**Ch2-NormEx4**

**In-Class:** Chapter 2 Normalization Example 4 - In-Class \_\_\_ \_\_\_ \_\_

Perform the following steps for the GRADE relation below:

1. What are the candidate keys of this relation?
2. What are the additional functional dependencies?
3. Are any determinants not candidate keys?
   1. Place the columns of the functional dependency in a table of their own.
   2. Make the determinant the primary key of the new table.
   3. Leave the determinant as a foreign key in the original table.
   4. Create a referential integrity constraint.

GRADE (ClassName, Section, Term, Grade, StudentNumber, StudentName, Professor, Department, ProfessorEmail)

Step 1: Candidate keys: ( StudentNumber, ClassName, Term )

Step 2: Functional Dependencies:

Professor 🡪 Department, ProfessorEmail

StudentNumber 🡪 StudentName

Step 3: Professor and StudentNumber are determinants, but not candidate keys.

Step 3a,b:

PROFESSOR ( Professor, Department, ProfessorEmail )

STUDENT ( StudentNumber, StudentName )

Step 3c: GRADE ( ClassName, Section, Term, Grade, *StudentNumber*, *Professor* )

Step 3d: StudentNumber in GRADE must exist in StudentNumber in STUDENT.

Professor in GRADE must exist in Professor in PROFESSOR.