Comsats University Islamabad

Lab Project Report
GYM MANAGEMENT SYSTEM

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Project Report
(GYM MANAGEMENT SYSTEM)

Introduction:

This project is presented by Eeman, Kashif and Wajahat as their final semester project. It is a **Gym Management System** with the following features:

I. Login (Default Username **admin** and Password **anything**)
II. Main Menu
   a. Members
   b. Trainers
   c. Machines
   d. Booking of Machines

This is specifically designed for administrative use, where full authority rests in the hands of the owner. We have created four text files (AdminInfo, Members, trainer, Machines).

Dealing with 2d-Arrays, loops, methods, exception and files. All the acceptance, modification and deletion of data is occurring in 2d-Arrays. Program continuously updates data stored in files for long-term storage after any changes. All of the data in the files will be copied into 2D arrays for use by the application when it runs or starts. All the program is mainly working in arrays and using files only to store the data permanently.

Main Features:

I.   To access an application, a user must first authenticate in to our system using their username and password. The user is denied access when a login attempt fails. They serve as a security mechanism to guard against unauthorized access to sensitive information.

II. Gym management system can be useful if you've had trouble keeping track of members, trainers, machines, and booking information. This software is more engaging and practical to use because it has tools for adding, viewing, searching, and deleting any entity record or data.

III. This program can never be compromised in any way. The program is designed in such a way that no input may cause it to misbehave and will totally handle unwelcome input.

IV. The automatic generation of registration numbers is another characteristic that attracts attention. Any entity will automatically receive a registration number from the system, which will also check to make sure it hasn't already been used by another party. If this is the case, the application won't stop until a unique registration number is generated.

V.   The best feature is that when the program receives a member's registration number during a booking, it will first identify the purchased session by the member (morning or evening) at gym, before offering any available machines with that sessions' remaining bookings.

VI. With the help of some processing at the backend, the user will be able to see the remaining available booking of all machines at the output screen. A machine that is fully booked cannot take new reservations.

VII. Another feature of booking is that after a member has booked a machine once, the program will prevent them from booking it again. The program will also limit a member's ability to reserve more than 4 machines at once because we only allow 4 bookings per member.

VIII. The user can easily reset all reservations after a day or any session (morning or evening) is over.
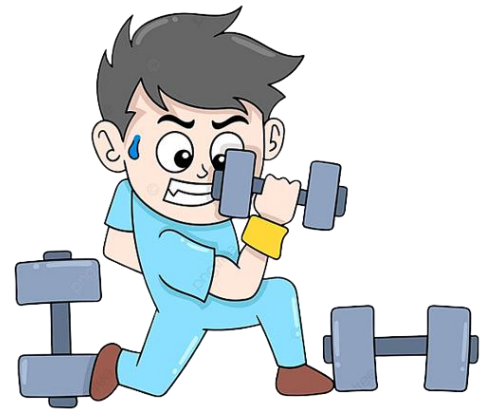
Task contribution:

Wajahat	Members
Eeman Basharat	Trainers
Kashif Kazmi	Machines + Booking Reservations

Login page:

We print a header and request the user's login and password. If inputs are incorrect, the system will repeatedly ask for the username or password (using a loop) until the proper username and password are entered. In the event that the user enters a wrong user name or password, the message "Enter correct username / password or enter "0" to exit" will be printed. The option for the user to modify their username and password is always available. Log out feature on main menu is also added which will exit the program and the login page will again prompt to the user.

Main Menu:

The main menu is the next step after the login validation. Features include: Members, Trainers, Machines, Machine Booking, Log Out, and Exit (To terminate the program).

```
                                    Admin Details
 Admin Name :   Mr.Haris Awaan

 GYM Timings:
Morning Time: 5am - 11am
Evening Time: 4pm - 11pm


                                 ***************
                                 ** MAIN MENU **
                                 ***************

1. Member
2. Trainer
3. Machines
4. Machine Booking
0. Logout
00.Exit

Enter Your Choice:
```

Members:

