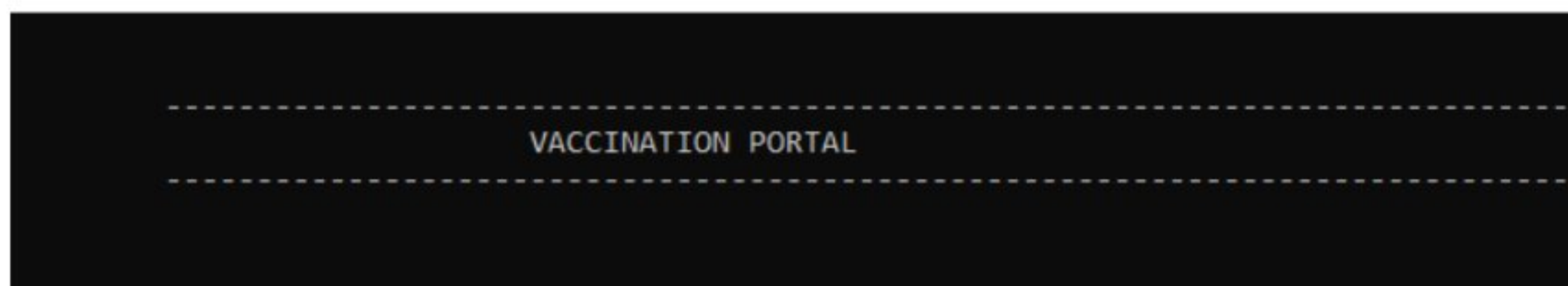


Figure -5 : Title Function Output Screenshot



### **LOGIN SCREEN FUNCTION (LoginScreen())-**

This function is responsible for output screen after welcome screen. In this user has to enter the Username - "STAYSAFE" and Password - "1234" which will appear capped in the output screen to protect it from being leaked. String Comparison is used to match the input by the user and the strings stored in the code.

Single User id and Password Feature is only there as the access will be given to only the pre-registered legit organisation to avoid fake registrations with improper information.

While loop is used to limit the login attempt to 3.

