

Lab 06 - Normalization

Due Mar 5 at 11:59pm **Points** 40 **Questions** 10
Available after Mar 3 at 9am **Time Limit** None

Instructions

This lab will focus on the process of database normalization and make use of a basic dataset based on a fictional Airline Supply company. You will be required to normalize and implement a database from ERD to third normal (3NF) form.

The file to be analyzed is, COMPIT_420_Spring_2021_Lab_06_Air_Supply.xlsx, and is available on the course Canvas.

Attempt History

	Attempt	Time	Score
LATEST	Attempt 1	333 minutes	37.5 out of 40

❗ Correct answers are hidden.

Score for this quiz: **37.5** out of 40

Submitted Mar 3 at 2:54pm

This attempt took 333 minutes.

Part 1: Keys and Determinants

Analyze the Air Supply data and answer the following questions.

Question 1

1 / 1 pts

What is a good choice for a potential primary key (candidate key) for the Air Supply Data in the spreadsheet?

Your Answer:

Composite primary key:

Order Id, Line Number

Question 2

1 / 1 pts

After identifying the key (in the previous question), is the table in first normal form (1NF)? Why or why not?

Your Answer:

Yes, because each row is not repeated, and the Primary Key is identified, and It is in Table Format.

Question 3

1 / 1 pts

Is the table in second normal form as well? Why or why not?

Your Answer:

No, because the table can be broken down further to remove partial dependencies. When a partially dependent attribute from the relation exists, we remove the partially dependent attribute by placing them in a new relation along with a copy of their determinant.

If we look at the table given, you can see that Order ID cannot alone decide the value of Vendor ID.

Question 4**2 / 2 pts**

Identify all the partial dependencies in the data and list them as dependencies with an arrow (->) where the determinant is on the left and the dependents are on the right.

Note: Remember that all dependencies are based on your choice of the primary key! You will lose points if your dependencies are not aligned with your key.

For example, if Accounts Payable Terms was a determinant for Order Date and Arrival Date, write:

(Accounts Payable Terms) -> (Order Date, Arrival Date)

List the partial dependencies you identify in the text box below. (There may be only one based on your choice of key.)

Your Answer:

(Order Id) -> (Order Date, Arrival Date)

Question 5**2.5 / 3 pts**

Identify all the transitive dependencies in the data and list them in the same form as the partial dependencies in the previous question.

List the transitive dependencies in the box below.

Your Answer:

VENDOR (Vendor Id) -> (Vendor Name, Accounts Payable Terms)

(Product Id) -> (Product Name, Product Description, Product Price, Accounts Payable Terms)

Question 6**1 / 1 pts**

Which attribute in the table is a denormalized, derived attribute? Why?

Your Answer:

Cost Per Order

We could get rid of Cost Per Order because if you multiply Product Price with Order Quantity it would return Cost Per Order. This is semi redundant and could lead to more cost to your database.

Question 7**9 / 10 pts**

Part 2: Normalizing

Normalize the data into third normal form (3NF), please use shorthand relational schema:

TABLE NAME (**PRIMARY KEY ATTRIBUTE**, ATTRIBUTE 1, ATTRIBUTE 2, ...)

Note: Composite primary keys must have each component bolded and underlined.

Your Answer:

2NF

ORDER DATES (**ORDER ID**, ORDER DATE, ARRIVAL DATE)

ORDER(**ORDER ID**, **LINE NUMBER**, VENDOR ID, VENDOR NAME, PRODUCT ID, PRODUCT NAME, PRODUCT DESCRIPTION, PRODUCT PRICE, ORDER QUANTITY, COST PER ORDER, ACCOUNTS PAYABLE TERMS)

3NF

ORDER DATES (ORDER ID, ORDER DATE, ARRIVAL DATE)VENDOR(VENDOR ID, VENDOR NAME, ACCOUNTS PAYABLE
TERMS)PRODUCT(PRODUCT ID, PRODUCT NAME, PRODUCT
DESCRIPTION, PRODUCT PRICE, ACCOUNTS PAYABLE TERMS)MAIN (ORDER ID, LINE NUMBER, VENDOR ID, PRODUCT ID, ORDER
QUANTITY)

account payable is repeated

Question 8**9 / 10 pts****Part 3: ERD**

Construct an ERD diagram in Draw.io of your 3NF tables, include the correct labels for primary and foreign keys as well as the correct Crow's Foot Notation for each of the key relationships.

Please upload a png of your ERD that has been exported from Draw.io.

[↓ Lab6ERD.png](#)<https://cilearn.csuci.edu/files/2679313/download>

order to main is one to many

Question 9**6 / 6 pts****Part 4: Implementation**

Implement the 3NF database you've designed in MySQL using the appropriate DDL statements (CREATE TABLE).

Please upload a copy of your DDL file.

↓ [3NFDatabase#9.sql](#)

(<https://cilearn.csuci.edu/files/2679819/download>)

Question 10**5 / 5 pts****Part 5: Reverse Engineer**

Reverse engineer your database in MySQL Workbench.

Please upload an image of your reverse engineered database in MySQLWorkBench.

↓ [L6#10.JPG](#) (<https://cilearn.csuci.edu/files/2679820/download>)

Quiz Score: **37.5** out of 40