

Occupational Certificate: Software Engineer (NQF6) Design and Manipulate Databases (DEMD)	
SAQA Qualification ID	119458
Intake / year	1-2026
Assessment Name	Formative Assessment
Module NQF Level	5
Credits	5
Open date and time	07 April 2026 • Open time: 08:00
Close date and time	26 April 2026 • Close time: 23:45
Assessment Total Marks	100 (50% of total mark percentage)
Pass percentage	65%

Lecturer Information	
Lecturer	Thaveshan Govender
Lecturer E-mail	thaveshang@aie.ac

IMPORTANT NOTICE

Before submitting your assessment, please ensure that it is signed and that all your personal details are accurately filled in the designated space below (Section in red). Work will not be accepted unless the required sections below are fully completed prior to submission, resulting in a 0% grade for this assessment.

The signature must be your valid handwritten signature and NOT your name and surname typed in the space provided.

Student Number:			
Student name and surname:		Date:	
Student cell phone number:			
Student Signature:			
Lecturer name and surname:	Thaveshan Govender	Date:	
Lecturer Signature:			
Assessor name and surname:		Date:	
Assessor Signature:			
Moderator name and surname:		Date:	
Moderator Signature:			

Instructions to Candidates

1. Read each question carefully.
2. You must answer Section B below the space provided named "STUDENTANSWER". Once completed, the answer sheet, with your answers, must be converted to PDF and uploaded to the student portal. Make sure that all additional information is uploaded in a single Zipped folder.
3. QCTO students who achieve between 55-64% may have a further submission opportunity, subject to the departmental rules.
4. **NO LATE submissions will be accepted. (System will automatically close when due date and time is reached). If you encounter any difficulty with the student portal, immediately take a screenshot, log a ticket (attention support), and attach your assessment to the ticket.**
5. You must follow the departmental formatting guidelines.
6. You must write your name, surname, and student number on your script. A failure to do so will result in your script not being marked.
7. By submitting your answer sheet for marking, you declare the following:
 - a. You are familiar with the AIE's policies on academic dishonesty and plagiarism;
 - b. Your submitted is your own original work. Where you have made use of someone else's work, you have duly referenced such work making using of the APA style of referencing;
 - c. You have not allowed, and will not allow any other student to copy your work; and
 - d. You did not copy the work of another student.
8. Students that are dishonest will be subjected to disciplinary procedures.

Assessment Objective/s:

The Formative assessment will cover the following assessment topics:

No	PM/PS number	PM Description
1.	PM-02-PS01	Design a database
2.	PM-02-PS02	Manipulate data in the database

Scope:

This module aims to provide a hands-on approach to learning, allowing you to apply theoretical concepts of database design and data manipulation in practical scenarios. By engaging in these activities, you'll gain a deep understanding of how databases function, how they are structured, and how data can be efficiently stored, retrieved, and manipulated to meet various requirements.

Technical Aspects:

Please verify that all pages are included when downloading this assessment by checking the page numbers at the bottom of the document.

Ensure the following font and size is used in this assessment

- a. Font: Arial

b. Size: 12

c. Font colour: Black

Save and upload the report as a .PDF (**No backgrounds**) with the following naming convention: StudentName_ StudentSurname _Student no_ ModuleCode_FA1

Question 1

(50)

<i>PM No</i>	<i>PS No</i>	<i>PS Description</i>
<i>02</i>	<i>01</i>	<i>Design a database</i>

Scenario

You are tasked with designing a database for a small online retail business. The business requires a database to manage its **inventory**, **customer information**, and **sales transactions**.

