DUE DATE: 11:55 pm Friday 24 October 2025 (Week 11)
Total Marks: 100 (40% of the final grade)
Objectives: ULO1, ULO2, ULO3 and ULO4 (refer to **Unit Guide**)

This is a group assignment. Part A has 4 database programming and implementation tasks. Part B has a presentation task on Part A results.

General requirements for all tasks (when applicable):

1. Complete the table below and include it at the beginning of the required pdf document described on page 3 in the Submission section of Part A:

Unit Code		Assignment#	2
Student ID Number		Student Name	
Student ID Number		Student Name	
Student ID Number		Student Name	
Student ID Number		Student Name	
Student ID Number		Student Name	
Tutor's Name		Workshop Date/Time	

2. Font Size must be 11 or 12 points.
3. Line Spacing must be single or 1.5 lines
4. Digitalized hand-written or hand-drawn contents will not be accepted for assessment.
5. Generative AI tools are forbidden in this unit.
6. Late submission penalty: see **Unit Guide**.

Assignment Background:

BuyNowCryLater Retail (BNCL) is planning to automate the manual process of customer order management, product sales, and loyalty programs. As a student of the COMP2350/COMP6350, you are tasked to develop a database solution for BNCL so that they can operate as an online retailer to offer multiple categories of products.

Business rules that are relevant to your tasks are provided below:

BR1. A customer can only place an order if at least one valid primary address is on file.

BR2. An order must always have at least one payment record, and the total amount paid must be equal to the order's total amount. Only Completed/Approved payment Status will be considered.

BR3. Customers can redeem loyalty points or gift cards, but only if the balance is sufficient and the card/points are active and valid.

BR4. Gift cards cannot exceed a maximum value of $1000.00 and must not be used beyond their expiration date.

BR5. Stock levels must be updated after each order is confirmed. If stock for a product is insufficient, the order cannot be completed.

BR6. Loyalty points are awarded only for completed (delivered) orders and cannot be earned on cancelled or returned orders.

BR7. Customers can request a return only for items that are part of their previous orders, and each return starts with a status of Pending before being approved or declined.

BR8. A refund can only be processed if the corresponding return is Accepted, and the refund amount must not exceed the purchase price of the returned item.

BR9. If a customer uses Afterpay, installment details must be recorded, and all installments must sum to the original payment amount. However, minor rounding differences of a few cents may occur between the original amount and the total installment amount.

BR10. The order status must always reflect its latest state and can only be one of: Processing, Delivered, Cancelled, or Returned.

Part A (30% of final grade)

To complete your tasks, you will use what has been covered during week 1 – week 11 (both lecture and workshop, including relevant textbook chapters) on SQL and Procedural Programming to complete Tasks 1 – 4. If you use anything that was not covered during week 1 – week 11, your implementation for that task will not be marked. SQL naming conventions must align with the standards demonstrated in the provided .sql.

Task 1: Database Creation and Population (10 marks)

1.1 Use the provided .sql file to create and populate required tables.

Task 2: Functions (20 Marks)

2.1 Calculate Loyalty Points (5 marks)
Write a function calcLoyaltyPoints, which returns the number of points earned for a given order. Point calculation is based on "1 point per $1 spent".

2.2 Check Gift Card Validity (10 marks)
Write a function called isGiftCardValid, which returns TRUE if the gift card is active and not expired, otherwise FALSE.

2.3 Testing (5 marks)
Think about what data you would need to test different data scenarios for Task 2.2. Add your test cases (test data and sql test codes) in the .sql file and outline those scenarios in your pdf submission to help you verify the correctness and completeness of Task 2.2. You will need to provide MySQL Workbench screenshots of your sql test codes, and test results. (Hints: you might need to add data into relevant table(s) for testing all possible cases that you can think of.)

