Ryan Young 999972702 CSCC43 Assignment 6 11/2/2017

1)

a) Professor (ProfessorID, CourseCode)

This is already in Third Normal Form

b) Lecture (ProfessorID, CourseCode, Day, Time, Room)

This is in First Normal Form

To change to second normal form, we have to break into two tables:

Lecture (ProfessorID, CourseCode)

Course (CourseCode, Day, Time, Room)

Which is also in third normal form.

c) Lecture (ProfessorID, CourseCode, Day, Time, Room, Capacity) [FD: Room -> Capacity]

This is in First Normal Form.

To make it second normal form, we first must break into two tables, as day, time, Room, and capacity are all only dependant on Course code.

Lecture (ProfessorID, CourseCode)

Course (CourseCode, Day, Time, Room, Capacity) [FD: Room -> Capacity]

But since Capacity has a functional dependency on Room, we break it further into:

Lecture (ProfessorID, CourseCode)

Course (CourseCode, Day, Time, Room)

Room (Room, Capacity) [FD: Room -> Capacity]

This is now in third normal form.

d) Lecture (ProfessorID, CourseCode, ProfessorName, CourseName)

First Normal Form

To change to second normal form, we break it into three tables.

d) Lecture (ProfessorID, CourseCode)

Professor (ProfessorID, ProfessorName)

Course (CourseCode, CourseName)

It is now in both second and third normal form

2)

For some hostpital,

Unknown\_Relation (PatientID, name, DiabetesType, Age, MaritialStatus, HomePostalCode)

Indexes could be used so that only records relevant would be given if we have an index for diabetes type. For example, suppose there are only two types of diabetes, A and B, then by using an index for the two, each report will only have to check the respective diabetes type for the corresponding age group, which in best case reduces the required searching to half the patients. The use of indexes in general will help speed up the time needed to find the corresponding rows by reducing the amount of searching required, by condensing the rows into an easier to search index.