Started on	Thursday, 25 February 2021, 5:01 PM
State	Finished
Completed on	Thursday, 25 February 2021, 6:17 PM
Time taken	1 hour 16 mins
Grade	**68.33** out of 75.00 (**91**%)

Question **1**

Correct

Mark 5.00 out of 5.00

Consider the following relational schema:

```
Customer(cId serial primary key, cName char(10), cAddr char(100), cAge integer)

Movie(mId serial primary key, mName char(10), mRuntime float, mRating char(5))

Theater(tId serial primary key, tName char(10), tCapacity integer, tAddr char(20))

TheaterVisit(vId serial primary key, mId integer references Movie(mId), tId integer references
Theater(tId), cId integer references Customer(cId), vCost money);
```

The following statement is true:

$Customer \bowtie Movie \bowtie TheaterVisit \bowtie Theater = (Customer \bowtie Theather) \bowtie (TheaterVisit \bowtie Movie)$

Select one:

- a. True ✔
- b. False
- c. True only if the tables are union compatible.
- d. Cannot be determined from the premise.

Your answer is correct.

Correct

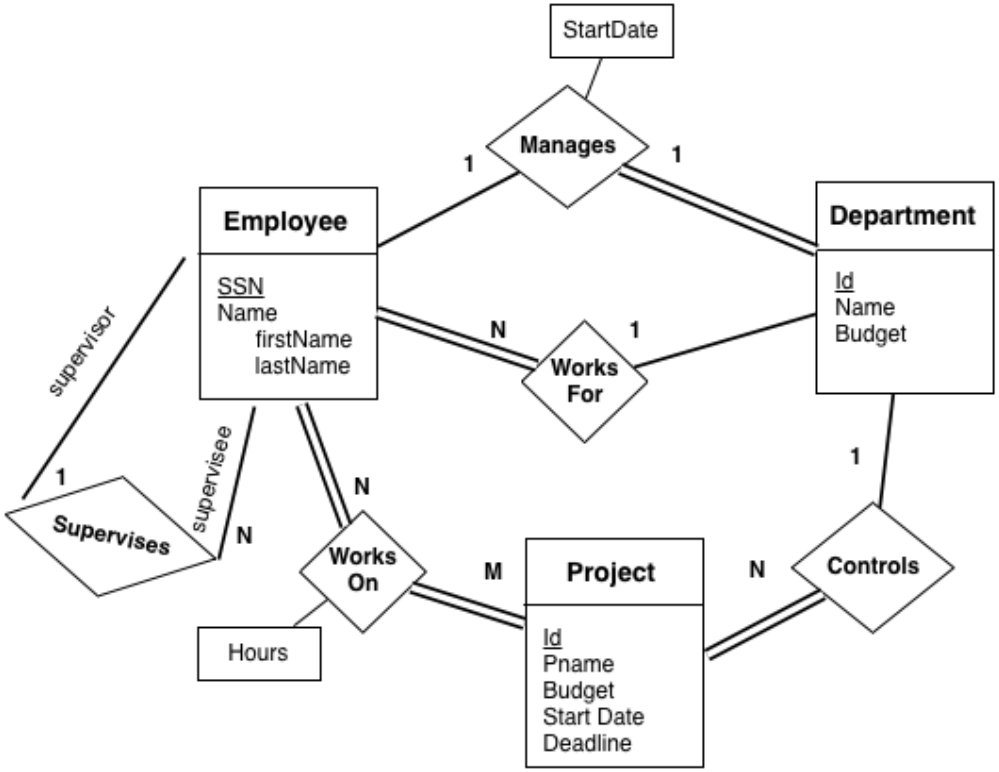
Marks for this submission: 5.00/5.00.

Question **2**

Correct

Mark 5.00 out of 5.00

Consider the following ER Diagram:



Suppose that the cardinality of entity **Project** is 2 and the cardinality of entity of **Employee** is 5. Suppose that the cardinality of WorksOn is 10?

