Group 7: Twinkle Ghatoriya, Tej Modi, Niyati Shah, Divyaj Podar, Balaji Katakam and Abhitej Kodali

Class: MIS 636   Joseph Morabito, Ph.D.

Assignment: Normalization – Team HW   September 19, 2018

COURSE (SCHEDULED)

ROOM	TIME	COURSENO	COURSENAME	TUTOR
112	9:00	1264	French 1	JL
-	8:00	1265	French 2	-
138	9:00	1266	French 3	PS
139	7:00	1562	Spanish 1	KL
139	8:00	1563	Spanish 2	KL
114	7:00	1564	Spanish 3	KR
138	8:00	1264	French 1	PS
112	7:00	1264	French 1	JL

Solution:

1NF First Normal Form

The Table satisfies the first normal form (1NF) based on the following rules:

Rule 1: Single Valued Attributes

Rule 2: Attribute Domain should not change

Rule 3: Unique name for Attributes/Columns

Rule 4: Order of rows and columns are insignificant

2NF Second Normal Form

A relation is in second normal form (2NF) if it is in first normal form and all of its non-key attributes are fully *functionally dependent* on *all* of the primary key.

Time/Room/Course Name cannot be set as a primary key alone. We will have to use a combination of columns for primary key. Since, the course name is dependent on course number. Therefore, the dependency needs to be removed.

Therefore, setting CourseNo as Primary Key for the table Course, the resulting table with CourseName and CourseNo, is displayed as below:

CourseNo	CourseName
1264	French 1
1265	French 2
1266	French 3
1562	Spanish 1
1563	Spanish 2
1564	Spanish 3

Therefore, resulting table, by substituting the CourseNo and CourseName with CourseNo as foreign key, would be displayed as below:

Room	Time	CourseNo (FK)	Tutor
112	9:00	1264	JL
-	8:00	1265	-
138	9:00	1266	PS
139	7:00	1562	KL
139	8:00	1563	KL
114	7:00	1564	KR
138	8:00	1264	PS
112	7:00	1264	JL

3NF Third Normal Form

We still have a problem with the original table, since there is null value present in it. Besides, there is a replication in the Room and Tutors. Also, Course Table is already in 3NF, but the original table is still to be normalized.

Therefore, by creating Tutor as primary Key, we can group the Tutor and the Room into one table which will be called Tutor table. The resulting tables are shown below:

Course Table: CourseNo -> CourseName

CourseNo (PK)	CourseName
1264	French 1
1265	French 2
1266	French 3
1562	Spanish 1
1563	Spanish 2
1564	Spanish 3

Tutor Table: Tutor –> Room

Tutor (PK)	Room
JL	112
KL	139
KR	114
PS	138

Remaining Table: Tutor, Time -> CourseNo

CourseNo (FK)	Tutor (FK) (PK)	Time (PK)
1264	JL	9:00
1266	PS	9:00
1562	KL	7:00
1563	KL	8:00
1564	KR	7:00
1264	PS	8:00
1264	JL	7:00