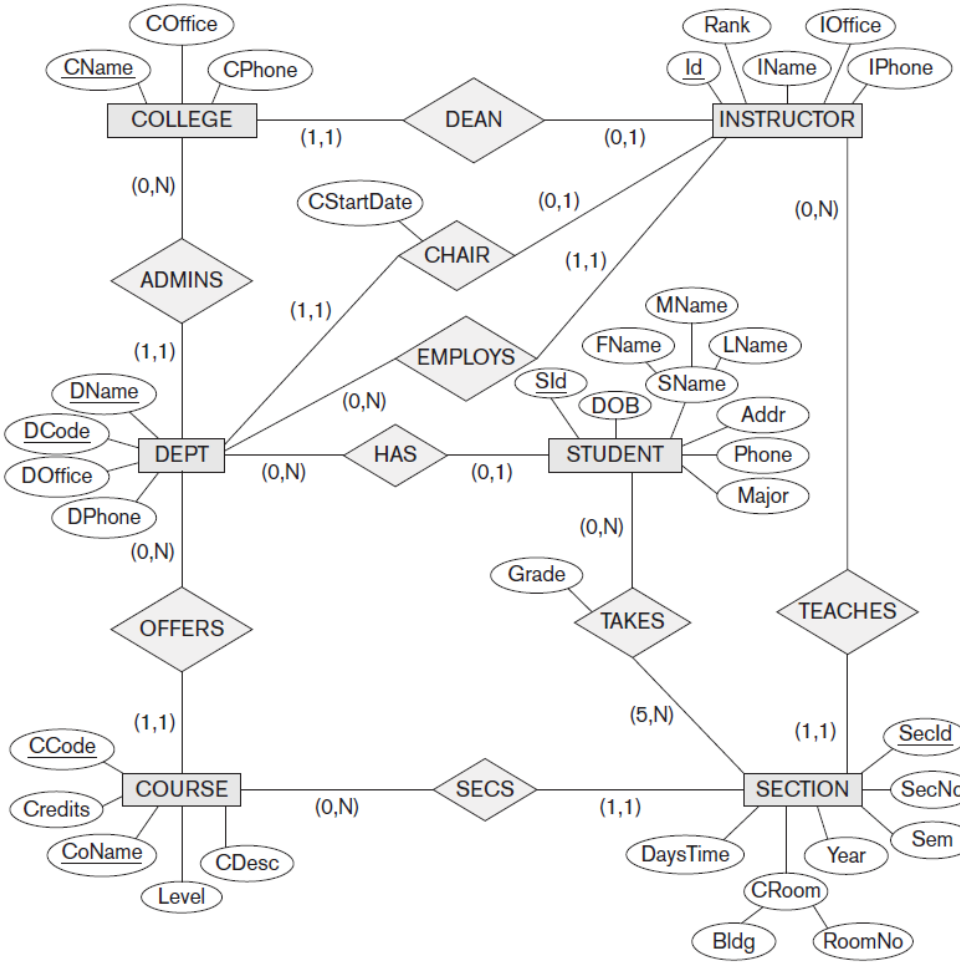
CS631 Assignment-3

Due date: See the Assignment page on Canvas

Do answer all items below and **submit** a word/pdf file via Canvas. If you have a question, email me or ask during class hours.

1- Consider the UNIVERSITY relational database schema.



1-a) (15 points) Map the UNIVERSITY database schema shown above into a relational database schema.

1-b) (15 points) Write appropriate SQL DDL statements for declaring the UNIVERSITY relational database schema.

Choose the appropriate action (reject, cascade, set to NULL, set to default) for each referential integrity constraint, both for the *deletion* of a referenced tuple and for the *update* of a primary key attribute value in a referenced tuple.

2- (70 points) Consider the following schema.

SUPPLIERS (SID : *integer*, SNAME : *string*, ADDRESS : *string*)
PARTS (PID : *integer*, PNAME : *string*, COLOR : *string*)
CATALOG (SID : *integer*, PID : *integer*, COST : *real*)

The key fields are underlined, and the domain of each field is listed after the field name. Thus, SID is the key for SUPPLIERS, PID is the key for PARTS, and SID and PID together form the key for CATALOG. The CATALOG relation lists the prices charged for parts by suppliers. CATALOG.SID is a foreign key referring to SUPPLIERS.SID and CATALOG.PID is a foreign key referring to PARTS.PID.

Write the following queries in **relational algebra** (5 points) and in **SQL** (5 points).

2-a) Find the names of parts supplied by suppliers who are at 1 Central Ave.

2-b) Find the city of the suppliers supplying a red part that costs more than $100.

2-c) Find the SIDs of suppliers who supply a red part and a green part.

2-d) Find the SIDs of suppliers who supply a red part or a green part.

2-e) Find pairs of PIDs such that the part with the first PID is sold at a higher price by a supplier than the part with the second PID.

2-f) Find the PIDs of parts supplied by a supplier who is at the city of Newark and by a supplier who is at the city of Trenton.

2-g) Find the PIDs of parts supplied by each and every supplier.