

Lab 03 - Yeah, It's All Relational

Due Feb 11 at 11:59pm **Points** 40 **Questions** 10
Available after Feb 10 at 10am **Time Limit** None

Instructions

The purpose of this lab is to familiarize you with some of the intricacies of the relational model and to get to work implementing that understanding. We will make use of MySQL Workbench for parts of this lab. You will become familiar with: 1) importing database schema and data into a live database, 2) running simple SQL queries on that data, and 3) reviewing some of the internal metadata associated with MySQL's implementation.

We will be primarily manipulating the schema and database created by:

```
COMP_420_Spring_2021_Lab_03_Saleco.sql
```

Attempt History

	Attempt	Time	Score
LATEST	Attempt 1	617 minutes	15.14 out of 40 *

* Some questions not yet graded

❗ Correct answers are hidden.

Score for this quiz: **15.14** out of 40 *

Submitted Feb 10 at 8:55pm

This attempt took 617 minutes.

Part 1: Table Read

This section will focus on some of the characteristics of relational tables like keys, datatypes, and other metadata components.

CUSTOMER table:

CUS_CODE	CUS_LNAME	CUS_FNAME	CUS_INITIAL	CUS_AREACODE	CUS_PHONE	CUS_BALANCE
10010	Ramas	Alfred	A	615	844-2573	0
10011	Dunne	Leona	K	713	894-1238	0
10012	Smith	Kathy	W	615	894-2285	345.86
10013	Olowski	Paul	F	615	894-2180	536.75
10014	Orlando	Myron		615	222-1672	0
10015	O'Brian	Amy	B	713	442-3381	0
10016	Brown	James	G	615	297-1228	221.19
10017	Williams	George		615	290-2556	768.93
10018	Farriss	Anne	G	713	382-7185	216.55
10019	Smith	Olette	K	615	297-3809	0

PRODUCT table:

P_CODE	P_DESCRIPT	P_INDATE	P_QOH	P_MIN	P_PRICE	P_DISCOUNT	V_CODE
▶ 11QER/31	Power painter, 15 psi., 3-nozzle	2013-11-03 00:00:00	8	5	109.99	0	25595
13-Q2/P2	7.25-in. pwr. saw blade	2013-12-13 00:00:00	32	15	14.99	0.05	21344
14-Q1/L3	9.00-in. pwr. saw blade	2013-11-13 00:00:00	18	12	17.49	0	21344
1546-QQ2	Hrd. cloth, 1/4-in., 2x50	2014-01-15 00:00:00	15	8	39.95	0	23119
1558-QW1	Hrd. cloth, 1/2-in., 3x50	2014-01-15 00:00:00	23	5	43.99	0	23119
2232/QTY	B&D jigsaw, 12-in. blade	2013-12-30 00:00:00	8	5	109.92	0.05	24288
2232/QWE	B&D jigsaw, 8-in. blade	2013-12-24 00:00:00	6	5	99.87	0.05	24288
2238/QPD	B&D cordless drill, 1/2-in.	2014-01-20 00:00:00	12	5	38.95	0.05	25595
23109-HB	Claw hammer	2014-01-20 00:00:00	23	10	9.95	0.1	21225
23114-AA	Sledge hammer, 12 lb.	2014-01-02 00:00:00	8	5	14.4	0.05	NULL
54778-2T	Rat-tail file, 1/8-in. fine	2013-12-15 00:00:00	43	20	4.99	0	21344
89-WRE-Q	Hicut chain saw, 16 in.	2014-02-07 00:00:00	11	5	256.99	0.05	24288
PVC23DRT	PVC pipe, 3.5-in., 8-ft	2014-02-20 00:00:00	188	75	5.87	0	NULL
SM-18277	1.25-in. metal screw, 25	2014-03-01 00:00:00	172	75	6.99	0	21225
SW-23116	2.5-in. wd. screw, 50	2014-02-24 00:00:00	237	100	8.45	0	21231
WR3/TT3	Steel matting, 4'x8'x1/6", .5" mesh	2014-01-17 00:00:00	18	5	119.95	0.1	25595

VENDOR table:

V_CODE	V_NAME	V_CONTACT	V_AREACODE	V_PHONE	V_STATE	V_ORDER
▶ 21225	Bryson, Inc.	Smithson	615	223-3234	TN	Y
21226	SuperLoo, Inc.	Flushing	904	215-8995	FL	N
21231	D&E Supply	Singh	615	228-3245	TN	Y
21344	Gomez Bros.	Ortega	615	889-2546	KY	N
22567	Dome Supply	Smith	901	678-1419	GA	N
23119	Randsets Ltd.	Anderson	901	678-3998	GA	Y
24004	Brackman Bros.	Browning	615	228-1410	TN	N
24288	ORDVA, Inc.	Hakford	615	898-1234	TN	Y
25443	B&K, Inc.	Smith	904	227-0093	FL	N
25501	Damal Supplies	Smythe	615	890-3529	TN	N
25595	Rubicon Systems	Orton	904	456-0092	FL	Y

