Unit Name: SIT772 Database and Information Retrieval
Trimester: 2021 T1
Assessment 1_Part B: SQL Query Practice and Implementation

This document supplies the detailed information on assessment tasks for this unit.

Key information

- ~~**Due:** 8:00pm (AEST), Sunday, 1 May 2022 (end of Week 7)~~
- New Due: 8:00pm (AEST), Friday, 6 May 2022 (Week 8)
- **Weighting:** 10%
- **Submit:** Through CloudDeakin

Learning Outcomes

This assessment assesses the following Unit Learning Outcomes (ULO) and related Graduate Learning Outcomes (GLO):

Unit Learning Outcome (ULO)	Graduate Learning Outcome (GLO)
ULO 3: Design and implement relational database systems through the use of SQL	**GLO 1: Discipline-specific knowledge and Capabilities** **GLO 2: Communication** **GLO 4: Critical thinking** **GLO 5: Problem solving**

Purpose

This task requires students to apply their understanding and ability to use Relational Database Management Systems (RDBMS) as well as use SQL in the modelling of the physical world. Students will be provided with a set of business scenarios and are required to design a database and provide related SQL queries.

Instructions and Submission Guide

This is an **individual** assessment task. Please read these instructions and answer the following questions.

Each student MUST submit **TWO files**.

- The 1st file is a written report in the PDF format
  - It must be in PDF format
  - It must clearly write your name, student ID, Unit Information 2022 T1 at the beginning of the report.
  - The report file must be named as **your-student-ID_Given-name_A1B.pdf**, e.g., **123456_Kevin_A1B.pdf**.
  - It must include the question number and answer for each question in the report, e.g., Task 1.1, Task 1.2, ... The report must include all the answers in this assignment. **The report also needs to include all the answers including the SQL queries and normalization**.
- The 2nd file is a SQL file with the **.sql** extension file type.
  - The SQL filename must be named as **your-student-IDA1B**.sql, e.g., **123456A1B.sql**.
  - For each question, you have to provide the question number using comment command, e.g., --Task 1.1, and write down your SQL queries at the next line.

    ```
    --Task 1.1
    Insert Into Regions (REGION_ID, REGION_NAME) values (1,'Europe');
    ```
  - You must guarantee the SQL file can be executed successfully before your submission.
  - SQL file doesn't include the answer of Task 2.1 normalization
- Marking rubrics have been declared at each task.

You must submit this assignment via CloudDeakin assessment portal. The wrong submission venue or

the wrong submitted files will lead to zero mark.

Question 1: Understanding an example database and write basic SQL queries [12 Marks]

We provide you with an Oracle sample database which is based on a global fictitious company that sells computer hardware including storage, motherboard, RAM, video card, and CPU https://www.oracletutorial.com/getting-started/oracle-sample-database/.

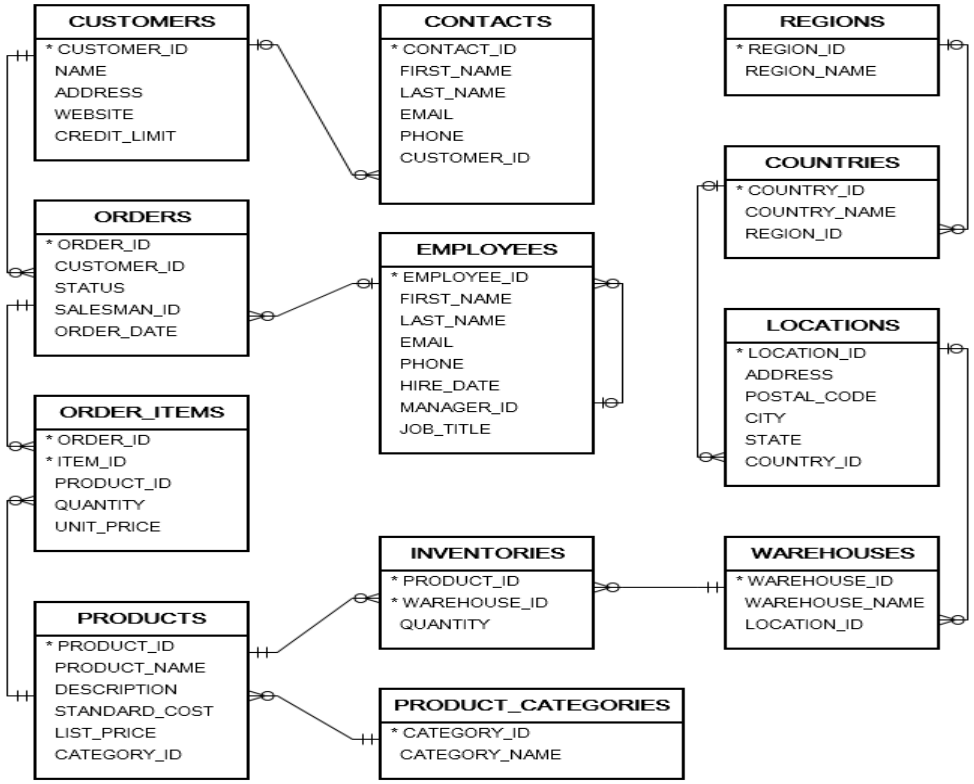
The company maintains the product information such as name, description standard cost, list price, and product line. It also tracks the inventory information for all products including warehouses where products are available. Because the company operates globally, it has warehouses in various locations around the world.

