DATA STRUCTURES & OBJECT-ORIENTED PROGRAMMING (EC-204)

PROJECT REPORT

An application named **Digi+Care**

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Abstract and introduction:

The "DigiCare" project aims to develop a digital caretaker application using object-oriented programming (OOP) and data structures concepts in C++. The application allows users to create their own accounts and securely store their health recordings, which can be updated as needed. The program also provides tips for maintaining health, suggests medicals, food, and exercises based on users. The use of OOP and data structures in the implementation of this application allows for efficient organization and management of the stored health information. The project report will detail the design and implementation of the application, including the use of classes, objects, data structures such as arrays and linked lists, and any challenges encountered during development.

Methodology:

The methodology for developing the DigiCare application programming involved utilizing various concepts from C++ programming, including the use of classes, constructors, loops, recursions, switch cases, functions, pointers, and file handling, etc. We also utilized information from various sources such as online resources and Google to gather information on diseases, diet plans, and exercise tips to include in the application. This information was then incorporated into the application's features, such as the ability to suggest medical care and exercise plans based on users. The application was also designed to keep track of the user's health history and provide updates on their health issues, tips for maintaining overall health and mini games for mental refreshment. The team also implemented a feature that allows users to easily access all of their health history with just one click. The application was developed using an iterative approach, constantly testing and updating the features until it met the project requirements.

Code explanation:

Libraries added:

```
#include<iostream>
#include<string>//for strings
#include<Windows.h>//for maximize the screen
#include<fstream>//for file handling

using namespace std;
```

This is a code snippet that includes several libraries in C++ programming. The first line, "#include<iostream>", is for input and output operations, such as displaying text on the screen or taking user input. The second line, "#include<string>", is for using string data type, which is a sequence of characters. The third line, "#include<Windows.h>", is for using windows specific functions such as maximizing the screen. The fourth line, "#include<fstream>", is for file handling, such as reading and writing to files. The last line "using namespace std;" allows the use of standard C++ library functions without having to specify the namespace. These libraries are commonly used in C++ programming and are useful for the DigiCare application as it allows for user input, string manipulation, screen manipulation, and storing data in files.

Base class and derived classes:

```
// Base class of diseases
class Disease
{
private:
    string name;
    string solution;

public:
    Disease(string name1, string solution1)//constructor
    {
        name = name1;
        solution = solution1;
    }

    string getName()
    {
        return name;
    }

    string getSolution()
    {
        return solution;
    }

};

// Derived class
class dizziness : public Disease
{
public:
    //parametrise constructor call of base class
    dizziness() : Disease("Dizziness", "Get plenty of rest, avoid sudden head movements, and stay hydrated.\n If you still facing the issue plese consult a doctor as soon as possible") {}
};
```

This is a code snippet for a C++ program that defines two classes: "Disease" and "chronicPain". The "Disease" class is the base class, and the "chronicPain" class is a derived class that inherits from the "Disease" class. The "Disease" class has two private variables: "name" and "solution", and has two public methods: "getName()" and "getSolution()" which returns the name and solution of the disease respectively. The derived class, "chronicPain" has a constructor that calls the constructor of the base class and passes the name and solution of the Chronic Pain disease. This class will allow the user to get the name and solution of the chronic pain disease. This is a simple example of how the base class and derived class work together and how inheritance can be used to organize code and reduce duplication. Similarly, we inherited all the diseases to the same base class Disease.

Main function:

```
//main function
int main()
{
    ShowWindow(GetConsoleWindow(), SW_MAXIMIZE);//to maximize the window
    firstwelcome();//function call of first wecome

    return 0;
}
```

This is a code snippet of the main function in a C++ program. The main function is the entry point of the program and is where the execution of the program begins. The first line, "ShowWindow(GetConsoleWindow(), SW_MAXIMIZE);", is used to maximize the console window. The second line, "firstwelcome();", is a function call to display a welcome message to the user upon running the program. The function "firstwelcome()" is not defined in this code snippet, but it's assumed to be a function that prints a welcome message on the console. The last line, "return 0;", is used to indicate that the main function has completed execution successfully. It's the core function of the program that calls other functions and runs the program.

Welcome function at the beginning:

```
//welcome function just after run the code
void firstwelcome()
{
    system("CLS");//to open a fresh console by deleting all others

    cout << endl << endl << endl;
    cout << "++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++" << endl;
    cout << "++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++" << endl;
    cout << endl << endl;
    cout << "                                    *********************************************" << endl;
    cout << "                                    *********************************************" << endl;
    cout << "                                    ******* welcome to your digital carer *******" << endl;
    cout << "                                    *********************************************" << endl;
    cout << endl << endl;
    cout << "                                            ****************************" << endl;
    cout << "                                            ****************************" << endl;
    cout << "                                            **********        **********" << endl;
    cout << "                                            **********        **********" << endl;
    cout << "                                            **********        **********" << endl;
    cout << "                                            *****                ******" << endl;
    cout << "                                            *****    DIGI + CARE ******" << endl;
    cout << "                                            *****                ******" << endl;
    cout << "                                            **********        **********" << endl;
    cout << "                                            **********        **********" << endl;
    cout << "                                            **********        **********" << endl;
    cout << "                                            ****************************" << endl;
    cout << "                                            ****************************" << endl;
    cout << endl << endl;
    cout << "++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++" << endl;
    cout << "++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++" << endl;
    cout << endl << endl << endl;
    system("pause");//just to pause the console window

    dupmain();//function call of duplicate main
}
```

This is just a welcome printing function for users just after open the application (just after running the code).

Duplicate function that act like main:

```
//duplicate main for ease
void dupmain()
{
    int chooser = 0;

    while (chooser != 3)//this loop will exit when chooser =3
    {

        system("CLS");//to open a fresh console by deleting all others

        cout << "*******************************************************************************************" << endl;
        cout << "*                                                                                         *" << endl;
        cout << "*                                                                                         *" << endl;
        cout << "*                                                                                         *" << endl;
        cout << "*                                                                                         *" << endl;
        cout << "*               Enter the number of action you want to take!                              *" << endl;
        cout << "*                 1.Login as ADMIN                                                        *" << endl;
        cout << "*                 2.Login as USER                                                         *" << endl;
        cout << "*                 3.Exit from the application                                             *" << endl;
        cout << "*                                                                                         *" << endl;
        cout << "*                                                                                         *" << endl;
        cout << "*                                                                                         *" << endl;
        cout << "*                                                                                         *" << endl;
        cout << "*******************************************************************************************" << endl;

        cin >> chooser;

        if (chooser == 1)
        {
            admin();//calling admin function
        }

        else if (chooser == 2)
        {
            user();//calling user function
        }

        else if (chooser == 3)
        {
            break;//exit from the loop
        }

        else
        {
            system("CLS");
            cout << "*******************************************************************************************" << endl;
            cout << "*                                                                                         *" << endl;
            cout << "*                                                                                         *" << endl;
            cout << "*           The number you entered is not suitable. Please try again                      *" << endl;
            cout << "*                                    :(                                                   *" << endl;
            cout << "*                                                                                         *" << endl;
            cout << "*                                                                                         *" << endl;
            cout << "*******************************************************************************************" << endl;
            system("pause");
        }
    }
}
```

This is a function that is act like main the programme. This is duplicate main function. This code snippet is a function named "dupmain()" that provides the main functionality of the program. It presents the user with a menu of options to choose from and performs different actions based on the user's choice. The function uses a while loop that continues to run until the user chooses the option to exit (chooser == 3). Inside the while loop, it presents the user with a menu of three options: 1. Login as ADMIN, 2. Login as USER, 3. Exit from the application. The user's choice is stored in a variable "chooser". The function then uses an if-else statement to check the value of "chooser" and perform the corresponding action. If the user chooses 1, the function calls the "admin()" function, if the user chooses 2, the function calls the "user()" function, and if the user chooses 3, the loop breaks and the function exits. If the user enters an invalid choice, the function displays an error message. The function also uses the "system("CLS")" command to clear the console before displaying the menu again.

