

## CECS 323 Final Project Part 1

### I. Business Rule

- A vehicle belongs to only one customer.
- An employee can either be a technician or a mechanics but not both.
- Technician must have knowledge of all services provided at Dave's Automotive.
- Technician only need to write services which are not part of vehicle routine services.
- A mastery level must be an integer between 1 to 10 inclusive.

### II. Class Definition in English

- **Customer:** people who require or have a possible of requiring service at Dave's Automotive.
- **Current:** customers who come to Dave's Automotive for vehicle service.
- **Prospective:** customers who have potential of requiring vehicle service from Dave's Automotive.
- **PromotionContact:** information associated with date, time, and mode of communication in which Dave's Automotive attempt to entice a prospective customer into a current customer.
- **Premier:** current customers who pay monthly (buy insurance) for service from Dave's Automotive.
- **Steady:** current customers who pay per visit for service from Dave's Automotive.
- **Address:** location or locations in which current customers associate with.
- **PriceIncrease:** the amount and cause of an increase in monthly payment of premier customers.
- **Vehicle:** a machine who purpose to carry people around from place to place at high speed.
- **VehicleFamily:** contains general information about a vehicle.
- **MaintainOrder:** services that require to be perform on a specific vehicle.
- **Employee:** people who work at Dave's Automotive.
- **Technician:** employees of Dave's Automotive who purpose is to diagnose and write extra services required by a vehicle.
- **Mechanics:** employees of Dave's Automotive who purpose are to do maintain or repair of a vehicle.
- **MaintainPackage:** a collection of service.
- **MaintainPackageLine:** shows relationship between MaintainPackage and MaintainOrder.
- **Skillset:** abilities of mechanics to do a specific job.
- **SkillsetLine:** keep track of mystery level of a specific skill for a specific customer.
- **MaintainItem:** a specific service that has been assigned to a specific mechanic.
- **TraniningSkill:** show a history of training relationship between mechanics.

- **ZipLocation:** a place in United States where postal service has assigned a specific identification code.
- **JobQueLine:** show a relationship between maintain item and mechanics and it keeps track of date in which a mechanic work on a specific item.
- **ItemWork:** shows relationship between MaintainOrder and MaintainItem.

### III. **Association:**

- **Customers:**
  - A customer is a current customer, a perspective customer, or others but he or she can only be one.
  - A perspective customer is a customer.
  - A current customer is a customer.
- **Prospective:**
  - A perspective customer received one to three promotion contact.
  - A promotion contact was received by one and only one perspective customer.
- **Current:**
  - A current customer related to one to many address.
  - An address is related to one and only one current customer.
  - A current customer is either a premier customer or a steady customer but not both.
  - A premier customer is a current customer.
  - A steady customer is a current customer.
  - A current customer owned one to many vehicles.
  - A vehicle is owned by one and only one current customer.
- **Premier:**
  - A premier customer associate with zero to many price increases.
  - A price increase is associated with one and only one premier customer.
- **Vehicle:**
  - A vehicle is part of one and only one vehicle family.
  - A vehicle family is made up of zero to many vehicles.
  - A vehicle requires one to many maintain orders.
  - A maintain order is required by one and only one vehicle.
- **Maintain Order:**
  - A maintain order link to zero to many maintain package lines. (1)
  - A maintain package line linked to one and only one maintain order. (1)
  - A maintain order contains one to many item works. (2)
  - An item work contains within one and only one maintain order. (2)
- **Maintain Package:**
  - A maintain package link to zero to many maintain package lines. (1)
  - A maintain package line linked to one and only one maintain order. (1)

- A maintain package composed of one to many maintain item.
- A maintain item is composed within one and only one maintain package.
- **Employee:**
  - An employee is a technician, a mechanics, or others but he or she can only be one.
  - A technician is an employee.
  - A mechanics is an employee.
- **Technician:**
  - A technician writes one to many maintain orders.
  - A maintain order was written by one and only one technician.
- **Mechanic:**
  - A mechanic trained zero to many other mechanic.
  - A mechanic is trained by one and only one other mechanic.
  - A mechanic is associated with one to many skillset lines. (4)
  - A skillset line is associated with one and only one mechanic. (4)
  - A mechanic is responsible for zero to many job que line. (3)
  - A job que line is responsible by one and only one mechanic. (3)
- **Skillset:**
  - A skillset is associated with one to many skillset line. (4)
  - A skillset line is associated with one and only one skillset. (4)
- **Maintain Item:**
  - A maintain item is contain within zero to many job que line. (3)
  - A job que line contains one and only one maintain item. (3)
  - A maintain item contain within one to many item work. (2)
  - An item work contains one and only one maintain item. (2)

#### IV. **Normalization:**

- All classes are in third normalization form because we eliminated multivalve and repeated values. In addition, we also able to eliminate sub key through the use of lossless join decomposition especially for class **Address** and **Vehicle**.