INVOICE table:

	INV_NUMBER	CUS_CODE	INV_DATE
▶	1001	10014	2014-01-16 00:00:00
	1002	10011	2014-01-16 00:00:00
	1003	10012	2014-01-16 00:00:00
	1004	10011	2014-01-17 00:00:00
	1005	10018	2014-01-17 00:00:00
	1006	10014	2014-01-17 00:00:00
	1007	10015	2014-01-17 00:00:00
	1008	10011	2014-01-17 00:00:00

LINE table:

	INV_NUMBER	LINE_NUMBER	P_CODE	LINE_UNITS	LINE_PRICE
▶	1001	1	13-Q2/P2	1	14.99
	1001	2	23109-HB	1	9.95
	1002	1	54778-2T	2	4.99
	1003	1	2238/QPD	1	38.95
	1003	2	1546-QQ2	1	39.95
	1003	3	13-Q2/P2	5	14.99
	1004	1	54778-2T	3	4.99
	1004	2	23109-HB	2	9.95
	1005	1	PVC23DRT	12	5.87
	1006	1	SM-18277	3	6.99
	1006	2	2232/PTY	1	109.92
	1006	3	23109-HB	1	9.95
	1006	4	89-WRE-Q	1	256.99
	1007	1	13-Q2/P2	2	14.99
	1007	2	54778-2T	1	4.99
	1008	1	PVC23DRT	5	5.87
	1008	2	WR3/TT3	3	119.95
	1008	3	23109-HB	1	9.95

Partial

Question 1

8 / 10 pts

Fill in the following table with the respective primary and foreign key(s) for each relation above. Also note whether the relations exhibit entity or referential integrity. (A primary key can be composite, in which case write "FIELD_1, FIELD_2". Similarly, if there is more than one foreign key separate them by commas.)

Table	Primary Key	Foreign Key(s) or None	Entity Integrity? (Y N N/A)	Referential Integrity? (Y N N/A)
VENDOR	V_CODE	None	Y	N
PRODUCT	P_CODE	V_CODE	Y	Y
CUSTOMER	CUS_CODE	None	Y	N
INVOICE	INV_NUMBER	CUS_CODE	Y	Y
LINE	INV_NUMBER. LIN	P_CODE	Y	Y

Answer 1:

V_CODE

Answer 2:

none

Answer 3:

Y

Answer 4:

N

Answer 5:

P_CODE

Answer 6:

v_code

Answer 7:

Y

Answer 8:

Y

Answer 9:

cus_code

Answer 10:

None

Answer 11:

Y

Answer 12:

N

Answer 13:

INV_NUMBER

Answer 14:

CUS_CODE

Answer 15:

Y

Answer 16:

y

Answer 17:

INV_NUMBER. LINE_NUMBER

Answer 18:

P_CODE

Answer 19:

Y

Answer 20:

y

Question 2**Not yet graded / 1 pts**

Why are the NULL values in the PRODUCT table probably an issue and why might they be NULL?

Your Answer:

It is probably an issue because it is a Foreign key, But if you look at your ERD and it has 0:M it might actually be fine because that is stating there could be an optional field. So its dependent to your ERD model.

They might be NULL because maybe the company that is tracking makes the sledge hammer, or PVC pipes themselves and there is no vendor code for products they create. They the hammer or PVC may not be from a specific company.

The foreign key can sometimes not be present it just cannot be wrong.

Question 3**1 / 1 pts**

Which of the above entity sets is likely associative?

