CS & IT ENGINEERING

Database Management System

FD's & Normalization

DPP 01 **Discussion Notes**

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01 Question

02 Discussion

Q.1

According to RDBMS rules, choose the correct statement from the following.

[MSQ]

A. A relation in RDBMS can have multiple attributes.

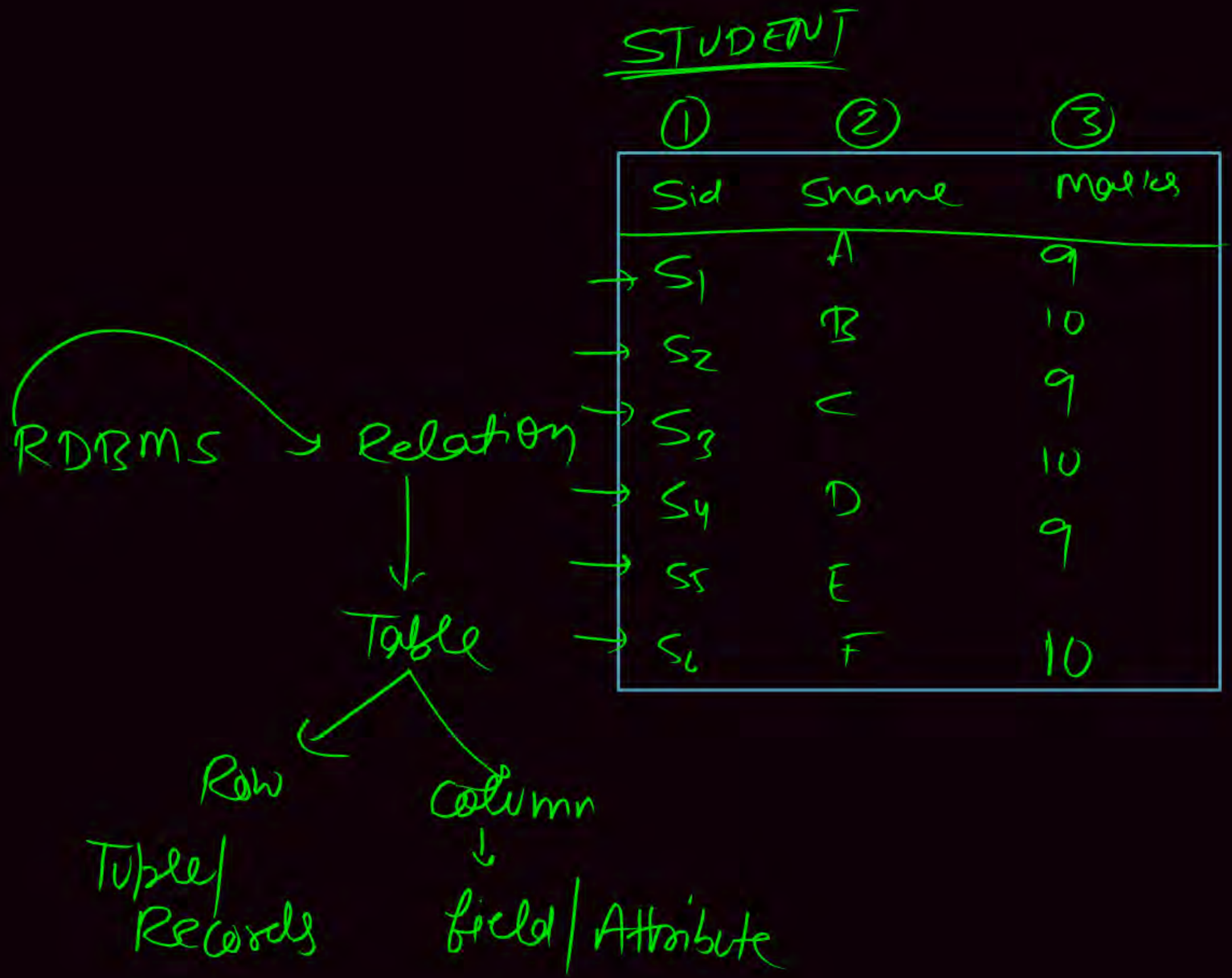
B. A relation in RDBMS is a set of rows and columns.

C. A tuple in a relation can have multiple values for an attribute.

D. All of the above

Multivalued

A & B


STUDENT
1
2
3
Sid
Sname
Marks
S1
A
9
S2
B
10
S3
C
9
S4
D
10
S5
E
9
S6
F
10
RDBMS
Relation
Table
Row
Tuple/
Records
Column
field/Attribute

Q.2

Consider the student relation shown below with schema stud (Sname, S age, S mail, S marks), **[NAT]**

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

Sname age ✗

Sname Smail ✗

age Smail ✗

Smail Smarks ✗

Sname Smarks

(1) Ans

For the above given instance how many 2-set of attributes can determine a row uniquely?

