Dalhousie University

CSCI2141-Intro to Database Systems

Assignment 2

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Question 1.

A. ASSUPTIONS

1. A customer could have no device that is repairing.
Reason: Customers may used to repair devices in the shop, but they don't have device with problems right now.

2. A damaged device in the shop may not in repairing.
Reason: The number of devices that required repairing is large, so some damaged devices may not on the schedule yet.

B. EER Diagram
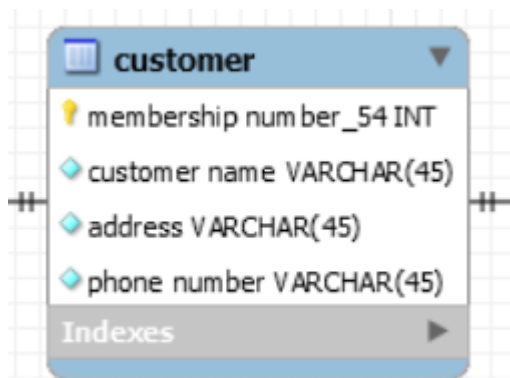
1. Overview of the EER Diagram
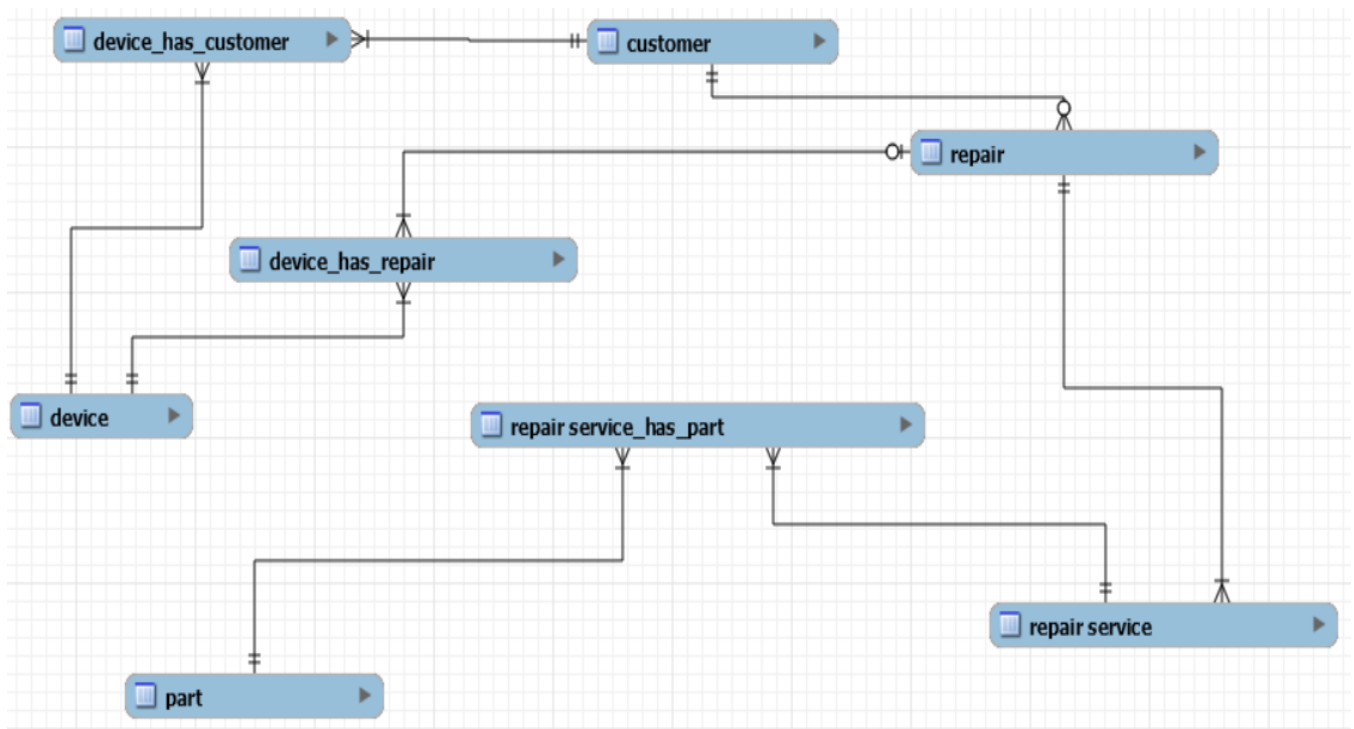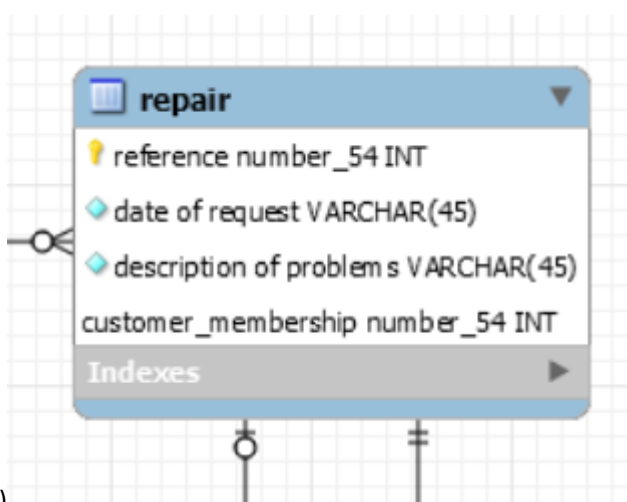
2. The EER Diagram by Parts with details