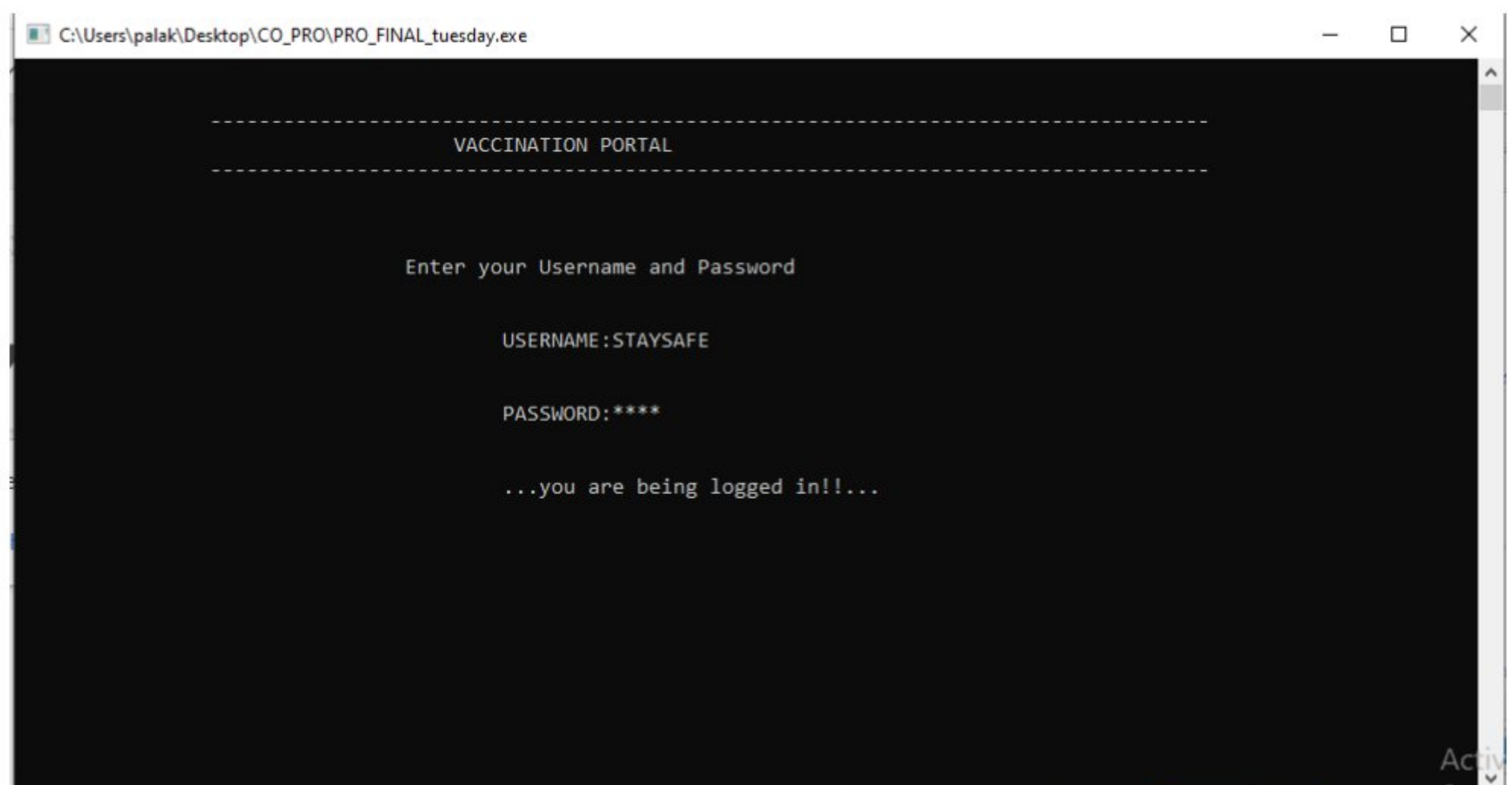


Figure - 6 : Login Function Output Screenshot



### **MAIN MENU FUNCTION(MainMenu())-**

This function presents an output screen featuring all the major operations that an organisation can use with the help of the portal using printf function.

The Operations are -

1. Add Volunteer Details
2. List of Volunteers
3. Search Volunteer
4. Delete Volunteer Details
5. Close Portal

The function then asks the user to enter his choice, regarding which operation to perform and then switch case is used to run the function associated with that operation.