Admin function:

```
//admin function
void admin()
{
    system("CLS");//to open a fresh console by deleting all others

    int chooser = 0;
    string username;//for file name
    string password;//for the thing written in the file
    string password2;//second password for confirmation
    string passwordchecking;//compare the paswrd with the file

    fstream adminfile;//controller


    cout << "**************************************************************************************" << endl;
    cout << "*                                                                                    *" << endl;
    cout << "*                                                                                    *" << endl;
    cout << "*                                 Enter your user name                               *" << endl;
    cout << "*                                                                                    *" << endl;
    cout << "*                                                                                    *" << endl;
    cout << "**************************************************************************************" << endl;
    getline(cin >> ws, username);//if ws is not there it wont take the string

    system("CLS");
    cout << "**************************************************************************************" << endl;
    cout << "*                                                                                    *" << endl;
    cout << "*                                                                                    *" << endl;
    cout << "*                                  Enter your password                               *" << endl;
    cout << "*                                                                                    *" << endl;
    cout << "*                                                                                    *" << endl;
    cout << "**************************************************************************************" << endl;
    getline(cin >> ws, password);//take the tring input. this can take space also

    system("CLS");
    cout << "**************************************************************************************" << endl;
    cout << "*                                                                                    *" << endl;
    cout << "*                                                                                    *" << endl;
    cout << "*                              Enter your password again                             *" << endl;
    cout << "*                                                                                    *" << endl;
    cout << "*                                                                                    *" << endl;
    cout << "**************************************************************************************" << endl;
    getline(cin >> ws, password2);

    adminfile.open(username + ".txt", ios::in);//opening the previos file to read
    //if the file is not there it returns false
```

```
if (adminfile)//goes only when there is already a file in this name
{
    getline(adminfile, passwordchecking, '\n');//first is directory, 2 nd is storing the things inside the file passwrdchecking variable and 3rd is upto this it will read
    adminfile.close();//closing the file

    while (chooser == 0)//loop if the user entered a wrong number
    {
        if (passwordchecking == password && passwordchecking == password2)
        {
            system("CLS");//for opening a new console by deleting everything

            //welcome
            cout << endl << endl << endl;
            cout << "                                  ***********************************************" << endl;
            cout << "                                  ***********************************************" << endl;
            cout << "                                  ***** You successfully login as an admin ****" << endl;
            cout << "                                  ***********************************************" << endl;
            cout << endl << endl;
            cout << "                                          ******************************" << endl;
            cout << "                                          ******************************" << endl;
            cout << "                                          **********        ***********" << endl;
            cout << "                                          **********        ***********" << endl;
            cout << "                                          **********        ***********" << endl;
            cout << "                                          *****                  ******" << endl;
            cout << "                                          *****    DIGI + CARE   ******" << endl;
            cout << "                                          *****                  ******" << endl;
            cout << "                                          **********        ***********" << endl;
            cout << "                                          **********        ***********" << endl;
            cout << "                                          **********        ***********" << endl;
            cout << "                                          ******************************" << endl;
            cout << "                                          ******************************" << endl;
            cout << endl << endl;
            cout << "++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++" << endl;
            cout << endl << endl << endl;
            system("pause");

            system("CLS");//for opening a new console by deleting everything

            cout << "***************************************************************************************" << endl;
            cout << "*                                                                                     *" << endl;
            cout << "*                                                                                     *" << endl;
            cout << "*                                                                                     *" << endl;
            cout << "*                                                                                     *" << endl;
            cout << "*                  Enter the number of action you need to take                        *" << endl;
            cout << "*                    1.Add new admin                                                  *" << endl;
            cout << "*                    2.Delete your admin account                                      *" << endl;
            cout << "*                    3.Go back                                                        *" << endl;
            cout << "*                    4.Go to first page                                               *" << endl;
            cout << "*                                                                                     *" << endl;
            cout << "*                                                                                     *" << endl;
            cout << "*                                                                                     *" << endl;
            cout << "*                                                                                     *" << endl;
            cout << "***************************************************************************************" << endl;

            cin >> chooser;
```

```
if (chooser == 1)
{
    system("CLS");//for opening a new console by deleting everything

    cout << "*****************************************************************************************" << endl;
    cout << "*                                                                                       *" << endl;
    cout << "*                                                                                       *" << endl;
    cout << "*                Enter your username for this new admin account                         *" << endl;
    cout << "*                                                                                       *" << endl;
    cout << "*                                                                                       *" << endl;
    cout << "*****************************************************************************************" << endl;
    getline(cin >> ws, username);//taking new admin name

    adminfile.open(username + ".txt", ios::in);//for reading

    if (adminfile)//checking if any previous account in the same name
    {
        system("CLS");
        cout << "*****************************************************************************************" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*                          Sorry for the inconvenience                                  *" << endl;
        cout << "*                      The username you entered is already exist                        *" << endl;
        cout << "*                        Now you are moving to the main page                            *" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*****************************************************************************************" << endl;
        adminfile.close();
        system("pause");
    }

    else
    {
        adminfile.close();
        adminfile.open(username + ".txt", ios::out);//for writing

        system("CLS");
        cout << "*****************************************************************************************" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*                                Enter new admin password                               *" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*****************************************************************************************" << endl;
        getline(cin >> ws, password);//taking pswrd

        adminfile << password;
        adminfile.close();

        system("CLS");

        cout << "*****************************************************************************************" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*                                  New admin added:)                                    *" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*****************************************************************************************" << endl;
        system("pause");
    }
}
```

```
            else if (chooser == 2)
            {
                //i should make this
            }

            else if (chooser == 3)
            {
                dupmain();//function call of duplicate main
            }

            else if (chooser == 4)
            {
                firstwelcome();//go to the first welcome page
            }

            else
            {
                system("CLS");
                cout << "*****************************************************************************************" << endl;
                cout << "*                                                                                       *" << endl;
                cout << "*                                                                                       *" << endl;
                cout << "*            The number you entered is not suitable. Please try again                   *" << endl;
                cout << "*                                        :(                                             *" << endl;
                cout << "*                                                                                       *" << endl;
                cout << "*                                                                                       *" << endl;
                cout << "*****************************************************************************************" << endl;
                chooser = 0;
                system("pause");
            }
        }
        else
        {
            system("CLS");
            cout << "*****************************************************************************************" << endl;
            cout << "*                                                                                       *" << endl;
            cout << "*                                                                                       *" << endl;
            cout << "*                          You entered wrong password                                   *" << endl;
            cout << "*                            Please try again later                                     *" << endl;
            cout << "*                                    :(                                                 *" << endl;
            cout << "*                                                                                       *" << endl;
            cout << "*                                                                                       *" << endl;
            cout << "*****************************************************************************************" << endl;
            system("pause");
            dupmain();//moving to the function dupmain
        }
    }
}
```

```
else
{
    system("CLS");
    cout << "*****************************************************************************************" << endl;
    cout << "*                                                                                       *" << endl;
    cout << "*                                                                                       *" << endl;
    cout << "*                      You entered wrong username                                       *" << endl;
    cout << "*                        Please try again later                                         *" << endl;
    cout << "*                                :(                                                     *" << endl;
    cout << "*                                                                                       *" << endl;
    cout << "*                                                                                       *" << endl;
    cout << "*****************************************************************************************" << endl;
    system("pause");
    dupmain();//moving to the function dupmain
}
}
```

This code snippet is a function named "admin()" that handles the admin login process of the program. It prompts the user to enter their username and password, and then verifies the entered information with a file with the same name as the username. If the file exists and the password entered by the user matches the one stored in the file, the user is granted access to the admin features of the program.

The function uses several string variables to store the username, password and the password for confirmation entered by the user. It also uses a file stream object "adminfile" to open and read the file with the same name as the entered username.

The function uses the getline function to take string inputs with spaces, the "ws" parameter discards any whitespaces before the input.

