

# **Star Fitness Gym Management System Database**

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## **Project Description**

Star Fitness is a Seattle, Washington-based gym offering memberships, personal training, and group fitness classes. The Star Fitness Gym Management System Database is designed to efficiently manage daily operations by tracking members, trainers, fitness classes, memberships, payments, and check-ins.

This database helps to:

- Maintain accurate records of members and staff.
- Track membership plans, payment history, and class participation.
- Prevent scheduling conflicts and enforce business rules, such as class capacities and active memberships.
- Provide management with quick access to member activity, trainer schedules, and class attendance.

## **Business Rules & Requirements**

### **Membership & Members**

1. Each member has exactly one active Membership Plan.
2. Membership IDs are 9 digits long.
3. Membership rates are restricted to \$20, \$30, or \$45 per month.
4. Member emails must be @gmail.com or @yahoo.com.

### **Trainers & Classes**

1. A trainer can lead multiple fitness classes.
2. Each fitness class is led by exactly one trainer.
3. Trainers cannot teach overlapping class times.
4. Trainer emails must use @starfitness.com.

## **Member-Class Participation**

1. Members can register for multiple fitness classes (many-to-many relationship).
2. Maximum of 20 members per class, though some classes may have smaller capacities.
3. Members must have an active membership to join a class or check in.

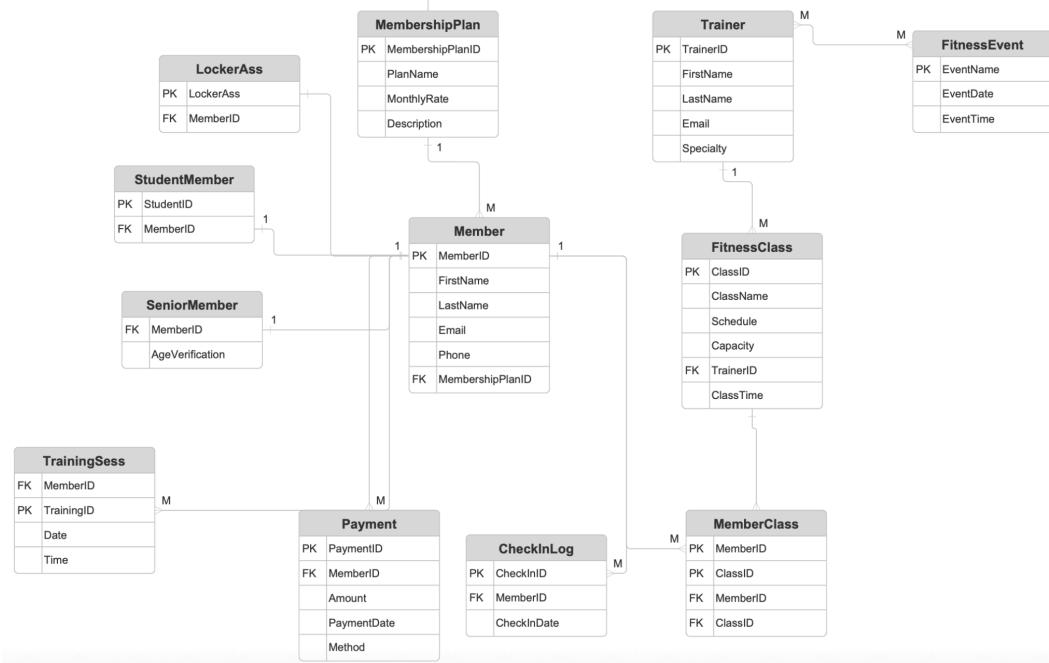
## **Payments & Check-ins**

1. Each payment is tied to exactly one member; members may make multiple payments.
2. Daily check-ins track member attendance.

## **Entities**

- MembershipPlan
- Member
- StudentMember (Subtype of Member)
- SeniorMember (Subtype of Member)
- Trainer
- FitnessClass
- MemberClass
- TrainingSess
- Payment
- CheckIn
- LockerAssignment (Weak Entity)
- FitnessEvent

## ER Diagram



## Relationships

### One-to-Many:

- MembershipPlan → Member — each membership plan can have multiple members, but each member has only one active membership plan.
- Trainer → FitnessClass — a trainer can lead multiple fitness classes, but each class is led by exactly one trainer.
- Trainer → FitnessEvent — a trainer can lead multiple fitness events, but each event is led by only one trainer.
- Member → Payment — each member can make multiple payments, but each payment belongs to exactly one member.
- Member → CheckIn — each member can have multiple check-ins, but each check-in belongs to only one member.

