IST 659 Database Management & Administration
Project Report

Gym Management System

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Table of Contents

1. Project Scope & Summary

The Gym Center Management System is a comprehensive solution designed to streamline the operations of gyms. It encompasses a range of features to assist gym owners and staff in efficiently managing their facilities and enhancing member experiences. The system includes several essential tables that are fundamental for organizing and storing data. These tables will be used to manage various aspects of the gym's operations. We have chosen "Gym Management System" as our project topic for this term as gyms are widely setup and encompass a huge chunk of the healthcare industry as well, thereby making it a relevant and practical project.

We have incorporated database tables like Members, Trainers, Equipments, Sessions, Diets, Member Payments, etc. in our system. The "Members" table includes data like the Member Name, Member ID, Member Age etc, thereby providing a particular Member's information. The System will allow the admin to register a new member, update or retrieve an existing member by referencing it through Member ID. Similarly, the "Trainers" table will include similar data for an Employee and the admin will be able to add, update or retrieve an employee by referencing it through Trainer ID. The "Equipments" table will include the data

of different Equipments in the fitness center, for e.g., Equipment Name, Equipment ID, Equipment Type, etc. Other tables will also include similar information and the tables can be linked to one another by referencing them with foreign keys used in the tables.

The System will also comprise of a user-friendly UI through which the admin will seamlessly be able to add, update and retrieve the required data. We will also incorporate the employee login and the member login (optional), through which the employees and members (optional) will be able to add, update and retrieve their data. We will try our best to incorporate efficient features in the system thereby making it seamless for the users.

2. Conceptual Data Model Diagram
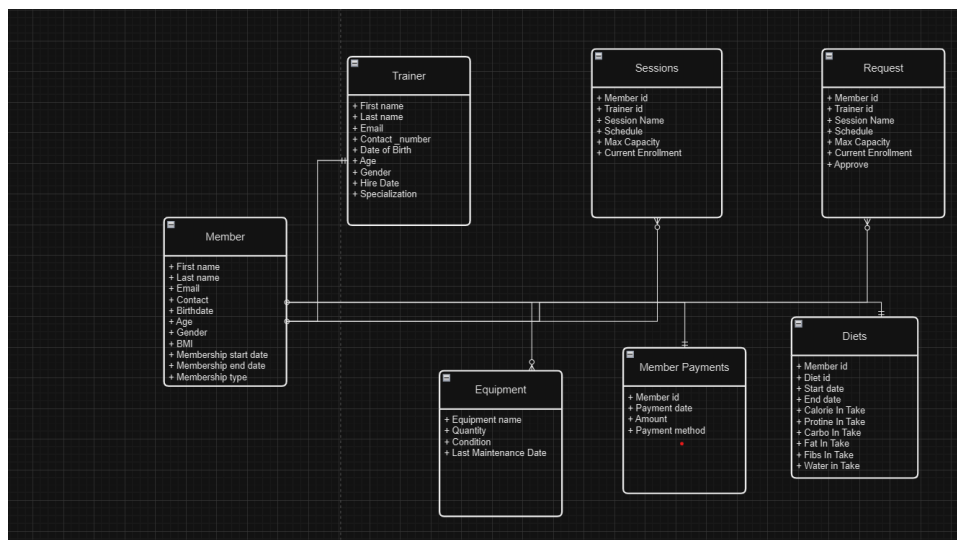
3. Logical Data Model Diagram
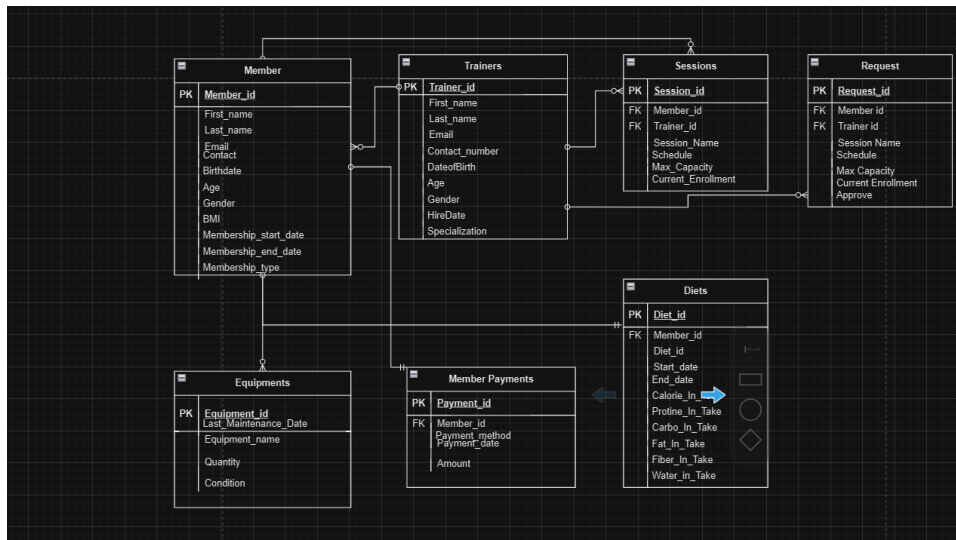
4. Tools Used

