

Experiment 4

Student Name: Sambhav Mahajan UID: 23BCS11290

Branch: B.E. C.S.E. **Section/Group:** KRG-2B

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Subject Name: ADBMS Subject Code: 23CSP-333

1. Aim: To study the concepts of functional dependencies, candidate keys, prime and non-prime attributes, and normalization in relational databases, and to apply them to identify the highest normal form of a given relation.

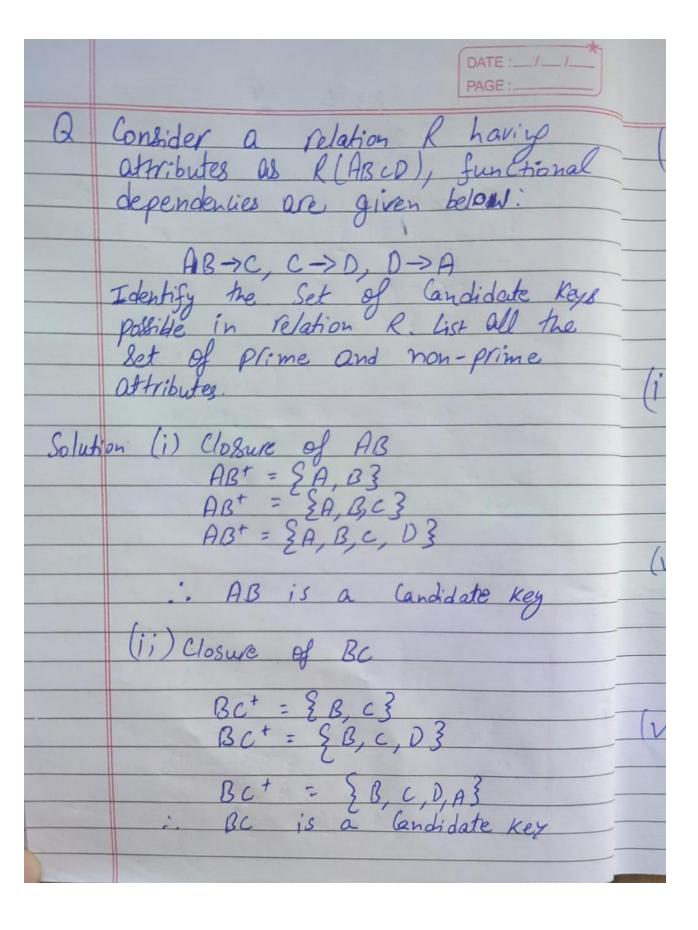
2. Objective:

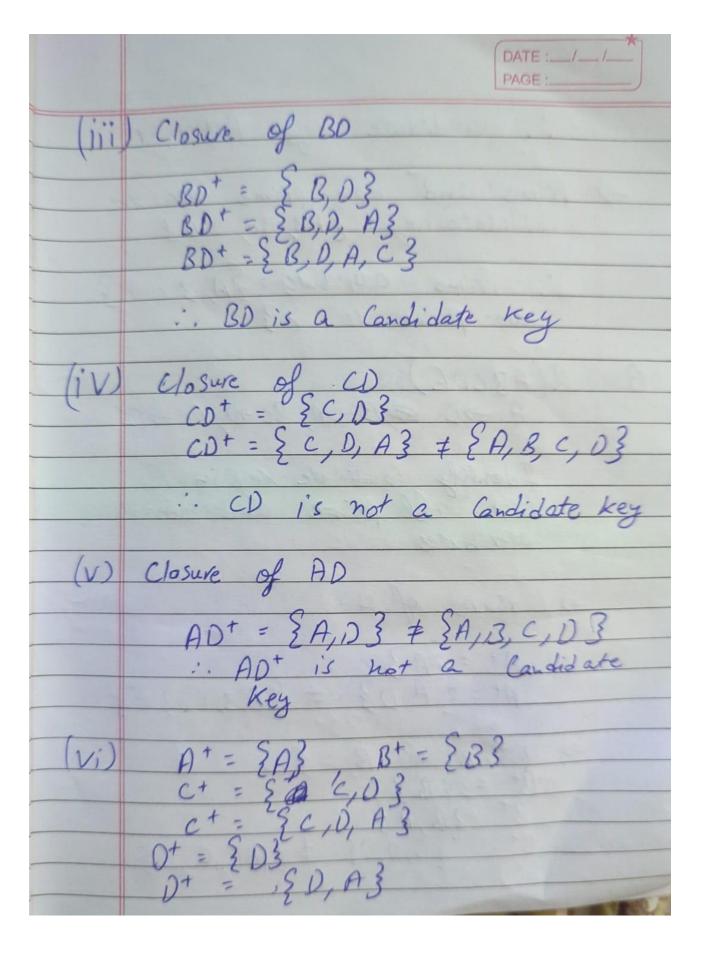
- To understand functional dependencies and their role in database design.
- To determine candidate keys for a given relation using closure method.
- To differentiate between prime and non-prime attributes.
- To analyze a relation schema and identify the highest normal form (1NF, 2NF, 3NF, BCNF) it satisfies.
- To learn how redundant functional dependencies can be removed.

