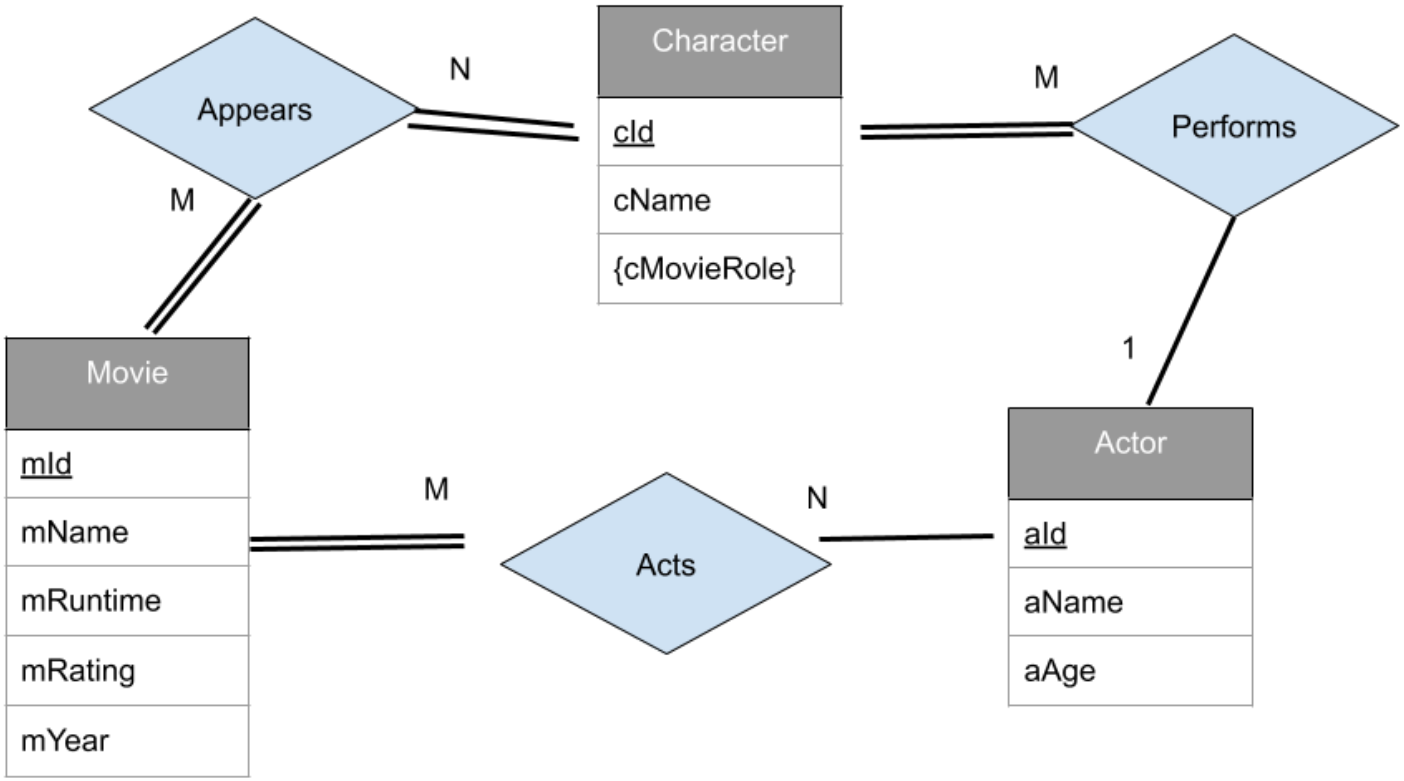
Started on	Thursday, 15 April 2021, 5:00 PM
State	Finished
Completed on	Thursday, 15 April 2021, 6:13 PM
Time taken	1 hour 12 mins
Grade	**69.17** out of 75.00 (**92**%)

Question **1**

Correct

Mark 2.50 out of 5.00

Consider the following ER:



Which of the entities or relationships in the diagram does not need to be mapped to a SQL table? If you think all must be mapped then write All.

Answer: Performs ✔

Correct

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

Question **2**

Correct

Mark 5.00 out of 5.00

Consider the following schema:

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

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

Engineer Tim Tom wants to get the minimum stock amount of plastic red parts per part id and supplier id but this query is giving him errors:

```
select * , min(stock)
from parts natural inner join supplies
where pcolor = 'red'
and pmaterial = 'plastic'
group by pid, sid
order by pid
```

Provide the line of SQL code that fixes his query. (Only one line)

Answer: select pid, sid, min(stock) ✔

Correct

Marks for this submission: 5.00/5.00.