Once the user enters the correct username and password, the function displays a welcome message and grants the user access to the admin features of the program. If the entered username does not match any existing files or the passwords do not match, the function will prompt the user to enter the information again.

User function:

```
//user function
void user()
{
    system("CLS");//to open a fresh console by deleting all others

    int chooser = 0;//will use laterin loop
    int chooser2 = 0;//will use laterin loop
    string username;//for file name
    string password;//for the thing written in the file
    string password2;//for confirmation
    string passwordchecking;//compare the pasword with the file

    cout << "*********************************************************************************************" << endl;
    cout << "*                                                                                           *" << endl;
    cout << "*                                                                                           *" << endl;
    cout << "*                                                                                           *" << endl;
    cout << "*                                                                                           *" << endl;
    cout << "*                  Enter the number of action you want to take!                             *" << endl;
    cout << "*                     1.Login to previous user account                                      *" << endl;
    cout << "*                     2.Create a new user account                                           *" << endl;
    cout << "*                     3.Go back                                                             *" << endl;
    cout << "*                     4.Go to first page                                                    *" << endl;
    cout << "*                                                                                           *" << endl;
    cout << "*                                                                                           *" << endl;
    cout << "*                                                                                           *" << endl;
    cout << "*                                                                                           *" << endl;
    cout << "*********************************************************************************************" << endl;

    cin >> chooser;

    if (chooser == 1)
    {
        fstream userfile;//controller

        system("CLS");
        cout << "*********************************************************************************************" << endl;
        cout << "*                                                                                           *" << endl;
        cout << "*                                                                                           *" << endl;
        cout << "*                            Enter your user name                                           *" << endl;
        cout << "*                                                                                           *" << endl;
        cout << "*                                                                                           *" << endl;
        cout << "*********************************************************************************************" << endl;
        getline(cin >> ws, username);//if ws is not there it wont take the string

        system("CLS");
        cout << "*********************************************************************************************" << endl;
        cout << "*                                                                                           *" << endl;
        cout << "*                                                                                           *" << endl;
        cout << "*                              Enter your password                                          *" << endl;
        cout << "*                                                                                           *" << endl;
        cout << "*                                                                                           *" << endl;
        cout << "*********************************************************************************************" << endl;
        getline(cin >> ws, password);

        system("CLS");
        cout << "*********************************************************************************************" << endl;
        cout << "*                                                                                           *" << endl;
        cout << "*                                                                                           *" << endl;
        cout << "*                            Enter your password again                                      *" << endl;
        cout << "*                                                                                           *" << endl;
        cout << "*                                                                                           *" << endl;
        cout << "*********************************************************************************************" << endl;
        getline(cin >> ws, password2);

        userfile.open(username + ".txt", ios::in);//opening the previos file to read
        //if the file is not there it returns false
```

```
while (chooser == 1)//loop if the user entered a wrong number
{
    if (userfile)
    {
        getline(userfile, passwordchecking, '\n');//first is directry, 2 nd is storing the things inside the file passwrdchecking variable and 3rd is upto this it will read
        userfile.close();//closing the file


        if (passwordchecking == password && passwordchecking == password2)
        {
            system("CLS");//to open a fresh console by deleting all others

            //welcome
            cout << endl << endl << endl;
            cout << "                                        ********************************************" << endl;
            cout << "                                        ********************************************" << endl;
            cout << "                                        ****** You successfully login as a user ******" << endl;
            cout << "                                        ********************************************" << endl;
            cout << endl << endl;
            cout << "                                                ******************************" << endl;
            cout << "                                                ******************************" << endl;
            cout << "                                                **********        **********" << endl;
            cout << "                                                **********        **********" << endl;
            cout << "                                                **********        **********" << endl;
            cout << "                                                *****                ******" << endl;
            cout << "                                                *****    DIGI + CARE   ******" << endl;
            cout << "                                                *****                ******" << endl;
            cout << "                                                **********        **********" << endl;
            cout << "                                                **********        **********" << endl;
            cout << "                                                **********        **********" << endl;
            cout << "                                                ******************************" << endl;
            cout << "                                                ******************************" << endl;
            cout << endl << endl;
            cout << "++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++" << endl;
            cout << endl << endl << endl;
            system("pause");

            system("CLS");//to open a fresh console by deleting all others

            cout << "*************************************************************************************" << endl;
            cout << "*                                                                                   *" << endl;
            cout << "*                                                                                   *" << endl;
            cout << "*                                                                                   *" << endl;
            cout << "*                                                                                   *" << endl;
            cout << "*                  What we offer!                                                   *" << endl;
            cout << "*                    1.Find the disease for your symtoms and get precautions        *" << endl;
            cout << "*                    2.Find healthy diet for you                                    *" << endl;
            cout << "*                    3.Find exercise tips for you                                   *" << endl;
            cout << "*                    4.Check the history of your file                               *" << endl;
            cout << "*                    5.Go back                                                      *" << endl;
            cout << "*                    6.Go to first page                                             *" << endl;
            cout << "*                  Enter the number of action you want to take!                     *" << endl;
            cout << "*                                                                                   *" << endl;
            cout << "*                                                                                   *" << endl;
            cout << "*                                                                                   *" << endl;
            cout << "*                                                                                   *" << endl;
            cout << "*************************************************************************************" << endl;

            cin >> chooser2;

            if (chooser2 == 1)
            {
                string filewriting;
                string date;

                system("CLS");
                cout << "*************************************************************************************" << endl;
                cout << "*                                                                                   *" << endl;
                cout << "*                                                                                   *" << endl;
                cout << "*                    Enter todays date in the format DD/MM/YYYY                     *" << endl;
                cout << "*                                                                                   *" << endl;
                cout << "*                                                                                   *" << endl;
                cout << "*************************************************************************************" << endl;
                cin >> date;

                filewriting = disease();//disease function call
                userfile.open(username + ".txt", ios::out | ios::app);//for writing
                userfile << "Identified the symptoms of " << filewriting;//writing on the file that the person got disease on this date
                userfile << " on the date of " << date << endl;
                userfile.close();//closing the file

                chooser = 0;//just to exit from the loop
            }

            else if (chooser2 == 2)
            {
                diet();//diet function call
                chooser = 0;
            }

            else if (chooser2 == 3)
            {
                ex_tips();//exercise function call
                chooser = 0;
            }

            else if (chooser2 == 4)
            {
                system("CLS");

                userfile.open(username + ".txt", ios::in);

                string data;

                cout << "*********************************************************************************************************" << endl;
                cout << "*                                                                                                       *" << endl;
                cout << "*                                                                                                       *" << endl;
                cout << "*                                                                                                       *" << endl;
                cout << "*                                                                                                       *" << endl;
                while (getline(userfile, data)) //read data from file object and put it into string.
                {
                    cout << "                        " << data << endl;   //print the data of the string
                }
                cout << "*                                                                                                       *" << endl;
                cout << "*                                                                                                       *" << endl;
                cout << "*                                                                                                       *" << endl;
                cout << "*                                                                                                       *" << endl;
                cout << "*********************************************************************************************************" << endl;
                userfile.close();   //close the file object.

                system("pause");

                chooser = 0;
            }
```

```
            else if (chooser2 == 6)
            {
                firstwelcome();//go to the first welcome page
                chooser = 0;
            }

            else
            {
                system("CLS");
                cout << "*****************************************************************************************" << endl;
                cout << "*                                                                                       *" << endl;
                cout << "*                                                                                       *" << endl;
                cout << "*              The number you entered is not suitable. Please try again                 *" << endl;
                cout << "*                                      :(                                               *" << endl;
                cout << "*                                                                                       *" << endl;
                cout << "*                                                                                       *" << endl;
                cout << "*****************************************************************************************" << endl;
                system("pause");
                chooser = 1;//it will again run the loop
            }
        }
        else
        {
            system("CLS");
            cout << "*****************************************************************************************" << endl;
            cout << "*                                                                                       *" << endl;
            cout << "*                                                                                       *" << endl;
            cout << "*                            You entered wrong password                                 *" << endl;
            cout << "*                              Please try again later                                   *" << endl;
            cout << "*                                      :(                                               *" << endl;
            cout << "*                                                                                       *" << endl;
            cout << "*                                                                                       *" << endl;
            cout << "*****************************************************************************************" << endl;
            system("pause");
            dupmain();
        }
    }
    else
    {
        system("CLS");
        cout << "*****************************************************************************************" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*                          You entered wrong username                                   *" << endl;
        cout << "*                            Please try again later                                     *" << endl;
        cout << "*                                    :(                                                 *" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*****************************************************************************************" << endl;
        system("pause");
    }
}
```

```
else if (chooser == 2)
{
    newuser();//function call of create new user account
}

else if (chooser == 3)
{
    dupmain();//function call of duplicate main
}

else if (chooser == 4)
{
    firstwelcome();//go to the first welcome page
}

else
{
    system("CLS");
    cout << "*****************************************************************************************" << endl;
    cout << "*                                                                                       *" << endl;
    cout << "*                                                                                       *" << endl;
    cout << "*              The number you entered is not suitable. Please try again                 *" << endl;
    cout << "*                                      :(                                               *" << endl;
    cout << "*                                                                                       *" << endl;
    cout << "*                                                                                       *" << endl;
    cout << "*****************************************************************************************" << endl;
    system("pause");
    user();//recursion

}
```

