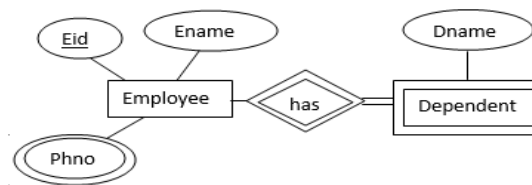


1st DATA BASE ENGINEERING ASSIGNMENTS FOR 5th Semester, CSE 2021-2022

- Q1. Write the advantages of DBMS over file system?
 Q2. What is Data independence and abstraction?
 Q3. Explain about 3 level architecture of DBMS.
 Q4. What do you mean by Specialization, Generalization and Aggregation in Extended ER Model?
 Q5. What is WEAK Entity and Identifying Relation, Explain with a suitable example?
 Q6. What do you mean by participation constraint and cardinality ratio of a relationship?
 Q7. Differentiate relation schema and instance?
 Q8. What do you mean by NULL values in a relation, explain with suitable example?
 Q9. Explain DDL, DML and DCL?
 Q10. Assume that, given E-R diagram is a one-many relationship.
- Find the Degree of the relationships, Participation constraint and Cardinality ratio.
 - Convert the E-R diagram into relational model.



- Q11. What are different types of constraints can be applied on a relation schema? Explain.
- Q12. Discuss about Entity integrity constraint and Referential integrity constraints.
- Q13. How super key, candidate key and primary key are different from each other, explain with example?
- Q14. Discuss about various types of attributes in ER model?
- Q15. Explain about all kind of relationship in ER model?
- Q16. Assume the following relation schema R.
 $R(K_1, K_2, K_3, \dots, K_n)$ with each attributes has their corresponding domain $(d_1, d_2, d_3, \dots, d_n)$ respectively. How many maximum number of tuples can be formed for the relation R?
- Q17. Consider the following Relation Schema R with candidate key. What will be the maximum and minimum no. of Super Key can be possible.
- $R(A_1, A_2, A_3, \dots, A_n)$ and Candidate Key : $\{A_1, A_2A_3\}$
 - $R(A_1, A_2, A_3, \dots, A_n)$ and Candidate Key : $\{A_1, A_2, A_3\}$
 - $R(A_1, A_2, A_3, \dots, A_n)$ and Candidate Key : $\{A_1A_2, A_3\}$

Q 18) Consider the given schema of Holiday trip database, In the 'Reserve' table, sailor_id and boat_id are the foreign key.

Sailor (sailor_id, sailor_name, rating, age),
 Boats (boat_id, boat_name, color)
 Reserve (sailor_id, boat_id, day)

Write the following queries using SQL and relational algebra.

- Find the names of the sailors who have reserved a red color boat.
- Find the name of the boat, which has been reserved on SUNDAY.

- c) Find the name of the sailor, whose rating is greater than equal to 4 and age is in between 30 and 35.

Q 19) Find the canonical set of functional dependency (Say G) for the following relation schema R.

R(ABCD), functional dependency (F) given on R

{B → A, C → AB, AD → BC}.

Check whether the new canonical functional dependency set (G) and given functional dependency set (F) are equivalent or not.

Q 20) Write all the rules of Armstrong Axioms and Use the Basic Armstrong Axioms to prove the Pseudo Transitivity rule.

Q 21). Consider the following Relation Schema and set of Functional Dependency

R = {A, B, C, D, E, F, G, H, I, J}

FD: {AB → C}, {A → DE}, {B → F}, {F → GH}, {D → IJ}

- i) What are the Candidate Keys for relation R?
- ii) Check whether R is in 3NF or not? If not decompose the relation R into 3NF and ensure the Loss-less decomposition Properties and Functional Dependency Properties.

Q 22) A Relation R is said to be in Third Normal Form under which of the following condition?

- i. R is in 2NF and for all non trivial FD $X \rightarrow Y$, X is not a Super Key and Y is a Prime Attribute
- ii. R is in 2NF and for all non trivial FD $X \rightarrow Y$, X is a Super Key and Y is a Prime Attribute
- iii. R is in 2NF and for all non trivial FD $X \rightarrow Y$, X is not a Super Key or Y is not a Prime Attribute
- iv. R is in 2NF and for all non trivial FD $X \rightarrow Y$, X is a Super Key or Y is a Prime Attribute

Q 23) Consider a relation schema T1(P, Q, R, S, T). The primary key for this relation T1 is {P,S}. Which of the following option false.

- i. {PQRST} is a super key
- ii. {PRTS} is a super Key
- iii. {SQRT} is a super Key
- iv. {SQRP} is a super key

Q 24) In a Identifying relationship of a weak entity set, which the following is/are TRUE?

- i. The identifying relationship does not have total participation with weak entity set.
- ii. The identifying relationship does have total participation with weak entity set always.

- iii. The identifying relationship does have participation constraint value 1 with weak entity set always.
- iv. An entity set participated in a relationship with participation constraint value 1, which confirms that the entity set is weak.

Q 25. i) What is Multivalued Dependency and how it is related to 4NF?

ii) What is Join Dependency and how it is related to 5NF?

Q 26). Discuss about Loss-less decomposition with suitable example.

N: B- **All the questions in 1st internal examination will be from this assignment only. However, the order and no. of questions in internal exam may vary.**

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