

Database Programming and Implementation (SQL)

This project aims to get the proper skills to use SQL trigger, procedure and function.

1. Project Domain

The context of this Project is the same as for first and second project, namely the Magic Ale (MA). This has been reproduced as is in the Appendix for your convenience.

A provided DDL script (createdB.sql) for creating the corresponding database, and a provided DML script (populateB.sql) for populating this database with some sample data are being provided in the same folder.

2. Task Specifications

Task 1

Create the tables in the Magic Ale database by running the DDL script provided in the same folder. Then insert some sample records into the tables by running the provided DML script. Verify that the tables are created and populated as intended.

Task 2

The membership records in the Membership table can be updated using an **UPDATE** statement. Such a statement can update any non-PK column value including the membership levels, but the Magic Ale has certain rules about membership level upgrades:

- Only those members with a non-expired membership can receive an upgrade.
- Only the SILVER members can be upgraded to the GOLD level.
- Only the GOLD members can be upgraded to the PLATINUM level.
- There is no further upgrade for the PLATINUM members.

You will write a **BEFORE UPDATE** trigger called **CHECK_MEMBERSHIP_UPDATE** which fires when a record is attempted to be updated in the Membership table. The trigger has to check the conditions above to make sure that they are satisfied by the update request. If the above conditions are satisfied, then the **UPDATE** statement is allowed to proceed. Otherwise, a meaningful message needs to be displayed to the user.

Note that a membership level can also be downgraded in a similar fashion but you are not responsible for checking the downgrading rules.

Task 3

In this task, you will write a procedure called **BrandNameCampaign** which takes a brand name as input and creates a new campaign with the top 5 most expensive products with that brand name. The campaign will have a 4 week duration and will start after exactly two weeks of its creation. For the campaign, the **SILVER** level members will receive a 10% discount, the **GOLD** level members 20% and the **PLATINUM** level members 30%.

Task 4

This task involves testing the code developed in Tasks 2 & 3.

Part (a)

First you are required to test the programs you wrote against the sample data provided as part of Task 1 to see if they work. These data constitute a minimal test against a very small number of records and are unlikely to demonstrate the full functionality of your programs.

Part (b)

Next you carry out a more extensive test by testing the programs against a larger set of records that are designed by you to easily expose any flaws in your programs. You do that by deleting records, adding records, or modifying the records in other ways, and then calling different procedures and/or firing the trigger.

Appendix: Problem Context from Project 1 & 2

This project concerns a liquor shop chain in Sydney, called The Magic Ale (MA). The objective of this project is to develop a database system that will be used to centrally store and manage all relevant information for the branches of MA.

The information to be stored include information on different branches of MA (Bankstown, Hornsby, etc.), types of drinks they sell (beers, wines, cedars, etc.), staff they employ (Retail Assistants, Shelving Assistants, etc.), Magic Members (MA Loyalty Card holders), and Sales Campaigns (discounts on specific products over a limited period). The basic requirements gathered from the stake holders is presented in the following five points. As typically the case, these requirements are often underspecified. Use your judgment in interpreting them when required, and keep a note of the assumptions you made.

1. **Branch Information:** The MA System shall keep information on each branch including its name and address, and the number of employees who work there. The system shall also contain information on which days (Mon-Sun) the branch is open, and opening hours. It will also keep information on opening hours (e.g., Mon-Fri 10:00AM-5:30PM; Sat 9:00AM-9:00PM; Sun Closed).
2. **Product Information:** The system shall contain relevant information on products of different types at the "item level", such as: type (wine/beer/spirit/...), packaging info (can/bottle/...), volume (e.g., 375ml X 6 pack), price, and brand (e.g. Tooheys Old Dark Ale), as well as current stock level.
3. **Staff Information:** The system shall record information on staff members who work at different branches of MA. This will include their roles, type of employment (e.g. permanent, casual), salary (annual or hourly depending on permanent or casual), as well as who they report to.
4. **Membership Information:** The system shall record information on magic members, including type of membership (Platinum/Gold/Silver), and when the membership will expire. 5. **Sales Campaign Information.** The system shall keep information on sales campaign. Assume that these campaigns are global (same across all branches of MA). It will have information of the form: campaign start date and campaign end date, what items are on sale, and the discount for customers based on their membership (e.g., nonmembers 10%, Silver 15%, and Platinum/Gold 20%)
5. **Sales Campaign Information:** The system shall keep information on sales campaign. Assume that these campaigns are global (same across all branches of MA). It will have information of the form: campaign start date and campaign end date, what items are on sale, and the discount for customers based on their membership (e.g., nonmembers 10%, Silver 15%, and Platinum/Gold 20%)