Cosc344 Assignment 1 Group 13

Leader: Millar, Bayley milba845@student.otago.ac.nz
Benn, Joe benjo000@student.otago.ac.nz
Patterson, Molly patmo016@student.otago.ac.nz
Carter, Blake carbl747@student.otago.ac.nz Storr,
Reuben store936@student.otago.ac.nz
Midgley, Ash midas668@student.otago.ac.nz

1) Nissan mechanic workshop mini-world

Group 13 selected the Nissan mechanic workshop mini-world for our assignment. The Nissan mechanic workshop database keeps track of:

- Customers and staff members. Each of these contain details that are going to be relevant and important towards the the mechanic workshop. Such details include names, phone number(s) address, customer_ID/staffID, gender and for staff we have salary
- Then we have Car which has essential details about the cars make, model, year and ID.
- We also have An Appointment which is for when the car needs a service. This includes appointment ID, work to do which may have multiple jobs to do, time the appointment is booked for and then the date for the appointment
- Parts is another entity. It is linked for the appointments so we know what we need to service the car. This includes the part ID, cost of the part, the part name and the description of the part
- Parts has a weak entity type called inventory. Inventory is dependent of their being parts. We want to keep track of the parts we have in the inventory. The attributes for this include the part_ID, part name, and quantity.
- We track the Payments. Payment include the payment ID, the date of the payment and the total amount of the payment.
- Account is stored for each customer. Account consists of account ID, balance, last visits, customer ID and then a calculated value for the number of accounts.

Customers, Staff, appointments, account, inventory, parts, payment and car. The company has many aspects associated with its existence. The limited entity numbers allowed for this assignment restricts the complexity of our ER model.

2) Entities and Attributes

- Customers
    - Name: composite(first_name, last_name) single-valued, String
    - Phone_num simple multi-valued, integer
    - Address simple single-valued, String
    - Customer_ID simple key attribute single-valued, String

- Gender simple single-valued, char type('M'or'F')

- Staff
  - Staff_ID simple key attribute single-valued, String
  - Salary simple single-valued, Real
  - Name composite(first_name, last_name) single-valued, String
  - Phone_num simple multi-valued, String
  - Address simple multi-valued, String
  - Gender simple single-valued, char type('M'or'F')

- Appointments
  - Pickup_time simple single-valued, String
  - Work_to_do simple multi-valued, String
  - Appointment_ID simple key attribute single-valued, String
  - Time_booked_for simple single-valued, String
  - Date simple single-valued, date

- Account
  - Num_of_accounts derived single-valued, integer
  - account _ID simple key attribute single-valued, String
  - customer_ID simple weak key attribute single-valued, String
  - Balance simple single-valued, double
  - Last_visit simple single-valued, date

- Inventory
  - Part_ID simple weak attribute key single-valued Integer
  - quantity simple single-valued Integer
  - Description simple single-valued String

- Parts
  - Part_ID simple key attribute single-valued Integer
  - Cost simple single-valued Double
  - Part_name simple single-valued String
  - Description simple single-valued String

- Payments
  - Payment_ID simple key attribute single-valued Integer
  - Date simple single-valued Date
  - Amount simple single-valued Double

- Car
    - Car_ID simple key attribute single-valued, String
    - Make simple single-valued, String
    - Model simple single-valued, String
    - Year simple single-valued, integer

3) Relationships

- Has An
    - 1:1 relationship.
    - One customer can have one account, and one account will be for one customer
    - Customer has total participation; Account has partial participation.

- Has for
    - 1:N relationship
    - One account may have one or more payments to deal with, payment details will only be on one account
    - Both have total participation

- Manages
    - M:1 relationship
    - Payment may have 1 staff member to deal with it, staff may deal with many payments
    - Both have partial participation

- Order
    - 1:N relationship
    - Staff may order N amount of parts, parts will be ordered by one staff member
    - Both have partial participation

- Come from
    - 1:N relationship
    - Parts come from 1 inventory, inventory may have many parts
    - Inventory has total participation; Parts have partial participation

- Need
    - M:1 relationship
    - Part only go to one appointment; appointments may need more than one part
    - Appointment has partial participation; parts have total participation

- Must have
    - 1:N relationship
    - An appointment can only deal with 1 car while a car can have multiple appointments
    - Car has total participation, an appointment has partial

- Owns
    - 1:N relationship
    - Customer may own N amount of cars, cars can only have one owner (customer)
    - Both have partial participation

5)TeamWork Summary:

- Our group had an open meeting on the following Monday of the assignment release date. We established that Bayley would be the group leader and allocate the appropriate workload for all group members.
- We established that each member would contribute evenly when creating the ER diagram.
- A second group meeting was made on the Wednesday and we decided that the work would be divided up as evenly as possible for creating and finishing the report.
- Last of all, a couple of group members on thursday were to meet up and have one last look over the report and ERD to check for any mistakes or changes that may need to be looked at.

<u>Summary of task allocation -</u>

The Customer and Account entities which is located in section 2 was created by Bayley with the attributes generation having assistant from Blake. The “Has a” relationship was discussed and established because of its importance.

The Appointments and Car entities which is located in section 2 was created by Ash with some attribute creation being done by Joe.

The parts and inventory entities which is located in section 2 was created by Blake and Bayley. The relationship “comes from” which connects entities inventory and parts is located in section 3 was done by Ash.

The Staff entity which is located in section 2 was created by Joe. The relationship “responsible for” which connects the entities Appointment and Staff is located in section 3 was mainly done by Reuben. Theses entities were made by Bayley.

The payment entity which is located in section 2 was created by Blake. The relationship “has for” which connects entities account and payment is located in section 3 was done by Joe.

The relationship “needs” which connects entities Appointment and parts is located in section 3 was done by Blake. Theses entities were made by Reuben.

The relationship “manages” which connects entities staff and payment is located in section 3 was done by Molly.

The relationship “order” which connects entities staff and parts is located in section 3 was done by Ash.

The cardinality between entities was done by Blake and Bayley.

Last of all Blake and Bayley did the last check over and fixed some mistake before the submission.

Summary of group characteristics and effectiveness:

The group immediately divided into sub groups to work efficiently. All of the pairs worked very well together with strong communication skills. Although the fact that the group had a size of six was almost a disadvantage to us. Due to the large numbers, the team leader Bayley was forced to spend valuable time organizing task allocation for the group. His time could of been better utilized with a smaller group but this obviously would have made more work for each individual.