This code snippet is a function named "user()" that handles the user login process of the program. It prompts the user to either login to an existing account or create a new account. If the user selects to login to an existing account, the function prompts the user to enter their username and password, and then verifies the entered information with a file with the same name as the username. If the file exists and the password entered by the user matches the one stored in the file, the user is granted access to the user features of the program.

The function uses several string variables to store the username, password and the password for confirmation entered by the user. It also uses a file stream object "userfile" to open and read the file with the same name as the entered username.The function uses the getline function to take string inputs with spaces, the "ws" parameter discards any whitespaces before the input.

Once the user enters the correct username and password, the function displays a menu of options available to the user such as finding a disease for symptoms and getting precautions, finding a healthy diet, finding exercise tips, checking the history of their file, going back or going to the first page. If the entered username does not match any existing files or the passwords do not match, the function will prompt the user to enter the information again.

New user function:

```
//function to create new user account
void newuser()
{
    system("CLS");//to open a fresh console by deleting all others

    //welcome to create a new user account
    cout << endl << endl << endl;
    cout << "                                        ********************************************" << endl;
    cout << "                                        ********************************************" << endl;
    cout << "                                        ********* Welcome to New User account ********" << endl;
    cout << "                                        ********************************************" << endl;
    cout << endl << endl;
    cout << "                                                ******************************" << endl;
    cout << "                                                ******************************" << endl;
    cout << "                                                **********         ***********" << endl;
    cout << "                                                **********         ***********" << endl;
    cout << "                                                **********         ***********" << endl;
    cout << "                                                *****                  ******" << endl;
    cout << "                                                *****    DIGI + CARE   ******" << endl;
    cout << "                                                *****                  ******" << endl;
    cout << "                                                **********         ***********" << endl;
    cout << "                                                **********         ***********" << endl;
    cout << "                                                **********         ***********" << endl;
    cout << "                                                ******************************" << endl;
    cout << "                                                ******************************" << endl;
    cout << endl << endl;
    cout << "++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++" << endl;
    cout << endl << endl << endl;

    system("pause");

    system("CLS");//to open a fresh console by deleting all others

    int chooser = 0;
    string username;//for file name
    string password;//for the thing written in the file
    string passwordchecking;//compare the paswrd with the file
    string fullname;//to write name in file
    int age;//to write age in file
    float weight;//to write weight in file

    fstream userfile;//controller

    cout << "*****************************************************************************************" << endl;
    cout << "*                                                                                       *" << endl;
    cout << "*                                                                                       *" << endl;
    cout << "*                  Enter your username for this new user account                        *" << endl;
    cout << "*                                                                                       *" << endl;
    cout << "*                                                                                       *" << endl;
    cout << "*****************************************************************************************" << endl;
    getline(cin >> ws, username);//taking new admin name

    userfile.open(username + ".txt", ios::in);//checking if any previous account in the same name

    if (userfile)
    {
        system("CLS");
        cout << "*****************************************************************************************" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*                              Sorry for the inconvenience                              *" << endl;
        cout << "*                        The username you entered is alredy exist                       *" << endl;
        cout << "*                             Now you are moving to back page                           *" << endl;
        cout << "*                                       :(                                              *" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*****************************************************************************************" << endl;
        userfile.close();
        system("pause");
        user();//user function call
    }
```

```
    else
    {
        userfile.close();
        userfile.open(username + ".txt", ios::out);//for writing

        system("CLS");
        cout << "*****************************************************************************************" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*                                  Enter new user password                              *" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*****************************************************************************************" << endl;
        getline(cin >> ws, password);//taking pswrd

        system("CLS");
        cout << "*****************************************************************************************" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*                                  Enter your full name                                 *" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*****************************************************************************************" << endl;
        getline(cin >> ws, fullname);//taking pswrd

        system("CLS");
        cout << "*****************************************************************************************" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*                                    Enter your age                                     *" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*****************************************************************************************" << endl;
        cin >> age;//taking pswrd

        system("CLS");
        cout << "*****************************************************************************************" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*                                Enter your current weight                              *" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*****************************************************************************************" << endl;
        cin >> weight;//taking pswrd

        userfile << password << endl;
        userfile << "\nFull name: " << fullname << endl;
        userfile << "Age: " << age << endl;
        userfile << "Weight: " << weight << endl << endl;
        userfile.close();

        system("CLS");
        cout << "*****************************************************************************************" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*                                    New user added:)                                   *" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*                                                                                       *" << endl;
        cout << "*****************************************************************************************" << endl;
        system("pause");
    }
}
```

This code defines a function called "newuser()" that creates a new user account for the user. It starts by clearing the console and displaying a welcome message. It then prompts the user to enter a username for their new account and checks if a file with that name already exists. If it does, it informs the user that the username is already taken and redirects them to the previous page. If the username is available, it prompts the user to enter their full name, age, and weight, and creates a new file with the entered username and writes the user's full name, age, and weight in it. It also prompts the user to enter a password and confirm it. It then saves this password in the created file.

Disease function:

```
//function for diseases
string disease()
{
    string diseaseforfile;//save the disease with compare the symptoms and will return

    system("CLS");
    cout << "*********************************************************************************" << endl;
    cout << "*                                                                               *" << endl;
    cout << "*                                                                               *" << endl;
    cout << "*                                                                               *" << endl;
    cout << "*                                                                               *" << endl;
    cout << "*                    What part of your body is hurting?                         *" << endl;
    cout << "*                      1.Brain, Nerves and Spinal cord                          *" << endl;
    cout << "*                      2.Ears, Nose and Throat                                  *" << endl;
    cout << "*                      3.Glands                                                 *" << endl;
    cout << "*                      4.Heart and blood vessels                                *" << endl;
    cout << "*                      5.Immune system                                          *" << endl;
    cout << "*                      6.Infections and poisoning                               *" << endl;
    cout << "*                      7.Kidneys, bladder and prostate                          *" << endl;
    cout << "*                      8.Lungs and airways                                      *" << endl;
    cout << "*                      9.Mouth                                                  *" << endl;
    cout << "*                                                                               *" << endl;
    cout << "*                                                                               *" << endl;
    cout << "*                                                                               *" << endl;
    cout << "*                                                                               *" << endl;
    cout << "*********************************************************************************" << endl;

    int partNo;//variable for taking paining parts
    int symptomSet;//variable for taking the set of symptoms

    cin >> partNo;

    Disease* ptr = nullptr;//pointer of class disease

    if (partNo == 1)
    {
        system("CLS");
        symptomSet = S_brain_nerves_spinalcord();//function call of symtoms

        if (symptomSet == 1)
        {
            ptr = new chronicPain();//creating a new object in dynamic memory

            system("CLS");
            cout << "*****************************************************************************************************************************************************" << endl;
            cout << "*                                                                                                                                                   *" << endl;
            cout << "*                                                                                                                                                   *" << endl;
            cout << "*                                                                                                                                                   *" << endl;
            cout << "                                                  You may have * << ptr->getName() << endl;
            cout << "                                                  To treat * << ptr->getName() << *:\n * << ptr->getSolution() << endl;//get the name and solutions of the disease
            cout << "*                                                                                                                                                   *" << endl;
            cout << "*                                                                                                                                                   *" << endl;
            cout << "*                                                                                                                                                   *" << endl;
            cout << "*****************************************************************************************************************************************************" << endl;

            diseaseforfile = ptr->getName();
        }
```