The admin will be given access to the following features in members: Details of members, View all members, Modify Member, Add new Member, Delete Member, and Main menu.

```
                                 ****************
                                 *** OPTIONS ***
                                 ****************



1- Details of Members
2- View All Members
3- Modify Members
4- Add new Member
5- Delete Member
6- Back To Main Menu
```

Details of member:

By entering their registration number in the option, users can search for any member's details, or the user can go back to main menu. Using for loop, the program will look for the registration number in an array. Once the program has the required member's row, it will display the information that is stored there. The system will display "Member not found, Enter correct one or Enter "Y" to return" if the member cannot be found.

```
-> Registration Number: 1648

-> First Name: M.Azmat

-> Last Name: Aziz

-> Date Of Birth: 18/06/1996

-> Gender: Male

-> Weight: 76.0 KG

-> Height: 5.9 Ft

-> Fitness Program: Muscle Gain

-> Contact Number: 0343-4347653

-> Trainer: Bilal Rajpoot

-> Workout Session: Morning

-> MemberShip: One Month (10,000PKR)
```

View All Member:

The ability to access all of the gym's member lists at any time is another benefit of this program. By selecting this option, the admin can access a list of all members along with their registration number and workout sessions.

```
    Reg. No.        |     Sessions       |        Names
                    |                    |
  _____|_____|_____
1   1648            |     Morning        |     M.Azmat Aziz
2   1391            |     Evening        |     Kamran Junayd
3   1590            |     Morning        |     Tariq Akmal
4   1395            |     Morning        |     Shabana Tariq
5   1189            |     Evening        |     Liaquat Jawed
6   1213            |     Evening        |     Shahrokh Ali
7   1108            |     Evening        |     Tanvir Abbas
```

Modify Member:

Another feature which makes the program best and flexible for usage is that the user can modify the details of members any time. User can modify the data of member by giving the registration number of member. If the registration number matches, then he will be allowed to make changes in that particular member's data. User still has the option to go back to the main menu.

```
Enter Registration Number: 1648


_____

                              * Modify the Details of M.Azmat Aziz *

What do you want to modify:
1- Name!
2- Last Name!
3- Weight!
4- Height!
5- Trainer!
6- Contact Number!
7- Program!
8- Session!
Y- Main Menu
Enter choice from (1-8) or 'Y' for Main Menu:
```

Add New Member:

With "Add new member," an admin can add a new member at any moment. With "Add new member," an admin can add a new member at any moment. The system will automatically generate a registration number for that member and check to see if it hasn't already been used by someone else. If it has, the program will then generate a new registration number until a unique registration number is generated. Then, by providing a few basic inputs, you can add a new member's details.

```
                                        Adding New Member



                Registration Number is ==> 1811

Enter the first name of Member:
```

Delete Member:

After receiving a registration number to delete a member, a program will begin reading lines from the file. If a line begins with the desired registration number, it will be replaced with null# to make it unreadable or empty for the program. Otherwise, lines will continue to be stored in a temporary string variable called "data," and after 200 lines have been read from the file, "data" will be written to a new file. Program will begin once desired

line is obtained "Found a member. Do you want to delete Y/N?" will also be shown. The user will receive a "Member not found" message if the application cannot locate the member.

```
Enter the RegNo to delete the Member: 1431

Member found
Do you want to Delete (Y/N):
```

```
Enter the RegNo to delete the Member: 1211
Member not found
```

Trainers:

In trainers following features will be given: View All Trainer, Trainer Details, Add Trainer, Modify Trainer, Delete Trainer, and Main Menu.

```
                              ****************
                              *** OPTIONS ***
                              ****************

1- View All Trainers
2- Detail of Trainer
3- Add Trainer
4- Modify Trainer
5- Delete Trainer
6- Back to Main Menu
Enter choice from(1 - 6):
```

View All Trainers:

This option gives the administrator access to view a list of all trainers along with their registration number with the help of loop.

```
No.      Reg. No.       Names

1.       1850           Ali
2.       1820           Bilal Rajpoot
3.       1248           Fatima
4.       1363           Bilal Ali
5.       1751           Kashif Kazmi
6.       1669           Noor Khan
7.       1943           Areeba Malik
8.       1225           Muhammad Aqib
9.       1863           Aiman Ghani
```