ER Diagrams- Draw.io

Backend- Azure Data Studio

Frontend- Power Apps

5. Dataset and SQL Code

```sql
73    select * from Members
74
75    CREATE TABLE Trainers (
76        TrainerID VARCHAR(10) PRIMARY KEY,
77        FirstName VARCHAR(50),
78        LastName VARCHAR(50),
79        Email VARCHAR(50),
80        ContactNumber VARCHAR(15),
81        DateOfBirth DATE,
82        Age INT,
83        Gender VARCHAR(10),
84        HireDate DATE,
85        Specialization VARCHAR(50)
86    );
87
88    SELECT * FROM Trainers
```

Results Messages

	TrainerID	FirstName	LastName	Email	ContactNumber	DateOfBirth	Age	Gender	HireDate	Specialization
1	T1	John	Doe	johndoe@email.com	123456789	1985-03-15	36	Male	2021-05-10	Yoga
2	T2	Emma	Smith	emmas@email.com	987654321	1990-08-20	31	Female	2020-11-28	CrossFit
3	T3	Michael	Johnson	michaelj@email.com	456789123	1980-11-03	41	Male	2019-06-14	Weight Training
4	T4	Sophia	Brown	sophiab@email.com	741852963	1995-02-18	26	Female	2022-03-22	Cardio
5	T5	Daniel	Garcia	dan@email.com	369258147	1988-09-28	33	Male	2020-08-07	Pilates

```sql
97
98
99     CREATE TABLE Sessions (
100        SessionID INT PRIMARY KEY,
101        MemberID VARCHAR(10),
102        TrainerID VARCHAR(10),
103        SessionName VARCHAR(50),
104        Schedule VARCHAR(50),
105        MaxCapacity INT,
106        CurrentEnrollment INT,
107        FOREIGN KEY (MemberID) REFERENCES Members(MemberID),
108        FOREIGN KEY (TrainerID) REFERENCES Trainers(TrainerID)
109    );
110
111    SELECT * FROM Sessions
112
```

Results Messages

	SessionID	MemberID	TrainerID	SessionName	Schedule	MaxCapacity	CurrentEnrollment
1	1	M001	T1	Yoga Class	Monday 10:00 AM	20	15
2	2	M002	T2	CrossFit Workout	Wednesday 5:00 PM	25	20
3	3	M003	T2	Weight Training	Friday 8:00 AM	30	25
4	4	M004	T4	Pilates Session	Tuesday 6:30 PM	15	12
5	7	NULL	T1	Pilates	Monday 09:00 AM	20	15
6	11	NULL	T5	CrossFit Workout	Monday 10:00 AM	15	20

```sql
123
124    CREATE TABLE Equipments (
125        EquipmentID INT PRIMARY KEY,
126        EquipmentName VARCHAR(50),
127        Quantity INT,
128        Condition VARCHAR(50),
129        LastMaintenanceDate DATE
130
131    );
132
133    SELECT * FROM Equipments
134
```