### Many-to-Many:

- Member ↔ FitnessClass via MemberClass — members can attend multiple classes, and classes can have multiple members.
- Member ↔ FitnessEvent — members can attend multiple events, and each event can have multiple members.
- Member ↔ Trainer via TrainingSess — members can book multiple training sessions, and trainers can have multiple sessions with different members.

### **Weak Entity:**

- LockerAssignment — depends on both LockerNumber and MemberID; a locker cannot exist without being assigned to a member.

### **One-to-One (Optional / Subtype):**

- StudentMember → Member — subtype representing student members (1:1).
- SeniorMember → Member — subtype representing senior members (1:1).

### **Query 1 – Member Info with Membership Plan**

```
SELECT M.MemberID, M.FirstName, M.LastName, MP.PlanName
FROM Member AS M
INNER JOIN MembershipPlan AS MP ON M.MembershipPlanID = MP.MembershipPlanID;
```

### **Query 2 – Member Classes with Trainer**

```
SELECT M.FirstName, M.LastName, FC.ClassName, T.FirstName AS TrainerFirst
FROM (MemberClass AS MC
INNER JOIN Member AS M ON MC.MemberID = M.MemberID)
INNER JOIN (FitnessClass AS FC
INNER JOIN Trainer AS T ON FC.TrainerID = T.TrainerID)
ON MC.ClassID = FC.ClassID;
```

### **Query 3 – Trainer Specialties**

```
SELECT T.FirstName, T.LastName, TS.SpecialtyName
FROM Trainer AS T
```

```
INNER JOIN TrainerSpecialty AS TS ON T.TrainerID = TS.TrainerID;
```

#### **Query 4 – Member Payments & Check-Ins**

```
SELECT M.FirstName, M.LastName, P.Amount, P.PaymentDate, C.CheckInTime  
FROM (Member AS M  
INNER JOIN Payment AS P ON M.MemberID = P.MemberID)  
INNER JOIN CheckIn AS C ON M.MemberID = C.MemberID;
```

#### **Design Rationale:**

The database ensures data integrity, prevents overbooked classes, and maintains accurate membership and payment records. Weak entities efficiently handle many-to-many relationships. Business rules such as maximum class capacity and active membership requirements are enforced through table relationships and data validation.

Access - Database1 : Database : C:\Users\loisia\Documents\Database1.accdb

Navigation Pane

Clipboard Sort & Filter Records Text Formatting

CheckinLog MemberClass Payment Member FitnessClass MembershipPlan Trainer LockerAss TrainingSess FitnessEvent

CheckinID MemberID CheckinDate Click to Add

CheckinID	MemberID	CheckinDate
C1	100000001	7/1/2025
C2	100000002	7/1/2025
C3	100000003	7/2/2025
C4	100000004	7/2/2025
C5	100000005	7/3/2025
C6	100000006	7/3/2025
C7	100000007	7/4/2025
C8	100000008	7/4/2025
C9	100000009	7/5/2025
C10	100000010	7/5/2025
C11	100000011	7/6/2025
C12	100000012	7/6/2025
C13	100000013	7/7/2025
C14	100000014	7/7/2025
C15	100000015	7/8/2025
C16	100000016	7/8/2025
C17	100000017	7/9/2025
C18	100000018	7/9/2025
C19	100000019	7/10/2025
C20	100000020	7/10/2025