☐ PRODUCT

☐ INVOICE

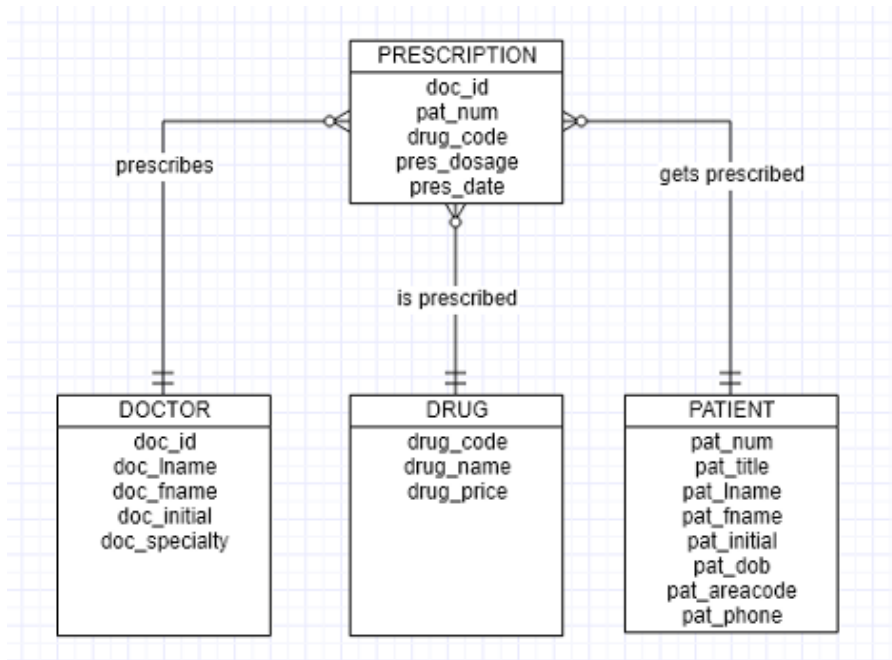
☒ LINE

☐ VENDOR

☐ CUSTOMER

Partial**Question 4****5.14 / 9 pts**

CI Clinic ERD:



Database notes:

1. There will only ever be at most 10,000 doctors.
2. Drug codes are alphanumeric and 10 characters long.
3. There will only ever be at most 1,000,000 patients
4. The doctor with the longest first name and last name is "Boneshanks McGrudelspiele", and no doctor in the database will ever have a longer name.
5. The patient with the longest first name and last name is "Tigerstyle Johnson-Peele" and no patient in the database will ever have a longer name.
6. Every doctor and patient either has a single middle name or no middle name.
7. Drug prices max out at \$99999.99 per drug.
8. Drug dosages are in grams rounded to the nearest milligram (0.01 gram). The largest dose is 1 kilogram.
9. The longest specialty for a doctor is 50 characters long.
10. Dates are strings in the format "YYYY-MM-DD"
11. Phone numbers are stored separately from area codes and without hyphens "5551234".

The available datatypes are:

1. INT – integer greater than 6 digits
2. SMALLINT – small integer up to 6 digits
3. CHAR(N) – fixed length string of N length
4. VARCHAR(N) – variable length string up to N length
5. NUMBER(N,D) – decimal number of N length with D of that length after the decimal point (i.e. NUMBER(5,2) = 000.00)

Make sure your datatypes are the same for fields that are likely foreign keys.

Based on the above information, please match the following attributes with the correct data types (there may be multiple valid answers):

PRESCRIPTION.doc_id	<input type="text" value="INT"/>
PRESCRIPTION.pat_num	<input type="text" value="INT"/>
PRESCRIPTION.drug_code	<input type="text" value="CHAR(10)"/>
PRESCRIPTION.pres_dosage	<input type="text" value="NUMBER(6,2)"/>
PRESCRIPTION.pres_date	<input type="text" value="CHAR(10)"/>
DOCTOR.doc_id	<input type="text" value="INT"/>
DOCTOR.doc_lname	<input type="text" value="VARCHAR(14)"/>
DOCTOR.doc_fname	<input type="text" value="VARCHAR(10)"/>
DOCTOR.doc_initial	<input type="text" value="VARCHAR(4)"/>
DOCTOR.doc_specialty	<input type="text" value="VARCHAR(50)"/>
DRUG.drug_code	<input type="text" value="INT"/>
DRUG.drug_name	<input type="text" value="VARCHAR(13)"/>

DRUG.drug_price	NUMBER(7,2) ▼
PATIENT.pat_num	INT ▼
PATIENT.pat_title	VARCHAR(4) ▼
PATIENT.pat_lname	VARCHAR(13) ▼
PATIENT.pat_fname	VARCHAR(10) ▼
PATIENT.pat_initial	VARCHAR(4) ▼
PATIENT.pat_dob	CHAR(10) ▼
PATIENT.pat_areacode	SMALLINT ▼
PATIENT.pat_phone	INT ▼

Question 5**1 / 1 pts**

What are the likely foreign keys in the PRESCRIPTION entity in the CI Clinic ERD?

☒ doc_id☒ pat_num☒ drug_code

☐ pres_dosage☐ pres_date

Question 6

Not yet graded / 5 pts

In this section, you will successfully load in, execute and reverse engineer a SQL database file in MySQL Workbench.