Results Messages

	EquipmentID	EquipmentName	Quantity	Condition	LastMaintenanceDate
1	1	Treadmill	5	Good	2022-12-05
2	2	Elliptical Machine	8	Excellent	2022-11-18
3	3	Stationary Bike	10	Fair	2022-10-25
4	4	Dumbbells (5 lbs)	20	Good	2022-12-10
5	5	Dumbbells (10 lbs)	15	Fair	2022-11-30
6	6	Barbell Set	6	Excellent	2022-11-28
7	7	Kettlebells	12	Good	2022-12-02
8	8	Resistance Bands	25	Excellent	2022-10-20
9	9	Yoga Mats	30	Good	2022-12-08
10	10	Jump Ropes	18	Fair	2022-11-25
11	11	Leg Press	2	Excellent	2023-11-01
12	15	Stationary Bike	4	Excellent	2023-11-08
13	20	Stationary Bike	2	Fair	2023-11-09
14	21	Dumbbells (5 lbs)	5	Fair	2023-11-10

```sql
150    CREATE TABLE Diets (
151        DietID VARCHAR(10) PRIMARY KEY,
152        MemberID VARCHAR(10),
153        DietType VARCHAR(50),
154        StartDate DATE,
155        End_Date DATE,
156        CalorieIntake DECIMAL(10, 2),
157        ProteinIntake DECIMAL(10, 2),
158        CarbIntake DECIMAL(10, 2),
159        FatIntake DECIMAL(10, 2),
160        FiberIntake DECIMAL(10, 2),
161        WaterIntake VARCHAR(50)
162        FOREIGN KEY (MemberID) REFERENCES Members(MemberID)
163    );
164
```

Results Messages

	DietID	MemberID	DietType	StartDate	End_Date	CalorieIntake	ProteinIntake	CarbIntake	FatIntake	FiberIntake	WaterI
1	D1	M001	Keto	2022-01-10	2022-02-10	1800.00	120.00	30.00	150.00	25.00	8 gla
2	D2	M002	Paleo	2022-02-15	2022-03-15	2000.00	100.00	50.00	100.00	30.00	10 gl
3	D3	M003	Vegan	2022-03-20	2022-04-20	1700.00	80.00	60.00	80.00	35.00	9 gla
4	D4	M004	Low-Carb	2022-04-05	2022-05-05	1600.00	110.00	40.00	120.00	20.00	7 gla
5	D5	M005	Keto	2022-05-12	2022-06-12	1900.00	130.00	35.00	140.00	27.00	8 gla

```sql
175
176  ∨ CREATE TABLE MemberPayments (
177        PaymentID VARCHAR(10) PRIMARY KEY,
178        MemberID VARCHAR(10),
179        PaymentDate DATE,
180        Amount DECIMAL(10, 2),
181        PaymentMethod VARCHAR(20)
182        FOREIGN KEY (MemberID) REFERENCES Members(MemberID)
183
184    );
185
```

Results Messages

	PaymentID	MemberID	PaymentDate	Amount	PaymentMethod
1	P1	M001	2022-01-10	50.00	Credit Card
2	P10	M010	2022-10-10	85.00	Credit Card
3	P11	M011	2022-11-15	95.00	Debit Card
4	P12	M012	2022-12-20	70.00	Online Payment
5	P13	M013	2023-01-25	75.00	Cash
6	P14	M014	2023-02-28	80.00	Credit Card
7	P15	M015	2023-03-05	60.00	Debit Card
8	P16	M016	2023-04-10	100.00	Online Payment
9	P17	M017	2023-05-15	55.00	Cash
10	P18	M018	2023-06-20	70.00	Credit Card
11	P19	M019	2023-07-25	90.00	Debit Card
12	P2	M002	2022-02-15	75.00	Cash
13	P20	M020	2023-08-30	80.00	Online Payment
14	P3	M003	2022-03-20	60.00	Debit Card
15	P4	M004	2022-04-05	100.00	Online Payment
16	P5	M005	2022-05-12	55.00	Cash
17	P6	M006	2022-06-18	70.00	Credit Card
18	P7	M007	2022-07-25	80.00	Debit Card
19	P8	M008	2022-08-30	90.00	Online Payment

```sql
265
266
267    CREATE TABLE Requests (
268        RequestID VARCHAR(10) PRIMARY KEY,
269        MemberID VARCHAR(10),
270        TrainerID VARCHAR(10),
271        SessionName VARCHAR(50),
272        Schedule VARCHAR(50),
273        MaxCapacity INT,
274        CurrentEnrollment INT,
275        Approve BIT DEFAULT 0,
276        FOREIGN KEY (MemberID) REFERENCES Members(MemberID),
277        FOREIGN KEY (TrainerID) REFERENCES Trainers(TrainerID)
278    );
279
```

