PROJECT DOCUMENTATION

GROUP PROJECT :

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Topic Of Project :

❖ **Gym Management System**

INTRODUCTION:

The Gym Management System is a comprehensive software solution designed to streamline and automate the various administrative and operational tasks associated with running a fitness facility.

PROJECT OVERVIEW:

The Gym Management System in C++ is a software application that aims to simplify the day-to-day operations of a gym, providing an effective and user-friendly platform for both gym administrators and members. This project leverages the power of C++ programming language to create a system that efficiently manages member details, and financial transactions.

BENEFITS:

- ***Time Efficiency:***

Automation of administrative tasks reduces manual effort, allowing staff to focus more on delivering quality services to members.

- ***Accuracy:***

Minimizes the chances of errors in member records, billing, and inventory management, ensuring data integrity.

Conclusion:

The Gym Management System in C++ is an essential tool for modern fitness centers, promoting efficient and organized operations. By harnessing the capabilities of C++ programming, this project offers a scalable and user-friendly solution for gym administrators to manage their facilities effectively and provide an excellent experience for their members.

DECLARATION:

- **fstream for file handling**
- **string library to introduce strings**
- **int (size)**
- **int (index)**
- **int (choice)**
- **string (array)**
- **string (name)**
- **string for age array**
- **string for contact array**
- **ofstream for writing in a file**
- **inFile is used to read the text that is stored in file**
- **records.txt is a file where text is stored that comes from output.**

DECLARATION OF FUNCTIONS PURPOSE:

- ❖ **For searching a record in program placed on any index:**

```cpp
// Function to search for a record
int search(string arr[], string f, int index)
{
    for (int i = 0; i < index; i++)
    {
        if (arr[i] == f)
        {
            return i;
        }
    }
    return -1;
}
```

❖ **For Displaying Records:**

```cpp
    return -1;
}

// Function to display records
void display(int size, string name[], string age[], string date[], string cont[])
{
    cout << "Records:\n";
    for (int i = 0; i < size; i++)
    {
        if (name[i] != "")
        {
            cout << "Record " << i << endl;
            cout << "|" << "Name = " << name[i] << "|" << " Age = " << age[i] << "|" << " Date Joined = " << date[i] << "|" << " Contac
        }
    }
}
```

❖ **To Save Records in file :**

```cpp
// Function to save records to a file
void saveToFile(int size, string name[], string age[], string date[], string cont[])
{
    ofstream outFile("records.txt"); // Open a file for writing

    for (int i = 0; i < size; i++)
    {
        if (name[i] != "")
        {
            outFile << name[i] << " " << age[i] << " " << date[i] << " " << cont[i] << endl;
        }
    }

    outFile.close(); // Close the file
}
```

❖ **Function To Load Records From File:**

```cpp
}

// Function to load records from a file
void loadFromFile(int &index, string name[], string age[], string date[], string cont[])
{
    ifstream inFile("records.txt"); // Open a file for reading

    while (inFile >> name[index] >> age[index] >> date[index] >> cont[index])
    {
        index++;
    }

    inFile.close(); // Close the file

}
```

❖ **For Displaying Choice Menu:**

```cpp
}
void displayMenu(){
 cout << "1. Enter Record\n";
        cout << "_____" << endl;
        cout << "2. Delete Record\n";
        cout << "_____" << endl;
        cout << "3. Update Record\n";
        cout << "_____" << endl;
        cout << "4. Display Record\n";
        cout << "_____" << endl;
        cout << "5. Display customer packages\n";
        cout << "_____" << endl;
        cout << "6. Exit\n";
        cout << "_____" << endl;
}
```

MAIN FUNCTION:

Main function starts here in which we use loops if else-if and else conditions for choices and try blocks for error catching .

```cpp
ez.cpp > © displayMenu()
int main()
{
    string name[255], age[255], dateJoined[255], contactinfo[255];
    int choice = 0;
    int index = 0;

    // Load existing records from the file
    loadFromFile(index, name, age, dateJoined, contactinfo);

    cout << "\t\t\t_GYM MANAGEMENT SYSTEM_" << endl;
    cout << "_____" << endl;
    while (1)
    {
        displayMenu();
            cin >> choice;

        try
        {
            if (choice == 1)
            {
                string n, a, d, c;
                cout << "Enter your name with CNIC in bracket like ''name(your CNIC num):'' "<<endl;
                cin >> n;
                cout << "Enter Age : ";
                cin >> a;
                cout << "Enter Joining Date in numbers: ";
                cin >> d;
                cout << "Enter Contact Information :   ";
                cin >> c;
                name[index] = n;
```