(1)
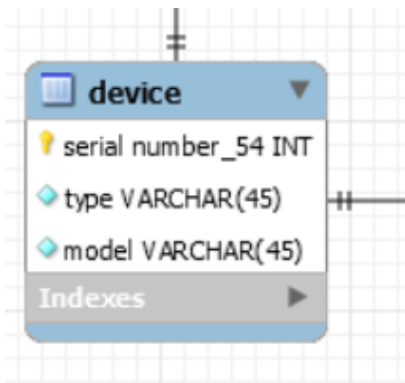
All attributes are multi-valued, must not have NULL value and not composite, Except serial number has unique value.
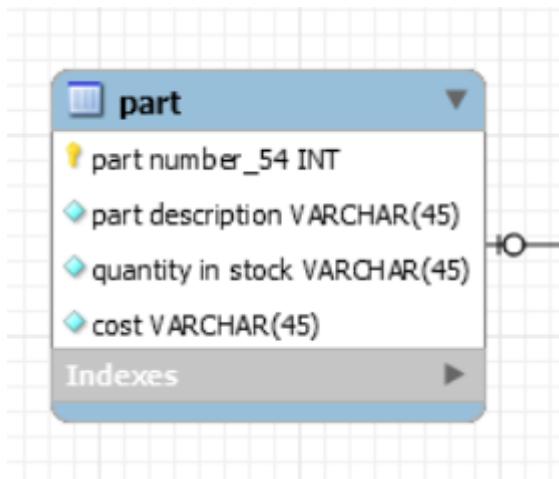

(2)

All four attributes are multi-valued, must not have NULL value and not composite, Except membership number has unique value.

(3)

All attributes are multi-valued, must not have NULL value and not composite, except reference number and membership number have unique value.

(4)

All attributes are multi-valued, must not have NULL value and not composite, except part number has unique value.
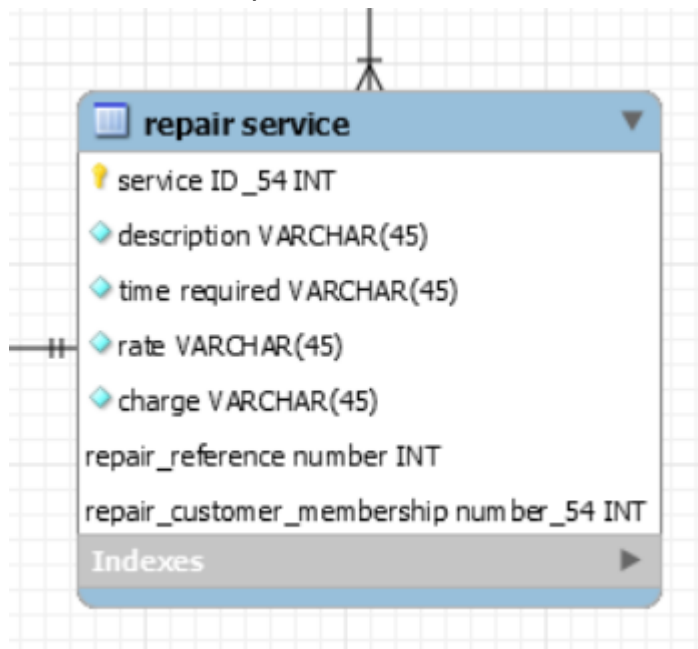

(5)

All attributes are multi-valued, must not have NULL value and not composite, except service ID, reference number and mebership number have unique value.