Results Messages

	RequestID	MemberID	TrainerID	SessionName	Schedule	MaxCapacity	CurrentEnrollment	Approve
1	REQ001	M001	T1	Yoga Class	Monday 5 PM	20	15	0
2	REQ002	M002	T2	Pilates Session	Wednesday 7 AM	15	10	0
3	REQ003	M003	T3	Cardio Workout	Friday 6 PM	25	20	0
4	REQ004	M004	T2	Zumba Fitness	Tuesday 6:30 PM	30	25	0
5	REQ005	M001	T1	Strength Training	Thursday 4 PM	18	12	0
6	REQ008	M008	NULL	Yoga Class	Monday 5 PM	NULL	NULL	0
7	REQ009	M009	NULL	Pilates Session	Thursday 4 PM	NULL	NULL	0
8	REQ010	M010	NULL	Cardio Workout	Thursday 4 PM	NULL	NULL	0
9	REQ011	M011	NULL	Strength Training	Tuesday 6:30 PM	NULL	NULL	0
10	REQ012	M012	NULL	Cardio Workout	Monday 5 PM	NULL	NULL	0
11	REQ013	M013	NULL	Cardio Workout	Thursday 4 PM	NULL	NULL	0
12	REQ014	M014	NULL	Cardio Workout	Thursday 4 PM	NULL	NULL	0

