DBMS (CS204) Mid Sem Exam Mar 2021

Exam Date: 6-Mar-2021 Exam Time: 2:00 PM to 3:00 PM.

Instructions:
1. The question paper consists of 60 Questions. No negative marks.
2. It is preferable to have a pen, pencil, rough pages, calculator, water bottle, smart phone/laptop etc handy.
3. Write answers in CAPITAL LETTERS only, if any.
4. Keep yourself visible in the Google meet. Those who are using the mobile phones, must check that they are visible in the Google meet.
5. DO NOT press any button of your browser like back button, refresh/reload button, forward button.
6. Before the end-time, you have to submit this quiz.

Your email address will be recorded when you submit this form.

Not **u19cs012@coed.svnit.ac.in**? Switch account

* Required

Consider two relations R(A, B,C) and S(C,D,E) having primary keys A and C respectively. If R and S contain 100 and 1000 tuples respectively, then the maximum number of tuples in the natural join of R and S will be *

- ○ 0
- ◉ 100
- ○ 900
- ○ 1000

Traditional file processing system has drawback(s): *

- ☑ data Is isolated and separated
- ☑ data is often duplicated
- ☐ none of these
- ☑ application programs are dependent on the file format

The _____ language is used in application program to request data from the DBMS. *

- [ ] None of these
- [x] DML
- [ ] DCL
- [ ] DDL

One relationship set can be connected with another relationship set by *

- ( ) Aggregation
- ( ) Specialization
- (•) Weak relation
- ( ) Generalization

Which of the following is/are not Unary operation? *

- [ ] Rename
- [x] Union
- [ ] Select
- [ ] Project

In an E-R diagram, for two relations having cardinality 1:1 where there is partial participation from both the entities, minimum number of tables required is *

- (•) 2
- ( ) 1
- ( ) 3

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Consider schemas: DVDs(Did INTEGER, Title TEXT, genre TEXT, PRIMARY KEY (Did)) and Checkouts(DVD INTEGER REFERENCES DVDs, day DATETIME, PRIMARY KEY (DVD, date)). Select all the statements that result in the correct output for the query to "return the Did and genre of each DVD that has ever been checked out. Remove any duplicate rows with the same Did and genre. *

- [x] SELECT DISTINCT D.Did, D.genre from DVDs D, Checkouts C where D.Did = C.DVD;
- [ ] SELECT D.Did from DVDs D, Checkouts C where D.Did = C.DVD;
- [ ] None of these
- [ ] SELECT D.Did, D.genre from DVDs D, Checkouts C where D.Did = C.DVD;

A weak entity always has a _____ constraint with respect to its identifying relationship. *

- [x] Multi value
- [ ] Referential
- [ ] Integrity
- [ ] Derived value

For given tables Student and Course having a common column Studentid, Select the appropriate join clause to select all the tuples from Course table and all the matches from the Student table: Select * from Student _____ on Student.Studentid = Course. Studentid; *

- [ ] NATURAL JOIN Course
- [ ] RIGHT JOIN Course
- [x] LEFT JOIN Course

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Given a set of FDs: { P → Q, P → QR, R → S} which of the following FDs cannot be derived from them? *

- ○ QR → S
- ○ P → R
- ◉ All of these
- ○ Q → S
- ○ None of these

Which of the following is true for the given data ? A) All phone numbers must include the area code B) Certain fields like email is required before the record is accepted C) Information on the customer must be known before anything can be sold to that customer D) When entering an order quantity, the user must input a number and not some text (i.e., 12 rather than 'a dozen') *

- ○ Domain constraint, Domain constraint, referential integrity constraint, Domain integrity constraint
- ○ Domain constraint, Domain integrity constraint, Domain integrity constraint, Domain Constraint
- ◉ Domain constraint, Domain integrity constraint, referential integrity constraint, Domain Constraint
- ○ None of these

For the 1 to Many relationship, the foreign key is placed in *

- ◉ the child table
- ○ none of these
- ○ either of the table
- ○ the parent table

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Faculty_Dept(F_ID, F_name, F_salary, D_dept, D_room, D_budget) is decomposed into Faculty(F_ID, F_name, F_dept name, F_salary) department(D_dept, D_building, D_budget) This comes under _____. *

- ○ a lossy decomposition
- ◉ a lossless decomposition

"Employee works for the project" represents _____ relationship. *

- ○ ternary
- ○ unary
- ○ n-ary
- ◉ binary

For two relations X and Y, the expression X - (X-Y) evaluates to *

- ○ X difference Y
- ◉ X intersect Y
- ○ None of these
- ○ X union Y

Set Difference operation in relational algebra performs similar to which of the following clauses in SQL? *

- ☐ All of these
- ☑ Except
- ☐ Exists
- ☐ Union

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_____ is an abstraction concept for building composite object from their component object. *