Process Steps:

1. Download COMP_420_Spring_2021_Lab_03._Saleco.sql from the course canvas
2. Import the file into MySQLWorkBench and run the SQL script.
3. Reverse engineer the database EER (ERD) from the imported data

Upload a picture of your reverse engineered EER (ERD).

Make sure to move the entities around so that all the relationship lines are visible.

↓ [ReverseEngineermySQL.JPG](https://cilearn.csuci.edu/files/2600050/download)
(<https://cilearn.csuci.edu/files/2600050/download>)

Part 2: Workbench

This section will continue your exploration of MySQL Workbench by asking you to analyze a pre-built MySQL database. You will use the imported the SaleCo database and provide images of your output and SQL statements for some basic data manipulation tasks.

If you successfully completed the EER (ERD) diagram section above then you should be good to proceed with the following questions. These will require some basic SQL manipulations, including JOINS as noted in Lecture 3. Please make use of the class time to clarify any questions, otherwise there are significant resources online to help with query manipulation.

Just as a reminder, we will be making use of the **SELECT**, **FROM**, **WHERE**, **AS**, **ON** and **JOIN** statements.

To be more specific with the implementation of each statement, a statement to project a relation based on specific constraints is:

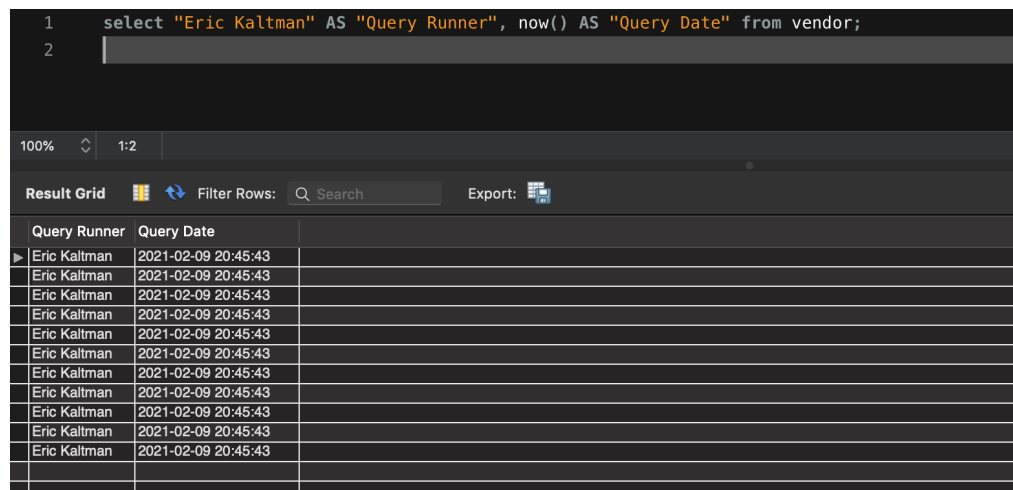
SELECT attribute1, attribute2, ... **FROM** table **WHERE** condition;

You can also use an asterisk "*" to perform the select operation on a table:

SELECT * **FROM** table **WHERE** condition;

For the following answers you will also make use of the **AS** statement to personalize the search results. The **AS** statement lets you rename attributes in the resulting relation or add new attributes with specific values.

Please add "{NAME}" **AS** "Query Runner", **now()** **AS** "Query Date" to the **SELECT** statement of each query, like so:



The screenshot shows a SQL query runner interface. At the top, a query is entered in a text area: `1 select "Eric Kaltman" AS "Query Runner", now() AS "Query Date" from vendor;`. Below the query area, there are controls for zoom (100%), a dropdown (1:2), and buttons for "Result Grid", "Filter Rows", "Search", and "Export". The "Result Grid" button is selected, and a table of results is displayed below. The table has two columns: "Query Runner" and "Query Date". The results show 12 rows, each with the name "Eric Kaltman" and the timestamp "2021-02-09 20:45:43".

Query Runner	Query Date
Eric Kaltman	2021-02-09 20:45:43
Eric Kaltman	2021-02-09 20:45:43
Eric Kaltman	2021-02-09 20:45:43
Eric Kaltman	2021-02-09 20:45:43
Eric Kaltman	2021-02-09 20:45:43
Eric Kaltman	2021-02-09 20:45:43
Eric Kaltman	2021-02-09 20:45:43
Eric Kaltman	2021-02-09 20:45:43
Eric Kaltman	2021-02-09 20:45:43
Eric Kaltman	2021-02-09 20:45:43
Eric Kaltman	2021-02-09 20:45:43
Eric Kaltman	2021-02-09 20:45:43

These additions will watermark your results.