Task 3: Procedure (30 Marks)

3.1 Redeem Gift Card (10 marks)
Design a procedure called redeemGiftCard that deducts from the gift card balance and records a payment. You will not be updating the table and writing SQL coded for this task. You will briefly explain the logic behind the procedure, with the following details included in your design specification:

- Purpose and BRs covered
- Inputs/outputs
- Pre-conditions / post-conditions
- Affected tables and key columns
- Failure handling (errors/messages)

3.2 Checkout Process Automation (15 Marks)
Implement a procedure called CheckoutOrder to automate checkout process, such that:

- Each customer must have a primary address (BR1).
- Stock must be available and deducted (BR5).
- Payment total must exactly match order total (BR2).
- If loyalty points are redeemed, balance is reduced; if order later cancelled, points are refunded (BR3 & BR6).

3.3 Testing (5 marks)
Think about what data you would need to test different data scenarios for Task 3.2. Add your test cases (test data and sql test codes) in the .sql file and outline those scenarios in your pdf submission to help you verify the correctness and completeness of Task 3.2. You will need to provide MySQL Workbench screenshots of your sql test codes, and test results. (Hints: you might need to add data into relevant table(s) for testing all possible cases that you can think of.)

Task 4: Trigger (40 Marks)

4.1 Trigger Design (10 marks)
Design two triggers for the following events.

Event 1: Stock Deduction (5 marks)
When inserting any OrderItem, automatically deduct stock and prevent order if insufficient.

Event 2: Overpayment Prevention (5 marks)
Ensure that the sum of all payments for an order never exceeds the order's total amount. Show a warning message when overpayment occurs.

You will not be updating the table and writing SQL coded for this task. You will briefly explain the logic behind the trigger, with the following details included in your design specification:
For each trigger, include:

- Purpose and BRs covered
- Triggering event description
- Validation rules / calculations
- Affected tables and key columns
- Error cases and messages

4.2 Implementation
Implement the following 2 triggers.

Trigger 1: Refund Processing (10 marks)
When a return is accepted, automatically process the refund. Refunds must not exceed the original purchase price. (BR7 & BR8)

Trigger 2: Loyalty Points Adjustment (10 marks)
Loyalty points should be credited only when an order is Delivered. If an order is later Cancelled or Returned, the credited points must be deducted. (BR6 & BR10)

4.3 Testing (10 marks)
Think about what data you would need to test different data scenarios for Task 4.2. Add your test cases (test data and sql test codes) in the .sql file and outline those scenarios in your pdf submission to help you verify the correctness and completeness of Task 4.2. You will need to provide MySQL Workbench screenshots of your sql test codes, and test results. (Hints: you might need to add data into relevant table(s) for testing all possible cases that you can think of.)

Submission:

1. A pdf file that demonstrates that you have met the requirements of all the design items and testing. Your pdf should have 5 sections:

   Section 1: Task2.3
   Section 2: Task3.1
   Section 3: Task3.3
   Section 4: Task4.1
   Section 5: Task4.3

2. A .sql file that contains all the sql codes of tasks 1-4, including the new data that you have inserted for testing, and sql statements/queries for testing.

Part B (10% of final grade)

Task 1: Video Presentation

You will present the outcomes of your group work from Part A tasks in a recorded video presentation. Your video must meet the following requirements:

- Add your student ID and name on the slides you are presenting
- Record your video using PowerPoint and save it as a **mp4** file
- Maximum length of video is **8 minutes**
- Each group member is expected to speak for **1-2 minutes**
- Each group member must show their face during their portion of the presentation

Task 2: Submission

Submit your presentation slides and video by the due date. One group member (only) should submit the slides and video in the Assignment 2 Presentation submission link on iLearn by the due date.

Task 3: Attend an Assessment Session in your Workshop

Your recorded video will be played during your enrolled Workshop in week12 and/or week13 (details will be announced on iLearn in Week11). An assessment session will follow the video playback, where each group member will be required to answer questions based on individual contribution.

Note: Marks will be awarded individually, based on individual contribution to the video presentation and the Live Q/A session.