On how many projects does each employee participate?

Note 1: This problem has only 2 attempts! There is a 50% penalty on the first failure.

Note 2: Do not use decimals

Answer: 2 ✔

Correct

Marks for this submission: 5.00/5.00.

Question **3**

Correct

Mark 5.00 out of 5.00

Suppose S is a finite with cardinality n. What is the size of $R = S \cap \emptyset$.

Note: Do not use decimals.

Answer: 0 ✔

Correct

Marks for this submission: 5.00/5.00.

Question **4**

Correct

Mark 5.00 out of 5.00

Let ***R=(A,B,C,F)*** and ***S=(A,F)*** be two relations. Let *R.A* be a primary key on schema *R*, and let *S.A* be a primary key on the schema of *S*. If |***R***| = 100, and |***S***|= 50, then what is the largest possible value for:

$|\pi_{A,F}(R) \cap \pi_{A,F}(S)|$

Note: Do not use decimals

Answer: 50 ✔

Correct

Marks for this submission: 5.00/5.00.

Question **5**

Correct

Mark 2.50 out of 5.00

In a SQL database server, using the administrator account to run the apps is a valid and sound choice.

a. True

b. Cannot be determined from the premise.

c. True, only if the encryption is used.

d. True, only if encryption and strong passwords are used.

e. False ✔

Your answer is correct.

Correct

Marks for this submission: 5.00/5.00. Accounting for previous tries, this gives **2.50/5.00**.

Question **6**

Correct

Mark 5.00 out of 5.00

```
Parts(pid serial primary key, pname varchar(10), pmaterial varchar(10), pcolor varchar(10),
pprice float);
```

Using the parts schema discussed in class, consider the query: *Find the id, and name for all red parts*.

What is the relational algebra expression for the query?

Select one:

- a. $\pi_{pid,pname}(\sigma_{pcolor='red'}(Parts))$ ✔
- b. $\pi_{pid,pname}(Parts)$
- c. $\sigma_{pcolor='red'}(\pi_{pid,pname}(Parts))$
- d. Both b and c
- e. None of the above

Your answer is correct.

Correct

Marks for this submission: 5.00/5.00.

Question **7**

Correct

Mark 5.00 out of 5.00

Consider the following sqlite tables:

```
parts(pid integer primary key, pname text, pmaterial text, pcolor text, pprice float)

supplier (sid integer primary key, sname text, scity text, sphone text)

supplies (pid integer references parts(pid), sid integer references supplier(sid), stock integer, primary key (pid, sid))
```

Use SQLite syntax to write SQL for the following query: **Find the id, and name for all parts with at least 20 units in stock by supplier 2;**

For example:

Test	Result
-- Case 1	pid pname ---------- ---------- 1 clavo 2 tuerka 6 zegueta

Answer: (penalty regime: 0 %)

```
SELECT pid, pname
FROM parts natural inner join supplier natural inner join supplies
WHERE sid = 2 and stock >= 20
```

	Test	Expected		Got		
✔	-- Case 1	pid ---------- 1 2 6	pname ---------- clavo tuerka zegueta	pid ---------- 1 2 6	pname ---------- clavo tuerka zegueta	✔
✔	-- Case 2	pid ---------- 1 2 6 3	pname ---------- clavo tuerka zegueta panel	pid ---------- 1 2 6 3	pname ---------- clavo tuerka zegueta panel	✔

Passed all tests! ✔

Correct

Marks for this submission: 5.00/5.00.