- (●) Aggregation
- ( ) Normalization
- ( ) Specialization
- ( ) Generalization

For the given relation R = {A,B,C,D,E,F} and functional dependencies F = {AB → CF, CE → B, F → D}. The decomposition of R into ABCE and ABDEF is _____ decomposition. *

- ( ) a lossless
- (●) a lossy

_____ is a/are comparison operator in SQL. *

- [ ] ==
- [x] =
- [x] BETWEEN
- [x] LIKE
- [ ] None of these

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The _____ of a relationship refers to the number of entity classes in the relationship. *

- ○ tuples
- ○ domain
- ○ attributes
- ◉ degree

Consider University offers several courses; each course has several classes. In this case, what mapping cardinality will appear for course to class in the ER Diagram? *

- ○ Many to many
- ○ Many to 1
- ◉ 1 to many
- ○ 1 to 1

The number of resultant rows obtained in left or right outer join is always ____ the number of rows obtained as a result of full outer join in relational algebra. *

- ○ <
- ◉ <=
- ○ >
- ○ >=

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For the relational schemas: R(A,B) and S(C,D,E), indicate whether following pairs of two relational algebra expressions are equivalent or not. *

$\sigma_{B<D}(R \bowtie_{A=C} \sigma_{D>200}(S))$ $\sigma_{B<D}(\sigma_{B<200}(R) \bowtie_{A=C} \sigma_{D>200}(S))$

- (●) No
- ( ) Yes

Which of the following is/are not binary operation/s? *

- [ ] Intersect
- [x] Rename
- [ ] Difference
- [ ] Cartesian Product
- [ ] Union

A ____ entity has a primary key that is partially or totally derived from the parent entity in the relationship. *

- ( ) Ternary
- ( ) Recursive
- (●) Weak
- ( ) Total

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For the relational schema: R(A,B), indicate whether following pairs of two relational algebra expressions are equivalent or not. *

$\sigma_{A>10 \vee B<50}(R)$ $\sigma_{A>10}(\sigma_{B<50}(R))$

- (●) No
- ( ) Yes

For the given FDs: AB → CD, AF → D, DE → F, C → G , F → E, G → A, write the closure of AF (ONLY use CAPITAL LETTERS without SPACE or any separator) *

ADEF

A functional dependency between two or more non-key attributes is called *

- ( ) Functional dependency
- (●) Transitive dependency
- ( ) Partial functional dependency
- ( ) None of these
- ( ) Partial transitive dependency

The _____ level of data abstraction describes how the data is actually stored and also the lowest level data model. *

- [ ] File
- [x] Conceptual
- [ ] Physical
- [ ] none of these

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In hierarchical model records are not organized as *

- [x] Graph
- [x] List
- [x] Links
- [ ] Tree

The primary key linked with a foreign key results in *

- ( ) One to many relationship between them
- (•) Parent-Child relationship between the tables that connect them
- ( ) Both of these
- ( ) None of these

_____ design is both software and hardware independent. *

- (•) Conceptual
- ( ) Physical
- ( ) none of these
- ( ) Logical

Every relation has at least one _____ key by default, which is the combination of all its attributes. (Write answers in CAPITAL LETTERS only) *

SUPER

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For the given relation R = {A,B,C,D,E,F} and functional dependencies F = {AB → CF, CE → B, F → D}. Select the key(s) that can be super key(s) and candidate key(s) both: *

- [ ] AB
- [x] ACE
- [ ] ABCDE
- [x] ABE
- [ ] ABCD

Consider two relations: X(c1 PRIMARY KEY, c2, c3) and Y(c1 PRIMARY KEY, c2, c3). Given statement is strue or false: X FULL OUTER JOIN Y ON X.c2 = Y.c2 has the same number of rows as X INNER JOIN Y ON X.c2 = Y.c2 if X.c2 contains all the values that Y.c2 contains. *

- ○ False
- ◉ True

The preferred way to represent multivalued attributes in a DBMS is to create a new entity composed of the original multivalued attribute's components in a(n) ____ relationship with the original entity. *

- ○ Many to 1
- ○ Many to many
- ◉ 1 to many
- ○ 1 to 1

Select the correct option(s): *

In the instance of the relation $R(A, B, C, D, E)$ shown below, which of the following functional dependencies (FD's) hold?

A	B	C	D	E
1	2	3	4	5
1	4	3	4	5
1	2	4	4	1

I. $AB \rightarrow C$ II. $B \rightarrow D$ III. $DE \rightarrow A$

- [x] III
- [ ] I
- [ ] None of these
- [x] II

In _____ relationship, an entity in A is associated with any number of entities in B and an entity in B, however can be associated with at most one entity in A. *

- ○ one to one
- ○ none of these
- ◉ one to many

The ability to modify database schema in one level without affecting the schema definition in higher level is known as _____. *

- ○ data isolation
- ◉ data independence
- ○ none of these
- ○ data migration

Referential integrity help to do following: *

- [ ] You cannot add record in reviews table, till you have not added record in product table for same product Id.
- [x] You cannot delete record from product table, till review exist in reviews table for same product Id.
- [x] If you delete the record from product table, reviews will be deleted automatically using cascade for the same product Id.
- [ ] none of these