LOOP:
While loop is used while (1) that always the loop is true.

```cpp
while (1)
{
    displayMenu();
        cin >> choice;

    try
    {
        if (choice == 1)
        {
            string n, a, d, c;
            cout << "Enter your name with CNIC in bracket like ''name(yd
            cin >> n;
            cout << "Enter Age : ";
            cin >> a;
            cout << "Enter Joining Date in numbers: ";
            cin >> d;
            cout << "Enter Contact Information :  ";
            cin >> c;
            name[index] = n;
            age[index] = a;
            dateJoined[index] = d;
            contactinfo[index] = c;
            index++;
            cout << "Record Saved\n";
            saveToFile(index, name, age, dateJoined, contactinfo);
        }
```

PACKAGES AND DEPOSIT INTRODUCTION IN CONDITIONS:

```cpp
lse

    cout << " Record found : \n  ";
    cout << "1. Premium customers : ";
    cout << "\n2. Regular customer : \n";
    cout<<"3.Student Packages:\n";
    cin >> a;

    if (a == 1)
    {
        int b;
        int z;
        do
        {
            cout << "Premium packages start from 5000 per month\n";
            cout<<"to see the facilites here enter '0'"<<endl;
            cin>>z;
            if(z==0)
            {
                cout << "Personal Training\n";
        cout << "Personal Nutrition Counselling\n";
        cout << "Cardio And Strength Training\n";
        cout << "Spa Facilities\n";
        cout << "Swimming Pool\n";
        cout << "Luxury Locker Rooms\n";
        cout << "Sauna\n";
        cout << "Changing Room\n";
```

WORKING:

❖ These are the header includes for input-output stream, string manipulation, and file stream functionalities.

```cpp
#include <iostream>
#include <string>
#include <fstream>
using namespace std;

// Function to search fo
```

❖ This function is used to search for a record (f) in an array of strings (arr). It returns the index of the found record or -1 if the record is not found.

```cpp
// Function to search for a record
int search(string arr[], string f, int index)
{
    for (int i = 0; i < index; i++)
    {
        if (arr[i] == f)
        {
            return i;
        }
    }
    return -1;
}
```