3. Relationships Table

Relationship Name	Entity E1 Name	Entity E2 Name	Relationship (E1: E2) Type			E1 Membership (mandatory/optional)		E2 Membership (mandatory/optional)	
			1: 1	1: N	N:M	Mand	Opt	Mand	Opt
Has	Customer	Repair		X		X			X
Has	Customer	Device			X	X		X	
Belongs	Device	Repair			X		X		X
Assigns	Repair	Repair Service		X		X		X	
Uses	Repair Service	Part			X	X			X

C. DB SCHEMA TABLES
1. device
   (1) serial number_54 (PK)
   (2) type (NN)
   (3) model (NN)
2. customer
   (1) mebership number_54 (PK)
   (2) customer name （NN)
   (3) address (NN)
   (4) phone number (NN UQ)
3. repair
   (1) reference number_54 (PK)
   (2) date of request (NN)
   (3) description of problems (NN)
   (4) customer_membership number_54 (FK NN UQ)
4. repair servise
   (1) service ID_54 (PK)
   (2) description (NN)
   (3) time required (NN)
   (4) rate (NN)
   (5) charge (NN)
   (6) repair_reference number (FK NN UQ)
   (7) repair_customer_mebership number (FK NN UQ)
5. part
   (1) part number_54 (PK)
   (2) part description (NN)
   (3) quainity in stock (NN)
   (4) cost (NN)

Question 2.