The program allows users to log in as an admin or regular user and provides a variety of options for users to access information about different diseases and health tips. The "disease()" function is a specific function within the program that is intended to help users identify a disease based on a set of symptoms. It does this by prompting the user to select a specific part of their body that is hurting and then providing a set of symptoms based on that selection. Once the user has selected their symptoms, the program uses a pointer to a class called "Disease" to create a new object in dynamic memory and then uses that object to access the name and solution of the disease that corresponds to the selected symptoms. And it is returning the variable “diseaseforfile” to identify the disease. Similarly, we have done for all paining parts.

Display symptom functions:

```
//functions for paining parts
int 5_brain_nerves_spinalcord()
{
    int chooser = 0;

    cout << "*****************************************************************************************************************************************************************" << endl;
    cout << "*                                                                                                                                                               *" << endl;
    cout << "*                                                                                                                                                               *" << endl;
    cout << "*                                                                                                                                                               *" << endl;
    cout << "*                                                        Enter the set number of symptoms which you have                                                        *" << endl;
    cout << "*                                                Enter any number other than this set number if you dont have these symptoms                                    *" << endl;
    cout << "*                                                                                                                                                               *" << endl;

    //chronic pain
    cout << "*                                                 SET 01                                                                                                        *" << endl;
    cout << "*                                                     -Aches or stiffness in the affected area*                                                                 *" << endl;
    cout << "*                                                     -Sharp or throbbing pain                                                                                  *" << endl;
    cout << "*                                                     -Difficulty sleeping or concentrating due to the pain                                                     *" << endl;
    cout << "*                                                     -Fatigue                                                                                                  *" << endl;
    cout << "*                                                     -Depression or anxiety                                                                                    *" << endl;
    cout << "*                                                     -Decreased range of motion in the affected area                                                           *" << endl;
    cout << "*                                                                                                                                                               *" << endl;

    //dizziness
    cout << "*                                                 SET 02                                                                                                        *" << endl;
    cout << "*                                                     -Lightheadedness or a sensation of floating or swimming                                                   *" << endl;
    cout << "*                                                     -Loss of balance or coordination                                                                          *" << endl;
    cout << "*                                                     -Nausea                                                                                                   *" << endl;
    cout << "*                                                     -Difficulty concentrating                                                                                 *" << endl;
    cout << "*                                                     -Vision changes, such as seeing stars or black spots                                                      *" << endl;
    cout << "*                                                     -Sweating                                                                                                 *" << endl;
    cout << "*                                                     -Headache                                                                                                 *" << endl;
    cout << "*                                                     -Rapid or pounding heartbeat                                                                              *" << endl;
    cout << "*                                                                                                                                                               *" << endl;

    //migraine
    cout << "*                                                 SET 03                                                                                                        *" << endl;
    cout << "*                                                     -Sensitivity to light, sound, and smell                                                                   *" << endl;
    cout << "*                                                     -Nauseaand vomiting                                                                                       *" << endl;
    cout << "*                                                     -Blurred vision                                                                                           *" << endl;
    cout << "*                                                     -Lightheadedness or dizziness                                                                             *" << endl;
    cout << "*                                                     -Difficulty concentrating                                                                                 *" << endl;
    cout << "*                                                     -Aura, or visual disturbances such as seeing flashes of light or zig - zag lines                          *" << endl;
    cout << "*                                                                                                                                                               *" << endl;
    cout << "*                                                                                                                                                               *" << endl;
    cout << "*                                                                                                                                                               *" << endl;
    cout << "*****************************************************************************************************************************************************************" << endl;

    cin >> chooser;

    return chooser;
}
```

This is just a printing function for print the symptoms. Similarly we made different functions to print all the symptoms of all paining parts. Finally, this function will return the int value of the specific symptom and this will help to identify the symptom.

Diet function:

```
//function to find healthy diet
void diet()
{
    system("CLS");
    int chooser = 0;

    cout << "*************************************************************************************" << endl;
    cout << "*                                                                                   *" << endl;
    cout << "*                                                                                   *" << endl;
    cout << "*                                                                                   *" << endl;
    cout << "*                                                                                   *" << endl;
    cout << "*              Select the age group that you want to find healthy diet              *" << endl;
    cout << "*                  1.Children (1-3 years)                                           *" << endl;
    cout << "*                  2.Children (4-13 years)                                          *" << endl;
    cout << "*                  3.Teens (14-18 years)                                            *" << endl;
    cout << "*                  4.Adults (19-50 years)                                           *" << endl;
    cout << "*                  5.Adults (51+ years)                                             *" << endl;
    cout << "*            Enter 6 to go to main page                                             *" << endl;
    cout << "*                                                                                   *" << endl;
    cout << "*                                                                                   *" << endl;
    cout << "*                                                                                   *" << endl;
    cout << "*                                                                                   *" << endl;
    cout << "*************************************************************************************" << endl;

    cin >> chooser;

    switch (chooser)
    {
    case 1:
        cout << "*****************************************************************************************************************************************************************" << endl;
        cout << "*                                                                                                                                                               *" << endl;
        cout << "*                                                                                                                                                               *" << endl;
        cout << "*          -Children at this age are still growing rapidly, so it's important for them to get enough nutrients to support their growth and development                *" << endl;
        cout << "*          -Offer a variety of foods, including protein sources like meat, beans, and tofu; grains like rice, pasta, and bread; and vegetables and fruit                *" << endl;
        cout << "*          -Avoid giving children under 4 years old honey, as it can contain botulism spores that can cause serious illness                                    *" << endl;
        cout << "*                                                                                                                                                               *" << endl;
        cout << "*                                                                                                                                                               *" << endl;
        cout << "*****************************************************************************************************************************************************************" << endl;
        break;

    case 2:
        cout << "*****************************************************************************************************************************************************************" << endl;
        cout << "*                                                                                                                                                               *" << endl;
        cout << "*                                                                                                                                                               *" << endl;
        cout << "*                                                                                                                                                               *" << endl;
        cout << "*                        -As children get older, it's important to encourage them to be active and choose a variety of healthy foods                           *" << endl;
        cout << "*                        -Offer plenty of vegetables, fruits, whole grains, and lean protein sources                                                            *" << endl;
        cout << "*                        -Limit sugary drinks and snacks, and encourage children to drink water                                                                 *" << endl;
        cout << "*                                                                                                                                                               *" << endl;
        cout << "*                                                                                                                                                               *" << endl;
        cout << "*****************************************************************************************************************************************************************" << endl;
        break;

    case 3:
        cout << "*****************************************************************************************************************************************************************" << endl;
        cout << "*                                                                                                                                                               *" << endl;
        cout << "*                                                                                                                                                               *" << endl;
        cout << "*                  -During the teenage years, it's important for young people to continue eating a healthy diet to support their growing bodies         *" << endl;
        cout << "*                  -Encourage teens to eat a variety of foods, including fruits, vegetables, whole grains, and lean protein sources                      *" << endl;
        cout << "*                  -Encourage them to be physically active and limit screen time                                                                          *" << endl;
        cout << "*                                                                                                                                                               *" << endl;
        cout << "*                                                                                                                                                               *" << endl;
        cout << "*****************************************************************************************************************************************************************" << endl;
        break;
```

This diet() function is providing information on healthy diets for different age groups. It uses a switch statement to display different information based on the user's choice of age group. The information provided includes tips on what types of foods to offer, and things to avoid, to ensure that children and adults are getting enough nutrients to support their growth and development.