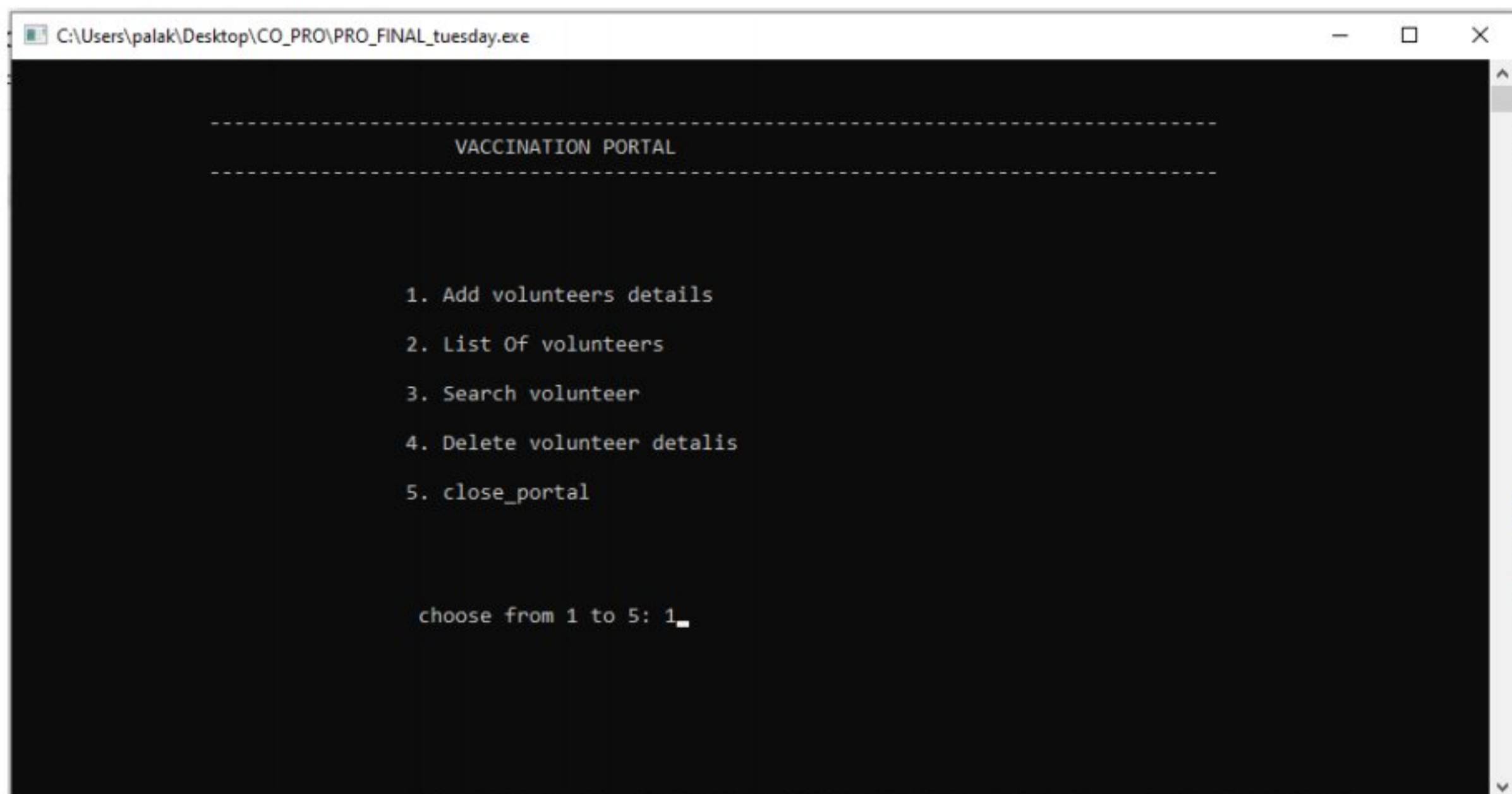


Figure -7 : Main Menu Function Output Screenshot

### **ADD VOLUNTEER DETAILS FUNCTION (Add\_rec())-**

This function is used to register the details of the volunteers. These details have been collected with help of struct volunteers and the details are input using the scanf function. These details are then analysed with the help of switch case and decision making statements to generate priority score.

The details user have to input are-

1. First name
2. Last name
3. Gender - User can enter F for female or M for male.

4. Age - With help of the age that has been input by the user, if - else if is used to assign age\_priority score, on the basis of following condition,

Case 1 : Age  $\geq$  60

age\_priority score assigned is 10

Case 2 : Age  $\geq$  35 and Age  $\leq$  59

age\_priority score assigned is 8.

Case 3 : Age  $\geq$  18 and Age  $\leq$  34

age\_priority score assigned is 6

Case 4 : Else

age\_priority score assigned is 4

More Age, More Urgency to get Vaccinated

5. Address
6. Covid cases range in area where volunteer is located -
- A.  $\leq$  200 (address priority score assigned is 1)
  - B. 201-400 (address priority score assigned is 2)
  - C. 401-600 (address priority score assigned is 4)
  - D. 601-800 (address priority score assigned is 6)
  - E. 801-1000 (address priority score assigned is 8)
  - F.  $>$ 1000 (address priority score assigned is 10)



The user input is taken via getch to maintain confidentiality of the calculation of priority score by the portal and organisation is analysed via switch case to assign address priority score given in brackets above, on the basis on the current covid case range in the area where residence of volunteer is located.

More cases in the area, More urgency to get vaccinated