Question **8**

Correct

Mark 5.00 out of 5.00

Consider the following sqlite tables:

```
parts(pid integer primary key, pname text, pmaterial text, pcolor text, pprice float)

supplier (sid integer primary key, sname text, scity text, sphone text)

supplies (pid integer references parts(pid), sid integer references supplier(sid), stock integer, primary key (pid, sid))
```

Use SQLite syntax to write SQL for the following query: **Find the id, name, and price for all parts that are black or azul or are made of steel.**

For example:

Test	Result
-- Case 1	pid pname pprice ---------- ---------- ---------- 1 clavo 0.1 2 tuerka 0.2 4 chicharra 10.0 6 zegueta 3.0 8 pads 40.0 9 driver 24.55

Answer: (penalty regime: 0 %)

```
1 select pid, pname, pprice
2 from parts
3 where pmaterial='steel' or pcolor='black' or pcolor='azul'
```

	Test	Expected			Got			
✔	-- Case 1	pid	pname	pprice	pid	pname	pprice	✔
		----------	----------	----------	----------	----------	----------	
		1	clavo	0.1	1	clavo	0.1	
		2	tuerka	0.2	2	tuerka	0.2	
		4	chicharra	10.0	4	chicharra	10.0	
		6	zegueta	3.0	6	zegueta	3.0	
		8	pads	40.0	8	pads	40.0	
		9	driver	24.55	9	driver	24.55	
✔	-- Case 2	pid	pname	pprice	pid	pname	pprice	✔
		----------	----------	----------	----------	----------	----------	
		1	clavo	0.1	1	clavo	0.1	
		2	tuerka	0.2	2	tuerka	0.2	
		4	chicharra	10.0	4	chicharra	10.0	
		6	zegueta	3.0	6	zegueta	3.0	
		8	pads	40.0	8	pads	40.0	
		9	driver	24.55	9	driver	24.55	
		10	hammer	15.99	10	hammer	15.99	

Passed all tests! ✔

Correct

Marks for this submission: 5.00/5.00.

Question **9**

Correct

Mark 5.00 out of 5.00

Consider the following relational schema:

```
Customer(cId serial primary key, cName char(10), cAddr char(100), cAge integer)

Movie(mId serial primary key, mName char(10), mRuntime float, mRating char(5))

Theater(tId serial primary key, tName char(10), tCapacity integer, tAddr char(20))

TheaterVisit(vId serial primary key, mId integer references Movie(mId), tId integer references
Theater(tId), cId integer references Customer(cId), vCost money);
```

Consider the following relational expression:

$\pi_{mName}(Movie) - \pi_{W.mName}(\sigma_{W.vcost<V.vCost}(\rho_W(TheaterVisit) \times \rho_V(TheaterVisit))$

Which of the following **best** describes the meaning this relational query?

Select one:

- a. Find the names of the most expensive movies to watch ✔
- b. Find the names of movies that cost more than some other movies.
- c. Find the names of movies that cost less than some other movies.
- d. Both a and b
- e. None of the above.

Your answer is correct.

Correct

Marks for this submission: 5.00/5.00.

Question **10**

Correct

Mark 5.00 out of 5.00

If sets **A** = {Joe, Bob, Ned, Ron}, **B** = {Ned, Bob, Apu, Jil}, and **C** = {Tim, Joe, Amy, Jil, Ron}, then which if the following represent the result of the following expression:

$(A \cup A) \cup (A \cap C)$

Select one:

a. {Joe, Bob, Ned, Ron}

b. {Joe, Ron, Joe, Bob, Ned, Ron }

c. {Jil}

d. {Bob, Jil}

e. {Joe, Bob, Ned, Ron, Apu, Jil, Tim, Amy}

f. $\emptyset$

Your answer is correct.

Correct

Marks for this submission: 5.00/5.00.