Question **3**

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))

customer (cid integer primary key, cname text, ccity text, cphone text);
```

-- puchases made by customer on part from a supplier, qty indicates number of parts purchased (price comes from parts table)

```
purchase (purid integer primary key, cid integer references customer(cid), pid integer references parts(pid), sid integer references supplier(sid), qty integer)
```

Use SQLite syntax to write SQL for the following query: **Find the id of the part which has sold the most.**

Hint: Use with clause

For example:

Test	Result

`-- Case 1`	`pid`
	`----------`
	`3`

Answer: (penalty regime: 0 %)

```
1 with sum_part_price as (select max(qty)
2                         from purchase )
3 select pid
```

```
4 from purchase
5 where qty=(select *
6            from sum_part_price)
```

	Test	Expected	Got	
✔	-- Case 1	pid ---------- 3	pid ---------- 3	✔
✔	-- Case 2	pid ---------- 3	pid ---------- 3	✔

Passed all tests! ✔

Correct

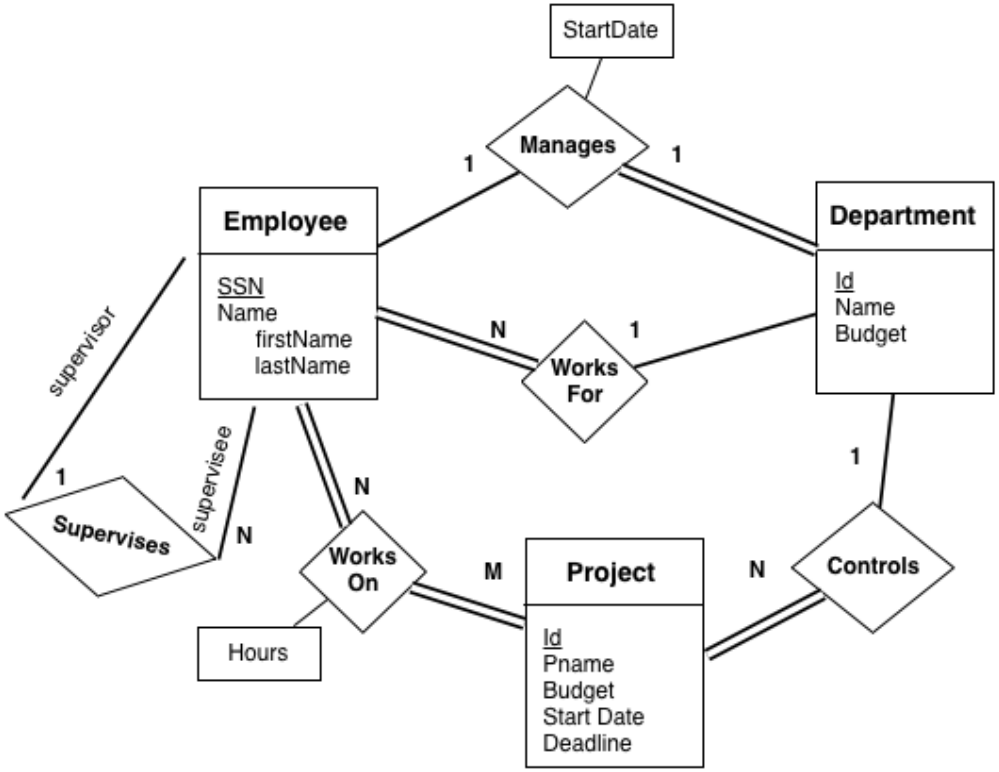
Marks for this submission: 5.00/5.00.

Question **4**

Correct

Mark 5.00 out of 5.00

Consider the following ER Diagram:



Suppose that the cardinality of entity **Project** is 10 and the cardinality of entity of **Employee** is 2,000.

*How many records from entity **Employee** will participate in relationship **WorksOn?***

Answer: 2000 ✔

Correct

Marks for this submission: 5.00/5.00.

Question **5**

Correct

Mark 5.00 out of 5.00

Let *R(A, B, C, D)* be a relation with attribute *A* as its primary key. Let |*R*| be the number of tuples in *R*. Consider the following query:

Select D, Min(C)
From R
Group by D

Suppose that |R| = 100,000 tuples, and that attribute D has 60 different values. What is the maximum number of rows that this SQL query can return?

Select one:

- a. 60 ✔
- b. 1,666
- c. 6,000,000
- d. None of the other alternatives is correct.
- e. 100,000

Your answer is correct.

Correct

Marks for this submission: 5.00/5.00.

Question **6**

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))

customer (cid integer primary key, cname text, ccity text, cphone text);
```

-- puchases made by customer on part from a supplier, qty indicates number of parts purchased (price comes from parts table)

```
purchase (purid integer primary key, cid integer references customer(cid), pid integer references parts(pid), sid integer references supplier(sid), qty integer)
```

Use SQLite syntax to write SQL for the following query: **Find the total amount of money made on the sales by each supplier, ordered by ascending sid.**

For example:

Test	Result
-- Case 1	sid sum(qty*pprice) ---------- --------------- 2 39.5 3 6.0 4 49.2 6 24.0

Answer: (penalty regime: 0 %)

```
1 select sid, sum(qty*pprice)
2 from purchase natural inner join parts
```

```
2 from purchase natural inner join parts
3 natural inner join supplies
4 group by sid
5 order by sid
```