Record: 4 21 of 21 | No Filter | Search

Dataset View

Clipboard Sort & Filter Records Text Formatting

PaymentID MemberID Amount PaymentType Member

P1 100000001 \$25.00 1/5/2025 Credit Card

P2 100000010 \$20.00 1/6/2025 Cash

P3 100000011 \$40.00 1/7/2025 Debit Card

P4 100000012 \$60.00 1/8/2025 Credit Card

P5 100000013 \$25.00 1/9/2025 Debit Card

P6 100000014 \$40.00 1/10/2025 Credit Card

P7 100000015 \$20.00 1/11/2025 Cash

P8 100000016 \$20.00 1/12/2025 Debit Card

P9 100000017 \$40.00 1/13/2025 Credit Card

P10 100000018 \$60.00 1/14/2025 Cash

P11 100000019 \$25.00 1/15/2025 Credit Card

P12 100000020 \$40.00 1/16/2025 Debit Card

P13 100000020 \$20.00 1/17/2025 Debit Card

P14 100000003 \$60.00 1/18/2025 Credit Card

P15 100000004 \$25.00 1/19/2025 Cash

P16 100000005 \$30.00 1/20/2025 Debit Card

P17 100000006 \$40.00 1/21/2025 Cash

P18 100000007 \$20.00 1/22/2025 Debit Card

P19 100000008 \$60.00 1/23/2025 Credit Card

P20 100000009 \$25.00 1/24/2025 Cash

P21 100000009 \$0.00

Record: 4 20 of 20 | No Filter | Search

Dataset View

Clipboard Sort & Filter Records Text Formatting

MemberID FirstName LastName Email Phone MembershipPlanID Click to Add

MemberID	FirstName	LastName	Email	Phone	MembershipPlanID
100000001	Alice	Johnson	alice.johnson@ 206-555-1001		1
100000002	Brian	Smith	brians.smith@ 206-555-1002		2
100000003	Cathy	Lee	cathy.lee@ 206-555-1003		3
100000004	David	Brown	david.brown@ 206-555-1004		1
100000005	Eva	Martinez	eva.martinez@ 206-555-1005		4
100000006	Frank	Wilson	frank.wilson@ 206-555-1006		2
100000007	Grace	Davis	grace.davis@ 206-555-1007		5
100000008	Henry	Clark	henry.clark@ 206-555-1008		3
100000009	Isla	Garcia	isla.garcia@ 206-555-1009		1
100000010	Jack	Lopez	jack.lopez@ 206-555-1010		5
100000011	Karen	Young	karen.young@ 206-555-1011		2
100000012	Liam	Hernandez	liam.hernandez@ 206-555-1012		3
100000013	Mia	Allison	mia.allison@ 206-555-1013		1
100000014	Noah	King	noah.king@ 206-555-1014		2
100000015	Olivia	Wright	olivia.wright@ 206-555-1015		4
100000016	Paul	Scott	paul.scott@ 206-555-1016		4
100000017	Quinn	Torres	quinn.torres@ 206-555-1017		2
100000018	Ryan	Nguyen	ryan.nguyen@ 206-555-1018		3
100000019	Sophia	Hill	sophia.hill@ 206-555-1019		1
100000020	Thomas	Adams	thomas.adams@ 206-555-1020		5

Record: 4 20 of 20 | No Filter | Search

Dataset View

Access - Database1 : ...

Navigation Pane

Table Tools

File Home Create External Data Database Tools Help Fields Table Tell me what you want to do

Views Clipboard Sort & Filter Records Find Text Formatting

Membership Plan MonthlyRate Description Click to Add

1 Basic	\$25.00	Access to gym equipment
2 Standard	\$40.00	Gym + Group Classes
3 Premium	\$60.00	Gym + Classes + Personal
4 Student	\$20.00	Discounted student rate
5 Senior	\$20.00	Discounted senior rate
*	(New)	\$0.00

Record: 1 of 5 | No Filter | Search

Access - Database1 : ...

Navigation Pane

Table Tools

File Home Create External Data Database Tools Help Fields Table Tell me what you want to do

Views Clipboard Sort & Filter Records Find Text Formatting

MemberID ClassID Click to Add

100000001	102
100000001	105
100000001	101
100000002	104
100000003	106
100000003	103
100000004	108
100000005	102
100000006	101
100000007	104
100000008	105
100000009	107
100000010	102
100000011	103
100000012	108
100000013	106
100000014	101
100000015	107
100000016	104
100000017	102
100000018	105
100000019	106
100000020	108
*	0

Record: 1 of 24 | No Filter | Search

Access - Database1 : ...

