Pearson Institute of Higher Education

Project Paper

Faculty Name:	Applied Science
Module Code:	ITDA310
Module Name:	Advanced Database Systems
Module Leader:	Oluwapelumi Giwa
Copy Editor:	Kevin Levy
Total Marks:	200
Submission Date:	13/05/2019 – 17/05/2019
Resources Required:	Student Resources folder

This module is presented on NQF level 7.

Mark deduction of 5% per day will be applied to late submission.

Late projects will not be accepted after a week from the due date.

This is an individual project.

This project contributes 90% towards the final mark.

Instructions to Students

- Remember to keep a copy of all submitted assignments.
- All work must be typed.
- Please note that you will be evaluated on your writing skills in all your assignments.
- All work must be submitted through Turnitin[1] and the full Originality Report should be attached to the final assignment.

[1] Refer to the PIHE Policy for Intellectual Property, Copyright and Plagiarism Infringement, which is available on *my*LMS.

- Negative marking will be applied if you are found guilty of plagiarism, poor writing skills or if you have applied incorrect or insufficient referencing. (See the table at the end of this document where the application of negative marking is explained.)
- Each assignment must include a cover page, table of contents and full bibliography, based on the referencing method applicable to your faculty as applied at Pearson Institute of Higher Education.
- Use the cover sheet template[2] for the assignment; this is available from your lecturer.
- Students are not allowed to offer their work for sale or to purchase the work of other students. This includes the use of professional assignment writers and websites, such as Essay Box. If this should happen, Pearson Institute of Higher Education reserves the right not to accept future submissions from a student.

Assignment Format

Students must follow the requirements when writing and submitting assignments as follows:

- Use Arial, font size 10.
- Include page numbers.
- Include a title page.
- Print submissions on both sides of the page.
- Write no more than the maximum word limit.
- Ensure any diagrams, screenshots and PowerPoint presentations fit correctly on the page and are referenced.
- Include a table of contents.
- Use the accurate referencing method throughout the assignment.
- Include a bibliography based on the applicable referencing method at the end of the assignment.
- Include the completed the Assessment/Project Coversheet (available on *my*LMS).
- Check spelling, grammar and punctuation.
- Run the assignment through Turnitin software.

[2] Available on *my*LMS.

Essential Embedded Knowledge and Skills Required of Students

- Report-writing skills
- Ability to analyse scenarios/case studies
- Understanding of subject field concepts and definitions
- Ability to apply theoretical knowledge to propose solutions to real-world problems
- Referencing skills

Resource Requirements

- A device with Internet access for research
- A desktop or personal computer for typing assignments
- Access to a library or resource centre
- Prescribed reading resources

Delivery Requirements (evidence to be presented by students)

- A typed assignment[3]
- A Turnitin Originality Report

Minimum Reference Requirements

At least five references for first year, ten references for second year and fifteen references for third year.

Additional reading is required to complete this assignment successfully. You need to include the following additional information sources:

- Printed textbooks/e-books
- Printed/online journal articles
- Academic journals in electronic format accessed via PROQUEST or other databases
- Periodical articles e.g. business magazine articles
- Information or articles from relevant websites
- Other information sources e.g. geographic information (maps), census reports, interviews

[3] Refer to the Conditions of Enrolment for more guidance (available on *my*LMS).

Note
• It is crucial that students reference all consulted information sources, by means of in-text referencing and a bibliography, according to the applicable referencing method. • Negative marking will be applied if a student commits plagiarism i.e. using information from information sources without acknowledgement and reference to the original source. • In such cases, negative marking, also known as 'penalty scoring', refers to the practice of subtracting marks for insufficient/incorrect referencing. • Consult the table at the end of this document, which outlines how negative marking will be applied as well as the way in which it will affect the assignment mark.

Assessment Criteria

The following criteria are assessed in this assessment:

LO1	Assessment Criteria	Question No.
1.1	Demonstrate how to use ER modelling in database design as well as the basic concepts associated with the ER model.	Task 1
1.2	Demonstrate how to use relational integrity rules, including entity and referential integrity in a distributed database management system	Task 1
LO2	**Assessment Criteria**	**Question No.**
2.3	Compare and contrast security measures associated with database systems and the web	Task 1
2.4	Compare and contrast concurrency controls and examine the protocols that can be used to prevent conflict	Task 1
LO3	**Assessment Criteria**	**Question No.**
3.1	Produce an optimised logical and physical design for a database of advanced complexity	Task 1
3.2	Develop and build the relational database	Task 1

Section A

Learning Objective

The purpose of this practical project is to design, document and implement a MySQL database system using procedures and events creation.

Project Topic

Use of MySQL advanced stored procedures for daily routine

Scope

Use attached MySQL dump file as a reference in writing your advanced stored procedures. All tables must be documented.