The company records all customer information including name, address, and website. Each customer has at least one contact person with detailed information including name, email, and phone. The company also places a credit limit on each customer to limit the amount that customer can owe.

Whenever a customer issues a purchase order, a sales order is created in the database with the pending status. When the company ships the order, the order status becomes shipped. In case the customer cancels an order, the order status becomes canceled.

In addition to the sales information, the employee data is recorded with some basic information such as name, email, phone, job title, manager, and hire date.

The following illustrates the sample database diagram:



To do the following tasks, it needs to execute **schema.sql** to build the database schema, i.e., create the tables, and then run **data.sql** to insert the data into the created tables. We have provided the training and practice at the workshop session of Week 2.

Tips: There are several commands that may be useful. Select table_name from user_tables; It can be used to check the existence of the tables. Suppose you have downloaded and placed your sql file at your Deakin mapped network drive H:. Then you can run by the command, @schema.sql. Additional information - To execute sql files remotely, you must connect Deakin VPN by following https://support.deakin.edu.au/kb_view_customer.do?sys_kb_id=69baaed84f671bc429ed30b01310c72f and set up "Map Network Drive" by following the webpage https://help.deakin.edu.au/ithelp?id=kb_article&sysparm_article=KB0010355&sys_kb_id=f1c42a30dbc689907991aaf6059619f0&spa=1 for Windows users, https://help.deakin.edu.au/ithelp?id=kb_article&sysparm_article=KB0010357&sys_kb_id=756171f8db028d901acbdbf2f3961998&spa=1 for Mac users. If you have access issue with your Deakin accounts, then you need to contact IT help via https://help.deakin.edu.au/ithelp or you can alternatively use MySQL or the implemented MySQL in XAMPP.

[Marking Rubric: 1 mark if the given SQL query is fully correct; otherwise, 0 mark will be given for each of the below Task 1.1-Task 1.6.]

Task 1.1: [1 Marks]
Write one SQL query to list the region names and the number of countries for each region from the above database.

Task 1.2: [1 Marks]
Write one SQL query to find all customers who have made orders before 2016. List must include the customer ID, customer name, and ordered by their ID values in descending.

Task 1.3: [1 Marks]
Write one SQL query to list all customers who have the sequential letters 'co' in the customer name where the condition 'co' is case-insensitive, i.e., 'CO', 'Co', … can also be retrieved. List must include the customers' ID, names and ordered by their names in ascending.

Task 1.4: [1 Marks]
Write one SQL query to list all products' ID, Name and price where the products haven't been purchased by any customer in the database. The list must be ordered by the product price.

Task 1.5: [1 Marks]
Write one SQL query to list the employees and the number of orders that each employee processed in the database. The output list must include employee ID, name, and the number of orders. The list must be sorted by the number of orders in the descending order.

