Quiz2 (Solution)
Database Systems
CE 373/ CS 355 (L5)
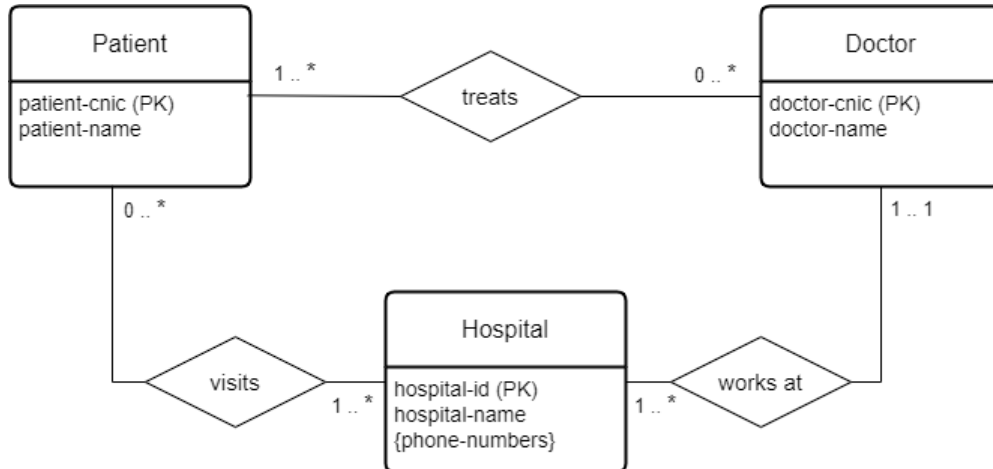
Fall 2023

Student Name: _____   **Student ID:** _____

Question 1
(3 points)

Consider the following E-R Diagram:

Identify whether the following statements are true or false:
a. A doctor can work at more than one hospital. (True / **False**)
b. A patient can only visit one hospital. (True / **False**)
c. The *Doctor* entity set has total participation in the *treats* relationship set. (Ture / **False**)

Question 2
(5 points)

For the E-R Diagram in Q1, generate the corresponding relation schema. Identify relations, attributes, primary keys, and foreign keys.

Solution:

Patient (<u>patient-cnic</u>, patient-name)

Treats (<u>doctor-cnic</u> (FK to Doctor), <u>patient-cnic</u> (FK to Patient))

Doctor (<u>doctor-cnic</u>, doctor-name, hospital-id (FK to Hospital))

Visits (<u>patient-cnic</u> (FK to Patient), <u>hospital-id</u> (FK to Hospital))

Hospital (<u>hospital-id</u>, hospital-name)

Phone-Numbers (<u>hospital-id</u> (FK to Hospital), <u>phone-number</u>)

Consider the following relation schema:

   StudentGrades (StudentID, CourseID, StudentGradeInCourse, StudentCGPA)

Is this schema in 2NF. If not, convert this into 2NF. Justify the conversion process by identifying the relevant functional dependency.

Solution:

Schema is not in 2NF.
Violating Functional Dependency: {StudentID} → {StudentCGPA}
2NF Schema:

   StudentCourseGrades (StudentID, CourseID, StudentGradeInCourse)
   StudentOverallGrades (StudentID, StudentCGPA)