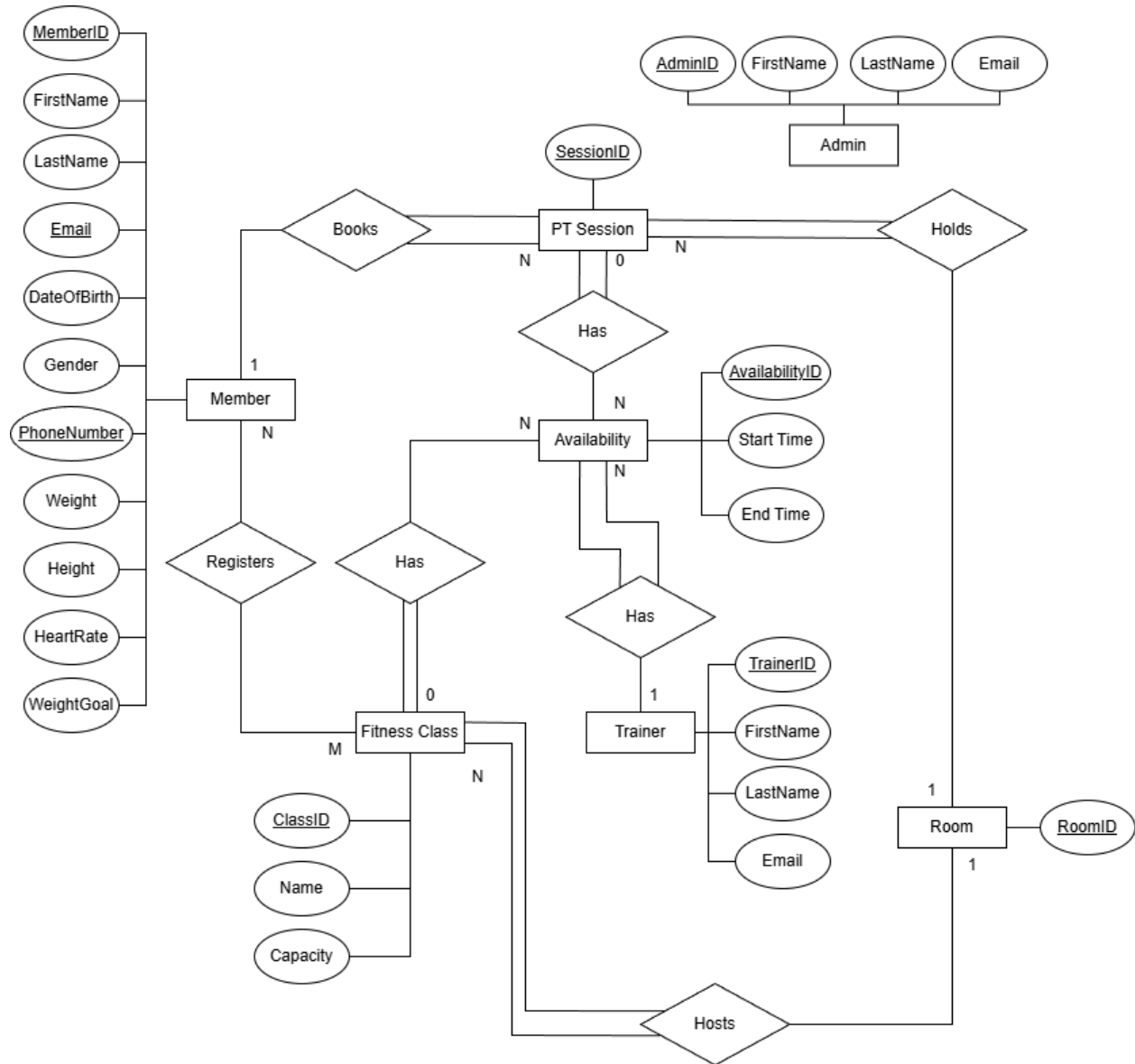
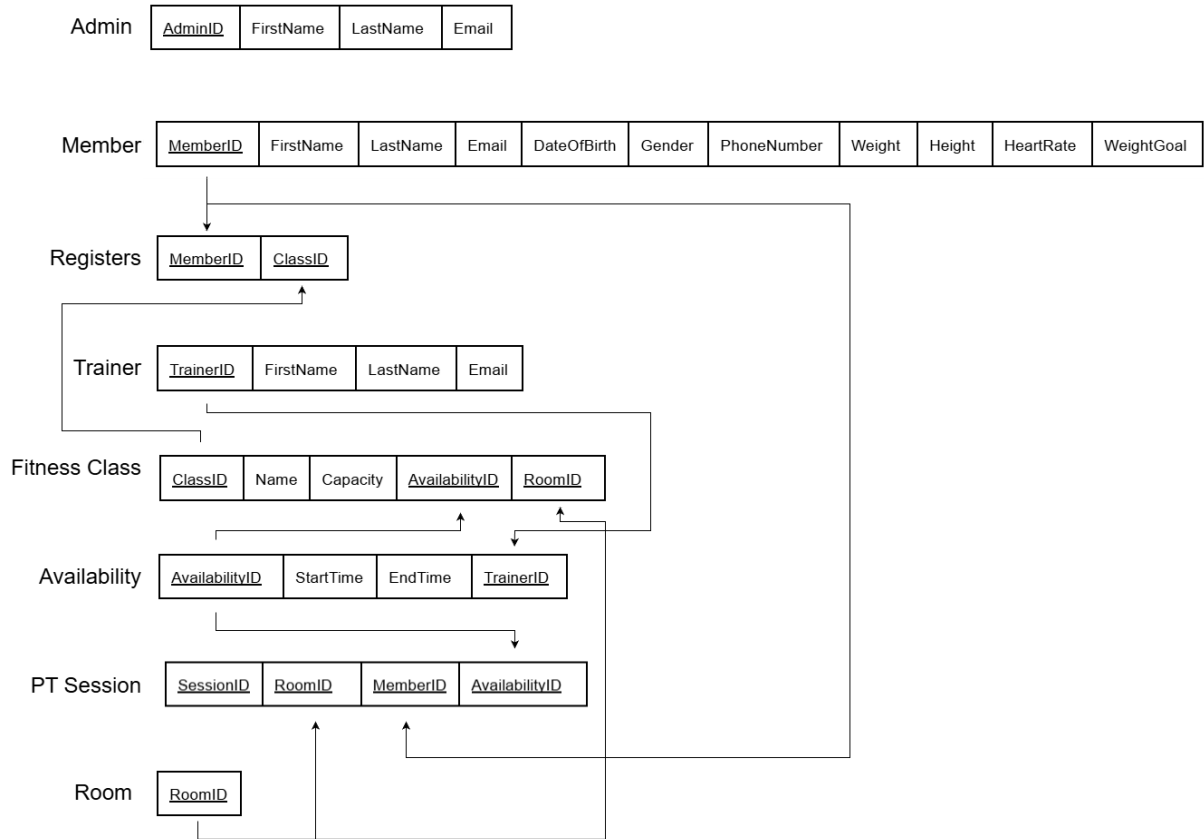