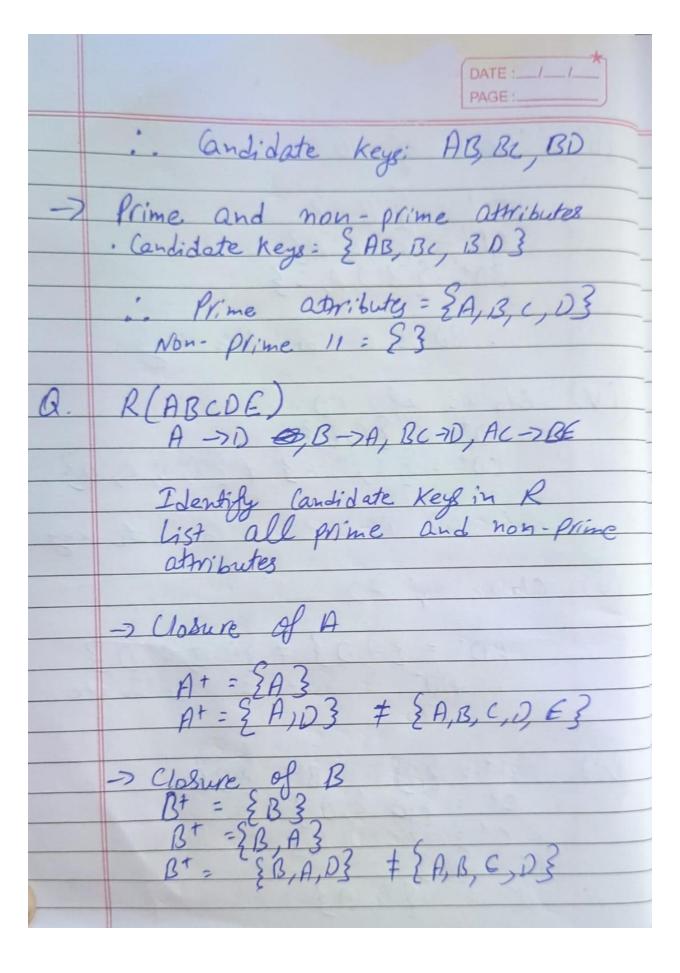


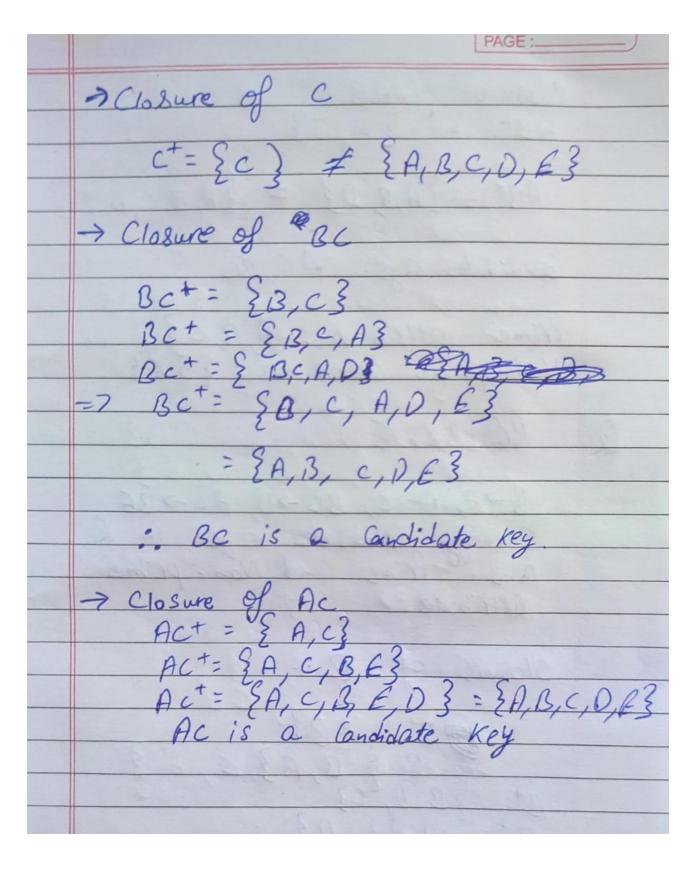
4. Questions and Answers

