CSCI3170 Short Assignment #3  
(Deadline: Nov 17, 23:59)

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1. Consider the following relation and functional dependencies:

R(a,b,c,d)

F = {a🡪b, c🡪d}

1. Give a BCNF decomposition of R. Please show your steps.

Diagram

Description automatically generated

The BCNF decomposition of R is , and .

1. Prove that your decomposition is a lossless-join decomposition.

Since is and , it is lossless-join decomposition.

Since is and , it is lossless-join decomposition.

1. Consider the following relation and functional dependencies:

R(a,b,c,d,e)

F = {ab🡪cd, c🡪d}

1. List the candidate key of R

is the candidate key of R.

1. Find the canonical cover of F

1. Give a 3NF decomposition of R. Briefly explain your answer.

For , create . For , create .

Since the candidate key is not contained in and , is added.

Thus, the 3NF decomposition of R is , and .