A. ASSUPTIONS
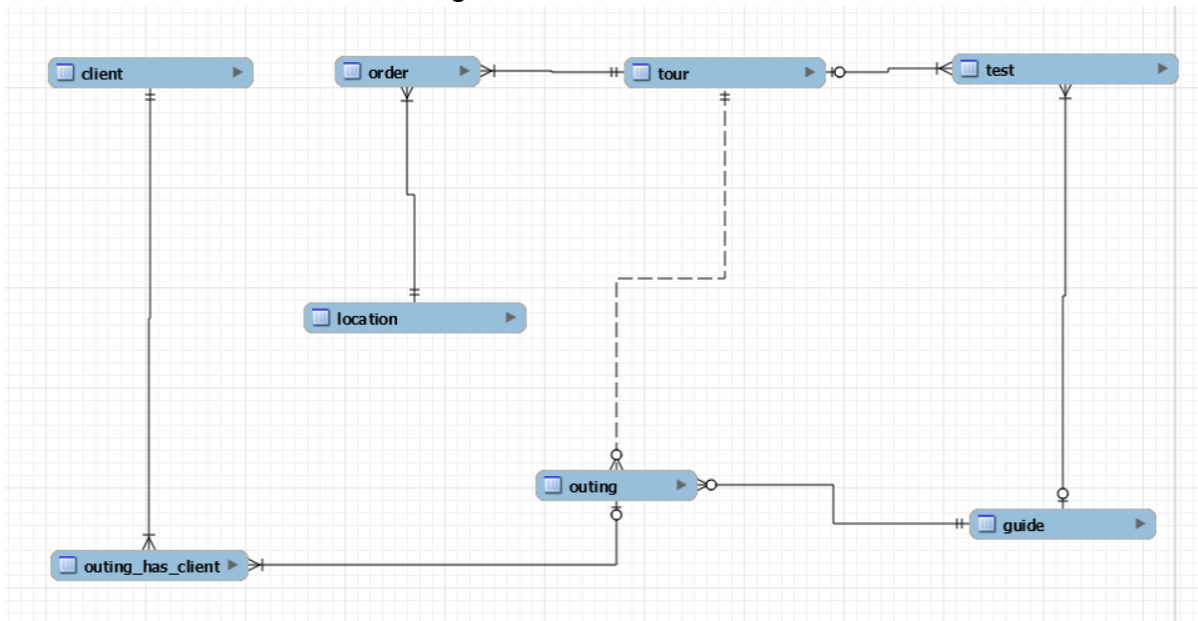   1. A tour may have no outing
      Reason: Some of the tours may still in the in the design and preparation state, the outing of these tours could be released later.
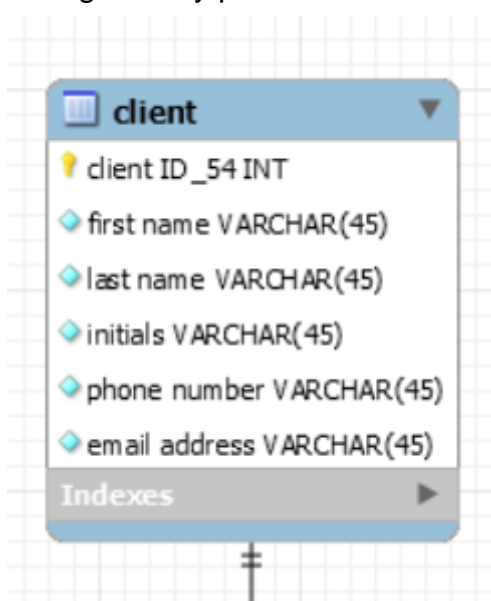   2. A guide may guide several outings
      Reason: Since the number of guides is limited, so a guide can guide more than one outing.
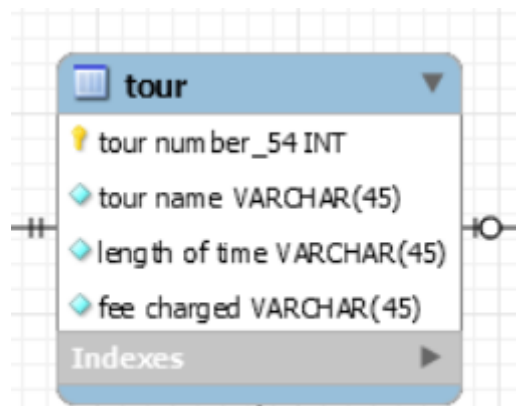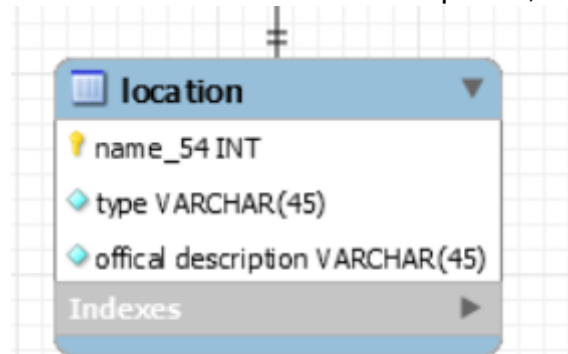
B. EER Diagrams
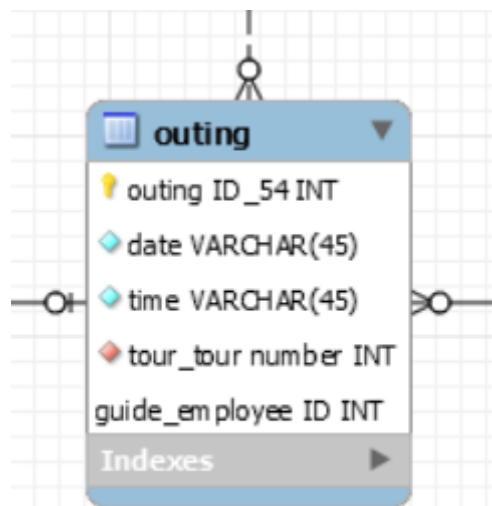   1. Overview of EER Diagram