Question **11**

Correct

Mark 5.00 out of 5.00

Consider the following sqlite tables:

```
parts(pid integer primary key, pname text, pmaterial text, pcolor text, pprice float)

supplier (sid integer primary key, sname text, scity text, sphone text)

supplies (pid integer references parts(pid), sid integer references supplier(sid), stock integer, primary key (pid, sid))
```

Use SQLite syntax to write SQL for the following query: **Find the id, name, and phone for all suppliers that currently supply a part named "tuerka" and have at least one part in stock.**

For example:

Test	Result
-- Case 1	sid sname sphone ---------- ---------- ---------- 2 Sears 789-9483 4 Lugo PR 833-4040 6 Manny Boat 484-4040

Answer: (penalty regime: 0 %)

```
select sid, sname, sphone
from supplier natural inner join supplies natural inner join parts
where pname='tuerka' and stock >= 1
```

	Test	Expected			Got			
✔	-- Case 1	sid ---------- 2 4 6	sname ---------- Sears Lugo PR Manny Boat	sphone ---------- 789-9483 833-4040 484-4040	sid ---------- 2 4 6	sname ---------- Sears Lugo PR Manny Boat	sphone ---------- 789-9483 833-4040 484-4040	✔
✔	-- Case 2	sid ---------- 2 4 6 1	sname ---------- Sears Lugo PR Manny Boat Sams	sphone ---------- 789-9483 833-4040 484-4040 123-0909	sid ---------- 2 4 6 1	sname ---------- Sears Lugo PR Manny Boat Sams	sphone ---------- 789-9483 833-4040 484-4040 123-0909	✔

Passed all tests! ✔

Correct

Marks for this submission: 5.00/5.00.

Question **12**

Correct

Mark 5.00 out of 5.00

Consider the following sqlite tables:

```
parts(pid integer primary key, pname text, pmaterial text, pcolor text, pprice float)

supplier (sid integer primary key, sname text, scity text, sphone text)

supplies (pid integer references parts(pid), sid integer references supplier(sid), stock integer, primary key (pid, sid))
```

Use SQLite syntax to write SQL for the following query: **Find the id, and name for all suppliers not supplying any part.**

For example:

Test	Result
-- Case 1	sid sname ---------- ---------- 1 Sams 5 Tito Auto

Answer: (penalty regime: 0 %)

```
1 select s.sid, s.sname
2 from (supplier s left join supplies sp using(sid)) left join parts p using(pid)
3 where p.pname is null
4
5
```

	Test	Expected	Got	
✔	-- Case 1	sid sname ---------- ---------- 1 Sams 5 Tito Auto	sid sname ---------- ---------- 1 Sams 5 Tito Auto	✔
✔	-- Case 2	sid sname ---------- ---------- 1 Sams 5 Tito Auto 7 MRM Boats	sid sname ---------- ---------- 1 Sams 5 Tito Auto 7 MRM Boats	✔

