CS & IT ENGINEERING

2024

Database Management System

Relational model & normal forms

DPP_01

Discussion Notes

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[NAT]

#Q. Consider the student relation shown below with schema stud (Sname, Sage, Smail, Smarks),

Stud

Sname	Sage	Smail	Smarks
Rohit	28	R@pw.live	68
Kanika	25	K@pw.live	75
Pankaj	25	K@pw.live	75
Rohit	28	R@pw.live	88
Anjali	26	A@pw.live	75

For the above given instance how many set of attributes of size two can determine each row uniquely?

Sname Sage X

Sname Smarks

Sname Smail X

Sage Smail X

Smail Smarks X

Smarks Sage X

[MSQ]

#Q. Consider a relation schema R(A, B, C, D, E, F, H) with the given Functional dependency set:

{A → BC, C → AD, DE → F, C → F}

The attribute closure that contains all the attributes of the relation R is?

A $AE^+ = \{A, E, B, C, D, F\}$ ✗

B $CE^+ = \{C, E, F, A, D\}$ ✗

C $AEH^+ = \{A, E, B, C, D, F, H\}$ ✓

D All of the above

[MCQ]

#Q. Consider the following set of FD's:
{V → W, W → XZ, X → YZ} for relation
R(V, W, X, Y, Z)
Then the attribute closure of YZ+ contains how many elements?

A 0

B 1

C 2

D 3

$YZ^+ = \{Y, Z\}$

[MCQ]

#Q. For the given FD set: {P → QT, Q → SU, V → U} of a relation R(P, Q, T, S, U, V). Find the set of attributes that is Super key but not a Candidate key?