Function for exercise tips:

```
//function for giving exercise tips
void ex_tips()
{
    system("CLS");
    int chooser = 0;

    cout << "*********************************************************************************" << endl;
    cout << "*                                                                               *" << endl;
    cout << "*                                                                               *" << endl;
    cout << "*                                                                               *" << endl;
    cout << "*                                                                               *" << endl;
    cout << "*          Select the age group to get a healthy efficient exercise tips        *" << endl;
    cout << "*              1.Children (6-12 years)                                          *" << endl;
    cout << "*              2.Teens (13-18 years)                                            *" << endl;
    cout << "*              3.Adults (19-64 years)                                           *" << endl;
    cout << "*              4.Adults (65+ years)                                             *" << endl;
    cout << "*        Enter 5 to go to main page                                             *" << endl;
    cout << "*                                                                               *" << endl;
    cout << "*                                                                               *" << endl;
    cout << "*                                                                               *" << endl;
    cout << "*                                                                               *" << endl;
    cout << "*********************************************************************************" << endl;

    cin >> chooser;

    switch (chooser)
    {
    case 1:
        cout << "*****************************************************************************************************************************************************" << endl;
        cout << "*                                                                                                                                                   *" << endl;
        cout << "*                                                                                                                                                   *" << endl;
        cout << "*                        -Encourage them to participate in a variety of physical activities such as running, jumping, and playing games            *" << endl;
        cout << "*                        -Organize fun activities that involve movement, such as dancing or playing tag                                             *" << endl;
        cout << "*                        -Set a good example by being physically active yourself                                                                    *" << endl;
        cout << "*                        -Make sure they get at least 60 minutes of physical activity every day                                                     *" << endl;
        cout << "*                                                                                                                                                   *" << endl;
        cout << "*                                                                                                                                                   *" << endl;
        cout << "*****************************************************************************************************************************************************" << endl;
        break;

    case 2:
        cout << "*****************************************************************************************************************************************************" << endl;
        cout << "*                                                                                                                                                   *" << endl;
        cout << "*                                                                                                                                                   *" << endl;
        cout << "*                                    -Encourage them to participate in team sports or individual activities they enjoy                              *" << endl;
        cout << "*                                    -Help them set fitness goals and work towards them                                                             *" << endl;
        cout << "*                                    -Make sure they get at least 60 minutes of moderate to vigorous physical activity every day                   *" << endl;
        cout << "*                                    -Teach them the importance of stretching and warming up before physical activity                               *" << endl;
        cout << "*                                                                                                                                                   *" << endl;
        cout << "*                                                                                                                                                   *" << endl;
        cout << "*****************************************************************************************************************************************************" << endl;
        break;

    case 3:
        cout << "*****************************************************************************************************************************************************" << endl;
        cout << "*                                                                                                                                                   *" << endl;
        cout << "*                                                                                                                                                   *" << endl;
        cout << "*                -Find an activity you enjoy and make it a regular part of your routine                                                             *" << endl;
        cout << "*                -Mix cardio and strength training exercises for a well-rounded workout                                                             *" << endl;
        cout << "*                -Stretch and warm up before exercising                                                                                             *" << endl;
        cout << "*                -Aim for at least 150 minutes of moderate-intensity aerobic activity or 75 minutes of vigorous-intensity aerobic activity per week *" << endl;
        cout << "*                                                                                                                                                   *" << endl;
        cout << "*                                                                                                                                                   *" << endl;
        cout << "*****************************************************************************************************************************************************" << endl;
        break;
```

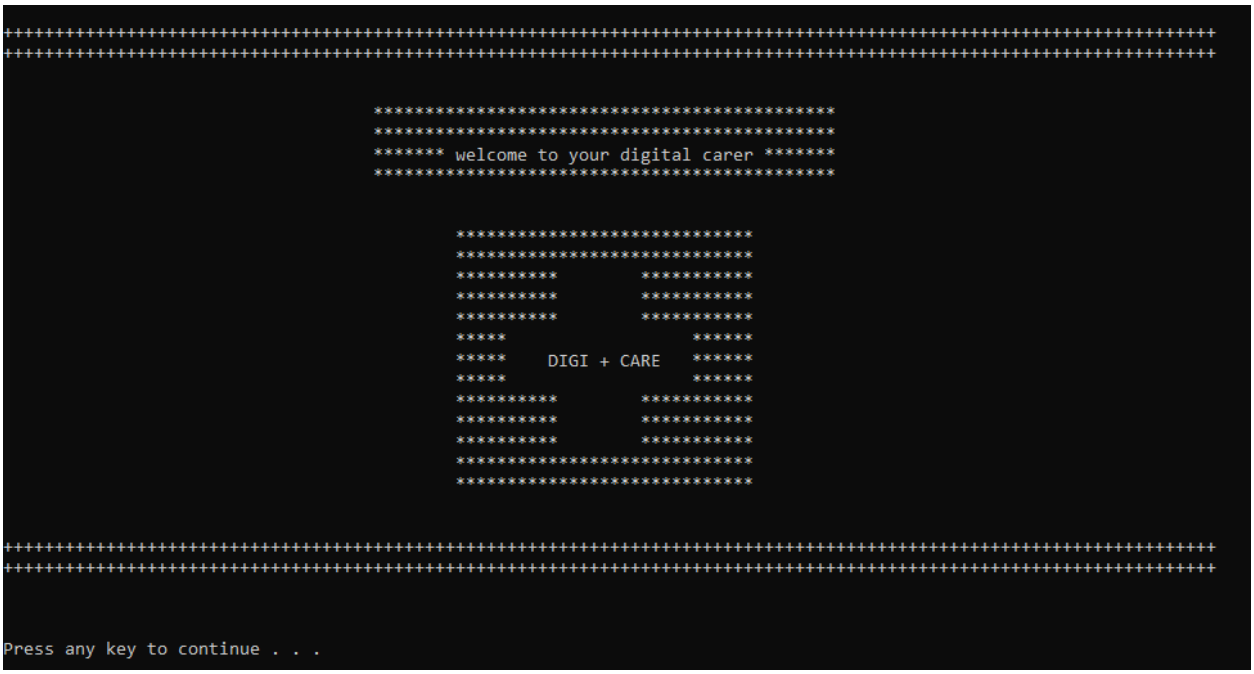
This is a C++ program that is designed to provide different types of health-related information and services to users, such as information about diseases, healthy diets, and exercise tips. The program uses a combination of functions, switch statements, and user input to display different information to the user based on their selections. Some of the functions, like "disease()" and "diet()" are used to provide specific information, while others, like "ex_tips()" are used to guide the user through the process of getting the information they need. Overall, the program appears to be well-organized and easy to follow.