Passed all tests! ✔

Correct

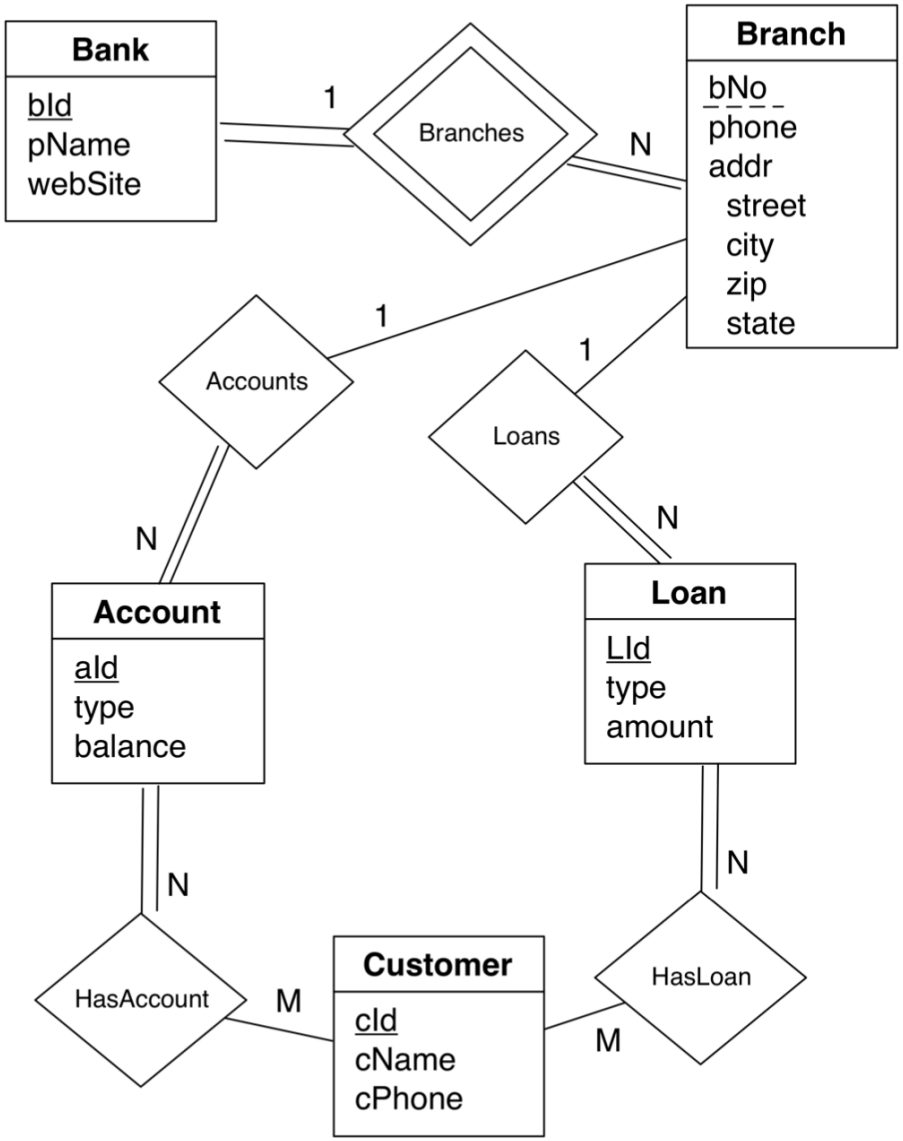
Marks for this submission: 5.00/5.00.

Question **13**

Correct

Mark 2.50 out of 5.00

Consider the following ER Diagram. If there are 100 accounts, then at least how many branches there must be?



a. Cannot be determined from the premise.

b. 50

c. 1 ✔

d. 100

e. 50

f. 0

Your answer is correct.

Correct

Marks for this submission: 5.00/5.00. Accounting for previous tries, this gives **2.50/5.00**.

Question **14**

Correct

Mark 3.33 out of 5.00

Consider the following relational schema:

```
Customer(cId serial primary key, cName char(10), cAddr char(100), cAge integer)

Movie(mId serial primary key, mName char(10), mRuntime float, mRating char(5))

Theater(tId serial primary key, tName char(10), tCapacity integer, tAddr char(20))

TheaterVisit(vId serial primary key, mId integer references Movie(mId), tId integer references
Theater(tId), cId integer references Customer(cId), vCost money);
```

Consider the query: **Find the name and address of all customers who watched a movie that had a runtime of more than two hours.**

Which of the following relational expressions solves this query?

Select one:

a. $\pi_{cName,cAddr}(Customer \bowtie TheaterVisit \bowtie \sigma_{mRuntime>2.0}(Movie))$

b. $\pi_{cName,cAddr}(Customer \bowtie \sigma_{mRuntime>2.0}(Movie) \bowtie TheaterVisit$

c. $\pi_{cNamecAddr}(\sigma_{mRuntime>2.0}(Customer \bowtie Movie \bowtie TheaterVisit))$

d. All of the above. ✔

e. None of the above.

Your answer is correct.

