

INST327 - Database Design and Modeling

Assignment 3 Questions

Be sure to complete all four questions.

Disallowed structures for Q.1, Q.2, and Q.3

(DO NOT USE THESE STRUCTURES FOR Q1, Q2, and Q3):

- category_id = x, where x is a PK value from the category table.
- Hard coding calculated values such as sums and averages. Instead, use appropriate functions and a “dynamic calculation” approach to calculate these values.

NOTE: Make sure to rerun the create_my_guitar_shop.sql script for this assignment to ensure you get the expected result sets back.

Q1.) (25 points) Write a SELECT statement that displays each product purchased, the category of the product, the number of each product purchased, the maximum discount of each product, and the total price from all orders of the item **for each product purchased.** Include a final row that gives the same information over all products (a single row that provides cumulative information from all your rows). For the Maximum Discount and Order Total columns, round the values so that they only have two decimal spaces.

Your result set should look like this, including results and formatting aspects:

	Product Name	Category Name	Number Purchased	Maximum Discount	Discounted Order Total
►	Fender Precision	Basses	1	30.00%	\$559.99
	Fender Stratocaster	Guitars	2	30.00%	\$978.60
	Gibson Les Paul	Guitars	2	30.00%	\$2,517.90
	Gibson SG	Guitars	1	52.00%	\$1,208.16
	Ludwig 5-piece Drum Set with Cymbals	Drums	1	30.00%	\$489.99
	Rodriguez Caballero 11	Guitars	1	39.00%	\$253.15
	Tama 5-Piece Drum Set with Cymbals	Drums	1	15.00%	\$679.99
	Washburn D10S	Guitars	2	0.00%	\$598.00
	Yamaha FG700S	Guitars	1	38.00%	\$303.79
	NULL	Guitars	12	52.00%	\$7,589.57

(returns 9 rows total)

Q2.) (25 points) The guitar shop has recently decided to add guitar lessons for beginner, intermediate, and advanced guitar players. In an effort to get people to attend the new lessons and to spread the word, the shop wants to send emails and flyers to all customers who have ordered a guitar or multiple guitars. This must be accomplished with a subquery.

Your result set should look like this, including results and formatting aspects:

Customer Name	Customer Email	Customer Address	Customer City/State/Zip
▶ Christine Brown	christineb@solarone.com	19270 NW Cornell Rd.	Beaverton, OR 97006
David Goldstein	david.goldstein@hotmail.com	186 Vermont St. Apt. 2	San Francisco, CA 94110
Allan Sherwood	allan.sherwood@yahoo.com	100 East Ridgewood Ave.	Paramus, NJ 07652
Erin Valentino	erinv@gmail.com	6982 Palm Ave.	Fresno, CA 93711
Frank Lee Wilson	frankwilson@sbcglobal.net	23 Mountain View St.	Denver, CO 80208
Barry Zimmer	barryz@gmail.com	16285 Wendell St.	Omaha, NE 68135

(6 rows returned)

Q3.) (25 points) The parent company of the guitar shop this database belongs to is withdrawing support from certain credit card companies due to high interchange fees. Create a CTE named `valid_card_cte` to retrieve the name, id, card number, card type, and card expiration date of the database's customers and note which customers are using an invalid card type. This should match the information in the first preview. Using this CTE, join the other tables to also retrieve the product name and item price found in the second preview.

Your result set should look like this, including results and formatting aspects:

	customer_name	order_id	card_number	card_type	card_expires
▶	Allan Sherwood	1	4111111111111111	Visa	04/2020
	Barry Zimmer	2	4012888888881881	Visa	08/2019
	Allan Sherwood	3	4111111111111111	Visa	04/2017
	David Goldstein	5	4111111111111111	Visa	04/2019
	Frank Lee Wilson	7	5555555555554444	MasterCard	04/2019
	Gary Hernandez	8	4012888888881881	Visa	04/2019
	David Goldstein	9	4111111111111111	Visa	04/2019
	Christine Brown	4	378282246310005	Invalid Card Type	04/2016
	Erin Valentino	6	6011111111111117	Invalid Card Type	04/2019

(9 rows returned)

	customer_name	order_id	product_name	item_price	card_number	card_type	card_expires
▶	Allan Sherwood	1	Gibson Les Paul	\$1,199.00	4111111111111111	Visa	04/2020
	Allan Sherwood	3	Gibson SG	\$2,517.00	4111111111111111	Visa	04/2017
	Allan Sherwood	3	Rodriguez Caballer...	\$415.00	4111111111111111	Visa	04/2017
	Barry Zimmer	2	Yamaha FG700S	\$489.99	4012888888881881	Visa	08/2019
	Christine Brown	4	Gibson Les Paul	\$1,199.00	378282246310005	Invalid Card Type	04/2016
	David Goldstein	9	Fender Stratocaster	\$699.00	4111111111111111	Visa	04/2019
	David Goldstein	5	Washburn D10S	\$299.00	4111111111111111	Visa	04/2019
	Erin Valentino	6	Washburn D10S	\$299.00	6011111111111117	Invalid Card Type	04/2019
	Frank Lee Wilson	7	Fender Precision	\$799.99	5555555555554444	MasterCard	04/2019
	Frank Lee Wilson	7	Fender Stratocaster	\$699.00	5555555555554444	MasterCard	04/2019
	Frank Lee Wilson	7	Ludwig 5-piece Dru...	\$699.99	5555555555554444	MasterCard	04/2019
	Gary Hernandez	8	Tama 5-Piece Dru...	\$799.99	4012888888881881	Visa	04/2019

(12 rows returned)

Q4.) (25 points)

Normalize the un-normalized table given below through 1NF, 2NF and 3NF. Show the normalization process in a file (e.g., creating tables and drawing lines in MS Word or MS Excel), save as a .pdf file, and submit it through the link available on Canvas. Name your file according to this scheme: *yourlastname_a3_normalize.pdf*. (Do not write, edit or print protect your .pdf file).

The presentation of your normalization process should mimic the normalization class exercise and the example provided on Canvas.

In order to complete this assignment successfully, please keep in mind the following points as you work on the normalization case. You may lose points if you do not follow these:

- Make sure that you cover each normalization step (1NF, 2NF, 3NF) **separately, explicitly, and in sequence.**
- Do not skip any normalization steps.
- In each normalization step, you should only resolve the issue(s) that pertain to the given step. (For example, do not resolve transitive dependencies in 1NF or 2NF, as transitive dependencies are 3NF business).
- In each step, list all of the tables, including those that do not change in the given step.
- Identify and show primary keys, composite primary keys, and foreign keys in each step.
- Show the relationships between the tables in each form, (by drawing lines/arrows between corresponding PKs and FKs).
- The sample records are for your reference only to help you understand the nature of each field. You should not include them in your work.

Things to note for this database:

- Clubs only meet once a week
- **Pay attention to the sample data**

<i>Field</i>	<i>Sample Record</i>
Club ID	14
club name	Data and Cloud Computing Society
club description	An org dedicated to teaching students the skills of cloud computing through AWS projects
club_email	dcssumd.com
club type	educational, professional, social
meeting day	Thursday
meeting location	Zoom
meeting time	7:00 PM
application	required
major requirement	open to all
gpa requirement	3.2
student 1 first name	Stacey
student 1 last name	Abrahms
student 1 class	Junior
student 1 role	Leader
student 2 first name	Quentien
student 2 last name	Tarantino
student 2 class	Senior
student 2 role	Member
student 3 first name	Sam
student 3 last name	Levinson
student 3 class	Freshman
student 3 role	treasurer