❖ This is the main function that drives the Gym Management System. It loads existing records, displays a menu, takes user input, and performs operations based on the user's choice. The loop continues until the user chooses to exit.Inside the loop, various options (1 to 6) are handled, such as entering a record, deleting a record, updating a record displaying records, displaying customer packages, and exiting the program.Each option has its own set of operations, like taking user input, searching records, updating arrays, and saving to a file. The try-catch block is used to handle exceptions.

```cpp
code2.cpp > displayMenu()
1   #include <iostream>
2   #include <string>
3   #include <fstream>
4   using namespace std;
5
6   // Function to search for a record
7   int search(string arr[], string f, int index)
8   {
9       for (int i = 0; i < index; i++)
10      {
11          if (arr[i] == f)
12          {
13              return i;
14          }
15      }
16      return -1;
17  }
18
19  // Function to display records
20  void display(int size, string name[], string age[], string date[], string cont[])
21  {
22      cout << "Records:\n";
23      for (int i = 0; i < size; i++)
24      {
25          if (name[i] != "")
26          {
27              cout << "Record " << i   (const char [8])"Name = "
28              cout << "|" << "Name = " << name[i] << "|" << " Age = " << age[i] << "|" << " Date Joined = " << date[i]
29          }
30      }
```

```cpp
            }
        }
    }

    // Function to save records to a file
    void saveToFile(int size, string name[], string age[], string date[], string cont[])
    {
        ofstream outFile("records.txt"); // Open a file for writing

        for (int i = 0; i < size; i++)
        {
            if (name[i] != "")
            {
                outFile << name[i] << " " << age[i] << " " << date[i] << " " << cont[i] << endl;
            }
        }

        outFile.close(); // Close the file
    }

    // Function to load records from a file
    void loadFromFile(int &index, string name[], string age[], string date[], string cont[])
    {
        ifstream inFile("records.txt"); // Open a file for reading

        while (inFile >> name[index] >> age[index] >> date[index] >> cont[index])
        {
            index++;
        }
```

```cpp
}
void displayMenu(){
 cout << "1. Enter Record\n";
        cout << "_____" << endl;
        cout << "2. Delete Record\n";
        cout << "_____" << endl;
        cout << "3. Update Record\n";
        cout << "_____" << endl;
        cout << "4. Display Record\n";
        cout << "_____" << endl;
        cout << "5. Display customer packages\n";
        cout << "_____" << endl;
        cout << "6. Exit\n";
        cout << "_____" << endl;
}
```

```cpp
77
78     int main()
79     {
80         string name[255], age[255], dateJoined[255], contactinfo[255];
81         int choice = 0;
82         int index = 0;
83
84         // Load existing records from the file
85         loadFromFile(index, name, age, dateJoined, contactinfo);
86
87         cout << "\t\t\t_GYM MANAGEMENT SYSTEM_" << endl;
88         cout << "_____" << endl;
89         while (1)
90         {
91             displayMenu();
92                 cin >> choice;
93
94             try
95             {
96                 if (choice == 1)
97                 {
98                     string n, a, d, c;
99                     cout << "Enter your name with CNIC in bracket like ''name(your CNIC num):'' "<<endl;
100                    cin >> n;
101                    cout << "Enter Age : ";
102                    cin >> a;
103                    cout << "Enter Joining Date in numbers: ";
104                    cin >> d;
105                    cout << "Enter Contact Information :  ";
106                    cin >> c;
```

```
07              name[index] = n;
08              age[index] = a;
09              dateJoined[index] = d;
10              contactinfo[index] = c;
11              index++;
12              cout << "Record Saved\n";
13              saveToFile(index, name, age, dateJoined, contactinfo);
14          }
15          else if (choice == 2)
16          {
17              string n;
18              cout << "Enter Name with your CINIC like ''name(your CINIC num):''to delete : ";
19              cin >> n;
20              int a1;
21              a1 = search(name, n, index);
22              if (a1 == -1)
23              {
24                  cout << "Record NotFound";
25                  throw 505;
26              }
27              else
28              {
29                  name[a1] = "";
30                  age[a1] = "";
31                  dateJoined[a1] = "";
32                  contactinfo[a1] = "";
33                  cout << "Record Deleted\n";
34              }
35          }
36          else if (choice == 3)
```

```
        }
        else if (choice == 3)
        {
            cout << "Enter Name to update : ";
            string n;
            cin >> n;
            int a1;
            a1 = search(name, n, index);
            if (a1 == -1)
            {
                cout << "Record NotFound";
                throw 505;
            }
            else
            {
                cout << "Record Found\n";
                cout << "Enter Updated Record \n";
                string n, a, d, i;
                cout << "Enter your First Name  with your CINIC like ''name(your CINIC num):'' : ";
                cin >> n;
                cout << "Enter Age : ";
                cin >> a;
                cout << "Enter Joining Date in numbers : ";
                cin >> d;
                cout << "Enter Contact Information :  ";
                cin >> i;
                name[a1] = n;
                age[a1] = a;
                dateJoined[a1] = d;
                contactinfo[a1] = i;
```

```cpp
                }
                else if (choice == 4)
                {
                    display(index, name, age, dateJoined, contactinfo);
                }
                else if (choice == 5)
                {
                    int a;
                    string c;
                    cout << "Enter your First Name  with your CNIC like ''name(your CNIC num):''  "<<endl;
                    cin >> c;

                    int a1 = search(name, c, index);
                    if (a1 == -1)
                    {
                        cout << "Record not found : \n";
                        throw 505;
                    }
                    else
                    {
                        cout << " Record found : \n  ";
                        cout << "1. Premium customers : ";
                        cout << "\n2. Regular customer : \n";
                        cout<<"3.Student Packages:\n";
                        cin >> a;

                        if (a == 1)
                        {
                            int b;
```

```cpp
                        cout<<"3.Student Packages:\n";
                        cin >> a;

                        if (a == 1)
                        {
                            int b;
                            int z;
                            do
                            {
                                cout << "Premium packages start from 5000 per month\n";
                                cout<<"to see the facilites here enter  '0'"<<endl;
                                cin>>z;
                                if(z==0)
                                {
                                    cout << "Personal Training\n";
                        cout << "Personal Nutrition Counselling\n";
                        cout << "Cardio And Strength Training\n";
                        cout << "Spa Facilities\n";
                        cout << "Swimming Pool\n";
                        cout << "Luxury Locker Rooms\n";
                        cout << "Sauna\n";
                        cout << "Changing Room\n";
                                }
                                cout << "Enter deposit  if you want to avail : ";
                                cin >> b;

                            } while (b < 5000);
                            cout << "\t\tamount deposited"<<endl;
                            cout<<"\t\tnow you can start GYM"<<endl;
                        }
```

```
                                        code.cpp          code2.cpp  ×        records.txt         code2.exe
2.cpp > 🔷 displayMenu()
                            cout << "\t\tamount deposited"<<endl;
                            cout<<"\t\tnow you can start GYM"<<endl;
                    }
                else if(a==3)
                {

                        int a,b,d;

                        cout<<"Student packages require REGISTRATION NO of Institute\n";
                        cin>>a;
                        cout<<"Their deposit starts from 1500\n";
                        cout<<"Enter 5 if you want to see facilities:\n";
                        cin>>d;
                        if(d==5){


                      do{
                        cout<<"Their facilities are\n";
                        cout<<"Group classes\n";
                        cout<<"Training in group\n";
                        cout<<"Changing Rooms\n";
                        cout<<"Strength Excersises\n";
                        cout<<"Enter your deposit\n";
                        cin>>b;}while(b>1500);
                        cout<<"You are eligible for Student package\n";
                    }
                }
                }
            }
            else if (choice == 6)
```

```
266                    }
267                }
268            }
269            else if (choice == 6)
270            {
271                // Save records to the file before exiting
272                saveToFile(index, name, age, dateJoined, contactinfo);
273                break;
274            }
275
276        }
277        catch (int mynum)
278        {
279            cout << "An exception occurred: " << mynum << endl;
280        }
281    }
282    return 0;
283 }
```