Detail of Trainer:

User can get all the details of the trainer. Registration number of trainer is required for this purpose. If the registration number of the trainer matches with the registration number stored in the array at specific index, then the information about the trainer will be displayed with their members list.

```
                                    Details of M.Yusuf Khan

-> Reg. No: 1850
-> Trainer's Name: M.Yusuf Khan
-> Gender: Male
-> Contact Number: 0312-5436543
-> Members:
   1-M.Azmat Aziz
   2-Kamran Junayd
```

Add Trainer:

With "Add new trainer," an admin can hire a new trainer for members at any moment. Program will search for the null space in file if the space is present then the trainer can be added at that particular index. The system will automatically generate a registration number for that trainer and check to see if it hasn't already been used by someone else. If it has, the program will then generate a new registration number until a unique registration number is generated. Then the program will prompt the user to enter the details of trainer. "Sorry, there is No available Vacancy" will be displayed on the output screen if all 20 trainers have already been hired by the gym or if there are no more openings.

```
              Registration Number is 2098

Enter the name of Trainer: Hamza

Select gender:
1- Male
2- Female
3- Others
Enter Choice(1-3): 1

Enter contact Number: 0301-9583959

                      Trainer Added Successfully
```

On the completion, a message will be displayed about the successful addition of trainer.

Modify Trainer:

In this gym management system, user is facilitated that he/she can modify the details of trainer at any time. On the first go, a list of all the trainers will be displayed to the user. Details of any trainer can be modified just with the entry of registration number. If the registration number of the trainer matches, then the user will be able to make changes in that particular trainer's data.

```
Trainers' names are as follows
-> 1850  M.Yusuf Khan
-> 1820  Bilal Rajpoot
-> 1248  Fatima
-> 1363  Bilal Ali
-> 1751  Kashif Kazmi
-> 1669  Noor Khan
-> 1943  Areeba Malik
-> 1225  Muhammad Aqib
-> 1863  Aiman Ghani
-> 2098  Hamza

Enter Registration number of trainer You want to Modify
(or 'Y' for Main Menu): 2098


What do you want to modify
1- Name
2- Contact Number
Enter Your Choice (1-2):1
```

Delete Trainer:

User has the access that he/she can delete the trainer. Registration number is just required for this. All the data will be fetched from the file in the form of string if the registration number matches then all the data stored at that particular index in string will be made equal to null (removal of data). Then that file is deleted, and the new file will be created with the same name and the updated data will be written in it. Then all the data will be fetched from the file and will get stored in the trainer's array.

```
Enter the Registration Number to delete Trainer or 'Y' For Main Menu : 2098

Trainer found
Do you want to Delete (Y/N): y


                        Trainer removed successfully
```

Machines:

We designed the machine's 2d array as

Machine Data				Morning Booking				Evening Booking			
Serial Number	Name	Weight	Exercise	Member Registration Number	--	--	--	Member Registration Number	--	--	--

Features of machine menu are as follows: Details of machine, View All Machines, Add Machine, Delete Machine, and Main Menu.

Details of Machine:

By entering the serial number, the user can view the machine's details. Loops will be used to check the serial number in the machine array. The user will get all the information related to that machine if the serial number matches. The user has the choice to return to the main menu.

View All Machines:

The user has the option to view all machine included in the system. The machine array will be iterated over in a loop, which will display information about each machine, including its name and registration number.

```
                                List Of Machines

Serial No.              Names

1685          |         Butteryfly Press
1158          |         Lat Pulldown
1355          |         Bicep Curl
1543          |         Push Down Station
1931          |         Abs Swing
1233          |         Overhead Press
1501          |         Leg Extension
1910          |         Dumbbell
```

Add new Machine:

User can add new machine. The program will first check the available slot for new machine if it is available then the registration number of the machine will be auto generated and then it will get checked if any other machine has same registration number, then new registration number will be allotted. User a will have to add the information and then it will be saved at its particular index. Before adding exercise, a list of exercises will be displayed to the user. If all 15 machines are still operational in the gym, the message "Sorry, there is no space for new machine" will appear on the output screen.

```
            Serial Number is ==> 1878

Enter the name of Machine: Dumbbell

Enter Weight in Kg: 57

Exercise :
1- Chest
2- Back
3- Bicep
4- Triceps
5- ABS
6- Shoulders
7- Legs
8- Others
```

Delete Machine:

User can delete the machine by its registration number. All the data from machine file will be fetched. The registration number will be checked against the data from file if it matches then the machine is found, and the user will be prompted to with the option to delete the machine. All the data from file is going to be fetched in the string if the registration number matches it will make it null and then it will delete the file. Then new file will be generated with the same name in which all the updated data is written. After writing the data then the array will be updated by the data from file.

```
                               ***************
                               *** OPTIONS ***
                               ***************

1- Details of a Machine
2- View All Machines
3- Add new Machine
4- Delete Machine
5- Back to Main Menu
Enter choice from(1 - 5): 4


Enter the Serial No. to delete Machine: 1910

Machine found
Do you want to Delete (Y/N): y

                           Machine removed successfully
```

Machine Booking:

There are the following submenus in the machine booking menu: Book a machine, Cancel Booking, Booking Details, Morning time reservation, Evening time reservation, Reset reservation, and Main Menu.

```
1. Book a machine
2. Cancel Booking
3. Booking Details
4. Morning Time Reservations
5. Evening Time Reservations
6. Reset Reservations
7. Back to Main Menu
```

Book a Machine:

User can book a machine just with the registration number of member or can go back to the main menu. For the facilitation, user has the access to view the list of members.

```
Enter the Member's Registration Number (XXXX) or 'Y' for Main menu :
OR Enter v to view Members list : v


    Reg. No.          |    Sessions      |        Names
_____|_____|_____
1    1648            |    Morning       |     M.Azmat Aziz
2    1391            |    Evening       |     Kamran Junayd
3    1590            |    Morning       |     Tariq Akmal
4    1395            |    Morning       |     Shabana Tariq
5    1189            |    Evening       |     Liaquat Jawed
```

When the program gets a member's registration number, it initially recognizes the paid session (morning or evening) at the gym before presenting any machines with that session's remaining bookings.

```
Enter the Member's Registration Number (XXXX) or 'Y' for Main Menu:
 OR v to View Members List:  1431


==> Faiza Malik paid for Morning session at the Gym,Here is the list of morning reservations that are available
                   Following Machines are Available
```

The user will be able to see the remaining available booking of all machines at the output screen with the aid of some processing at the backend.

```
                 Following Machines are Available

Serial No      Machines                              Booking

-> 1685  |   Butteryfly Press                  (3 Bookings are Available)
-> 1158  |   Lat Pulldown                      (3 Bookings are Available)
-> 1355  |   Bicep Curl                        (4 Bookings are Available)
-> 1543  |   Push Down Station                 (4 Bookings are Available)
-> 1931  |   Abs Swing                         (4 Bookings are Available)
-> 1233  |   Overhead Press                    (2 Bookings are Available)
-> 1501  |   Leg Extension                     (3 Bookings are Available)
-> 1878  |   Dumbbell                          Fully Booked
```

When a machine is fully booked, it cannot accept additional reservations.

```
> 1301   |  Leg Extension                        (5 Bookings are Avail
-> 1878  |  Dumbbell                              Fully Booked

Enter Serial number of machine (you want) from list or 'Y' for Main Menu:
1878

                    Sadly, the machine is completely booked.
```

After a member has booked a machine once, the program will prevent the member from booking it again.

```
Enter Serial number of machine (you want) from list or 'Y' for Main Menu:
1878

                    Sorry You've already reserved this machine, Select a different machine
```

The program will also limit a member's ability to reserve more than 4 machines at once because we only allow 4 bookings per member.

```
_____
                              Machine Reservation

Enter the Member's Registration Number (XXXX) or 'Y' for Main menu :
OR Enter v to view Members list : 1661


==> Osman Nawaz paid for Morning session at the Gym,Here is the list of morning reservations that are available

We apologise, but your Morning booking limit has reached. Maximum 4 Bookings are allowed
_____
```

User has the option for more bookings of he/she selects "No" then it will be taken to the booking page again.

```
                    Machine Booked Successfully by Faiza Malik

Want to book another one Y/N ? :
```

After the user has finished the booking process, the program will update the machines file for long-term storage right away with the help of the machines 2d array and loop.

