INF10004 Database Analysis and Design: Case study

This is a group assignment with a maximum of 3-4 students per group.

Assessment Value = 20% for your total marks for this subject

Due date/ time: Please see Canvas.

This case study project requires you to construct a database for a given scenario and develop some queries using SQL to find answers for given problems. There are specific business rules that you need to reflect on your database.

Submission Requirements

- All submissions must be made <u>by a team</u> (even if your team size is one person)

Files required:

- **A single MS WORD document named INF10004_Case study.DOCX** that contains:
  - A **fully expanded** and complete ERD diagram.
    - The diagram must be an image that has been generated in www.diagrams.net.
    - The diagram must follow the ERD symbol conventions used in lectures and labs.
  - The **relational schema**.
  - **Network diagram** (follow the same drawing guidelines from lectures).

- **A text file** named **INF1004_Case study_SQL.TXT** that contains all of the SQL statements required to create, populate and query tables used in this assignment.
  - Your script must work with Oracle iSQL Junior

- **A WORD Document** named **INF10004_Case Study_OUTPUT.DOCX** that contains the output generated by ISQL JR after **all of the statements** in your script file (INF1004_Case study_SQL.TXT) been executed.

Note:
After you submit your assignment, a tutor will copy and paste the entire contents of the SQL file into ISQL Jr. The tutor will press the Execute button in ISQL Jr. This will execute the entire script. The script must work as expected without the tutor having to make any changes to contents of the script.

Please ensure that all comment symbols '--' and end of line characters ';' have been included as necessary.

Please test your script (as described above) in your own account prior to uploading your assignment.

Late submissions will attract a penalty

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Melbourne Adventure Hub (MAH)

Business Narrative

Melbourne Adventure Hub (MAH) runs camping and motel adventures around Australia. The adventures originate in Melbourne and go to places such as Philip Island, Great Ocean Road and Central Australia.

Each adventure is run on a number of occasions each year (each occasion is known as an event).

Each event has one tour leader. Each event may have many tour assistants. All leaders and assistants are employees of MAH. An employee who is a leader of one event may be an assistant of a different event.

All employees possess a number of skills (such as cooking, first aid, bus driver). No two events for the same adventure code ever commence on the same date.

People interested in participating in an adventure usually write to or ring MAH requesting an adventure brochure. MAH immediately assigns that person a customer identification code and also records the name, address and phone number of the person making the brochure request. MAH also records that date the request was made. A printed brochure is normally sent out the same day.

At some point of every event, MAH has a special activity evening. Activities may include Shark feeding, Shopping, Rock Climbing, Toga Party, Attending a Movie etc. Each activity has an activity code and an activity description. MAH administration specify which activities are available for each event (e.g., this will change from event to event depending upon weather conditions, access to resources, time of year etc.).

For each customer attending an event, MAH assigns the customer a customer identification code (unless the person has previously been assigned a customer identification code via a brochure request or a previous booking) and records the name, address and phone number.

MAH also records the fee charged (same value as the current event price) to the customer*. They also record the total payment that has been made by the participant. (A customer may pay half the money at the time of the booking and then pay the remainder at a later date).

MAH also records which activities the participant has a preference for (participants are encouraged to nominate for more than one activity in case one or more activities are cancelled due to unforeseen circumstances). Obviously, customers can only choose activities that are available for the event they have selected.

The current price of each adventure is stored in the database. However, this price does change from time to time (due to inflation and increases in fuel costs etc). Therefore, MAH need record the price of an adventure for every booking that is made (this is called a fee).

Note: You are not expected to attempt to validate data such as:

- To ensure customer books on two tours that overlap
- To ensure staff members are no allocated to two tours that overlap

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- To ensure customers have not underpaid or overpaid their booking payments

These are beyond the scope of this assignment. Such restrictions would normally be programmatically solved using Stored Procedures/ Functions, Triggers or some other programming technique.

Requirements:

1. Create a fully expanded ERD based on the above information and some examples in Appendix A.

2. Create a Relational Schema based on the ERD.

3. Create a Network Diagram based on your relation schema.

4. Implement your design in **Oracle (only after your ERD is complete!)**

   Add all Drop Table statements need to drop all tables that are created by your script.

   Add Create Table to create all of the tables based on the schema.

   All tables **must enforce referential integrity** where necessary.

   Surrogate Keys are **NOT allowed** to be introduced into your solution.

   All constraints must be named using the conventions used in INF10004 subject.

5. Populate your tables with the data provided. In some circumstances you may need to add your own data.

6. **Testing**

   Create your own SQL statements that test **all your primary key and foreign key constraints**. Each of the these insert statements **must fail,** due to constraint errors such as duplicate primary key, invalid key, parent key not found ect.

7. **Queries Part 1**

   Create a SQL queries to do the following:

   7.1. List Customer No, Name and Address all customers. The list must be in ascending Customer No sequence.

   7.2. List adventure code, tour date, allocated staff names of all tours. The list must be in ascending adventure code, tour date, staff name sequence.

   7.3. List adventure code, tour date, customer no and customer name for every booking made. The list must be in ascending adventure code, tour date, customer no sequence.

