Database Management System

The course covers the basic concepts of databases, database system concepts and architecture, data modeling using ER diagram, relational model, SQL, relational algebra and calculus, normalization, transaction processing, concurrency control, and database recovery.

Exam Year

DBMS Question Bank 2079
DBMS Question Bank 2078
DBMS Question Bank 2076

Tribhuvan University

Institute of Science and Technology

2079

Bachelor Level / fourth-semester / Science
Computer Science and Information Technology(CSC260)
Database Management System

Full Marks: 60 + 20 + 20
Pass Marks: 24 + 8 + 8
Time: 3 Hours

Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.

Section A

Long Answer Questions.

1 What is Database Management System? Explain the DBMS architecture with a diagram. What is data independence?

2 What is entities and its types? How do we reduce different types of entities and relationships of ER diagram into Tables? Explain with assuming different types of entities and relations.

3 What is normalization? Why normalization is required? Explain 1NF, 2NF, and 3NF with example.

Section B

Short Answer Questions.

4 What do you mean by Schema and Instance in DBMS? Explain both with examples.

5 What is conflict schedule? Explain with example.

6 Retrieve the TName, and No_of_priod of teachers who teach in “ABC” school using Relational Algebra.

TEACHER (TID, TName, TAddress, TQualification)

SCHOOL (SID, SName, SAddress, SPhone)

SCHOOL_TEACHER (SID, TID, No_of Period).

7 Explain aggregation with example.

8 Define functional dependencies. Explain 2nd normal form with example.

9 Explain Assertion and Triggers with example.

10 What is concurrency control? What are its advantages in DBMS?

11 What is Buffer Management in DBMS? Expalain.

12 What is transaction? Draw states of transaction and explain.

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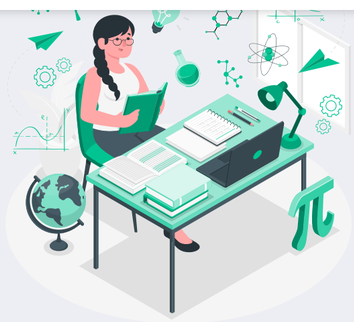

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Short Answer Questions

Attempt any Two Questions (2 x 10 = 20)

1. What are different types of Database users and their roles? Explain the Data independence with example.
2. What are the components of ER diagram? Explain the function of various symbols use in ER diagram. Construct an ER diagram to store data in a library of your college.
3. Explain deadlock and starvation. Explain Time stamp based protocol for concurrency control?

Short Answer Questions

Attempts any Eight Questios (8 x 5 = 40)

4. What is difference between logical data independence and physical data independence?
5. Explain Relationship and Relationship sets with example.
6. Retrive the TName, SName, SPhone for “ABC” school using SQL from given relation as below.

```
TEACHER (TID, TName, TAddress, TQualification)
SCHOOL (SID, SName, SAddress, SPhone)
SCHOOL_TEACHER (SID, TID, No_of Period)
```

7. What is integrity? Explain different types of database integrity.
8. Define Functonal dependencies. Explain trival and non trival dependencies?
9. Explain the difference between “Join” and “Natural Join” of algebriac operations with example.
10. What is Checkpoints in database recovery? How does it help in database recovery? Explain.
11. Define schedule and serializability. How can you test the serializability?
12. Define Boyce-Codd normal form with example. How it is different that 3rd Normal form.

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Section A

Attempt any Two questions(2 x 10 = 20)

1 What are the advantages of using Database Management System over traditional filing system? Explain different data models with example.

2 What is concurrency control? Name various methods of controlling the concurrency control? Differentiate between Binary lock and shared/Exclusive lock.

3 What is normal form? Explain their types. Explain about loss-less join decomposition.

Section B

Short Answer Questions(8 x 5 = 40)

4 What is data abstraction? What are three levels of data abstraction? Explain.

5 What is difference between Entities and Entity sets? Explain with example.

6 Create two table Courses (CID, Course, Dept) and HoD (Dept, Head) using SQL language with all constraints [Primary key, Foreign key and Referential Integrity]. Assume the types of attributes by your own.

7 Differentiate between Integrity and Security with example.

8 Define schedule and serializability. How can you test the serializability?

9 What is Granularity of data items? How does it effect in concurrency control?

10 Explain 2 phase locking technique in brief.

11 What are the different approaches of Database recover? What should log file maintain in log-based recovery?

12 Explain the use of primary and foreign key in DBMS with example. What is the role of foreign key?