7. Contact Number - The number of digits that can be entered has been restricted to 10, with help of for loop and getch function.
8. Health Status - Details of health records have to be input.
9. In which of the following categories does the health status of volunteers fall?
  - A. Breathing Problem (Health priority score assigned is 0)
  - B. Neurological Problem (Health priority score assigned is 0)
  - C. COVID (Health priority score assigned is 3)
  - D. Fever (Health priority score assigned is 4)
  - E. Infection (Health priority score assigned is 3)
  - F. Body Pain (Health priority score assigned is 7)
  - G. Had past major health problem but now healthy (Health priority score assigned is 0 as require proper analysis of past health records)
  - H. Immunity Issues (Health priority score assigned is 0)

I. I am healthy! Perfect for Vaccination (Health priority score assigned is 10)

The user input is again taken via getch and is analysed via switch case to assign health priority score as given in brackets above.

More fit the volunteer is, More is the priority score!

10. Profession

11. Under which of the following categories does the volunteer's profession fall?

A. Health and medical related (Profession priority score assigned is 10)

B. Govt employee-WFH is difficult (Profession priority score assigned is 9)

C. Govt employee-WFH is not difficult (Profession priority score assigned is 3)

D. Private employee-WFH is difficult (Profession priority score assigned is 5)

E. Private employee-WFH is not difficult (Profession priority score assigned is 0)

F. College going (Profession priority score assigned is 5)

G. Student (Profession priority score assigned is 3)

H. Homemaker (Profession priority score assigned is 0)



The user input is again taken via getch and is analysed via switch case to assign profession priority score as given in brackets above.