Q.3

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?

[MSQ]

A. AE^+ $(AE)^+ = [AEBCDF] \Rightarrow [ABCDEF]$ (H)

B. CE^+ $(CE)^+ = [CEADFB] \Rightarrow [ABCDEF]$ (H)

C. AEH^+ $(AEH)^+ = [AEHBCDF] \Rightarrow [ABCDEFH]$

D. All of the above

Ans [C]

Q.4

Consider the below relation schema Stud (Rid, name, course, mail, phone) with FD set as: [NAT]

1. Rid → {Rid} → Trivial FD
2. Rid → {name, mail} → Non Trivial FD
3. course → {course, phone} → Semi Non Trivial
4. phone → {phone} → Trivial
5. mail → {Rid, course} → Non Trivial FD
6. name → {phone, mail, course} → Non Trivial

Trivial : 2
Non Trivial : 3
Semi Non Trivial : 1
6

The number of non-trivial FD's in the given FD set is/are?

3 Ans

Trivial FD

$X \to Y$ is Trivial

If $X \supseteq Y$

$AB \to A$

$AB \to B$

$AB \to AB$

Non Trivial FD

$X \to Y$ is Non Trivial

iff $X \cap Y = \phi$ & Must Satisfy FD Defination

$A \to B$

Roll No $\longrightarrow$ Branch

Semi Non Trivial FD

$X \not\supseteq Y$ & $X \cap Y \neq \phi$

$A \to AB$

$X \to Y$

Neither $X \not\to Y$ & $X \cap Y \neq \phi$

Q.5

[MCQ]

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

$[yz]^+ = [yz]$

Ans [C]

Q.6 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? **[MCQ]**

A. PTQ $(PTQ)^+ = [PTQSU]$

B. PV $(PV)^+ = [PVQTSU] \Rightarrow [PQTSUV]$

C. PQV $(PQV)^+ = [PQVTSU] \Rightarrow [PQTSUV]$

D. QV $(QV)^+ = [QVSU]$

Ans [C]

Keys

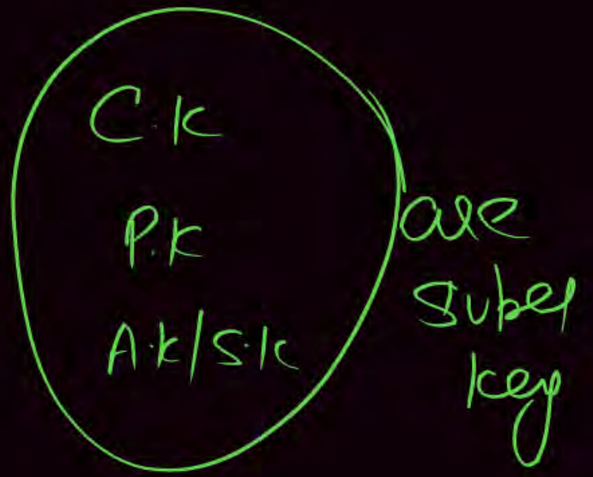
- Any Subset of Super key is also Super key

Super key : from $[X]^+$ getting all attribute of Relational Schema R then X is super key.

Candidate key : Minimal of Super key

AB is C.K

Note: Every Candidate key is a Superkey But Every Super key is Not Candidate key



Super key

Minimal → Candidate key (Assume 4 C·k)

1 Select as → Primary key

Remaining 3 CK → A·K / Secondary key

Q.7

In a schema with attribute X, Y, Z, W, V, the following set of functional dependencies are given:

{Y → X, Y → Z, ZW → V, X → W, V → X}.

Which of the following FD is not implied by the above set? [MCQ]

A. YX → ZW — Implied — $(YX)^+ = (YXZWV)$

B. XV → YZ — $(XV)^+ = (XVW)$ — Not Implied

C. ZW → V — Implied — $(ZW)^+ = (ZWVX)$

D. XV → XW — Implied — $(XV)^+ = (XVW)$

Ans [B]

$F: [A \to B,\ B \to C]$

Check $A \to C$?

$(A)^+ = [A\ B\ C]$

$X \to Y$ logically implied from the closure of X

$(X)^+ = [\ldots\ldots Y\ldots]$ determines Y

Q.8

Choose the correct statement from the following.

[MCQ]

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

Ans [C]

STUDENT

① Sid	② Sname	③ Branch	④ Marks
S_1	A	CS	9
S_2	B	IT	10
S_3	C	CS	8
S_4	D	IT	9
S_5	E	EC	8
S_6	F	EE	10

(6)

Degree

(or)

Arity: Number of Attribute

(4)

Cardinality ⇒ Number of Tuples/Records

(6)

Relational Schema: STUDENT (Sid Sname Brand Marks)

Relational Instance: Set of Records [Snapshot]


THANK YOU GW
SOLDIERS !