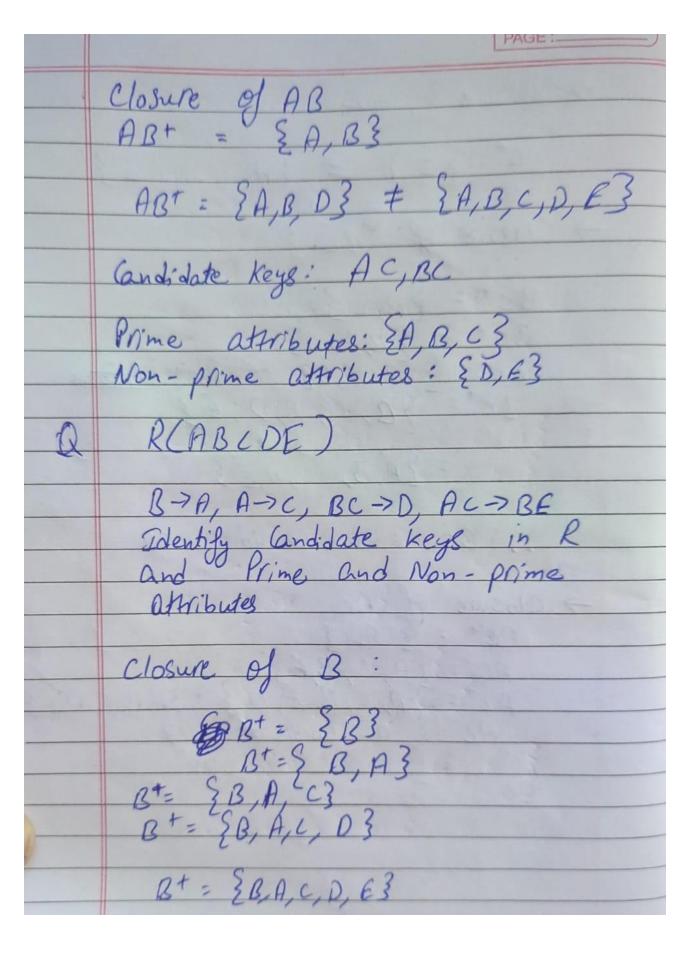
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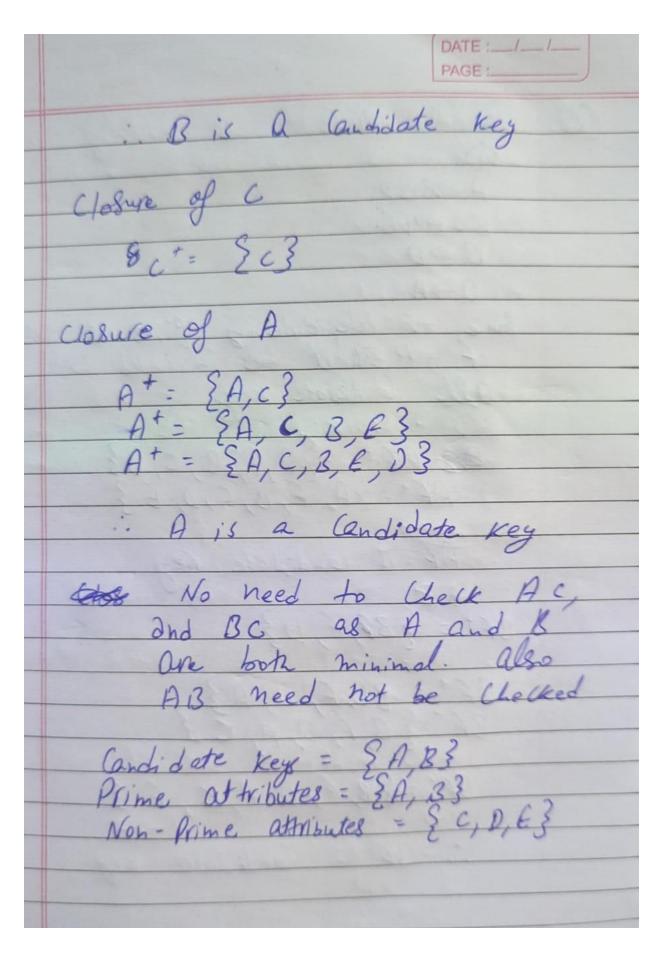