Task 1.6: [1 Marks]
Write one SQL query to list all the warehouses and the revenue of each warehouse. Here, given a product, the revenue of the product is calculated by the sold quantity of the product and its List_Price. The list must be ordered by the revenue value in the descending. [Reminder: if one product_ID links to more than one warehouses in the provided database, you can simply count it into its linked warehouses' revenue.]

Question 2: Understanding and practice of normalization [4 Marks, HD Task]

Below provides a list of sample transactions in a database. It provides the full information about the transactions, products, the companies of the products, customers' names, the shop information of the sold items, and the sold prices of items for some shops and customers.

TransactionDate	Product	Price	Category	PaymentType	CustomerName	Company Contact	Company	Shop	address
21/03/2021	One ThinkPad, Two Mouse	$1,500*1, $30*2	Electronic	Visa	Kevin Li	111111	IBM	Freeland Choice	20 Avenue, Burwood, VIC3125
21/03/2021	Five Office Chair	$79*5	Office	Mastercard	Daniel Andrews	222222	Luxo Narelle Mesh	City Bunnings	36 Maple street, Melbourne, VIC3000
22/03/2021	One Camera, Two Keyboard	$100*1, $50*2	Electronic	Visa	Kevin Li	111111	IBM	Burwood Electronic	20 Avenue, Burwood
23/03/2021	Three ThinkPad	$1,350*3	Electronic	Mastercard	David Andrews	111111	IBM	Burwood Officework	606 Burwood Hwy, Vermont South VIC 3133
24/03/2021	Four Office Chair	$80*4	Office	Mastercard	Daniel Andrews	222222	Luxo Narelle Mesh	Burwood Bunnings	606-634 Burwood Hwy, Vermont South VIC 3133

Task 2.1: [2 Marks]
Normalize the table to ensure all generated tables are in 3NF. Present all tables generated from the normalization and **present the results step by step from 1NF to 3NF**. You are required to specify the primary keys in your generated tables.
(Marking Rubric: 2 marks if all tables confirm from 1NF to 3NF with correct keys specified; 1 mark if all tables confirm to 1NF-3NF but keys are incorrect; otherwise, 0 mark will be given.)

1NF:

Task 2.2: [1 Marks]
Write a set of SQL queries to create your normalized tables for building the database schema. Each table must declare the primary keys, foreign keys if applicable.
(Marking Rubric: 1 mark if there is no mistake to create the tables or only has one mistake; otherwise, 0 mark will be given.)

Task 2.3: [1 Marks]
Write a set of SQL queries to add data into the database implemented in Task 2.2. The database must include all the provided information. If need, you can add unique identifiers or ids for tables.
(Marking Rubric: 1 mark if the added data is to support the above transactions or there only exists minor missing data such as one data record; otherwise, 0 mark will be given.)

Extension requests
Requests for extensions should be made via CloudDeakin – SIT772 – Assessments Menu with 3 days early before the assessment due date. You also need to show your working progress and explain how the extension is reasonable to complete the assignment. Without clear evidence and working progress, the request cannot be approved.

Special consideration
You may be eligible for special consideration if circumstances beyond your control prevent you from undertaking or completing an assessment task at the scheduled time.

See the following link for advice on the application process:
http://www.deakin.edu.au/students/studying/assessment-and-results/special-consideration

Assessment feedback
Detailed written feedback and results will be provided within two weeks of submission.

Academic integrity, plagiarism and collusion
Plagiarism and collusion constitute extremely serious breaches of academic integrity. They are forms of cheating, and severe penalties are associated with them, including cancellation of marks for a specific assignment, for a specific unit or even exclusion from the course. If you are ever in doubt about how to properly use and cite a source of information refer to the referencing site above.

Plagiarism occurs when a student passes off as the student's own work, or copies without acknowledgement as to its authorship, the work of any other person or resubmits their own work from a previous assessment task.

Collusion occurs when a student obtains the agreement of another person for a fraudulent purpose, with the intent of obtaining an advantage in submitting an assignment or other work.

Work submitted may be reproduced and/or communicated by the university for the purpose of assuring academic integrity of submissions: https://www.deakin.edu.au/students/study-support/referencing/academic-integrity