Resources:

- Data Modelling Tools (e.g., MySQL Workbench, ER/Studio).
- Database Management Systems (e.g., MySQL, PostgreSQL).
- Basic Application Development Tools (for linking the database).

a)	Create an Appropriate Model (PA0101): • Based on the scenario, design a data model that represents the entities (like products, customers, transactions) and their attributes. • Ensure that your model is comprehensive and caters to all the business requirements.	[10]
	ANSWER:	
b)	Construct Tables Based on the Model (PA0102): • Translate your data model into actual database tables. • Define the fields (columns) for each table and determine the data types for these fields (e.g., integer, text, date).	[15]

	ANSWER:	
c)	Create Cardinality (Relationship) Between Tables (PA0103): - Establish the relationships between different tables. - Define the cardinality (e.g., one-to-one, one-to-many, many-to-many) and enforce referential integrity constraints.	[15]
	ANSWER:	
d)	Link Database to an Application (PA0104): Connect your designed database to a simple application interface. This could be a basic front-end that allows you to perform operations like adding, viewing, or modifying data.	[10]
	ANSWER:	

Evidence Required:

- A data model diagram representing the entities and relationships.
- Screenshots or scripts of the database tables and their structures.
- Documentation of the relationships and cardinalities between tables.
- Screenshots or a brief description of how the database is linked to an application.

Criteria	Yes	No	Comments
PA0101 Create an appropriate model based on the given scenario			
PA0102 Construct tables based on the model			
PA0103 Create cardinality (relationship) between tables			
PA0104 Link database to an application			

Name: _____

Signature: _____

Date: _____

Question 2

(50)

<i>PM No</i>	<i>PS No</i>	<i>PS Description</i>
<i>02</i>	<i>02</i>	<i>Manipulate data in the database</i>

Scenario

Continuing with the database you designed for the online retail business, you now have a database with tables for products, customers, and transactions. The business requires various data manipulations to manage its operations effectively.

Resources:

- Access to a SQL Database (the one you designed).
- SQL reference materials or online SQL platforms for practice (e.g., W3Schools SQL Tutorial, SQLFiddle).

a)	Select Data from Tables (PA0201): • Practice writing SQL queries to select data from the tables. For example, retrieve a list of all products currently in stock, or all transactions made in the last month.	[10]
	ANSWER:	
b)	Insert Data into Tables (PA0202):	[10]

	Insert new records into your tables. This might include adding new customer details, new product entries, or recording a new transaction.	
	ANSWER:	
c)	Delete Data from Tables (PA0203): Write queries to delete specific records. For example, remove a discontinued product from the products table.	[10]
	ANSWER:	
d)	Update Data in Tables (PA0204): Practice updating existing records. For instance, update the stock quantity of a product after a sale.	[10]
	ANSWER:	
e)	Join Tables Together (PA0205): Use SQL joins to retrieve data that spans multiple tables. For example, a query to display all products bought by a specific customer, which would require joining the customer and transaction tables.	[10]
	ANSWER:	

Evidence Required:

- Screenshots or scripts of your SQL queries and the results they return.
- A brief explanation of each operation and its purpose in the context of the online retail business.

Criteria	Yes	No	Comments
PA0201 Select data from tables			
PA0202 Insert data into tables			
PA0203 Delete data from tables			

PA0204 Update data in tables			
PA0205 Join tables together			

Name: _____

Signature: _____

Date: _____

Mark allocation for student		
Question	Maximum Mark	Learner mark
Question 1.a	10	
Question 1.b	15	
Question 1.c	15	
Question 1.d	10	
Question 2.a	10	
Question 2.b	10	
Question 2.c	10	
Question 2.d	10	
Question 2.e	10	
Total:	100	

STUDENT ASSESSMENT FEEDBACK

Qualification Name:	Occupational Certificate: Software Engineer
Qualification SAQA Number:	119458
Subject Name:	Design and Manipulate Databases
Subject Code:	DEMD
Assessment Name:	Formative Assessment
Assessment Code:	DEMD_FA

Assessment Decision	Competent		Not yet competent	
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Feedback report	1st Attempt		2nd Attempt	
	C	NYC	C	NYC
Practical module/Practical skill				
PM02				
PS01				
PS02				

General feedback to learner

Supply comprehensive feedback why learner is found NYC