The syntax for **JOIN** statements is as follows (commands are bold):

SELECT attribute 1, attribute 2, ...

FROM table1 t1

JOIN table2 t2 **ON** t1.{attribute} = t2.{attribute}

WHERE condition;

The "t1" and "t2" are shortened aliases for the longer table names. They are available but not required.

For each query result requested below, please upload an image of your SQL statement along with your customized columns. Research the SHOW command to more easily review the columns for each table. There are hints for the statements that should be used for each question below.

Question 7

Not yet graded / 3 pts

Create a SQL query to project customer data and restrict the results based on customers no outstanding balances. Project all fields shown below and pay attention to their names. (WHERE)

CUS_CODE	CUS_LNAME	CUS_FNAME	CUS_INITIAL	CUS_AREACODE	CUS_PHONE	CUS_BALANCE	Query Runner	Query Date
▶ 10010	Ramas	Alfred	A	615	844-2573	0	Eric Kaltman	2021-02-09 20:56:13
10011	Dunne	Leona	K	713	894-1238	0	Eric Kaltman	2021-02-09 20:56:13
10014	Orlando	Myron		615	222-1672	0	Eric Kaltman	2021-02-09 20:56:13
10015	O'Brian	Amy	B	713	442-3381	0	Eric Kaltman	2021-02-09 20:56:13
10019	Smith	Olette	K	615	297-3809	0	Eric Kaltman	2021-02-09 20:56:13

Please upload a screenshot of your query and its result.

↓ [Lab3#7.JPG \(https://cilearn.csuci.edu/files/2600281/download\)](https://cilearn.csuci.edu/files/2600281/download)

Question 8

Not yet graded / 3 pts

Create a SQL query to project product data and restrict the results based on products provided by Randsets Ltd. Project all fields shown below and pay attention to their names.

(WHERE, JOIN, AS)

Product	Description	Price	Quantity	Min Quantity	Contact	Phone	Query Runner	Query Date
▶ 1546-QQ2	Hrd. cloth, 1/4-in., 2x50	39.95	15	8	Anderson	678-3998	Eric Kaltman	2021-02-09 21:03:59
1558-QW1	Hrd. cloth, 1/2-in., 3x50	43.99	23	5	Anderson	678-3998	Eric Kaltman	2021-02-09 21:03:59

Please upload a screenshot of your query and its result.

↓ [L3#8.JPG \(https://cilearn.csuci.edu/files/2601649/download\)](https://cilearn.csuci.edu/files/2601649/download)

Question 9**Not yet graded / 3 pts**

Create a SQL query to return products sold which have no associated vendor. Project all fields shown below and pay attention to their names.

(WHERE, JOIN, AS, IS NULL)

Product	Description	Price	Quantity	Min Quantity	Contact	Phone	Query Runner	Query Date
▶ 23114-AA	Sledge hammer, 12 lb.	14.4	8	5	NULL	NULL	Eric Kaltman	2021-02-09 21:11:20
PVC23DRT	PVC pipe, 3.5-in., 8-ft	5.87	188	75	NULL	NULL	Eric Kaltman	2021-02-09 21:11:20

Please upload a screenshot of your query and its result.

↓ [L3#9.JPG \(https://cilearn.csuci.edu/files/2601763/download\)](https://cilearn.csuci.edu/files/2601763/download)

Question 10**Not yet graded / 4 pts**

Create a SQL query to project the line of every invoice belonging to the customer named Myron Orlando.

Requires more than a single join. Project all fields shown below and pay attention to their names. (WHERE, JOIN, AS)

Customer	Last	First	Invoice	Invoice Date	Line	Product	Description
▶ 10014	Orlando	Myron	1001	2014-01-16 00:00:00	1	13-Q2/P2	7.25-in. pwr. saw blade
10014	Orlando	Myron	1001	2014-01-16 00:00:00	2	23109-HB	Claw hammer
10014	Orlando	Myron	1006	2014-01-17 00:00:00	1	SM-18277	1.25-in. metal screw, 25
10014	Orlando	Myron	1006	2014-01-17 00:00:00	2	2232/QTY	B&D jigsaw, 12-in. blade
10014	Orlando	Myron	1006	2014-01-17 00:00:00	3	23109-HB	Claw hammer
10014	Orlando	Myron	1006	2014-01-17 00:00:00	4	89-WRE-Q	Hicut chain saw, 16 in.

Please upload a screenshot of your query and its result.

↓ [L3#10.JPG \(https://cilearn.csuci.edu/files/2601935/download\)](https://cilearn.csuci.edu/files/2601935/download)

Quiz Score: **15.14** out of 40