6. Application Screens
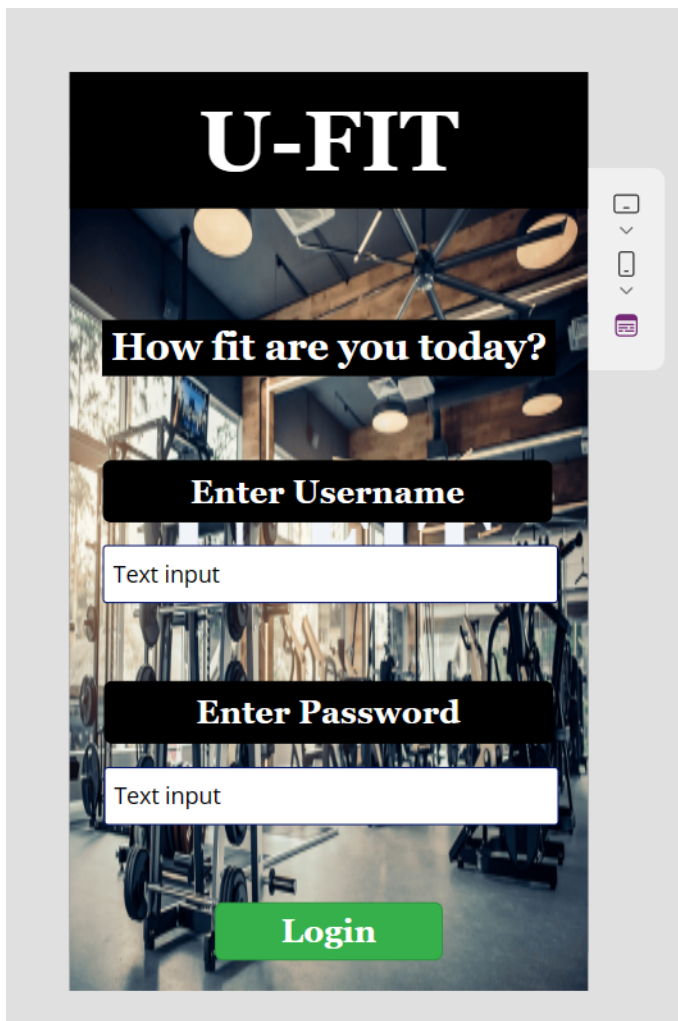
Welcome Member!!

Member Info

View Diet

View Sessions

Request New Session

Membership &
Payment Details

Logout

Search items

Grace Garry
M020 , 25Female
gracegarry@example.com
1234567890

>

Lucas Nguyen
M019 , 25Male
lucas@example.com
2345678901

>

Harper Scott
M018 , 30Female
harper@example.com
7890123456

>

Logan Wright
M017 , 33Male
logan@example.com
5678901234

>

Amelia Allen
M016 , 28Female
amelia@example.com
0123456789

>

Search items

John Doe
M001
Keto
>

Alice Smith
M002
Paleo
>

Michael Johnson
M003
Vegan
>

Emily Brown
M004
Low-Carb
>

Robert Wilson
M005
Keto
>
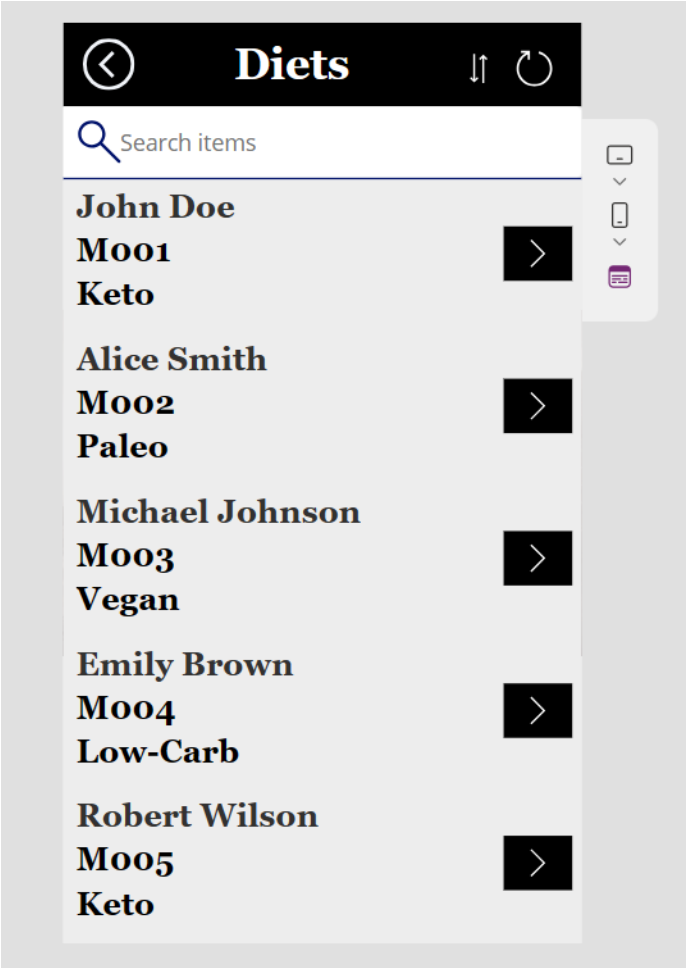
Diet Details

StartDate

10/01/2022

End_Date

10/02/2022

ProteinIntake

120

FiberIntake

25

WaterIntake

8 glasses

FatIntake

150

Search items

Yoga Class
John Doe , T1
Monday 10:00 AM

CrossFit Workout
Emma Smith , T2
Wednesday 5:00 PM

Weight Training
Emma Smith , T2
Friday 8:00 AM

Pilates Session
Sophia Brown , T4
Tuesday 6:30 PM

Pilates
John Doe , T1
Monday 09:00 AM

✕ Request New Session

* **RequestID**

REQ015

MemberID

M001

SessionName

Zumba Fitness ⌄

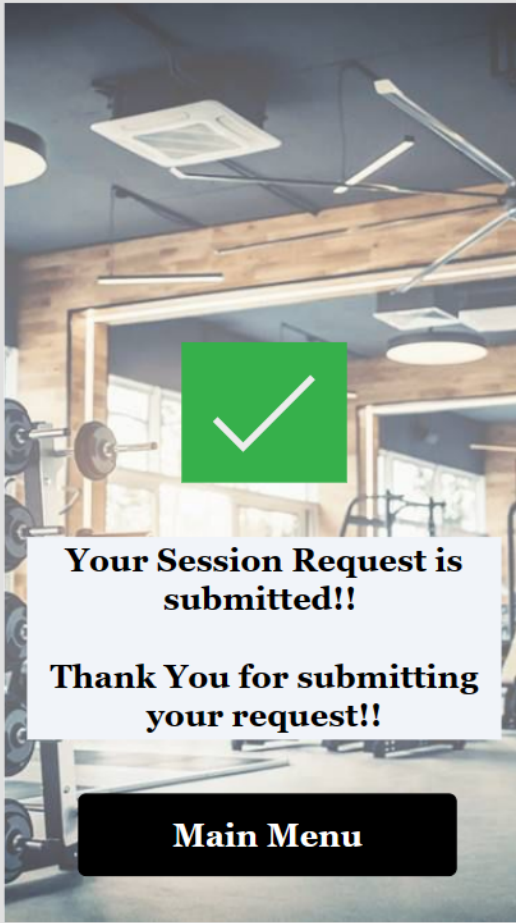**Schedule**

Thursday 4 PM ⌄

Submit Request

Your Session Request is submitted!!

