

Dave's Automotive

CECS 323 TERM PROJECT

ZHIPENG MEI, VIET LE, BRIAN LEE, YIXUAN LENG

Class Descriptions

- **Customer:** a person or organization that buys goods or services from Dave's Automotive.
- **Corporation:** a company or group of people authorized to act as a single entity
- **Individual:** a single person that is distinct from a group, class, or family.
- **Steady:** a steady customer is a person who has signed up for generated E-mail **notifications** with Dave's Automotive.
- **Premier:** a premier customer is a person who pays an annual fee in monthly installments to receive planned preventative maintenance at Dave's Automotive.
- **Prospective:** a prospective customer is a person who may become a potential steady or premier customer in the future.
- **Referral:** a recommendation of new potential customers that includes their contact information.
- **ExistingCustomer:** a paying customer (steady or premier) at Dave's Automotive.
- **Special:** a discount offer for first time customers to entice prospective customers.
- **SpecialInstance:** the occurrence of sending prospective customers special deals through E-mail or Phone.
- **Appointment:** an arrangement to meet someone at a particular time and place.
- **Notification:** an E-mail sent to steady customers to remind them when their automobiles are due for maintenance.
- **Vehicle:** a means of transportation on land, typically with four wheels and powered by an internal combustion engine.
- **Order:** a request made for (a) good(s) and/or (a) service(s)
- **OrderLine:** the lines of an order
- **RepairItems:** a list of parts that need to be fixed
- **RepairInstance:** the occurrence of repairing an item
- **MaintenancePack:** a maintenance item that consists of other maintenance items
- **Technician:** an employee that writes the maintenance order which assigns a mechanic to each of the maintenance items on the list
- **Mechanics:** an employee who is skilled in one particular job and can mentor another person who is involved with that same skillset
- **Employee:** a person who works at Dave's Automotive for wages or salary
- **Mentorship:** a program where a mechanic with a particular skill teaches a mechanic with the same skill
- **Skill:** something that can be learned by a mechanic and can be developed into a great understanding and mastery of what was learned
- **SkillRepair:** when a mechanic fixes a part that needs to be fixed
- **SkillMechanic:** something that a mechanic has learned and mastered

Class Associations:

- A customer may be either steady, premier, or prospective.
- A steady, premier, or prospective is a customer.
- A customer is either an individual or a corporation.
- An individual or corporation is a customer.
- A prospective customer receives zero to many special.
- A special can be received by one to many prospective customers.
- A corporation has one to many addresses.
- An address represents one and only one corporation.
- A customer receives one to many special instance.
- A specialinstance is received by one and only one customer.
- A customer owns one to many vehicles.
- A vehicle is owned by one and only one customer.
- A special contains one to many special instance.
- A specialinstance is contained in one and only on special.
- A vehicle gets zero to many notifications.
- A notification is sent to one and only one vehicle.
- A prospective customer receives zero to many referrals.
- A referral is received by one and only one prospective customer.
- A vehicle is contained in one to many orders.
- An order contains one and only one vehicle.
- A premier customer gives zero to many referrals.
- A referral is given by one and only one premier customer.
- An order contains one and only one orderline.
- An orderline is contained by one and only one order.
- A steady customer gives zero to many referrals.
- A referral is given by one and only one steady customer.

- A repair items is contained in one to many orderline.
- An orderline contains one and only one repair item.
- A steady customer makes zero to many appointments.
- An appointment is made by one and only one steady customer.
- A maintenance package contains one to many repair items.
- A repair item is contained in one to many maintenance packages.
- A steady customer is sent one to many notifications.
- A notification is sent to one and only one steady customer.
- A maintenance package contains one to many repairInstances.
- A repairInstance is contained in one and only one maintenance package.
- A repair item contains one to many repairInstances.
- A repairInstance is contained in one and only one repair item.
- A mechanic earns one to many certifications.
- A certification is earned by one and only one mechanic.
- A repair item requires one to many skills.
- A skill is required to fix one to many repair items.
- A mechanic is assigned to one and many orderlines.
- An orderline assigns to one and only one mechanic.
- A repair item requires one to many skillrepair.
- A skillrepair is required to fix one and only one repair item.
- A mechanic mentors one to many mentorships.
- A mentorship is mentored by one and only mechanic.
- A skill requires one to many skillrepair.
- A skillrepair is required by one and only one skill.
- A mechanic acquires one to many skills.
- A skill can be acquired by one to many mechanics.
- An employee is either a technician, mechanic, or neither.
- A technician or mechanic is an employee.

- A mechanic acquires one to many skillmechanic.
- A skillmechanic can be acquired by one and only one mechanic.
- A technician writes one to many order.
- An order is written by one and only one technician.
- A skill acquires one to many skillmechanic.
- A skillmechanic can be acquired by one and only one skill.

Additional 5 Business Rules:

- 1) Only 1 mechanic works on a single task for each order.
- 2) Once a premier customer accumulates 3 delinquencies (which may be an instance of an accident or missing a maintenance interval by more than 3000 miles), the customer can no longer be a part of the premier plan.
- 3) A mechanic should have at least one skill in an individual maintenance responsible for.
- 4) A customer can only be a premier customer if he/she meets a credit score requirement.
- 5) A Steady Customer who fails to respond and not setting up an appointment more than 5 consecutive appointments will be flagged as an "Inactive Customer. This customer will no longer receive any emails or any form of notice from us. Customer will mark as active user once customer brings in a vehicle to our shop.

Denormalization:

For the denormalization, we decided not to merge anything in the denormalization part because it will cause redundant data and the number of joins we will make later is not enough to warrant denormalization.

