

# Functional Dependencies:

Members(id, Name, Date\_Joined, Tier\_Name, Trainer\_ID)

Keys: (id)

Functional dependencies of the relation Members:

1. id  $\rightarrow$  Name, Date\_Joined, Tier\_Name, Trainer\_ID

Trainers(Emp\_id, Specialization)

Keys: (Emp\_id)

Functional dependencies of the relation Trainers:

1. Emp\_id  $\rightarrow$  Specialization

Employees(id, Name, Date\_Joined, Salary)

Keys: (id)

Functional dependencies of the relation Employees:

1. id  $\rightarrow$  Name, Date\_Joined, Salary

Payments(id, Date\_Paid, Member\_id, Amount)

Keys: (id)

Functional dependencies of the relation Payments:

1. id  $\rightarrow$  Date\_Paid, Member\_id, Amount

Tiers(Name, Cost)

Keys: (Name)

Functional dependencies of the relation Tiers:

1. Name  $\rightarrow$  Cost

## Normal Form:

### 1NF

The database is in 1NF since every attribute of relations have atomic values

### 2NF

The database is in 2NF. Since all primary keys are single attributes, there are no non-empty proper subsets of any primary key, hence all attributes are fully functional dependent on the primary key.

### 3NF

The database is in 3NF since all values on LHS of any functional dependency are primary keys, and hence superkeys.