

FINAL EXAMINATION

Semester	:	MAY 2024 SEMESTER
Programme Name	:	DIPLOMA IN COMPUTER SCIENCE DIPLOMA IN E-BUSINESS TECHNOLOGY
Course Code & Name	:	DCS2233 DEB2113 DATABASE MANAGEMENT SYSTEM
Duration	:	3 HOURS

INSTRUCTIONS TO CANDIDATES:

1. Please read the instructions given in the question paper **CAREFULLY**.
2. The question paper consists of **FOUR (4)** questions.
3. Answer **ALL** questions in the question paper.
4. Answers to the questions are to be written into the examination booklet.
5. Electronic dictionaries, lecture notes, files or any unauthorised materials except writing equipment are strictly prohibited.

This question paper must be submitted along with all used and/or unused rough papers and/ or graph papers (if any). Candidates are **NOT ALLOWED** to take any examination paper(s) used or unused out of the examination hall.

WARNING:

The Examination Board of Peninsula College Georgetown regards cheating as a very serious offence and will not hesitate to mete out the appropriate punitive actions according to the severity of the offence committed, and in accordance with the clauses stipulated in the Students' Handbook, up to and including expulsion from Peninsula College Georgetown.

(This booklet contains 4 printed pages including this page)

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE ALLOWED TO DO SO

Answer **ALL** questions on the separate sheet provided.

[100 marks]

1. a) Using a table, describe **ONE (1)** difference between conceptual, logical, and physical data models. (7 marks)

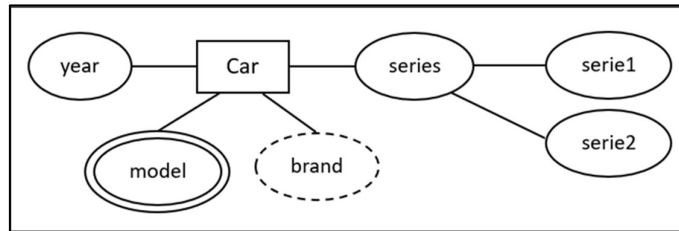


Figure 1

- b) Based on **Figure 1**, identify the type of attribute for the following attributes:
- i) year (2 marks)
 - ii) model (2 marks)
 - iii) brand (2 marks)
 - iv) series (2 marks)
- c) Explain **THREE (3)** components in Entity-Relationship modelling. (6 marks)
- d) Based on **Scenario 1**, describe **TWO (2)** benefits of Entity Relationship Diagram (ERD). (4 marks)

You are tasked with designing a database for an Online Library Management System. The system needs to manage books, members, borrowing transactions, and library branches.

Scenario 1

Total: [25 marks]

2. a) State any **THREE (3)** types of relationship set. (3 marks)
- b) Illustrate simple diagram to represent the relationship set for the following scenario:
- i) An employee can supervise other employees. (3 marks)
 - ii) A doctor administers a treatment to a patient with a specific medication. (6 marks)
 - iii) A student enrolls in a course. (4 marks)
- c) Based on your answer in **2b(ii)**, name the relationship set. (1 mark)
- d) Discuss **FOUR (4)** advantages of normalized tables. (8 marks)
- Total: [25 marks]
3. a) Design the output of First Normal Form (1NF) based on the denormalized database table shown in **Table 1**. (14 marks)

Customer Name	Item
Ani Rini	Chair, Sofa
Maher Ruhi	Table, Coffee, Lamp
Bryan Ray	TV, Bag, Chair, Coffee

Table 1

- b) Based on **Table 1** in **Question 3(a)**, explain **THREE (3)** problems of denormalized table that you solved. (6 marks)

c)

StudentID	StudentName	CourseID	CourseName	Instructor
101	Alice	CSE101	Databases	Prof. Smith
101	Alice	CSE102	Algorithms	Prof. Johnson
102	Bob	CSE101	Databases	Prof. Smith
103	Charlie	CSE103	Networks	Prof. Lee
103	Charlie	CSE104	Operating Systems	Prof. Taylor

Table 2

- Based on **Table 2**, discuss **TWO (2)** violations done. (5 marks)
- Total: [25 marks]

4. a) Explain **THREE (3)** database securities. (9 marks)
- b) Discuss in detail the **FOUR (4)** basic properties of ACID. (12 marks)
- c) Describe any **TWO (2)** general techniques to overcome deadlocks. (4 marks)
- Total: [25 marks]

- END OF QUESTIONS -