   2. EER Diagrams by parts

      (1)   All attributes are multi-valued, must not have NULL value and not composite, except client ID has unique value.
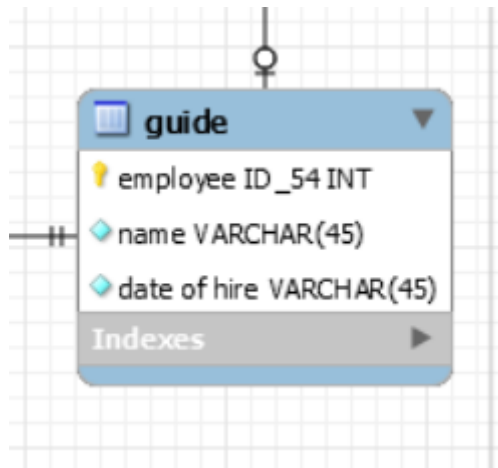
tour

🔑 tour number_54 INT
🔹 tour name VARCHAR(45)
🔹 length of time VARCHAR(45)
🔹 fee charged VARCHAR(45)

Indexes ▶

(2)   All attributes are multi-valued, must not have NULL value and not composite, except tour number has unique value.

location

🔑 name_54 INT
🔹 type VARCHAR(45)
🔹 offical description VARCHAR(45)

Indexes ▶

(3)   All attributes are multi-valued, must not have NULL value and not composite, except name has unique value.

outing

🔑 outing ID_54 INT
🔹 date VARCHAR(45)
🔹 time VARCHAR(45)
🔴 tour_tour number INT
guide_employee ID INT

Indexes ▶

(4)   All attributes are multi-valued, must not have NULL value and not composite, except outing ID, tour name and employee ID have unique value.
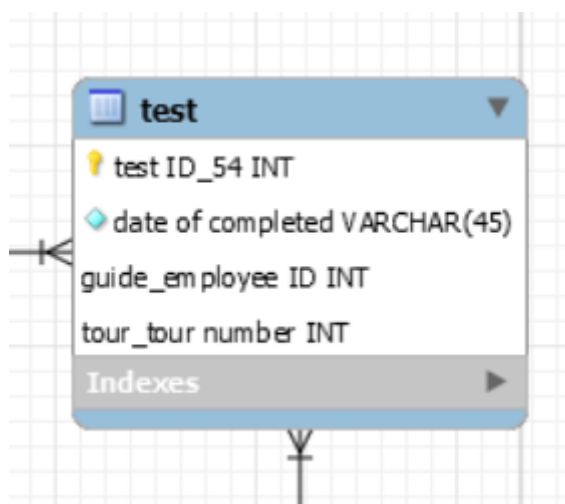
(5) All attributes are multi-valued, must not
have NULL value and not composite, except employee ID has unique value.

(6) All attributes are multi-valued, must
not have NULL value and not composite, except test ID, employee ID and tour
number have unique value.

3. Super Type and Sub Type

Super type: tour
Sub type: outing
There is only one sub type of tour.
A tour instance does not have to be any of its sub-types.

4. Relationship Table

Relationship Name	Entity E1 Name	Entity E2 Name	Relationship (E1: E2) Type			E1 Membership (mandatory/optional)		E2 Membership (mandatory/optional)	
			1: 1	1: N	N:M	Mand	Opt	Mand	Opt
Has	Tour	Location			X	X		X	
Needs	Tour	Test		X			X	X	
Pass	Guide	Test		X			X	X	
Has	Tour	Outing		X		X			X
Guides	Guide	Outing		X		X			X
Participates	Client	Outing			X	X			X

C. DB SCHEMA TABLES
   1. client
      (1) client ID_54 (PK)
      (2) first name (NN)
      (3) last name (NN)
      (4) initial (NN)
      (5) phone number (NN)
      (6) email address (NN)
   2. tour
      (1) tour number_54 （PK)
      (2) tour name (NN)
      (3) length of time (NN)
      (4) fee charged (NN)
   3. location
      (1) name_54 (PK)
      (2) type (NN)
      (3) officeal description (NN)
   4. outing
      (1) outing ID_54 (PK)
      (2) date (NN)
      (3) time (NN)
      (8) tour_tour number (FK NN UQ)
      (9) guide_employee ID (FK NN UQ)
   5. guide
      (1) employee ID_54 (PK)
      (2) name (NN)
      (3) date of hire (NN)
   6. test
      (1) test ID_54 (PK)
      (2) date of completed (NN)
      (3) tour_tour number (FK NN UQ)
      (4) guide_employee ID (FK NN UQ)