Gym Database Management System:

Database Specification:

Purpose, Business Problems Addressed and Business Rules

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Database Purpose:

The purpose of this database is to maintain branch-wise customer and billing information and calculate annual turnover of each branch to find the most profitable branch. This information is secured and will be used only by administrative teams to track the functioning of different branches.

Business Problems Addressed:

- Allow Gym database administrators to generate descriptive reports.
- Provide information on the functioning of each branch to make necessary improvements and to enhance existing facilities.
- Allow storage and maintenance of customer information to keep track of number of enrollments which also makes communication easier in case of emergencies.
- Allow storage of enrollment information to determine the popularity of fitness classes.
- Tracks payment and billing details to capture turnover.

Business rules:

- A branch may have one or more fitness equipment.
- A customer may have only one membership plan.
- A branch may have one or more classrooms.
- A classroom may be utilized by 0 or more fitness classes
- An employee belongs to only one branch and a branch will have at least one employee.
- An employee will have only one job type.
- An offer or discount may be given to zero or more customers.
- A customer may register to one or more fitness classes.
- A branch will have only one address.
- A person may have one or more addresses.
- An address may belong to one or more persons.

Design Requirements:

- Use Crow's Foot Notation.
- Specify primary key fields for each entity by specifying PK beside the field names.

- Draw a line between the fields of each table to show the relationships between each table. This line should be pointed directly to the fields in each table that are used to form the relationship.
- Specify which table is on the one side of the relationship by placing a one next to the field where the line starts.
- Specify which table is on the many side of the relationship by placing a crow's foot symbol next to the field where the line ends.

Design Decisions:

Entity Name	**Why entity included**	**How entity is related to other entities**
Branch	One of the primary objectives of the database is to maintain branch-wise customer and billing information to record annual turnover of each branch. Functioning of each branch is monitored to enhance and improve the facilities to the customers and employees.	Branch entity's primary key BranchID relates to employees, classroom and equipment entities
Address	Address details of Branch and Persons are stored and maintained in Address entity.	Address entity's primary key relates to Branch and PersonAddress table where both Branch and Person's local addresses are stored.
Person	Information of every person irrespective of being an employee of a branch or a customer is maintained. This information is helpful to track the identity of an individual and is helpful during emergencies.	As a core entity of the database, Person entity relates to Employees and customer entities by its primary key Person_ID. It is related to Address entity as all address of a person are stored in Address entity.
PersonAddress	An associative entity which connects both Person and Address table stores the key values of Person and Address entities.	PersonAddress entity relates to Person entity and also Address entity as a Person can have many address and an address can belong to more than one person.
Customer	Information of every customer is stored and maintained in the database to track the number of enrollments. This helps improve the existing facilities based on the number of enrollments.	Customer entity is related to enrollment to keep track of number of enrollments to fitness classes. Each customer's information is stored in Person entity and hence customer entity is related to Person entity. It is related to discounts entity as some customers might hold discounts with their memberships. It is also related to

		PlanType and BillingRecord entities as each customer opts for a membership plan and the payment made by customer for a particular plan is maintained in BillingRecord entity.
PlanType	A fitness center may allow a customer to choose one or more plans. The amount paid for a membership plan is dependent on the type of plan chosen by a customer.	PlanType entity is related to Customer entity as customer choses zero or more plans and his payment is made according to the type of plan that is chosen.
BillingRecord	Transaction is an important part of the fitness database as it plays major role in tracking the turnover of the fitness center. Hence the amount paid by every customer is tracked and maintained in BillingRecord entity.	BillingRecord entity relates to Customer entity as the amount paid by customers are tracked and recorded in BillingRecord entity. A customer may have multiple BillingRecords, however a BillingRecord or statement belongs to one and only one customer.
Employees	Employees play an important role as they contribute to the functioning of every fitness center. Employees of fitness center include instructors, managers, admins.	Employee entity is related to branch entity as every employee works for at least one branch. It is related to JobTitle entity as different employees are assigned with different job roles. It is also related to PaymentRecord entity to store the payment information of every employee.
JobTitle	Every employee working in a Branch holds a specific job role and hence is assigned a JobTitle. A title decides the position of an employee and payment of every employee is based on the role he/she is working for.	JobTitle is directly related to Employee entity as all employees are assigned a specific role and are given a specific title. An employee can hold only one job title, but same job title can be assigned to more than one employee.
Classes	Fitness classes can include classes like yoga, Zumba, swimming and personal trainings. It also holds the information of instructors.	Classes entity is related to employee entity because every class is instructed by an instructor who is also an employee. It is related to classroom entity as the classes are held inside a classroom. Customers are enrolled to specific classes and hence the Classes entity is also related to the Enrollment entity.

ClassRoom	All fitness classes are held in a ClassRoom. A branch can have multiple classrooms either shared between different fitness classes or specific to each fitness class.	ClassRoom entity is related to Classes as every class is held inside a classroom. It is also related to Branch entity as each classroom belongs to a specific Branch.
Enrollment	A fitness member or a customer can be enrolled to a branch to register for one or more classes.	Enrollment entity is related to customer and classes tables as every member or a customer must be enrolled for one or more classes in a branch.
Equipment	Fitness equipment is an important part of a gym. Most customers prefer utilizing equipment like treadmill, exercise bikes, dumbbells to increase or maintain their fitness levels. Having good number of useful equipment can also attract more customers and hence enhance number of customer enrollments.	Equipment is related to branch entity. Information of any new equipment to be ordered or existing equipment to be replaced is tracked branch-wise. It is related to MaintenanceRecord entity to capture the maintenance details of fitness equipment. Also, as every equipment belongs to a category, it is related to EquipmentCategory entity.
EquipmentCategory	A Fitness Center can have multiple equipment. Every equipment belongs to a particular category.	EquipmentCategory entity is related to Equipment entity as each equipment belongs to a specific equipment category.
MaintenanceRecord	Information of equipment maintenance is captured in MaintenanceRecord entity. This information includes cost, date and details of the equipment maintenance.	MaintenanceRecord entity is related to equipment entity as it records the maintenance details of an equipment.
PaymentRecord	Payment must be given to all employees who work for a fitness branch based on number of working hours and their role. Payment cycle is monthly in our Fitness database.	Payment entity is directly related to employee entity as all the employees who work for a branch must be paid. The payment is based on the type of job that an employee holds.
Discounts	Discounts or offers attract customers and hence it helps enhance the number of customers being enrolled. Offers can be based on seasons or peak hours.	Discount entity is related to Customer entity. An offer or discount can be given to zero or more members and hence need not be made mandatory.