System Settings

Table Tools

File Home Create External Data Database Tools Help Fields Table Tell me what you want to do

Views Clipboard Sort & Filter Records Find Text Formatting

EventName EventDate EventTime Click to Add

CrossFit Challenge	8/25/2025	6:00:00 PM
Marathon Prep Seminar	8/20/2025	8:00:00 AM
Nutrition Bootcamp	8/22/2025	7:30:00 AM
Pilates Princess	8/30/2025	5:00:00 PM
Yoga Workshop	8/15/2025	10:00:00 AM
*		

Record: 1 of 6 | No Filter | Search

Access - Database1

File Home Create External Data Database Tools Help Fields Table Tools Database: C:\Users\loboasiak\Documents\Database1 Lois Bosisiako

Tell me what you want to do

Clipboard Sort & Filter Records Find Text Formatting

ClassID ClassName Schedule Capacity TrainerID Click to Add

ClassID	ClassName	Schedule	Capacity	TrainerID	
101	Strength Boots	Mon/Wed/Fri	20	1	6:00:00 AM
102	Morning Yoga	Tue/Thu	15	2	7:30:00 PM
103	Cardio Blast	Mon/Wed	25	3	5:00:00 PM
104	Spin Class	Tue/Thu/Sat	18	4	6:00:00 PM
105	Boxing Basics	Fri/Sat	12	5	4:00:00 PM
106	Pilates Flow	Mon/Wed	15	6	8:00:00 AM
107	CrossFit Challe	Tue/Thu	20	7	5:30:00 PM
108	Zumba Dance	Sat/Sun	30	8	10:00:00 AM
*			0		

Record: 14 of 14 Previous record Next record % No Filter Search

Datasheet View

A Access - Database1

Access - Database1

File Home Create External Data Database Tools Help Fields Table Tools Database: C:\Users\loboasiak\Documents\Database1 Lois Bosisiako

Tell me what you want to do

Clipboard Sort & Filter Records Find Text Formatting

TrainerID FirstName LastName Email Specialty Click to Add

TrainerID	FirstName	LastName	Email	Specialty	
1	John	Roberts	anna.roberts@starfitness.com	Yoga	
2	Mary	Miller	ben.miller@starfitness.com	Boxing	
3	David	White	cara.white@starfitness.com	Spin	
4	Emily	Hall	derek.hall@starfitness.com	Strength Traini	
5	Michael	Baker	ella.baker@starfitness.com	Pilates	
6	Sarah	Green	finn.green@starfitness.com	HIT	
7	James	Moore	gina.moore@starfitness.com	CrossFit	
8	Laura	Anderson	laura.anderson@starfitness.co	Zumba	
*	(New)				

Record: 14 of 8 Previous record Next record % No Filter Search

Datasheet View

A Access - Database1

Access - Database1 : ...

File Home Create External Data Database Tools Help Fields Table Tell me what you want to do

Cut Copy Paste Filter Advanced Refresh All More Selection Totals Spelling Go To Find Select Text Formatting

Clipboard Sort & Filter Records Find Text Formatting

Views LockerNumb MemberID Click to Add

LockerNumb	MemberID
LO1	100000002
LO2	100000007
LO3	100000009
LO4	100000012
LO5	100000013
LO6	100000014
LO7	100000017
LO9	100000018
LO10	100000020
*	0

Record: 4 of 9 > No Filter Search

Datasheet View

Access - Database1 : ...

Access - Database1 : ...

File Home Create External Data Database Tools Help Fields Table Tell me what you want to do

Cut Copy Paste Filter Advanced Refresh All More Selection Totals Spelling Go To Find Select Text Formatting

Clipboard Sort & Filter Records Find Text Formatting

Views MemberID TrainerID Date Time Click to Add

MemberID	TrainerID	Date	Time
100000001	1	8/1/2025	6:00:00 AM
100000002	2	8/3/2025	7:00:00 AM
100000003	2	8/1/2025	8:00:00 AM
100000005	3	8/2/2025	5:00:00 PM
100000009	1	8/2/2025	6:30:00 AM
100000009	5	8/2/2025	4:00:00 PM
100000003	3	8/3/2025	5:30:00 PM
100000011	4	8/3/2025	6:00:00 PM
100000015	5	8/4/2025	4:30:00 PM
100000019	1	8/4/2025	6:00:00 AM
100000020	2	8/5/2025	7:30:00 AM
*	0		

Record: 4 of 11 > No Filter Search

Datasheet View

Access - Database1 : ...