Correct

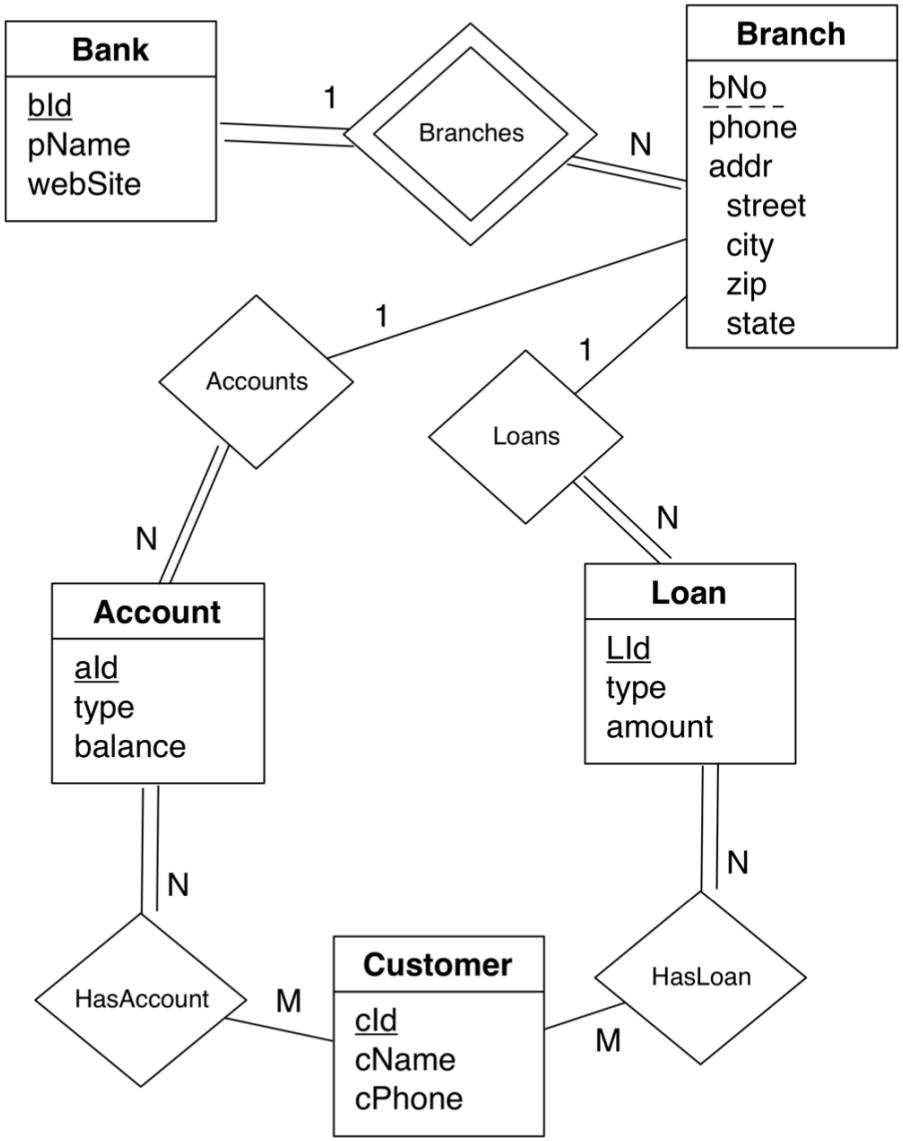
Marks for this submission: 5.00/5.00. Accounting for previous tries, this gives **3.33/5.00**.

Question **15**

Correct

Mark 5.00 out of 5.00

Which of the following statements can be inferred from the the following ER Diagram:



a. Every customer must have a loan.

b. Every customer must have many loans.

c. Every loan has multiple customers that own it.

d. Every account must have an branch to which it belongs. ✔

e. Every branch must have at least one account

f. None the alternatives is correct.

Your answer is correct.

Correct

Marks for this submission: 5.00/5.00.

◄ Quiz #3 - Selection and Projection in Relational Algebra and SQL

Jump to...

Practice Exam 1