Results and outputs:

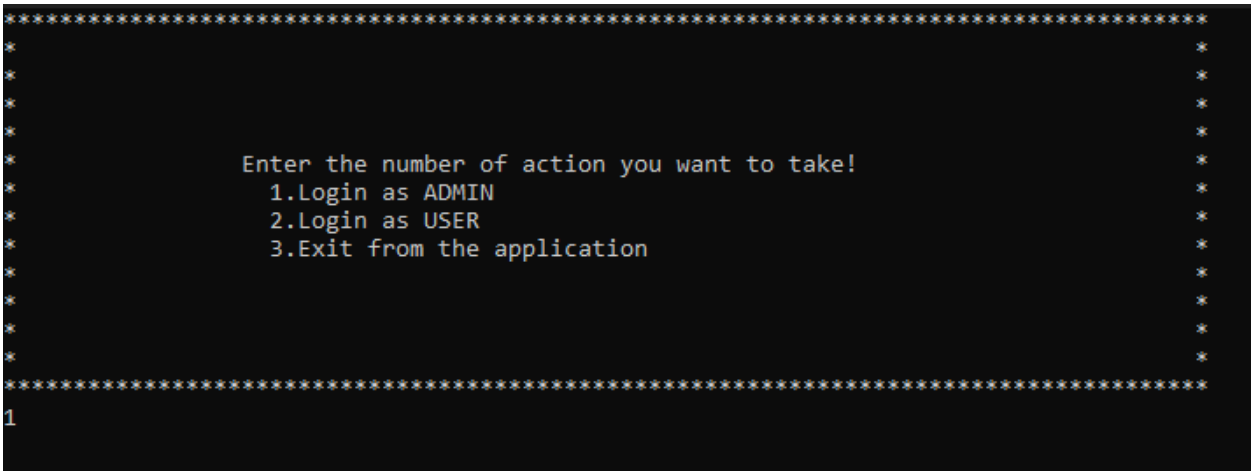
All the outputs of the program are attached as a video here,

https://drive.google.com/drive/folders/1cSvtV_QZ-bJWbdQ-WGF4I2hI2ElI1FIY?usp=share_link

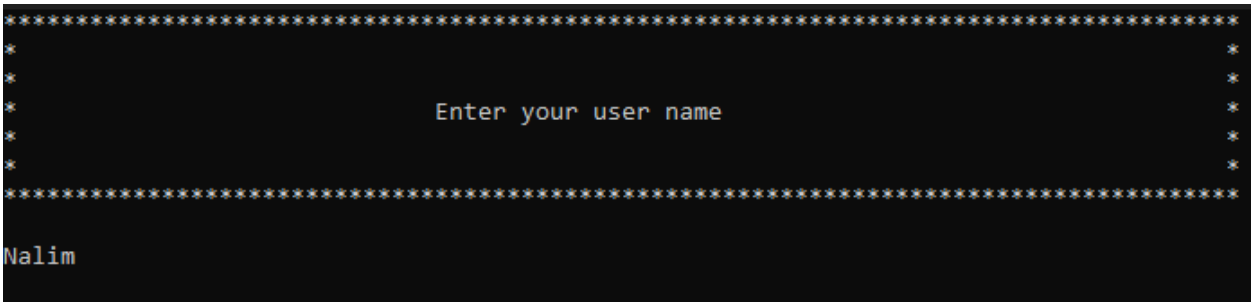
Here are some screenshots of the main outputs from the console window,



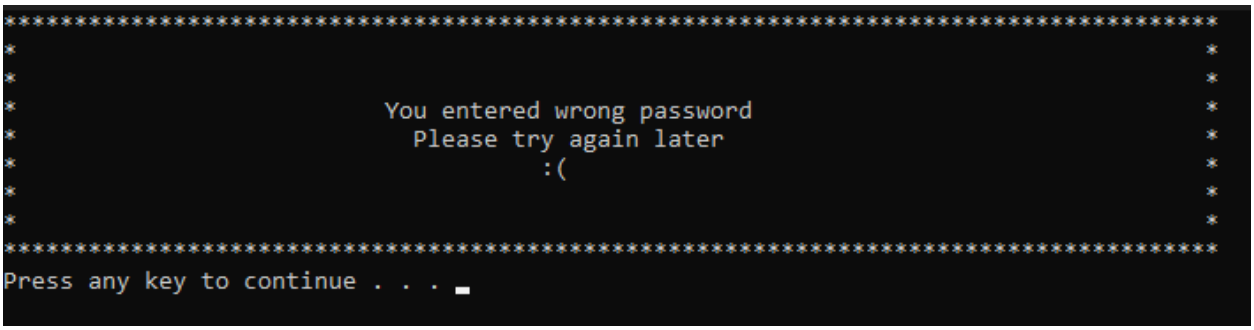
Welcome output



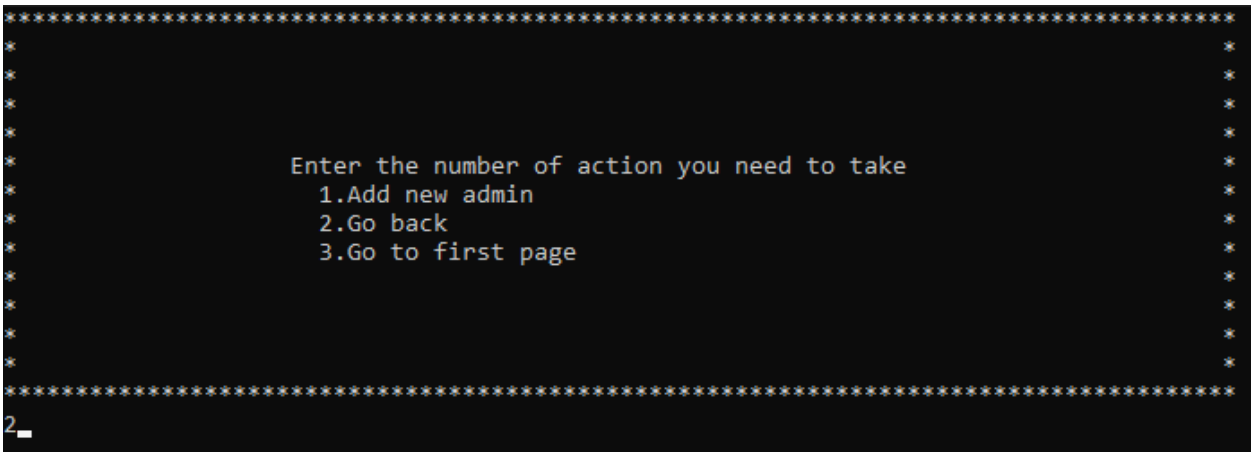
Asking the operation as user or admin



Asking user name to confirm



If user entered wrong password



After login to admin account

```
Enter the number of action you want to take!
   1.Login to previous user account
   2.Create a new user account
   3.Go back
   4.Go to first page
1
```

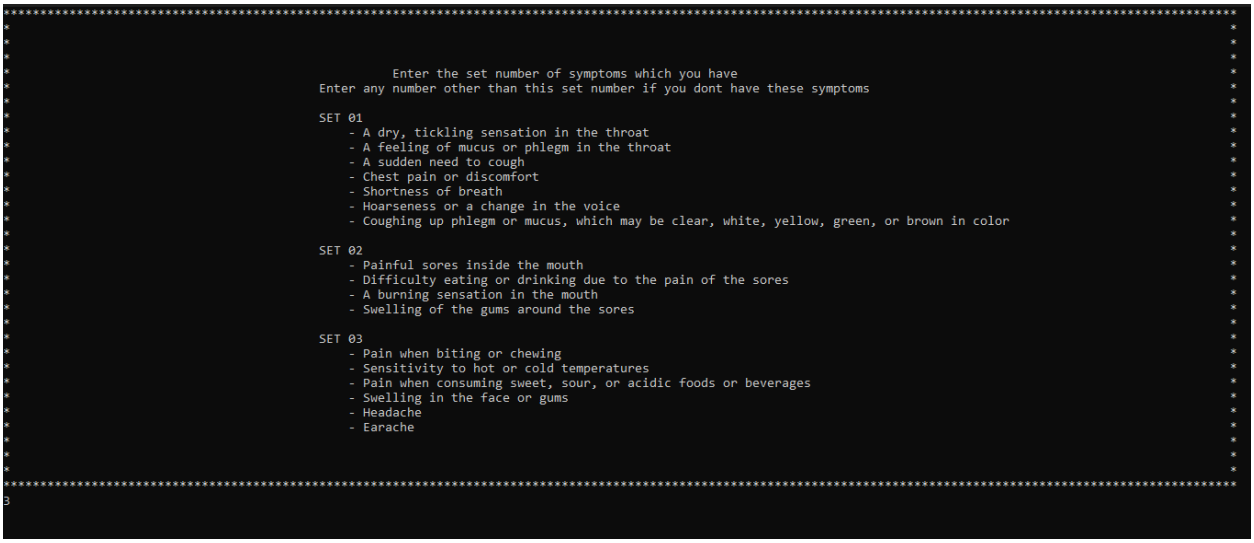
Entering user section

```
What we offer!
  1.Find the disease for your symtoms and get precautions
  2.Find healthy diet for you
  3.Find exercise tips for you
  4.Check the history of your file
  5.Go back
  6.Go to first page
Enter the number of action you want to take!
1
```

