NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY

FACULTY OF COMPUTING AND INFORMATICS
SCHOOL OF COMPUTING

DEPARTMENT OF SOFTWARE ENGINEERING

QUALIFICATIONS: BACHELOR OF COMPUTER SCIENCE; BACHELOR OF INFORMATICS; BACHELOR OF GEOINFORMATION TECHNOLOGY	
QUALIFICATION CODES: 07BCMS; 07BACS 07BAIT; 07BAIF; 07GITB	**LEVEL:** 6
COURSE CODE: DPG621S	**COURSE NAME:** DATABASE PROGRAMMING
SESSION: JANUARY 2025	**PAPER:** PAPER 1
DURATION: 3 HOURS	**MARKS:** 100

SECOND OPPORTUNITY/SUPPLEMENTARY EXAMINATION QUESTION PAPER	
EXAMINER:	DR GEREON KOCH KAPUIRE, MS SHILUMBE CHIVUNO-KURIA, MS JOSEPHINA MUNTUUMO, MR ANDREW TJIRARE
MODERATOR:	MS ROSETHA KAYS

INSTRUCTIONS

1. Answer ALL the questions.
2. Read all the questions carefully before answering.
3. Number the answers clearly.
4. Write your "Section A" answers in the answer booklet provided.
5. Copy and paste your final code into Notepad and save it to the exam folder on E-Learning.

THIS QUESTION PAPER CONSISTS OF 4 PAGES (Including this front page)

Section A – Theory (10 Marks)

Question 1

Choose True or False [10 Marks]

No	Questions	True (T)	False (F)
1	A stored procedure in SQL Server can encapsulate multiple SQL statements to perform a specific task.		
2	The IF statement in SQL Server is used to manage the flow of execution in stored procedures or batches.		
3	Stored procedures can return more than one result set in SQL Server.		
4	SQL Server allows stored procedures to have both input and output parameters.		
5	Triggers in SQL Server execute automatically in response to events like INSERT, UPDATE, or DELETE.		
6	The FETCH statement retrieves the next row from the cursor's result set in SQL Server.		
7	The DECLARE CURSOR statement specifies the attributes of a cursor in SQL Server.		
8	SQL Server utilizes a TRY...CATCH block for managing exceptions.		
9	Parameters in a SQL Server stored procedure must match the data types of the corresponding columns in the database.		
10	The ERROR statement is used in SQL Server to raise exceptions explicitly.		

Section B – Practical (90 Marks)

Please utilise SQL Server Management Studio (SSMS) on your computer for this section.
Instructions: Copy and paste your final code into Notepad and save it to the exam folder on E-Learning. Ensure that you number your code appropriately. Refer to the scenario and table below to aid your understanding of the preceding questions.

Scenario:
Design and develop an application aimed at providing career guidance and counseling. This application will focus on enhancing an individual's self-awareness, exploring educational and occupational options, and facilitating career planning. Its purpose is to help individuals make informed educational and occupational decisions and implement those choices effectively.

For this application, we can create a table named UserProfiles to store information about individuals using the career guidance application. Here's a suggested structure for the UserProfiles table:

```
CREATE TABLE UserProfiles (
UserID INT PRIMARY KEY IDENTITY(1,1),
FirstName VARCHAR(100) NOT NULL,
LastName VARCHAR(100) NOT NULL,
Email VARCHAR(100) UNIQUE NOT NULL,
EducationLevel VARCHAR(50) NOT NULL,
CareerInterests VARCHAR(100),
LastGuidanceSession DATETIME,
CreatedAt DATETIME DEFAULT GETDATE(),
LastUpdated DATETIME DEFAULT GETDATE() );
```

Question 1 [9 Marks]

Write a stored procedure to insert a new user profile into the UserProfiles table. The procedure should check if the email already exists before inserting. If it exists, return a message indicating that the email is already in use.

Question 2 [9 Marks]

Create a stored procedure to update a user's career interests based on their email. If the email does not exist, print a message indicating that the user is not found.

Question 3 [5 Marks]

Write a trigger that automatically logs changes made to the UserProfiles table in a ProfileChangeLog table whenever an update occurs.

Question 4 [5 Marks]

Write a stored procedure that retrieves all user profiles based on a specified education level.

Question 5 [12 Marks]

Create a stored procedure that loops through all user profiles and sends a reminder message to users whose last career guidance session was more than 6 months ago. Print a reminder for each relevant user.

Question 6 [4 Marks]

Write a stored procedure that analyses the most common career interests among users and returns the top three career interests.

Question 7 [10 Marks]

Write a stored procedure to insert a new user profile with error handling. Use TRY...CATCH to manage potential errors, such as attempting to insert a profile with an existing email.

Question 8 [8 Marks]

Write a stored procedure that deletes a user profile based on their email address. If the user does not exist, print a message indicating that the user cannot be found.

Question 9 [4 Marks]

Write a stored procedure that counts the number of users for each education level and returns the results.

Question 10 [6 Marks]

Write a stored procedure that retrieves all user profiles that match a specific career interest provided as a parameter. If no users are found with that interest, print a message indicating so.

Question 11 [8 Marks]

Create a stored procedure that resets a user's career interests and education level to default values based on their email address. If the user does not exist, print a message indicating that.

Question 12 [10 Marks]

Create a stored procedure to insert a new user profile into the UserProfiles table using a transaction. If any part of the insertion process fails (e.g., due to a duplicate email), roll back the transaction and print an error message. Ensure that the user profile is only committed if the entire operation is successful.

<<<<<<End of Exam Paper>>>>>