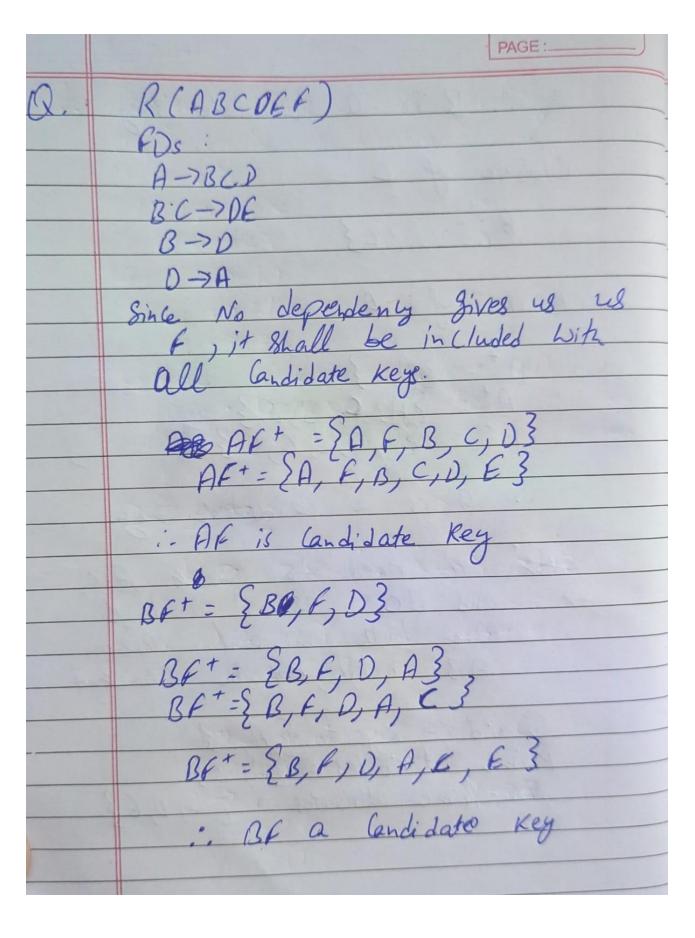






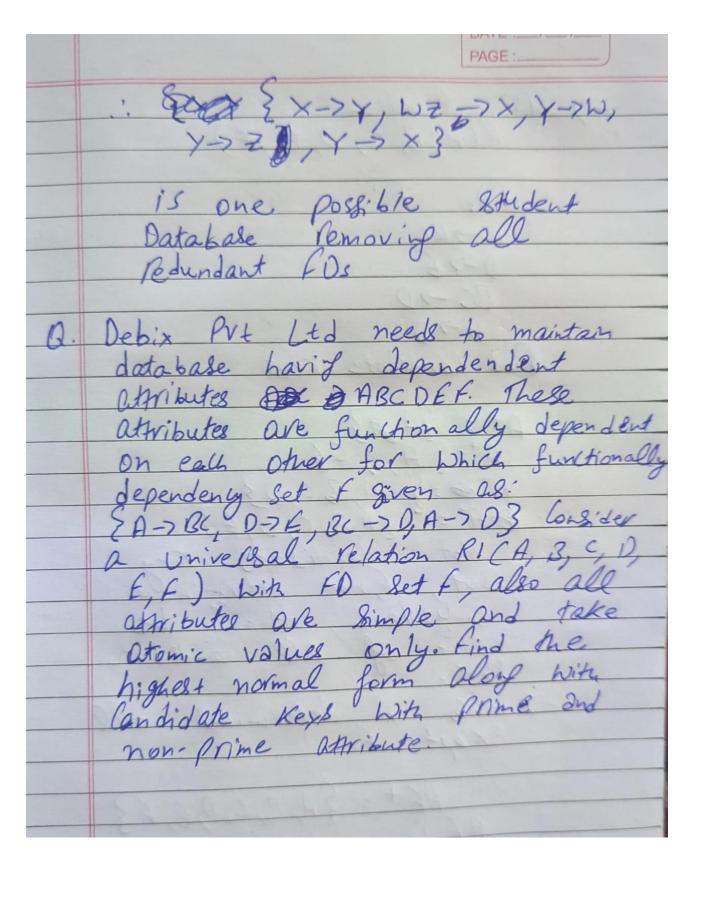


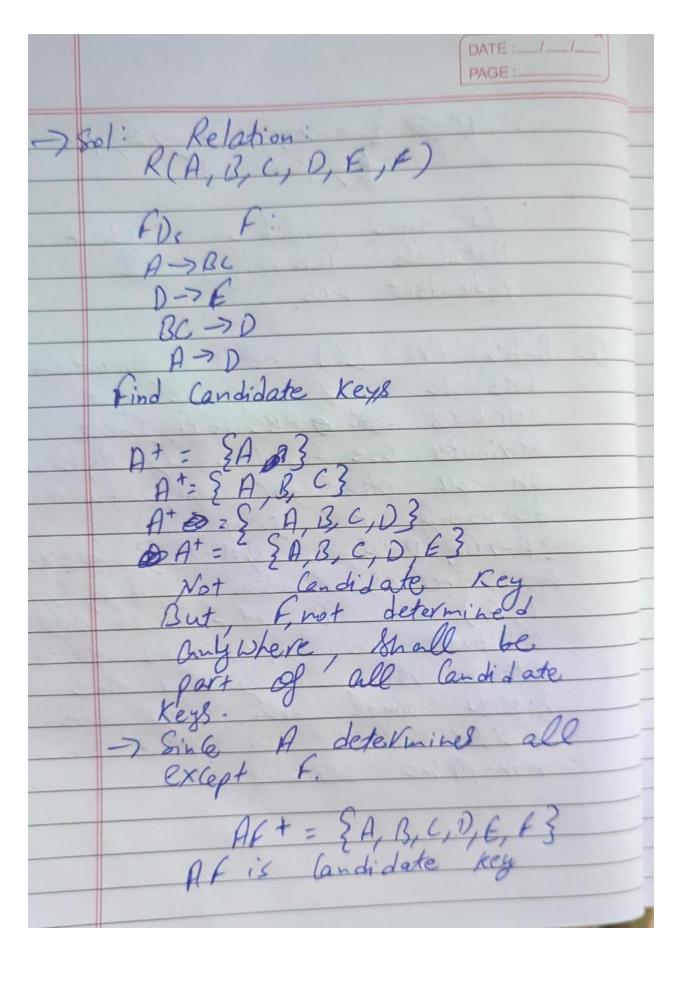




PAGE:
$CF^{+} = \{C,F\}$ $EF^{+} = \{E,F\}$
OF + = { D, F, A} Sin & AF is a Candidate Key:
DF+ = \{D, F, A, B, C, E\}
i. A is a Candidate Key
: Candidate Keys = AF, BF, DF
-> Prime attributes = {A,B,D,F} -> Non-Prime attributes = {C,E}
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	DATE:// PAGE:	
Q.	Design Student DB involving Certain dependencies which are listed below:	
	dependencies which are listed below:	
	1) X-> Y	
	21 WZ ->X	
	31 WZ -> Y	
	41 7-72	-
	5) Y -> W	
	6) Y -> 2	
	Kemore all redundent is got	
	Remove all redundant FDs for efficient working of the student database management system.	
	Gulabase managemen	
	TORRESTO .	
	THE STATE OF THE S	
	WZ -7 x and X->Y->WZ ->Y	
	: WZ-77 is redundant	
	-> remove (3)	
	-> Write minimal Set Canonial	
	Cover)	
	X-) Y Y->Z	
	WZ -7×	
	Y -7 U	
	YIX	





PAGE :___ A) provide de l'étermines de all attributes. A an determine A .. Af is the only cardidate Key -> Prime attributes = SA, F3 > Non-Prime attributes = EB, C, D, ES -> Normal Form.
. INF: yes Catomic attributes. Check JNF:

A-> BC (A Exey BE are

non Prime)

... Partial dependency exist

Not in 2NF Only 2NF

Candidate Keys = EA, F3

Prime attributes = {A, F3}

Non-1, 11 = {B, C, D, E3}

Highest NF = INF

5. Learning Outcomes:

- •Define and explain functional dependencies in relational schema.
- •Find candidate keys and classify attributes into prime and non-prime.
- •Detect partial, transitive, and trivial dependencies.
- Identify the highest normal form satisfied by a relation.
- Apply normalization techniques to design efficient and consistent database schemas.