Final Project

ER Model



Relational Schema



Normalization

Relations

Admin (AdminID, FirstName, LastName, Email)

Member (MemberID, FirstName, LastName, Email, DateOfBirth, Gender, PhoneNumber, Weight, Height, HeartRate, WeightGoal)

Registers (MemberID, ClassID)

Trainer (TrainerID, FirstName, LastName, Email)

FitnessClass (ClassID, Name, Capacity, AvailabilityID, RoomID)

Availability (AvailabilityID, StartTime, EndTime, TrainerID)

PTSession (SessionID, RoomID, MemberID, AvailabilityID)

Room (RoomID)

Admin Functional Dependencies:

- AdminID -> FirstName, LastName, Email
 - No non-key attributes depend on other non-key attributes, so it is 3NF

Member Functional Dependencies:

- MemberID -> FirstName, LastName, Email, DateOfBirth, Gender, PhoneNumber, Weight, Height, HeartRate, WeightGoal
 - No non-key attributes depend on other non-key attributes, so it is 3NF

Registers Functional Dependencies:

- MemberID, ClassID -> no non-key attributes
 - No non-key attributes partially dependent, so it is 2NF
 - No non-key attributes depend on other non-key attributes, so it is 3NF

Trainer Functional Dependencies:

- TrainerID -> FirstName, LastName, Email
 - No non-key attributes depend on other non-key attributes, so it is 3NF

FitnessClass Functional Dependencies:

- ClassID -> Name, Capacity, AvailabilityID, RoomID
 - No non-key attributes depend on other non-key attributes, so it is 3NF

Availability Functional Dependencies:

- AvailabilityID -> StartTime, EndTime, TrainerID
 - No non-key attributes depend on other non-key attributes, so it is 3NF

PTSession Functional Dependencies:

- SessionID -> RoomID, MemberID, AvailabilityID
 - No non-key attributes depend on other non-key attributes, so it is 3NF

Room Functional Dependencies:

- No Functional Dependencies

The Registers relation is the only relation with composite primary keys, however there are no attributes dependent on it, therefore it follows 2NF.

No relations have non-key attributes depending on other non-key attributes, therefore they all follow 3NF.

