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M.S. Ramaiah Institute of Technology
(Autonomous Institute, Affiliated to VTU)
Department of Computer Science and Engineering

Course Name: Database Systems

Course Code: CS52

Credits: 3:1:0

UNIT 5 Tutorial

Term: September – December 2020

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Test for Lossless(non additive) join property

$R = \{A, B, C, D, E\}$

$F = \{A \rightarrow C,\ B \rightarrow C,\ C \rightarrow D,\ DE \rightarrow C,\ CE \rightarrow A\}$

$DECOMP = \{R_1, R_2, R_3, R_4, R_5\}$

$R_1 = \{A, D\}$

$R_2 = \{A, B\}$

$R_3 = \{B, E\}$

$R_4 = \{C, D, E\}$

$R_5 = \{A, E\}$

	A	B	C	D	E
R_1	a_1	b_{12}	b_{13}	a_4	b_{15}
R_2	a_1	a_2	b_{23}	b_{24}	b_{25}
R_3	b_{31}	a_2	b_{33}	b_{34}	a_5
R_4	b_{41}	b_{42}	a_3	a_4	a_5
R_5	a_1	b_{52}	b_{53}	b_{54}	a_5

$*$ Try $CE \rightarrow A$:

	A	B	C	D	E
R_1	a_1	b_{12}	b_{13}	a_4	b_{15}
R_2	a_1	a_2	b_{13}	a_4	b_{25}
R_3	b_{31} a_1	a_2	a_3	a_4	a_5
R_4	b_{41} a_1	b_{42}	a_3	a_4	a_5
R_5	a_1	b_{52}	a_3	a_4	a_5

The third row is made up entirely of a_i symbols. The decomposition $DECOM$ has the lossless join property.

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Find a dependency-preserving decomposition

DECOMP = {R1, R2, . . . , Rn} of R such that each Ri in DECOMP is in 3NF

R = {A, B, C, D, E, H},

F = {AE → BC, B → AD, CD → E, E → CD, A → E}

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Decompose into 2NF and 3NF relations

Consider the universal relation $R = \{A, B, C, D, E, F, G, H, I, J\}$ and the set of functional dependencies $F = \{\{A, B\} \rightarrow \{C\}, \{A\} \rightarrow \{D, E\}, \{B\} \rightarrow \{F\}, \{F\} \rightarrow \{G, H\}, \{D\} \rightarrow \{I, J\}\}$. What is the key for R? Decompose R into 2NF and then 3NF relations.

And also Test for non additive join property

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Consider a relation R(A, B, C, D, E) with the following dependencies: **AB -> C, CB -> E, E ->DA. Find the key**

AB+=ABCED

BC+=BCEDA

E+=EDA

AB is the primary Key

BC is the candidate key

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Check for Non-additive Lossless-Join Decomposition

R1= ABC and R2= BCD, with

F = {A→BC ,C →B, B →C, D →B}

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1. Find the minimal cover of the set of functional dependencies given;

{A → C, AB → C, C → DI, CD → I, EC → AB, EI → C}

2. F = { AB -> C, C -> A, BC -> D, ACD -> B, D -> E, D -> G, BE -> C, CG -> B, CG -> D, CE -> A, CE -> G}

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Thank you