Project 2 deliverable

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Abstract

This a document that will describe all the business rules and display definitions for each of the entities identified in our business, a gym. firstly, we will discuss the upper most important entities, display tables about them and talk about their sub classes and how they enhance the data model as a whole. afterwards, I will discuss the high level knowledge of the business and how these entites came about. Models of the data will be strewn across the document to enhance the understanding. For detailed and summarized revision history, please see: https://github.com/adedomin/csc341-project

Contents

1. Introduction

The problem domain we seek to solve is organizing our knowledge of our gym business into a clear, concise data model. THe key being to represent the core parts of our business, to enhance the experience of out customer and to get insights into what we, the gym, need to do to make it better.

1.1. Example Use Cases

- The database should allow us to quickly discover the total value of the inventory.
- The database should allow us to calculate how much money we should make from subscriptions.
- The database should show employees what machines they are responsible for.
- The database should allow us to track broken down machines.
- The database should allow out sales and retention team to reach out to inactive members.
- The database should help us to make equipment purchasing decisions based on number of these equipments.
- The database should help us to find parts for broken machines, by finding them and returning a serial number to look up.
- The database should retain personal information for billing, handing out promotional offerings, etc.
- The database should assist trainers be notified who, a member, they are training.

1.2. Business Rules

Like all gyms and places of business there are people. People can be a variety of things; customers, employees and trainers. People have full names comprised of first names and last names. People are assigned their starting date into their record.

A person can be a customer. A customer shares the same id as a person record. The customer can be active or inactive if they paid their membership. The customer record should keep track of their last payment.

A person can also be an employee. An employee has a wage and a role.

A person can also be a trainer. A trainer record has no specific attribute.

1.2.1. Customer Interactions

A customer enrolls to services of the gym. An example of a service would be general gym membership. This general service would have a unique code, some type of identifying string for what it is and a base cost that the enrolled customer would be responsible for. Other services, like one-on-one personal trainer services, will have a trainer associated with it.

Services can have many customers and customers can have many services associated to them. Customers can also use equipment, however this interaction can't be precise.

1.2.2. Trainer Interactions

Trainers are special employees that teach classes and can provide personal services for customers.

1.2.3. Inventory Management

A gym has a large amount of very valuable equipment. It is important to keep track of it for accounting reasons, but also to ensure products are being properly maintained.

There is a general equipment definition with basic information like the brand and name of the product. The equipment has an accounting value. The equipment also has a date since it was bought and made available at the gym. For simplicity, it may be helpful to include a character that identifies what type of equipment it is.

An equipment can be a weightlifting equipment. Such equipment is special in that it is much more simpler and will likely be discarded if it were to break. The equipment also has a special property of weight and diameter. The weight is its weight in pounds. The diameter is a special attribute that indicates what type plates can fit on what type of bar; for instance an Olympic bar can only take Olympic plates (2 inches).

An equipment can be a machine. A machine is much more expensive to purchase so it is pivotal that they be maintained and in working order. So a machine record should contain a date since it was last maintained and when

the next maintenance should be done. A machine will likely have parts or lubricants; to find these, the product serial number should be held on record so they can be found.

1.2.4. Sessions and Classes

A session is a one-on-one personal training service for one customer to one personal trainer. such services will add an additional charge for each one.

Personal trainers can teach classes. classes have a fixed time and days it is ran.

2. Key Entities

There are two major entities in our model, "People" and "Equipment." From these, most of our data model is derived.

2.1. People

As a gym we "have" many people. People can be many things, employees, customers and personal trainers. Below is a simple table outlining all the properties these people have in common.

Table 1: Person entity

column name	type	typeof key	description
person_id	NUMERIC(6)	PK	The primary identifier of a person.
fisrt	VARCHAR(30)	n/a	The person's first name, UTF8.
last	VARCHAR(30)	n/a	The person's last name, UTF8.
phone	CHAR(11)	n/a	the full phone number.
address	VARCHAR(30)	n/a	The address line.
state	CHAR(2)	n/a	The state.
city	VARCHAR(20)	n/a	The city.
type	VARCHAR(1)	n/a	A char that determines if the user is an employee or customer.
since	Date	n/a	A date describing when they were a member of the gym.
birth	Date	n/a	DOB of a user can provide which can be used to offer specials.

2.1.1. Customer

A customer entity is a person who ends up using our services and pays us. Below is the definition of a customer.

Table 2: Customer entity

column name	type	typeof key	description
person_id	NUMERIC(6)	PK/FK	The primary identifier of a customer, from person.
last_pay	Date	n/a	Indicates if this customer is up to date with their membership fees.
is_active	Boolean	n/a	Programmatically indicates if customer is up to date with payment Determined by since field in parent and last_pay date

2.1.2. Employee

An employee entity is someone we pay to maintain and provid services to the customers through the gym. Below is the entity.

