

STUDENT ACTIVITY 4.1 KEY

MTA Course: Database Administration Fundamentals

Topic: Understand normalization

File name: DBAdminFund_SA_4.1_Key

Lesson Objective:

4.1: Understand normalization. *This objective may include but is not limited to:* understanding the reasons for normalization, the five most common levels of normalization, how to normalize a database to third normal form.

Create tables as indicated here for each of the first three normalization forms.

Last	First	Birthday	Tuition	Sex	Subject	Room	Start Time 1	Subject2	Room2	Start Time 2	costs class1	cost class2	fees per hour1	credit hours class 1	credit hours class 2	fees per hour2
Holt	Holly	10/5/1990	10000	F	English	Hall A	1:00 PM	Social Studies	4576c	6:00 PM	480	700	120	4	5	140
Raheem	Michael	6/18/1990	4000	M	CIS	Hall 12	3:00 PM	Social Studies	4576c	6:00 PM	600	700	150	5	5	140
Raheem	Michael	6/18/1990	4000	M	CIS	Hall 12	3:00 PM	Social Studies	4576c	6:00 PM	600	700	150	5	5	140
Jacobsen	Lola	8/7/1997	9000	F	Social Studies	4576c	6:00 PM	English	Hall A	1:00 PM	700	480	140	5	4	120
Higa	Sidney	11/21/2000	12000	F	English	Hall A	1:00 PM	Math	2354c	4:00 PM	480	1404	120	4	6	234
Johnson	Brian	4/15/1989	500	M	English	Hall A	1:00 PM	Math	2354c	4:00 PM	1404	1701	234	6	3	567
Raheem	Michael	6/18/1990	4000	M	CIS	Hall 12	3:00 PM	Social Studies	4576c	6:00 PM	600	700	150	5	5	140
Bentley	Sean	2/17/1990	350	M	Science	Hall B	2:00 PM	Social Studies	4576c	6:00 PM	1701	700	567	3	5	140
Price	Jeff	10/5/1990	2000	M	Social Studies	4576c	6:00 PM	CIS	Hall 12	3:00 PM	700	600	140	5	5	150
Raheem	Michael	6/18/1990	4000	M	CIS	Hall 12	3:00 PM	Social Studies	4576c	6:00 PM	600	700	150	5	5	140
Ashton	Chris	1/1/1951	50	M	Social Studies	4576c	6:00 PM	CIS	Hall 12	3:00 PM	480	1404	120	4	6	234

Use the First Normal Form (1NF) with the previous table. Create separate tables for each group of related data and identify each row with a unique column (the primary key). (There are other possible solutions.)

StudentID	Last	First	Birthday	Tuition	Sex	Subject	Room	S_Time 1	Subject 2	Room 2	S_Time 2	Costs 1	Cost 2
1	Holt	Holly	10/5/1990	10000	F	English	Hall A	1:00 PM	Social Studies	4576c	6:00 PM	480	700
2	Raheem	Michael	6/18/1990	4000	M	CIS	Hall 12	3:00 PM	Social Studies	4576c	6:00 PM	600	700
3	Jacobsen	Lola	8/7/1997	9000	F	Social Studies	4576c	6:00 PM	English	Hall A	1:00 PM	700	480
4	Higa	Sidney	11/21/2000	12000	F	English	Hall A	1:00 PM	Math	2354c	4:00 PM	480	1404
5	Johnson	Brian	4/15/1989	500	M	English	Hall A	1:00 PM	Math	2354c	4:00 PM	1404	1701
6	Bentley	Sean	2/17/1990	350	M	Science	Hall B	2:00 PM	Social Studies	4576c	6:00 PM	1701	700
7	Price	Jeff	10/5/1990	2000	M	Social Studies	4576c	6:00 PM	CIS	Hall 12	3:00 PM	700	600
8	Ashton	Chris	1/1/1951	50	M	Social Studies	4576c	6:00 PM	CIS	Hall 12	3:00 PM	480	1404

Student_Info *Primary Keys

Class_ID	Subject	Room	Start Time	credit hours	fees						
1	English	Hall A	1:00 PM	4	120						
2	CIS	Hall 12	3:00 PM	5	150						
3	Social Studies	4576c	6:00 PM	5	140						
4	Science	Hall B	2:00 PM	4	567						
5	Math	2354c	4:00 PM	6	234						

Class_Info *Primary Keys

Use the Second Normal Form (2NF) with the previous table. Remove subsets of data that apply to multiple rows of a table and place them in separate tables, and create relationships between these new tables through the use of foreign keys.

[illegible]

*Foreign Keys

[illegible]

Use the Third Normal Form (3NF) with the previous table. Remove columns that are not dependent upon the primary key. Any column that is not directly needed should be removed from the table.

Costs can be calculated using Class Info table. Credit Hours * Fees

Costs fields have been removed from the table.

[illegible]