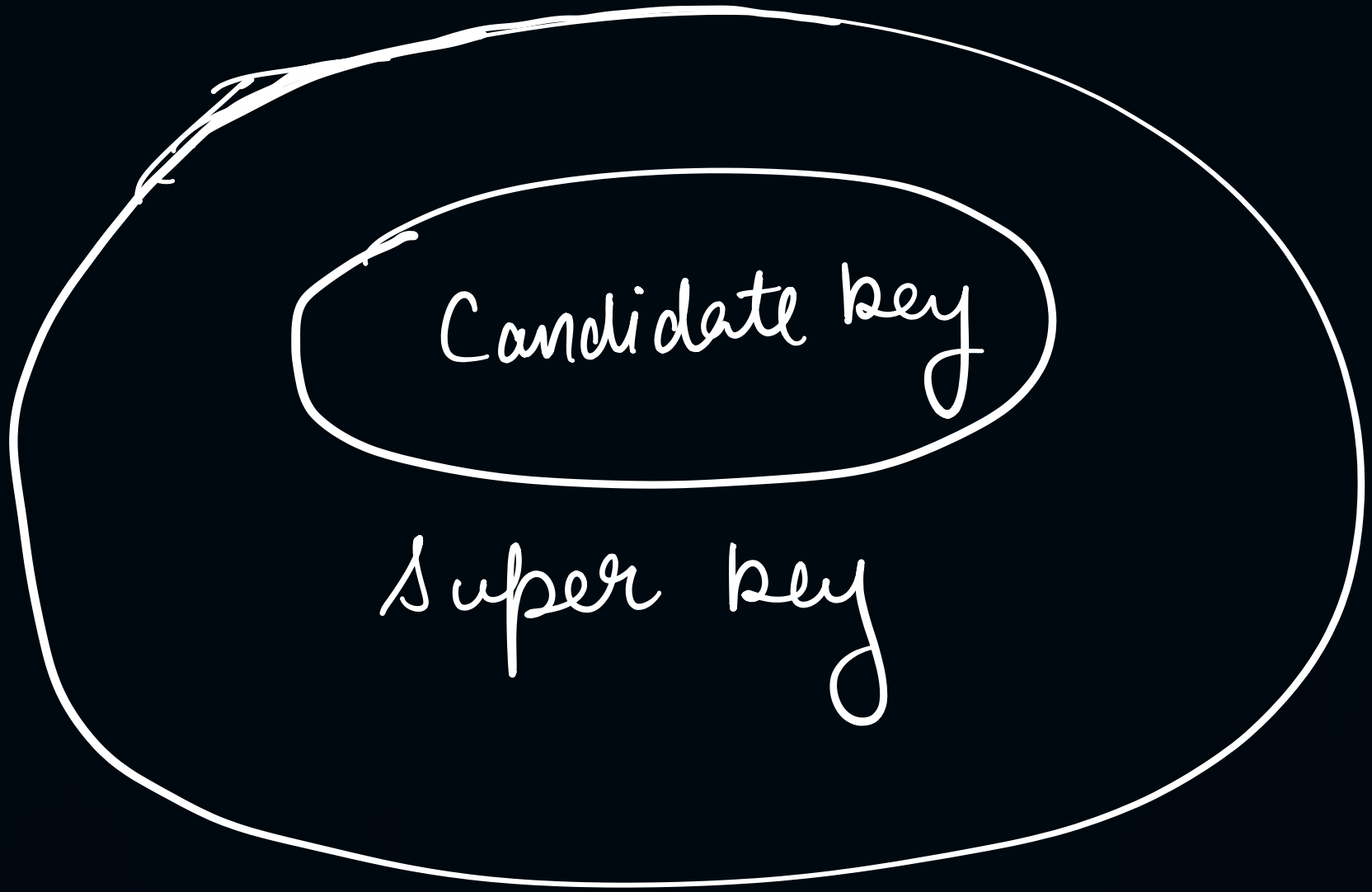
A PTQ

B PV

C PQV

D QV

$PV^+ = \{P, V, Q, T, S, U\}$ → Candidate key


Candidate key
Super key

[MCQ]

#Q. Choose the correct statement from the following.

A. The cardinality is defined as the number of attributes in a relation.

B. Degree of the relation is the number of tuples in the relation.

C. Relation instance is the set of tuples of a relation at a particular instance of time.

D. All of the above

[MSQ]

#Q. Choose the correct statement from the following:

A. There can be many primary keys for a relation. ✗

B. There can be many alternate keys for a relation.

C. All the candidate keys are also super keys.

D. All the super keys are also the candidate keys. ✗

minimal set of attributes that uniquely identify a tuple in a relation.

[MCQ]

#Q. Consider the following statements:

S_1: A key in DBMS is an attribute (or a set of attributes) that helps in uniquely identifying each tuple (or row) in a relation (or table).

S_2: There should be only one candidate key in relation, which is chosen as the primary key.

A. Only S_1 is true.

B. Only S_2 is true.

C. Both S_1 and S_2 are true.

D. Neither S_1 nor S_2 is true.

[MCQ]

#Q. Consider the following statements:

S_1: Primary key has no duplicate values it has only unique values.

S_2: Primary key is not necessarily formed using a single column of the table, more than one column of the table can also be used to form a primary key of the table.

A. Only S_1 is true.

B. Only S_2 is true.

C. Both S_1 & S_2 are true.

D. Neither S_1 nor S_2 are true.

[NAT]

#Q. Assume a relation R (P, Q, R, S, T). If PR and RT are the only candidate keys of the relation R, then how many total super keys exist in relation R.

PR ↓ $5-2$ RT ↓ $5-2$ $5-3$

$$2^{} + 2^{} - 2^{}$$

$$\Rightarrow 2^{3} + 2^{3} - 2^{2} \Rightarrow 8 + 8 - 4$$

$$\Rightarrow \underline{12}.$$

[NAT]

#Q. Assume a relation R (P, Q, R, S, T, U, V).
If PQ, RS, and TU are the only three candidate keys of relation R, then how many total super keys exist in relation R?

PQ

↓

$\Rightarrow 2^{7-2} + 2^{7-2} + 2^{7-2} - (2^{7-4} + 2^{7-4} + 2^{7-4})$

$+ 2^{7-6}$

$\Rightarrow 2^5 + 2^5 + 2^5 - (2^3 + 2^3 + 2^3) + 2$

$32 + 32 + 32 - (24) + 2$

$64 + 8 + 2 \Rightarrow 64 + 10 = 74$.

THANK - YOU