CSCI3170 Short Assignment #2  
(Deadline: Nov 3 23:59)

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Consider the following relation schema and functional dependency:

R(A,B,C)

F = {A 🡪 C, C🡪 A}

1. Find A+, B+, C+, AB+, and BC+

Answer:

A+: AC

B+: B

C+: AC

AB+: ABC

BC+: ABC

1. List all the candidate keys of the relation.

Answer:

{AB}, {BC}

1. Is the relation in BCNF? Briefly explain your answer.

Answer:

Consider A 🡪 C,

{ C } { A }, it is not a trivial FD.

Moreover, A is not a key for R.

Therefore, the relation R is not in BCNF.

1. Is the relation in 3NF? Briefly explain your answer

Note that {AB} and {BC} are keys for R. Therefore, A, B and C are part of the key.

Consider A 🡪 C, C is part of some key {BC}.

Consider C 🡪 A, A is part of some key {AB}.

Therefore, the relation R is not in 3NF.