Initial Data

Member

| <u>MemberID</u> | FirstName | LastName | Email | DateOfBirth | Gender | PhoneNumber | Weight | Height | Heart Rate | WeightGoal |
|-----------------|-----------|----------|----------------------------|-------------|--------|--------------|--------|--------|------------|------------|
| 1 | Nanako | Dojima | nanako.dojima@fitness.com | 2004-10-04 | Female | 111-111-1111 | 60 | 120 | 90 | 65 |
| 2 | Yu | Narukami | yu.narukami@fitness.com | 1994-07-10 | Male | 222-222-2222 | 140 | 180 | 80 | 145 |
| 3 | Akihiko | Sanada | akihiko.sanada@fitness.com | 1991-09-22 | Male | 333-333-3333 | 160 | 175 | 90 | 170 |
| 4 | Kanji | Tatsumi | kanji.tatsumi@fitness.com | 1996-01-19 | Male | 444-444-4444 | 143 | 180 | 95 | 148 |
| 5 | Chie | Satonaka | chie.satonaka@fitness.com | 1994-10-30 | Female | 555-555-5555 | 135 | 158 | 85 | 130 |

Trainer

| <u>TrainerID</u> | FirstName | LastName | Email |
|------------------|-----------|------------|--------------------------------|
| 1 | Will | Metaphor | will.metaphor@fitness.com |
| 2 | Strohl | Haliaetus | strohl.haliaetus@fitness.com |
| 3 | Eiselin | Hulkenberg | eiselin.hulkenberg@fitness.com |
| 4 | Heismay | Noctule | heismay.noctule@fitness.com |
| 5 | Basilio | Magnus | basilio.magnus@fitness.com |

Admin

| <u>AdminID</u> | FirstName | LastName | Email |
|----------------|-----------|----------|--------------------------------|
| 1 | Herlock | Sholmes | herlock.sholmes@fitness.com |
| 2 | Iris | Wilson | iris.wilson@fitness.com |
| 3 | Susato | Mikotoba | susato.mikotoba@fitness.com |
| 4 | Ryunosuke | Naruhodo | ryunosuke.naruhodo@fitness.com |
| 5 | Kazuma | Asogi | kazuma.asogi@fitness.com |

Room

| <u>RoomID</u> |
|---------------|
| 1 |
| 2 |
| 3 |
| 4 |
| 5 |

Availability

| <u>AvailabilityID</u> | StartTime | EndTime | <u>TrainerID</u> |
|-----------------------|---------------------|---------------------|------------------|
| 1 | 2025-12-01 13:00:00 | 2025-12-01 14:00:00 | 1 |
| 2 | 2025-12-03 15:00:00 | 2025-12-03 16:00:00 | 2 |
| 3 | 2025-12-03 15:00:00 | 2025-12-03 16:00:00 | 3 |
| 4 | 2025-12-07 18:00:00 | 2025-12-07 19:00:00 | 4 |
| 5 | 2025-12-05 14:00:00 | 2025-12-05 15:00:00 | 5 |
| 6 | 2025-12-02 14:00:00 | 2025-12-02 15:00:00 | 1 |
| 7 | 2025-12-02 16:00:00 | 2025-12-02 17:00:00 | 2 |
| 8 | 2025-12-04 13:00:00 | 2025-12-04 14:00:00 | 3 |
| 9 | 2025-12-06 15:00:00 | 2025-12-06 16:00:00 | 4 |
| 10 | 2025-12-07 15:00:00 | 2025-12-07 16:00:00 | 5 |

Fitness Class

| <u>ClassID</u> | Name | Capacity | <u>AvailabilityID</u> | <u>RoomID</u> |
|----------------|---------|----------|-----------------------|---------------|
| 1 | Yoga | 5 | 1 | 1 |
| 2 | Boxing | 2 | 2 | 2 |
| 3 | Cycling | 10 | 3 | 3 |
| 4 | Dance | 15 | 5 | 4 |
| 5 | HIIT | 6 | 4 | 5 |

PT Session

| <u>SessionID</u> | <u>RoomID</u> | <u>MemberID</u> | <u>AvailabilityID</u> |
|------------------|---------------|-----------------|-----------------------|
| 1 | 1 | 1 | 6 |
| 2 | 2 | 2 | 7 |
| 3 | 3 | 3 | 8 |
| 4 | 4 | 4 | 9 |
| 5 | 5 | 5 | 10 |

Registers

| <u>MemberID</u> | <u>ClassID</u> |
|-----------------|----------------|
| 1 | 4 |
| 2 | 1 |
| 3 | 2 |
| 4 | 3 |
| 5 | 5 |