Technical Aspects

The deliverables of this project are as follows:

- Documentation
- Database:
  - 5 tables
  - 3 advanced stored procedures using cursors
  - 1 MySQL event for system automation

Task 1 — 200 Marks

Study the scenario and complete the question(s) that follow:

You have recently been hired as a DB administrator for an insurance company located offshore. They want to implement a new database system for a funeral insurance product. Besides developing a database system, they want you to automate some the system's product policies.

The clients gave some functional specifications in terms of requirements describing the required tables for the DB development: Below are the requirements:

Table "col_trans_log" receives all payment transaction data (via debt order, payAT etc) on a daily basis. The table must have a field "payment_status", which by default is "U" (unallocated). The payment status field changes to "A" (allocated) once each payment has been assigned or mapped to an appropriate policy number. Note: this specific Table receives daily transactions, therefore, more than one transaction could belong to a policy number.

Table "sys_notif_msg" contains SMS messages that are meant to be forwarded to each client whose payment has been allocated to a policy number. Messages in this table are sent as a batch process on daily basis.

Table "fn_policy_mast" contains each policy information fields such as monthly premium, policy number, policy benefit, payment type, total amount paid, last payment type, waiting period, balance, and total accrued. This table is directly linked to "ci_customer_profile" table.

Table "ci_customer_profile" contains all customers' information such as first name, last name, age, date of birth, residential address, ID number, payment types etc.

Table "cover_product" contains different insurance products with their associated cover number. This table has a direct relationship with table fn_policy_mast.

Note: For all payments obtained from each payment type, you are advised to create a staging table that contains all the original values from the vendors before mapping associated fields to Table "col_trans_log". Kindly be aware that this payment allocation routine runs daily using allocated parameters. Also, incorporate cursors where necessary in your stored procedures.

Source: Giwa, O. (2019)

Based on the above identified entities:

- perform entity relationship modelling.
- Identify relationship types for the entities
- Determine attribute domains, primary and alternative key attributes for all tables including the staging tables.
- Create a procedure that maps data from all your staging tables to “col_trans_log” table.
- Using a procedure, create a process that automates and calculates last payment type, total amount paid, balance, and total accrued of each policy number in the “fn_policy_table” on daily basis.
- Create a procedure that sends customers messages (use “sys_notif_msg” table) based on received daily payments. Please note that payments only get forwarded to clients based on their policy number. Include name, policy number and amount in the forwarded message.
- Create an event on MySQL that runs these procedures on daily basis.

(200 Marks)

End of Task 1

You have now reached the end of this assessment. Ensure that you have answered all the required questions before submitting your assignment to your lecturer and ensure that you have adhered to all the instructions within this assignment.

Section B

Database Project requirements	170 marks
Project proposal: Project definition, Scope, Requirements specification document and methodology employed	10
ER Modelling	10
Application of Relational integrity rules	5
MySQL events	25
Advanced Stored Procedures	110
Developing the database: Data Definition Language, Data Manipulation Language	20
Documentation	**30 marks**
Cover page with all the relevant details	1
Table of contents	2
Introduction	2
Description of the distributed database management system	5
Presentation and neatness	5
User Manual	10
Bibliography	5
PROJECT TOTAL	**200 marks**

Section C

Plagiarism and Referencing

Pearson Institute of Higher Education places high importance on honesty in academic work submitted by students, and adopts a policy of zero tolerance on cheating and plagiarism. In academic writing, any source material e.g. journal articles, books, magazines, newspapers, reference material (dictionaries), online resources (websites, electronic journals or online newspaper articles), must be properly acknowledged. Failure to acknowledge such material is considered plagiarism; this is deemed an attempt to mislead and deceive the reader, and is unacceptable.

Pearson Institute of Higher Education adopts a zero tolerance policy on plagiarism, therefore, any submitted assessment that has been plagiarised will be subject to severe penalties. Students who are found guilty of plagiarism may be subject to disciplinary procedures and outcomes may include suspension from the institution or even expulsion. Therefore, students are strongly encouraged to familiarise themselves with referencing techniques for academic work. Students can access the PIHE Guide to Referencing on *my*LMS.

Third-year Students

- A minimum of 15 additional information sources must be consulted and correctly cited.
- If no additional information sources have been used, a full 15% must be deducted.
- Deduct 1% per missing resource of the required 15. For example:
  - If only five resources cited, deduct 10%.
  - If only three resources cited, deduct 12%.
- Markers to apply the penalties for Category A for insufficient sources and incorrect referencing style.
- To determine the actual overall similarity percentage and plagiarism, markers must interpret the Turnitin Originality Report with reference to credible sources used and then apply the penalties as per the scale in the PIHE Policy for Intellectual Property, Copyright and Plagiarism Infringement.
- The similarity report alone is not an assessment of whether work has or has not been plagiarised. Careful examination of both the submitted paper/assignment/project and the suspect sources must be done.

Category A

Minimum reference requirements	Deduction of final mark
No additional information sources have been used or referenced.	15%