Cancel the booking:

User can cancel the booking just with the registration number of member or can go back to the main menu. It will check the registration number in the members array if it is found then it will get that index. If the index where session is stored become equal to the morning, then it will check in the morning reservations of machine. If that member is found, then it will display its booking with the serial number of machines. Similarly, for evening.

```
Enter the Member's Registration Number (XXXX) or 'Y' for Main Menu
OR Enter 'V' to View Members list : 1431


                              ********************
                              **Morning Bookings**
                              ********************


 Serial No              Machines Name


> 1158          |       Lat Pulldown
> 1233          |       Overhead Press
> 1501          |       Leg Extension
> 1878          |       Dumbbell

To cancel a reservation, enter the Machine's Serial Number or 'Y' to return : 1878

Want to cancel your reservation Y/N ? : y
```

Then the user can cancel the booking of machine by its serial number. If the serial number matches with the data in machine array, then the booking array element will be made equal to null and the array is updated, then all the data from array is written into the file with the help of loops.

Booking Details:

User can view the booking details of any desired member for this the registration number of member is required if the registration number of member is found in the machines array (checking the registration No. in the machine array by traversing in the loop). If the registration number is found then it will check the part where the morning and evening reservations are placed.

First it will check in the indexes, if the member is found then it will display the name of member with the machine name.

If no member of that added registration number is found, then it will display "No Booking".

```
                              Machine Reservation Details

Enter the Member's Registration Number (XXXX) or 'Y' for Mainmenu : 1431

Member : Faiza Malik
                              ********************
                              **Morning Booking**
                              ********************


 Serial No              Machine Name

> 1158        |         Lat Pulldown
> 1233        |         Overhead Press
> 1501        |         Leg Extension


                              ********************
                              **Evening Booking**
                              ********************


 Serial No              Machine Name

> No Bookings.........

```

Morning booking Info:

The user has the option to view the booking information for the entire morning. The program will first go through the machine array (from index 4 to 7), checking each machine against the members array, and if a booking is found, it will start displaying the machine name, member name, and registration number. If no booking is discovered, massage will be displayed. "No Bookings..."

```
                         ********************
                         **Morning Booking**
                         ********************


 Machines Name                          Reserved By           Reg No's

-> Butteryfly Press        |            Osman Nawaz            1661
-> Lat Pulldown            |            Osman Nawaz            1661
-> Lat Pulldown            |            Faiza Malik            1431
-> Overhead Press          |            Faiza Malik            1431
-> Overhead Press          |            Osman Nawaz            1661
-> Leg Extension           |            Faiza Malik            1431
-> Dumbbell                |            Osman Nawaz            1661
```

Evening booking Info:

The user can choose to see all of the booking details for the evening. When a booking is identified, the program will start showing the machine name, member name, and registration number after going through the machine array (from index 8 to 11) and checking each machine against the members array. If no booking is discovered, massage will be displayed. "No Bookings…"

```
                    ********************
                    **Evening Booking**
                    ********************


Machines Name                          Reserved By              Reg No's

> No Bookings.........
```

Reset Reservation:

User can reset the reservations. Menu of reset reservations:

```
                              ************************
                              **Reset Reservations**
                              ************************


Which Reservations would you like to Reset?
1. Morning
2. Evening
3. Both
0. Main Menu
```

The loop will go through the machine array in the following order: Morning: index 4 to 7, Evening: index 8 to 11, and Both: index 4 to 11. With each traversal, the data will be set to null, and the new data will then be saved in the file (writing in file).

Thus, while looking for a blank space for new bookings, the program will consider null because it has a blank, writeable space available.

```
Do you want to remove all of the Reservation details Y/N ?
Enter Your Choice:
```