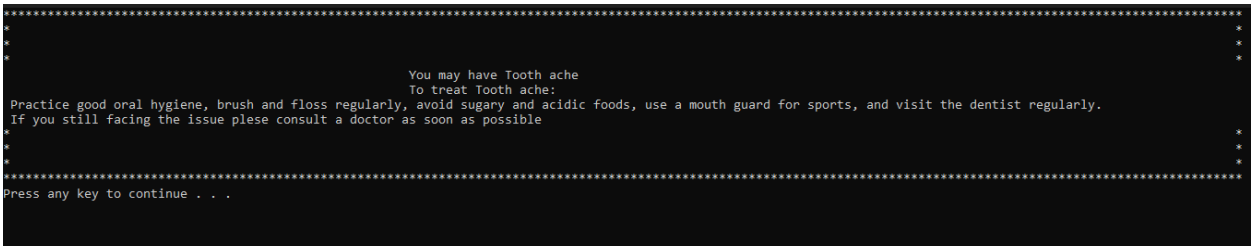
After login to previous user account

```
What part of your body is hurting?
  1.Brain, Nerves and Spinal cord
  2.Ears, Nose and Throat
  3.Glands
  4.Heart and blood vessels
  5.Immune system
  6.Infections and poisoning
  7.Kidneys, bladder and prostate
  8.Lungs and airways
  9.Mouth
9
```

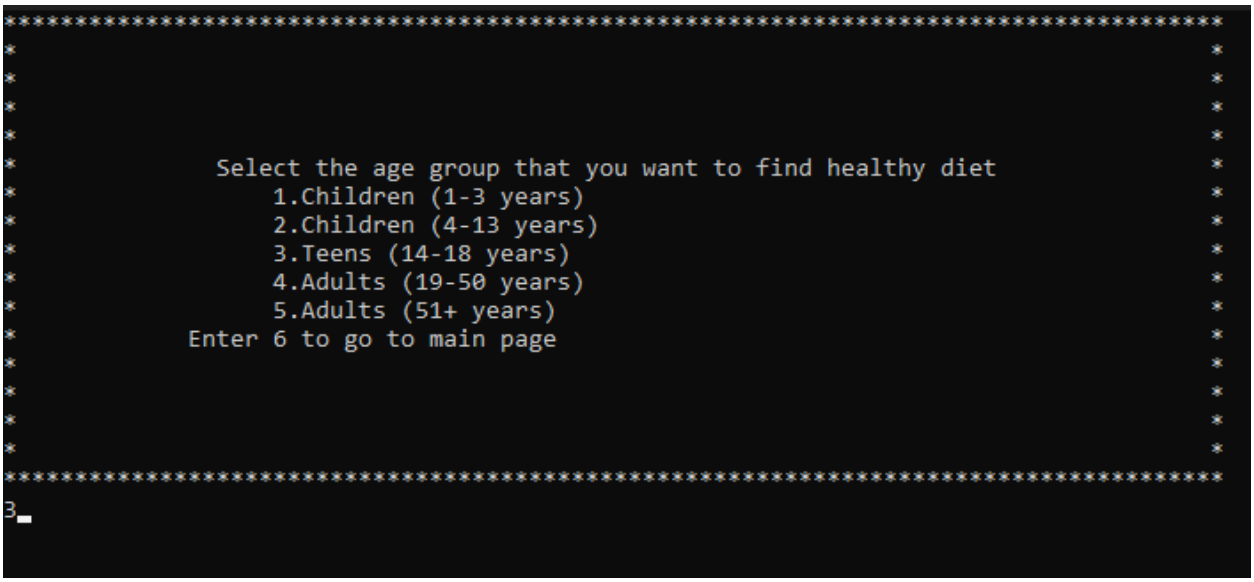
Showing the paining parts to choose



Ask the user to select the symptom set



Suggesting precautions after identified the disease



Categories to get healthy diet

```
-During the teenage years, it's important for young people to continue eating a healthy diet to support their growing bodies
-Encourage teens to eat a variety of foods, including fruits, vegetables, whole grains, and lean protein sources
-Encourage them to be physically active and limit screen time
Press any key to continue . . .
```

Showing some healthy diet tips

```
lol

Full name: Ahamed Nahar
Age: 22
Weight: 83
Identify the symptoms of Nose bleed
Identified the symptoms of  on the date of 13/01/2023
Identified the symptoms of Tooth ache on the date of 13/01/2023
Identified the symptoms of Tooth ache on the date of 15/01/2023
Press any key to continue . . .
```

Showing the previous history of the user

```
Enter your username for this new user account
Nahar
```

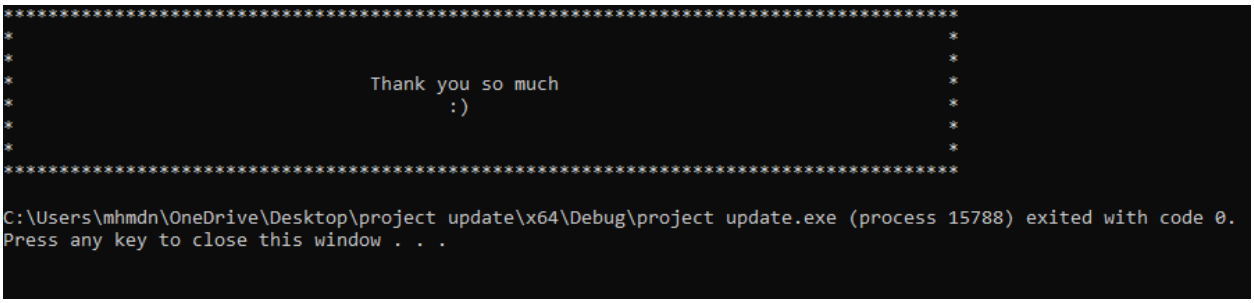
Creating new user account

```
Sorry for the inconvenience
The username you entered is alredy exist
Now you are moving to back page
:(
Press any key to continue . . .
```

If the username entered is already exists

Enter new username

Showing that new user added



Exit from the application

Discussions and conclusions:

The project aims to create a digital healthcare system that allows users to access information and services related to their health and well-being. The system includes several features such as a symptom checker, information on various diseases and their treatments, healthy diet and exercise tips, and a user account system for personalization and tracking of health information. The system is implemented in C++ programming language and uses file handling for storing user information.

Overall, the digital healthcare system demonstrates the potential for technology to improve access to healthcare information and services. It provides a convenient and user-friendly platform for users to manage their health and seek advice on various health concerns. However, it is important to note that the system is not meant to replace professional medical advice and should not be used as a substitute for consulting a healthcare provider.

In conclusion, the digital healthcare system is a valuable tool for individuals to manage their health and stay informed about various health issues. However, it should be used in conjunction with professional medical advice and not as a replacement for seeking professional help. Further improvements and updates can be made to the program to enhance its functionality and make it even more user-friendly and efficient.

References and Appendices:

All the details of diseases and their solutions are compiled from the website,

https://www.nhsinform.scot/symptoms-and-self-help/a-to-z

All diet plans are compiled from the websites,

https://www.singlecare.com/blog/best-diets-by-health-condition/

https://chat.openai.com/

All exercise tips and plans are compiled from the websites,

Best exercises for every age and gender | MDLinx

https://chat.openai.com/

END!