For the given relation R = {A,B,C,D,E,F} and functional dependencies F = {AB → CF, CE → B, F → D}. The decomposition of R into ABCE and ABDEF is _____ decomposition. *

- ( ) a dependency preserving
- (•) not dependency preserving

DBMS *

- [x] maintains data integrity
- [ ] none of these
- [x] establishes the relationships among different entities
- [ ] increases data redundancy

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Consider the relation schema SKY_DIVER(SkyDiver_ID: smallint, SkyDiver_name: char(30), DOB: date, Age: int). Answer which of the following relations is UNION compatible with SKY_DIVER? *

- ○ None of these
- ○ SKYDIVER(SkyDiver_ID: int, s_name: char(30), DOB: date)
- ◉ SDIVER(SID: int, s_name: varchar(20), DOB: date, Age: smallint)
- ○ S_DIVER(S_ID: smallint, s_name: char(25), DOB: date, Age: int, Address: varchar(5))

Following clause in SQL is used to give a temporary name to a sub-query; so that it can be later referred to at various places in the main SQL query. *

- ○ ALIAS
- ◉ AS
- ○ WITH
- ○ RENAME

For a table named Customers(FirstNAme, LastName), how do you select all the tuples having LastName between “Agarwal” and “Patel” (both these lastnames included) ? *

- ◉ Select * from Customers where LastName BETWEEN ‘Agarwal’ and ‘Patel’;
- ○ Select LastName> ‘Agarwal’ and LastName < ‘Patel’ from Customers;
- ○ Select * from Customers where Lastname > ‘Agarwal’ and LastName< ‘Patel’;

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For a table named Product (Pname, City), the query to list the number of products sold in each city, ordered by the city with the highest number of products sold is given below: Select ____ (Pname), City from Product Group by City Order by _____. *

- [x] count, Pname DESC;
- [ ] SUM, Pname DESC;
- [ ] count, SUM(Pname);
- [ ] count, count(Pname) DESC;

Select the correct option for the given statement: The instance of the relational schema R (D, E, F, G) has distinct values of D, including NULL values. *

- [x] D is a candidate key
- [ ] D is not a candidate key
- [ ] None of these

Select the correct statement for the network structure: *

- [ ] It is conceptually simple
- [ ] It is a physical representation of the data
- [ ] None of these
- [x] It allows a many to many relationship

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A ____ relationship exists when an association is maintained within a single entity. *

- ○ Weak
- ○ Ternary
- ○ Total
- ◉ Recursive

Given the basic ER and relational models, which of the following is/are CORRECT? *

- ☑ An attribute of an entity can be composition of values
- ☐ In a row of a relational table, an attribute can have more than one value
- ☑ An attribute of an entity can have more than one value
- ☑ In a row of a relational table, an attribute can have exactly one value or a NULL value

A relationship where a number of different entity set participate is called as _____ of a relationship. *

- ○ Specialization
- ○ Generalization
- ○ Cardinality
- ◉ Degree

Select the correct statement(s) for an SQL query - *

- [x] An SQL query can contain a HAVING clause only if it has a GROUP BY clause.
- [ ] Not all attributes used in the GROUP BY clause need to appear in the SELECT clause.
- [ ] An SQL query can contain a HAVING clause even if it does not a GROUP BY clause.
- [ ] All attributes used in the GROUP BY clause must appear in the SELECT clause.

The entity set Employee is classified as Adhoc, Contractual and Permanent. This process is represented by following relationship? *

- [ ] IN
- [ ] ISA
- [x] HASA

Assignment operator in relational algebra can be used to perform which of the following: *

- [ ] Delete
- [x] None of these
- [ ] Update
- [ ] Insert

Which statement is correct for conceptual design ? *

- [x] Involves modelling independent of the DBMS
- [ ] Is designing the relational model.
- [ ] None of these
- [ ] Needs data volume and processing frequencies to determine the size of the database.

Which of the following in relational algebra requires that at least one common attribute exists between two relations? *

- ○ All of these
- ○ Theta Join
- ○ Equi Join
- ◉ Natural Join

Attributes in an order by clause in SQL _____ be the part of select clause as well. *

- ○ CAN
- ○ CANNOT
- ◉ CAN and CANNOT
- ○ None of these

"Employee works for the departments on the project" represents _____ relationship. *

- ○ binary
- ○ unary
- ○ n-ary
- ◉ ternary

For two relations A and B which of the following relational algebra expressions are valid? *

- [x] A U B
- [ ] All of these expressions are not valid
- [x] A - B
- [ ] A % B

For a relation Instructor (id, name, dept_name, salary) Select the invalid query: *

- [ ] Select distinct id from instructor order by name;
- [ ] Select distinct name from instructor order by name;
- [x] Select name from instructor order by name, dept_name;
- [ ] None of these

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