   7.4. List adventure code, tour date, activity code and activity description for all activities **offered** on all tours. The list must be in ascending adventure code, tour date, activity code sequence.

   7.5. List adventure code, tour date, customer no, customer name, activity code and activity description for all activities selected by customers on all tour events. The list must be in ascending tour code, event date, customer no, gift code sequence.

8. **Queries Part 2**

   Create a SQL queries to do the following:

   8.1. List all customers. Show the Customer No, Customer Name, total payments made by the customer Include customers that have never made a booking. The list must be in ascending Customer No sequence

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8.2. List Tour Code and total payments made for all tours. The list must be in ascending Tour Code sequence

8.3. List activity code and activity description and total number of times that a activity has been selected by a booked customer. Include all activities that may never have been selected. The list must be in descending total sequence.

8.4. List the adventure code, descriptions, and the most recent price for each adventure. E.g.

Adventure code	Description	Most Recent Price $
PER1	Tour of Perth	1750
TAS1	Tour of Tasmania	500

8.5. List Customer No, Customer Name, adventure code, tour date for all customers who requested a brochure for an adventure and then made a booking for that adventure.

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Appendix: Information derived from existing documents

Below are copies of various <u>word-processed</u> reports / documents that are **manually** prepared by staff.

Adventures

Code	Duration (days)	Price	Accom Type	Description
GR01	3	$580	Motel	Great Ocean Rd Motel Adventure
GR04	7	$680	Camping	Great Ocean Rd Camping Adventure
YV02	2	$195	Hotel	Yarra Valley Winery Getaway
GL 02	5	$695	Hotel	Murray River Golf Getaway

Event (tour) Calendar

Code	Start Date	Event Leader	Assistants	Activities Offered
YV02	2021/09/17	John Bull	Sue Brown Eric Ng	A4, P1, S1
GL 02	2021/09/18	Jane Scott	Nick Davis	M1, P1, G1
GR01	2021/09/18	Trudy Lee	Sonia Chen Henry Blake	S1, S2
GR01	2021/09/25	Henry Blake	Sue Brown Jane Scott	S1, S2, G1

List of staff

Staff Id	Name	Skills
101	John Bull	Cooking, Bus Driver, First Aid
125	Sue Brown	Horse Riding, Cooking, First Aid
174	Eric Ng	Bus Driver, First Aid
213	Henry Blake	First Aid, Surfing
333	Nick Davis	Golf, Bus Driver

351	Jane Scott	Golf, Horse Riding
394	Sonia Chen	First Aid
400	Trudy Lee	Bus Driver

Activities

Code	Activities
S1	Shopping
S2	Surfing
G1	Golf Lessons
M1	Movies
P1	Pottery
A4	Art Tour
R1	Rock Climbing
T2	MAH Party

Customer details

Custno	Name	Address
1145	Joel Black	12 Glenferrie Rd Malvern
1444	Alan Rock	7 Green Ave, Hawthorn
1805	Ed Bailey	2 Red St Richmond
1274	Jim Sykes	1 John St, Kew
1333	Sue Ryan	2 Bell St Dingley
1810	Ted White	7 Oak Rd Hawthorn
1334	Peter Ryan	2 Bell St Dingley
1299	Jeff Brown	4 Hill Ave Kew
521	Helen Mills	8 Dale St, Kew

Bookings

Customer	Adventure	Code	Date	Fee	Activities Selected
1145	Joel Black	GR01	2021/09/25	$580	Surfing
1444	Alan Rock	YV02	2021/09/17	$195	Pottery, Shopping
1274	Jim Sykes	YV02	2021/09/17	$195	Art Tour, Pottery
1333	Sue Ryan	GR01	2021/09/18	$580	Surfing
1334	Peter Ryan	GR01	2021/09/18	$580	Surfing
1299	Jeff Brown	GL02	2021/09/18	$695	Golf Lessons
521	Helen Mills	GL02	2021/09/18	$695	Golf Lessons

Payments

Customer	Code	Tour Date	Payment date	Amount paid
1145	GR01	2021/09/25	2021/09/01	$580
1444	YV02	2021/09/17	2021/08/03	$100
1444	YV02	2021/09/17	2021/08/28	$95
1274	YV02	2021/09/17	2021/08/20	$195
1333	GR01	2021/09/18	2021/08/10	$580
1299	GL02	2021/09/18	2021/07/15	$695
1334	GR01	2021/09/18	2021/08/14	$580
521	GL02	2021/09/18	2021/06/15	$250
521	GL02	2021/09/18	2021/07/14	$250
521	GL02	2021/09/18	2021/08/16	$195

Brochure Requests

Date Requested	Date sent	Name	Address	Code
2021/07/16	2021/07/18	Jim Sykes	1 John St, Kew	YV02
2021/07/21	2021/07/21	Ed Bailey	2 Red St Richmond	GR01
2021/07/28	2021/08/01	Jeff Brown	4 Hill Ave Kew	GL02
2021/08/07	2021/08/07	Ted White	7 Oak Rd Hawthorn	GR04