Assignment 2 - CIS4301, Fall 2019

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- **Due Date:** Wednesday October 16, 2019 at the beginning of class
- **Submit via Canvas**
  –upload before 3:00pm

Problem 1

Consider relation R(A, B, C, D, E) with the following functional dependencies.

1. $A \rightarrow B$
2. $E \rightarrow A$
3. $CE \rightarrow D$

1. Find the key(s) of R? Show that the key(s) is/are minimal.
2. Find a minimal basis or prove the current basis is minimal.
3. Perform a BCNF decomposition of R to find a lossless-join dependency-preserving decomposition.
4. Use the 3NF synthesis algorithm to find a lossless-join dependency-preserving decomposition of R into 3NF.

Problem 2

Consider relation S(C,E,J,P,R,T) with the following functional dependencies.

1. $J \rightarrow P$
2. $T \rightarrow E$
3. $J \rightarrow C$
4. $JT \rightarrow R$
5. $C \rightarrow P$

Repeat questions 1 - 4 from problem 1 using relation S.