PRIORITY SCORE is then calculated by adding age priority score, profession priority score, health priority score and address priority score and printed on screen using printf.



```
C:\Users\palak\Desktop\CO_PRO\PRO_FINAL_tuesday.exe

-----
                        VACCINATION PORTAL
-----

!!!!!!!!!!!!!! Add volunteers Record !!!!!!!!!!!!!!!

First Name: PALAK

Last Name: GUPTA

Gender[F/M]: F

Age:19

Address: KHANDARI

Covid cases in your area are in range of-
A. =< 200
B. 201-400
C. 401-600
D. 601-800
E. 801-1000
F. >1000
Enter A-F according to covid cases range
Contact no: 1234567890
health_status: FINE

In which of the following category you health status falls?
A. Breathing problem
B. Neurological problem
C. COVID
D. Fever
E. Infection
F. Body pain
G. Have past major health problem but now healthy
H. Immunity issues
I. I am healthy! perfect for vaccination
Enter A-F according to covid cases range
ProfessionSTUDENT
```

Figure - 8 : Add Volunteer Function Output Screenshot

```
ProfessionSTUDENT

Under which of the following category your profession falls?
A. Health and medical related
B. Govt employee-WFH is difficult
C. Govt employee-WFH is not difficult
D. Private employee-WFH is difficult
E. Private employee-WFH is not difficult
F. College going
G. Student
H. Homemaker
Enter A-H according to your profession

PRIORITY SCORE - 23

.... Information Record Successful ....
```

Figure -9 : Add Volunteer Function Output Screenshot (continued)

All this data, first name, last name, gender, age, address, contact number, profession, health status and overall final priority score in saved in “Record2.dat” file.

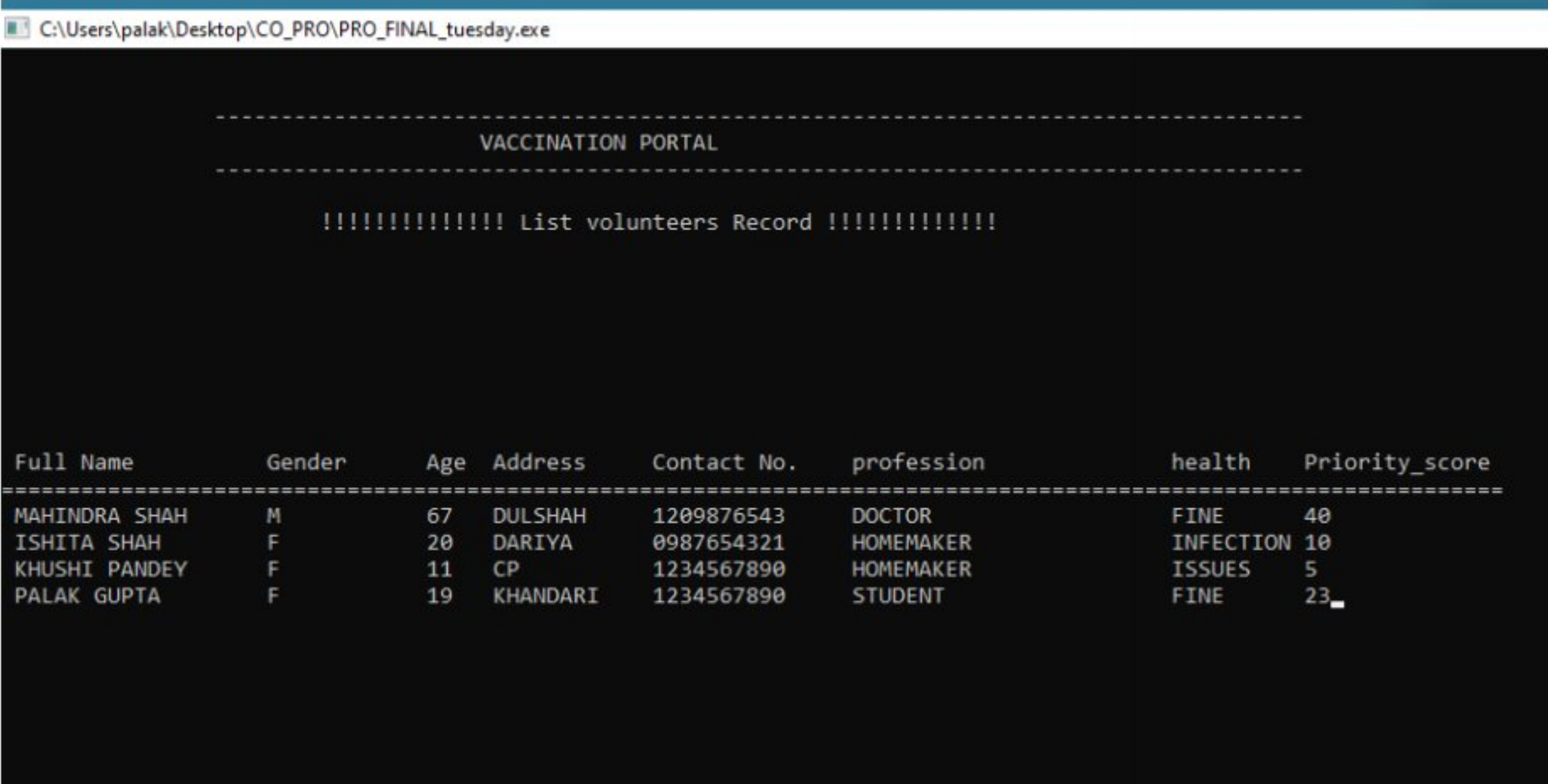
```
Record2 - Notepad
File Edit Format View Help
MAHINDRA SHAH M 67 DULSHAH 1209876543 DOCTOR FINE 40
ISHITA SHAH F 20 DARIYA 0987654321 HOMEMAKER INFECTION 10
KHUSHI PANDEY F 11 CP 1234567890 HOMEMAKER ISSUES 5
PALAK GUPTA F 19 KHANDARI 1234567890 STUDENT FINE 23
```