OUTPUTS :

```
PS C:\coding\gym mangagement sys> cd "c:\coding\gym mangagement sys\" ; if ($?) { g++ code2.cpp -o code2 } ; if ($?) { .\code2 }
                    _GYM MANAGEMENT SYSTEM_
-----------------------------------------------------------------
1. Enter Record
-----------------------------------------------------------------
2. Delete Record
-----------------------------------------------------------------
3. Update Record
-----------------------------------------------------------------
4. Display Record
-----------------------------------------------------------------
5. Display customer packages
-----------------------------------------------------------------
6. Exit
-----------------------------------------------------------------
1
Enter your name with CNIC in bracket like ''name(your CNIC num):''
x(1212)
Enter Age : 23
Enter Joining Date in numbers: 12/12/23
Enter Contact Information :  33333333
Record Saved
1. Enter Record
-----------------------------------------------------------------
2. Delete Record
-----------------------------------------------------------------
3. Update Record
-----------------------------------------------------------------
4. Display Record
-----------------------------------------------------------------
5. Display customer packages
-----------------------------------------------------------------
6. Exit
-----------------------------------------------------------------
4
Records:
```

```
3. Update Record
_____
4. Display Record
_____
5. Display customer packages
_____
6. Exit
_____
4
Records:
Record 0
|Name = z(1313)| Age = 22| Date Joined = 12/7/23| Contact Information332222222|
Record 1
|Name = v(2222)| Age = 28| Date Joined = 11/11/23| Contact Information4444444|
Record 2
|Name = x(1212)| Age = 23| Date Joined = 12/12/23| Contact Information33333333|
1. Enter Record
_____
2. Delete Record
_____
3. Update Record
_____
4. Display Record
_____
5. Display customer packages
_____
6. Exit
_____
5
Enter your First Name  with your CNIC like ''name(your CNIC num):''
x(1212)
 Record found :
  1. Premium customers :
2. Regular customer :
3.Student Packages:
3
```

```
3.Student Packages:
3
Student packages require REGISTRATION NO of Institute
232997
Their deposit starts from 1500
Enter 5 if you want to see facilities:
5
Their facilities are
Group classes
Training in group
Changing Rooms
Strength Excersises
Enter your deposit
1400
You are eligible for Student package
1. Enter Record
_____
2. Delete Record
_____
3. Update Record
_____
4. Display Record
_____
5. Display customer packages
_____
6. Exit
_____
```

Data saved in file due to file handling:

❖ **Name of file is record.txt:**

```
≡ records.txt
  1    z(1313) · 22 · 12/7/23 · 332222222
  2    v(2222) · 28 · 11/11/23 · 4444444
  3    x(1212) · 23 · 12/12/23 · 33333333
  4
```