CSE 132A **Homework# 3** **Winter 2023**

Due on Friday, March 10, 11:59pm (see instructions)

This is an individual assignment. What you turn in must be entirely your own work.

Let R be a relation with attributes $ABCDE$ and

$$F = \{C \to D, AC \to BDE, AB \to CDE, B \to CE\}$$

(i) (1 *point*) Find all the keys of R.

(ii) (4*points*) Find a BCNF decomposition of R with lossless join with respect to F. (Show how the decomposition is obtained.)

(iii) (2 *points*) Is the decomposition obtained in (ii) dependency preserving with respect to F ?

(iv) (5 *points*) Find a 3NF decomposition of R with lossless join and dependency preseving with respect to F (show the steps). Is the decomposition also in BCNF ?

What and how to turn in

- Write or print each answer on a separate page.
- Generate a pdf file with your assignment (if handwritten, scan and save in pdf).
- Upload the pdf file on your Gradescope account.
- If you are tempted to typeset your homework in latex (like a real pro) you can use as a template the solutions to the practice problems on normal forms, which will be posted in latex on the class web site.