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Co-501/DBMS/5th Sem/2017/N

**DATABASE MANAGEMENT SYSTEM**

Full Marks – 70

Time – Three hours

The figures in the margin indicate full marks  
for the questions.

Answer *all* questions.

**SECTION – A**

Marks – 25

1. (a) State true or false : 1×5=5
- (i) SQL is an abbreviation for Simple Query Language
  - (ii) Foreign Key values can be left blank
  - (iii) Null value means string of blank characters
  - (iv) An internal schema describes physical structure of the database
  - (v) If a relation is in BCNF, it is also in 3 NF.

[Turn over

(b) Fill up the blanks :  $1 \times 5 = 5$

(i) The SQL statement used to describe the layout of a table is \_\_\_\_\_.

(ii) Duplicate data is referred to as \_\_\_\_\_.

(iii) Cardinality is the number of \_\_\_\_\_ in a relation.

(iv) The data dictionary is normally maintained by the \_\_\_\_\_.

(v) The information stored in the catalog is called \_\_\_\_\_.

(c) Choose the correct alternative :  $1 \times 15 = 15$

(i) In the relational models, cardinality is termed as :

(a) Number of tuples

(b) Number of attributes

(c) Number of tables

(d) Number of constraints

(ii) In the architecture of a database system external level is the

(a) physical level

(b) logical level

(c) conceptual level

(d) view level

(iii) An entity set that does not have sufficient attributes to form a primary key is a

(a) strong entity set

(b) weak entity set

(c) simple entity

(d) primary entity set

(iv) In an E-R diagram attributes are represented by

(a) rectangle

(b) square

(c) ellipse

(d) triangle

(v) The language used in application programs to request data from the DBMS is referred to as the

- (a) DML
- (b) DDL
- (c) VDL
- (d) SDL

(vi) A logical schema

- (a) is the entire database
- (b) is a standard way of organizing information into accessible parts
- (c) describes how data is actually stored on disk
- (d) both (a) and (c)

(vii) Relations produced from an E-R model will always be in :

- (a) First normal form
- (b) Second normal form
- (c) Third normal form
- (d) Fourth normal form

(viii) 4NF is designed to cope with :

- (a) Transitive dependency
- (b) Join dependency
- (c) Multi valued dependency
- (d) None of these

(ix) A super key is a set of one or more attributes that, taken collectively, allow us

- (a) to identify uniquely an entity in the entity set
- (b) to make the key most powerful for faster retrieval
- (c) to increase effectiveness of database access
- (d) none of the above

(x) Which command is used to remove all rows from a table ?

- (a) Delete
- (b) Remove
- (c) Truncate
- (d) Both (a) and (b)

(xi) A deadlock exists in the system if and only if the wait for graph :

- (a) has a cycle in it
- (b) has a path from first node to last node
- (c) is a tree
- (d) none of the above

(xii) Prevention of access to the database by unauthorized users is referred to as :

- (a) Integrity
- (b) Productivity
- (c) Security
- (d) Reliability

(xiii) Rollback of transactions is normally used to :

- (a) recover from transaction failure
- (b) update the transaction
- (c) retrieve old records
- (d) repeat a transaction

(xiv) In an E-R diagram attributes are represented by

- (a) rectangle
- (b) square
- (c) ellipse
- (d) triangle

(xv) An advantage of the database management approach is

- (a) Data is dependent on programs
- (b) Data dependency increases
- (c) Data is integrated and can be accessed by multiple programs
- (d) None of the above

#### SECTION – B

Marks – 45

2. (a) Define Functional Dependency. Discuss various normal forms based on Primary Keys. 5

(b) Discuss the two-phase locking protocol and explain how it guarantees serializability. 5



3. (a) Define database and state its implicit properties. 3
- (b) Differentiate between logical data independence and physical data independence? Which one is harder to achieve and why? 3
- (c) Classify DBMS by different criteria. 4
4. (a) Explain the desirable properties of transactions. 4
- (b) Mention and briefly explain the control measures that are used to provide security of data in databases. 6
5. Write short notes on any *three* :  $5 \times 3 = 15$
- (i) Views
- (ii) Digital signature
- (iii) Distributed database
- (iv) Schedules
- (v) Deadlock
- (vi) BCNF.