INF10002 Database Analysis and Design

Task 5 – Pass Submission

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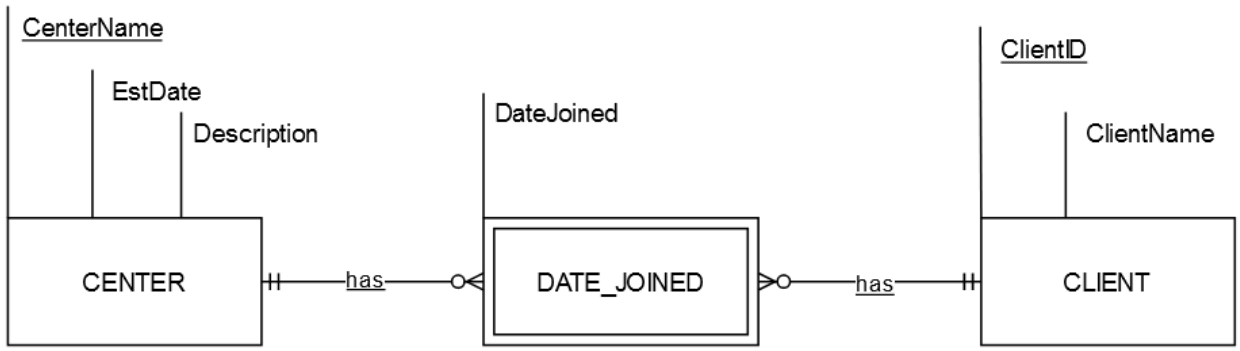
Step 1

Paste your screen capture(s) for this task here.



Step2

Paste your screen capture(s) for this task here.

CENTER (CenterName, EstDate, Description)

PRIMARY KEY (CenterName)

CLIENT (ClientID, ClientName)

PRIMARY KEY (ClientID)

DATE_JOINED (DateJoined, CenterName, ClientID)

PRIMARY KEY (CenterName, ClientID)

FOREIGN KEY (CenterName) REFERENCES CENTER

FOREIGN KEY (ClientID) REFERENCES CLIENT

Step 3
Paste your screen capture(s) for this task here.

```
CREATE TABLE CENTER (
   CENTERNAME VARCHAR(30),
   ESTDATE DATE,
   DESCRIPTION VARCHAR(100),
   PRIMARY KEY (CENTERNAME)
);

CREATE TABLE CLIENT (
   CLIENTID NUMERIC,
   CLIENTNAME VARCHAR(20),
   PRIMARY KEY (CLIENTID)
);

CREATE TABLE DATE_JOINED (
   DATEJOINED DATE,
   CENTERNAME VARCHAR(30),
   CLIENTID NUMERIC,
   PRIMARY KEY (CENTERNAME, CLIENTID)
   FOREIGN KEY (CENTERNAME) REFERENCES CENTER
   FOREIGN KEY (CLIENTID) REFERENCES CLIENT
);
```

Step 4
Paste your screen capture(s) for this task here.

Definition

Normalisation is a database design technique used to generate relational schemas. Normalisation is often used as an alternative to ERDs. Normalisation requires no diagrams. An aim of normalisation is to achieve third normal form (3NF).

Stages of normalisation

3 stages:

Stages	Abbreviation	Description
1st normal form	1NF	Remove repeating groups
2nd normal form	2NF	Remove part key dependencies
3rd normal form	3NF	Remove part key dependencies

Normalization by decomposition

Repeating groups (multiple values in a single cell)

Removal of repeating groups generates 1NF

Known as *The Universal Relation,* remove repeating groups with each cell in a row has a maximum of 1 value

Identification of PK

Must be determined at the outset, often difficult to determine

Functional dependency

1 attribute can be determined by another attribute

Ex: If there is only 1 StudentName for a StuId → there is functional dependency

Remove part-key dependencies (1NF → 2NF)

The Universal Key of the Universal Relation is StuId, SubCode

Definition: A Part Key dependency is where a column in the Universal Relation is dependent on only part of the Universal Key.

→ StudentName has a part-key dependency

Dependency because it's dependent on StuId but not SubCode

Part-key because StuId is part of the Universal Key

Removal of non-key dependencies (2NF → 3NF)

Definition: A Non-Key dependency is where a column is dependent on another column that is not part of the UK

Ex: Convener Location is dependent on Convener Name but not StuId+SubCode (UK)

Steps to achieve 3rd normal form (3NF)

1. Eliminate repeating groups by ensuring every cell has a value. You now have 1NF.
2. Identify the universal key (primary key).
3. Remove Part Key dependencies. You now have 2NF.
4. Remove Non-Key dependencies. You now have 3NF.

Step 5

Paste your screen capture(s) for this task here.

CustId	Name	Phone	CarReg	MakeModel	StartDate	ReturnDate
125	John Coles	0401112233	1AU8HK	Mazda 3	31/08/2020	7/09/2020
125	John Coles	0401112233	1LM3AB	Hyundai i30	14/11/2020	21/11/2020
278	Erin Trump	0466121455	1AU8HK	Mazda 3	12/09/2020	19/09/2020
278	Erin Trump	0466121455	1KA2CA	Toyota Camry	1/10/2020	8/10/2020
278	Erin Trump	0466121455	1CZ8JK	Mazda 3	10/11/2020	12/11/2020
278	Erin Trump	0466121455	1AU8HK	Mazda 3	26/11/2020	1/12/2020
721	Emma Knox	0423544117	1LM3AB	Hyundai i30	10/09/2020	13/09/2020