Table 3: Employee entity

column name	type	typeof key	description
person_id	NUMERIC(6)	PK/FK	The primary identifier of a customer, from person.
wage	NUMERIC(5,2)	n/a	amount paid per hour.
type	CHAR(1)	n/a	Determines if the user is a generic employee or a physical therapist or trainer.

2.1.3. Trainer

A trainer is an employee that is responsible for running classes at the gym or offering one on one consulting for customers.

Table 4: Trainer entity

column name	type	typeof key	description
person_id	NUMERIC(6)	PK/FK	The primary identifier of a

2.1.4. Rules

At the end, there are people associated with the gym. They can be divided into customers and employees. Customers have active or inactive memberships and are expected to pay their fees on time. Employees are people of a gym that provide services to the gym; they can also be customers as well. Trainers are a subset of employees which can teach classes or do individual training sessions with customers. For unique constraints, a trainer has a code which is used in other entites to ensure that only trainers are added to classes and services.

2.2. Equipment

A gym has numerous amounts of workout related equipment. Below is an entity used to identify this equipment at a high level.

Table 5: Gym Equipment

column name	type	typeof key	description
equip_id	NUMERIC(6)	PK	The primary identifier of the gear.
name	VARCHAR(30)	n/a	name of the gear.
brand	VARCHAR(30)	n/a	brand name of the gear.
type	CHAR(1)	n/a	A char that determines if the equipment is a machine of if it is A free weight or a weightlifting component
value	NUMERIC(7,2)	n/a	A number describing its current estimated value to the business.
since	Date	n/a	A date describing when the gear was added to the gym.

2.2.1. Weightlifting Equipment

This is a subtype of equipment which describes simpler equipment involved mostly with weight training. Examples: plates, dumbdells, 2" olympic bars.

Table 6: Weightlifting Equipment Entity

column name	type	typeof key	description
equip_id	NUMERIC(6)	PK	The primary identifier of the gear.
weight	Integer	n/a	The weight of the weight equipment
type	VARCHAR(20)	n/a	The type of weight product this is. e.g. plate, bar, dumbbell, etc.
diameter	Integer	n/a	For bars and plates; This describes the diameter of the hole that the plate has in its center and what plates will fit on a bar. generally should only be 2 inches. This is null for dumbbells.

2.2.2. Machine Equipment

A subtype of equipment which describes products like treadmills and other "machine" training devices. This also describes things like powercages and squat racks which might have more use in weightlifting. This is a subtype because unlike weightlifting gear, machines can go "out of order," generally must be maintained frequently, can have replacement parts and various other information.

Table 7: Machine Equipment Entity

column name	type	typeof key	description
equip_id	NUMERIC(6)	PK	The primary identifier of the gear.
type	VARCHAR(20)	n/a	The type of machine this is. e.g. treadmill, powercage, bench…
in_order	Boolean	n/a	If the machine is functioning as expected.
maintained	Date	n/a	Last maintained at this date.
serial	VARCHAR(30)	n/a	Machine serial number or other identifier to find parts for this machine.

2.2.3. Maintenance Schedule

This table indicates which employee is expected to maintain which machine at what date. Many machines can have many maintainers and likewise.

Table 8: Maintenance Schedule Entity

column name	type	typeof key	description
equip_id	NUMERIC(6)	PK/FK	A machine being maintained.
employee_id	NUMERIC(6)	PK/FK	The employee maintaining this.
type	VARCHAR(20)	n/a	What is being worked on.
date	Date	n/a	When the maintenance is going to take place.

2.2.4. Rules

A gym has equipment which allows it to provide services. The gym has two splits of equipment, weightlifting and machine equipment. Weightlifting equipment can be discarded if it breaks due to their simplistic design, low price, and construction. However machine components are much more valuable and have more working parts which may need to be maintained and fixed, thus a much more complex entity.

3. Other Entities

These are the other entities of the business. This Describes activities and services the gym provides.

3.1. Personal Sessions

Sessions that a customer has with a personal trainer, or base membership if trainer is not set.

Table 9: Session Entity

column name	type	typeof key	description
customer_id	NUMERIC(6)	PK/FK	The primary identifier of the customer
trainer_id	NUMERIC(6)	PK/FK	The trainer that provides this service, if null, no trainer.
cost	NUMERIC(5,2)	n/a	The cost this service adds to a customer's fee.
time	TIME	n/a	Time this session occurs
days	VARCHAR(7)	n/a	The days this service occurs (M)on (T)ue (W)ed (Th)ur (F)ri (S)a

3.2. Classes

Optional classes taught by trainers at a given time and on the day(s) shown.

Table 10: Class entity

column name	type	typeof key	description
trainer_id	NUMERIC(6)	PK/FK	The trainer that leads this class.
class_type	VARCHAR(25)	PK	The class that is being taught.
time	Time	n/a	The time this class is taught at.
day	VARCHAR(7)	n/a	A string of all the days this day is taught. 6 days total. (M)on (T)ues (W)ed (Th)urs (F)ri (S)at