Thank You for submitting your request!!

Main Menu

Search items

M001 , John Doe
50 , Credit Card
10/01/2022

M010 , Ava Lopez
85 , Credit Card
10/10/2022

M011 , Ethan Harris
95 , Debit Card
15/11/2022

M012 , Mia Clark
70 , Online Payment
20/12/2022

M013 , James Lewis
75 , Cash
25/01/2023

Welcome Trainer!!

Trainer Info

View Sessions

View Equipment

Add Equipment

Manage Session Requests

Logout

🔍 Search items

Daniel Garcia
T5 , Pilates ›
dan@email.com , 369258147

Emma Smith
T2 , CrossFit ›
emmas@email.com , 987654321

John Doe
T1 , Yoga ›
johndoe@email.com , 123456789

Michael Johnson
T3 , Weight Training ›
michaelj@email.com , 456789123

Sophia Brown
T4 , Cardio ›
sophiab@email.com , 741852963

Search items

T2
Friday 8:00 AM
Weight Training

T1
Monday 09:00 AM
Pilates

T5
Monday 10:00 AM
CrossFit Workout

T1
Monday 10:00 AM
Yoga Class

T4
Tuesday 6:30 PM
Pilates Session

New Session

* **SessionID**

20

SessionName

CrossFit Workout ▾

Schedule

Wednesday 5:00 PM ▾

TrainerID

T11

MaxCapacity

20

CurrentEnrollment

18

Search items

Resistance Bands
20/10/2022
Excellent

Stationary Bike
25/10/2022
Fair

Elliptical Machine
18/11/2022
Excellent

Jump Ropes
25/11/2022
Fair

Barbell Set
28/11/2022
Excellent

New Equipment

* **EquipmentID**

20

EquipmentName

Elliptical Machine

LastMaintenanceDate

08/12/2023

Condition

Fair

Quantity

3

🔍 Search items

REQ001 , John Doe
Yoga Class
Monday 5 PM　　　Approve

REQ002 , Alice Smith
Pilates Session
Wednesday 7 AM　　Approve

REQ003 , Michael Johnson
Cardio Workout
Friday 6 PM　　　Approve

REQ004 , Emily Brown
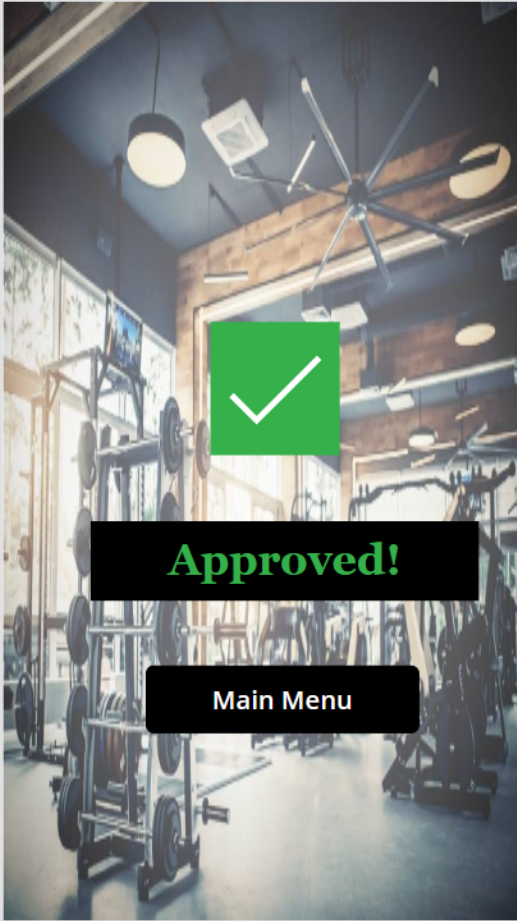**Zumba Fitness**
Tuesday 6:30 PM　　Approve

REQ005 , John Doe
Strength Training
Thursday 4 PM　　Approve

Approved!

Main Menu