Figure - 10 : Record2.dat File Screenshot



## **VOLUNTEER REGISTRATIONS LIST VIEW FUNCTION (func\_list())-**

In this function, the formatted input from the file is scanned and printed on the output screen in list form with help of while loop and proper co-ordinate adjustment with the help of the gotoxy function.



Full Name	Gender	Age	Address	Contact No.	profession	health	Priority_score
MAHINDRA SHAH	M	67	DULSHAH	1209876543	DOCTOR	FINE	40
ISHITA SHAH	F	20	DARIYA	0987654321	HOMEMAKER	INFECTION	10
KHUSHI PANDEY	F	11	CP	1234567890	HOMEMAKER	ISSUES	5
PALAK GUPTA	F	19	KHANDARI	1234567890	STUDENT	FINE	23

Figure - 11 : List View Function Output Screenshot

## **SEARCH VOLUNTEER DETAILS FUNCTION (Search\_rec())-**

This function can be used to search the particular volunteer by the first name, from the record file which is scanned till the end, to match the first name of the user in records to the first input name using string comparison. If the details are found, they are printed with the help of gotoxy function, otherwise invalid input is printed.



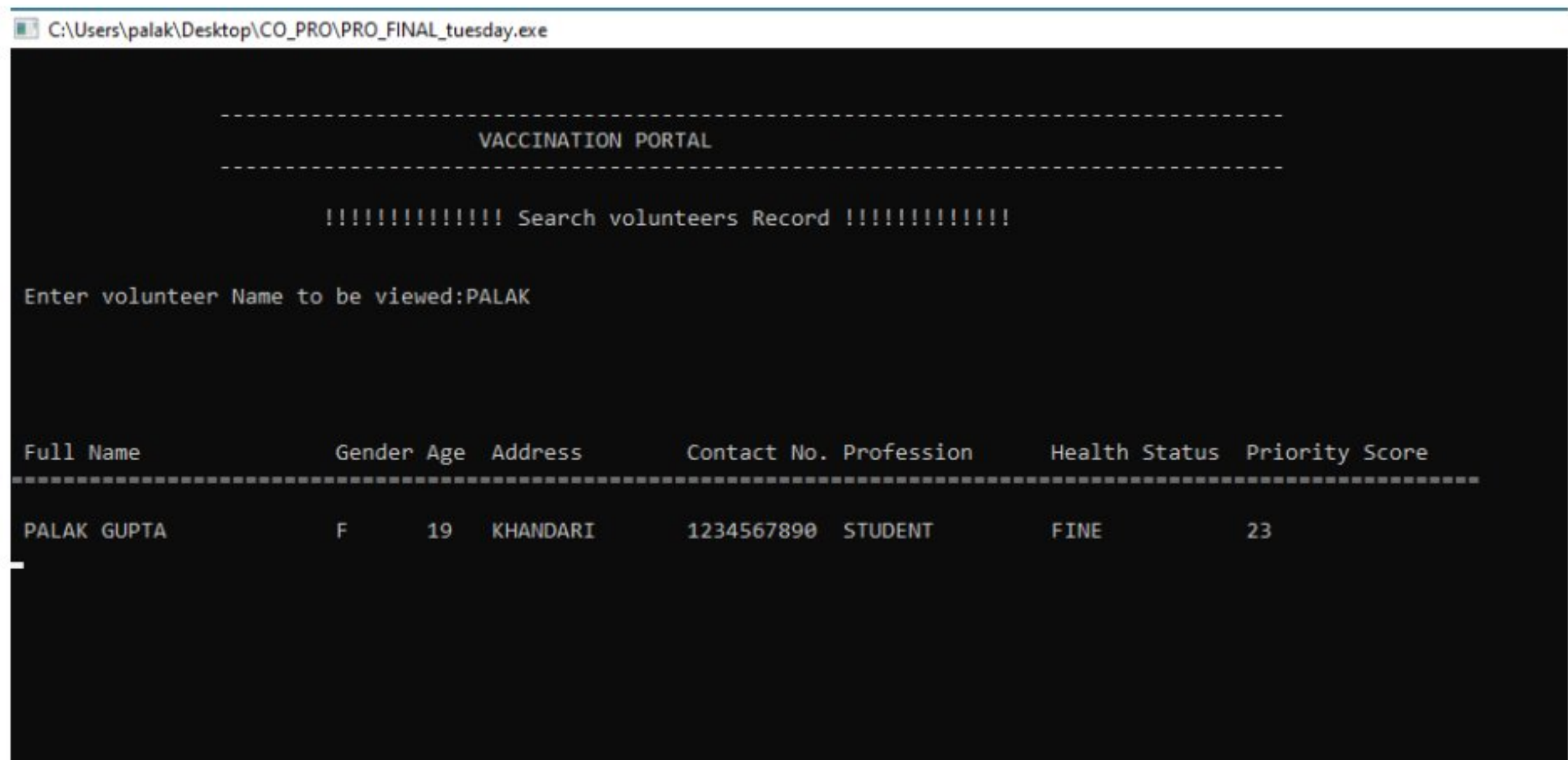


Figure - 12 : Search Function Output Screenshot

### **DELETE VOLUNTEER REGISTRATION FUNCTION (Dlt\_rec())-**

This function can be used to delete the volunteer details from the records in case he/she backs out from the vaccination process or if volunteers details are incorrect. For this purpose while loop is used to scan the file till the end, the strcmp() function is used to compare input first name from records, if the name is not same as input name for deletion, the details of the volunteer are copied to other temp file and if the name matches, then it is not copied to other file. Then, the original record file is deleted and the temp file is named as the original file called "Record2.dat".

