

Name: \_\_\_\_\_

## QUIZ 13 - ICS 321 Fall 2017

In today's class, we learned about Normal Forms. The following relvar contains a portion of the student course enrollment at a fictitious university some place some semester.

<u>ID</u>	<u>CRN</u>	Student	Course	Section	Description	Instructor	Office
19168876	65224	Tom B	ICS331	1	Logic Design	baker@fu.edu	POST115
28763471	85324	Justin W	ICS331	2	Logic Design	chang@fu.edu	POST209
28763471	26423	Justin W	ICS351	1	Network Design	inouye@fu.edu	POST311
83334232	45244	Nicole L	ICS631	1	Logic Design	baker@fu.edu	POST115
83334232	54732	Nicole L	ICS691	1	Topics in Software	chang@fu.edu	POST209
35289768	74782	Della B	ICS691	2	Topics in Software	kim@fu.edu	POST311
35289768	85324	Della B	ICS331	2	Logic Design	chang@fu.edu	POST209

Note that { ID, CRN } make up the primary key. With those two values, you can uniquely identify any row or tuple. Once you have identified a unique tuple, you have determined the values for each of the other attributes of the header also.

For example, Description = "Network Design" for the tuple defined by { 28763471, 26423 }. We can say that { ID, CRN } determines { Description }, as well as all the other non-key attributes of the relvar. However, in this particular relvar, we also can see that { Course } also determines { Description }. In fact, in reality, { CRN }  $\rightarrow$  { Course } and { Course }  $\rightarrow$  { Description }

1. Write the functional dependencies for the other attributes Student, Section, Instructor and Office.
2. What are the values for relvars { ID, CRN } and ones for { CRN }  $\rightarrow$  { Course }, { Course }  $\rightarrow$  { Description }, and the four functional dependencies you answered for Question 1? Name the relvars appropriately so you can reference them in the next question.

3. Finish the Tutorial D expression for reproducing the original relvar using the relvars you defined in Question 2. (ID\_CRN is the projection of { ID, CRN } of the original relvar.)

( ID\_CRN JOIN \_\_\_\_\_ )  
{ ID, CRN, Student, Course, Section, Description, Instructor, Office }