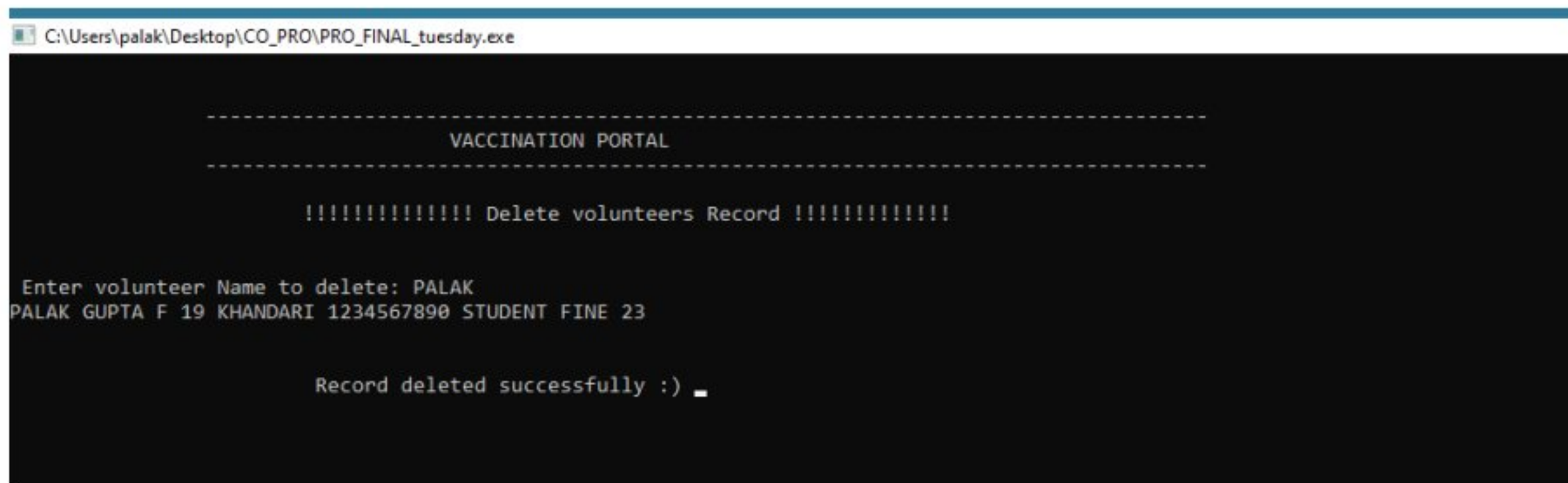


Figure - 13 : Delete Function Output Screenshot

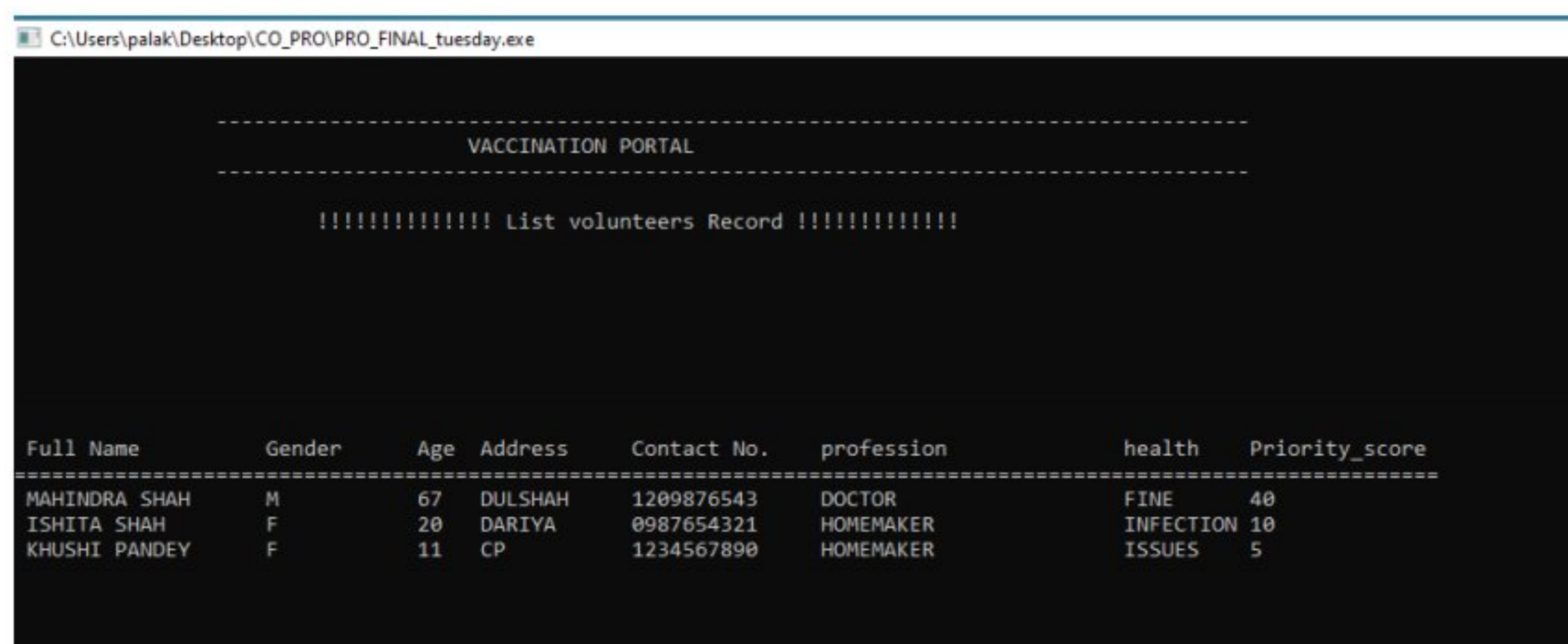


Figure - 14 : Screenshot Showing Deletion Of Record From List

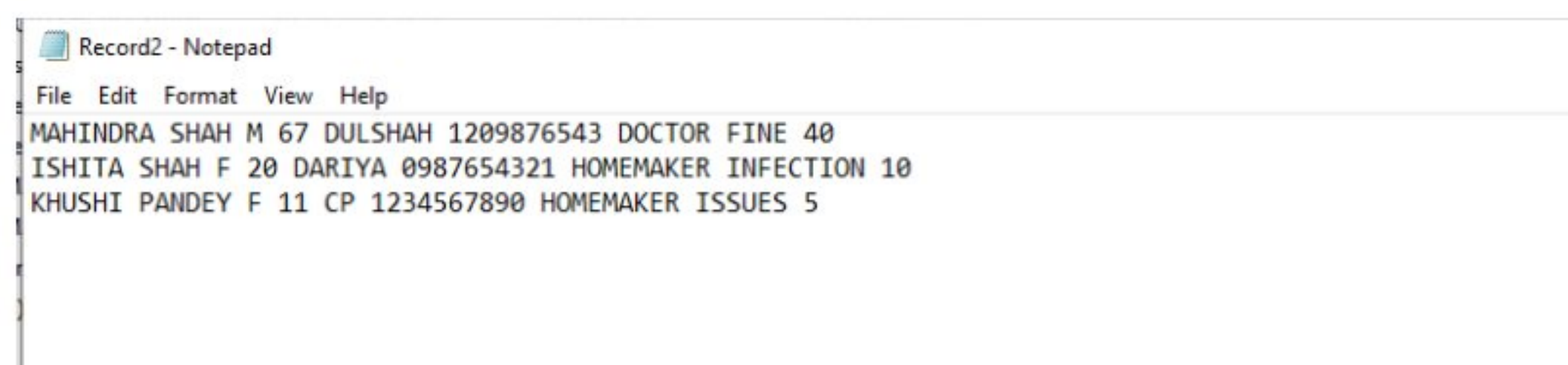


Figure - 15 : Screenshot Showing Deletion Of Record From Record2.dat file

## **EXIT FUNCTION(ex\_it())-**

This function is used to close the portal.

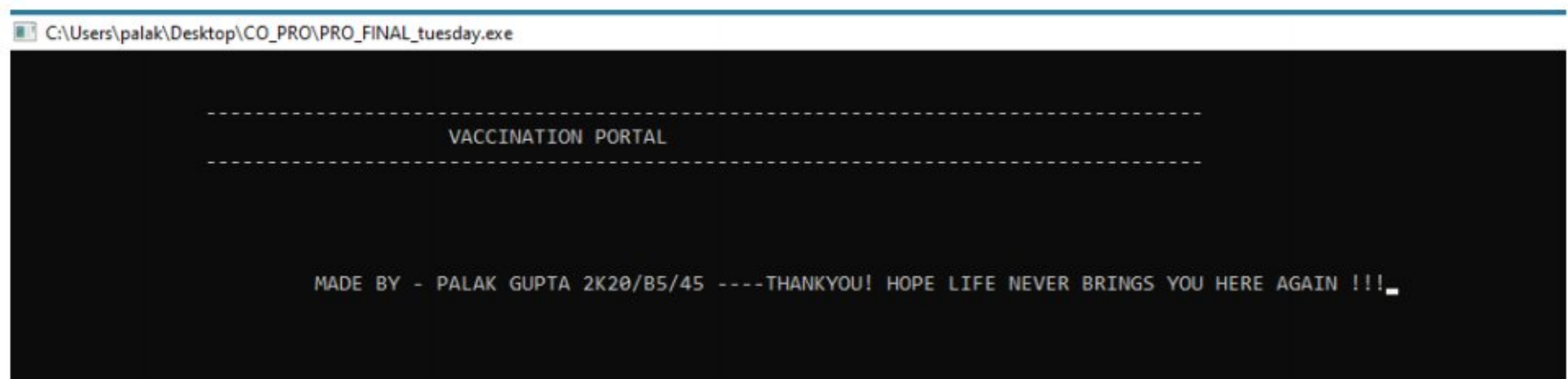


Figure - 16 :Exit Function Output Screenshot



# **CHAPTER 4**

## **CONCLUSION**

The project- **VACCINATION PRIORITY REGISTRATION PORTAL**, fulfilled its purpose to provide the priority score & make volunteer registrations in a structured way. The project has been made with the help of various concepts of C language and has been a great journey of learning new concepts and implementing them.

### **LIMITATIONS**

Even though, the project fulfilled its primary purpose, there are always certain limitations which can be worked upon for the improvement of the project. The major limitation of the project is that the priority score of volunteers is not sorted in any particular order like from high to low or low to high, they are arranged in the order as volunteers input their details, hence with more number of registered volunteers, it may take time to figure out the priority score from the list to find out the urgency.

## **FUTURE WORKS**

- Targeting improvement of project with providing sorted data list on basis of priority score using various data structures.
- Aim to learn database connectivity and implement it with the project for more smooth run and better process for user registration.

# CHAPTER 5

## REFERENCES

[1]

Available: <https://www.howtogeek.com/363326/what-is-a-dat-file-and-how-do-i-open-one/> (Accessed: 11 March, 2021)

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[3]

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