	Test	Expected		Got		
✔	-- Case 1	sid	sum(qty*pprice)	sid	sum(qty*pprice)	✔
		2	39.5	2	39.5	
		3	6.0	3	6.0	
		4	49.2	4	49.2	
		6	24.0	6	24.0	
✔	-- Case 2	sid	sum(qty*pprice)	sid	sum(qty*pprice)	✔
		2	41.5	2	41.5	
		3	6.0	3	6.0	
		4	49.2	4	49.2	
		6	24.0	6	24.0	

Passed all tests! ✔

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))

customer (cid integer primary key, cname text, ccity text, cphone text);
```

-- puchases made by customer on part from a supplier, qty indicates number of parts purchased (price comes from parts table)

```
purchase (purid integer primary key, cid integer references customer(cid), pid integer references parts(pid), sid integer references supplier(sid), qty integer)
```

Use SQLite syntax to write SQL for the following query: **Find the total amount of money spent by each customer ordered by descending customer id.**

For example:

Test	Result

`-- Case 1`	`cid sum(qty*pprice)`
	`---------- ---------------`
	`8 45.0`
	`6 8.0`
	`4 21.0`
	`3 32.5`
	`2 850.0`
	`1 12.2`

Answer: (penalty regime: 0 %)

```
1 select cid, sum(qty*pprice)
2 from customer natural inner join purchase natural inner join parts
3 group by cid order by cid desc
```

	Test	Expected		Got		
✔	-- Case 1	cid	sum(qty*pprice)	cid	sum(qty*pprice)	✔
		----------	---------------	----------	---------------	
		8	45.0	8	45.0	
		6	8.0	6	8.0	
		4	21.0	4	21.0	
		3	32.5	3	32.5	
		2	850.0	2	850.0	
		1	12.2	1	12.2	

	Test	Expected		Got		
✔	`-- Case 2`	`cid`	`sum(qty*pprice)`	`cid`	`sum(qty*pprice)`	✔
		`----------`	`---------------`	`----------`	`---------------`	
		`8`	`45.0`	`8`	`45.0`	
		`6`	`8.0`	`6`	`8.0`	
		`5`	`2.0`	`5`	`2.0`	
		`4`	`21.0`	`4`	`21.0`	
		`3`	`32.5`	`3`	`32.5`	
		`2`	`850.0`	`2`	`850.0`	
		`1`	`12.2`	`1`	`12.2`	

Passed all tests! ✔

Correct

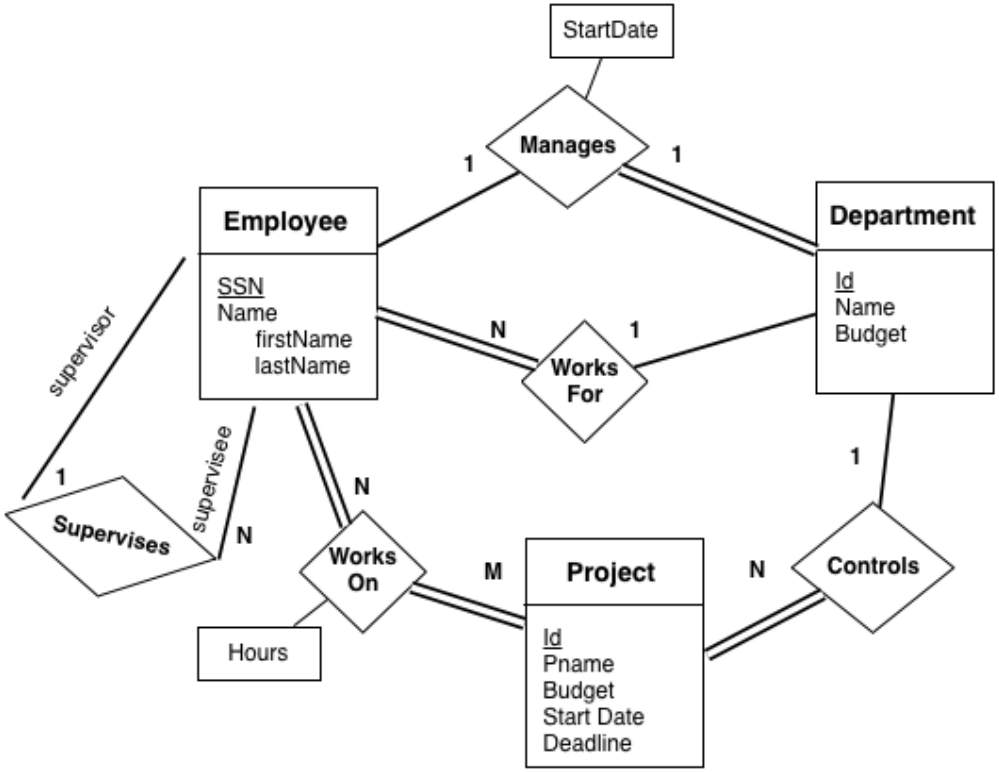
Marks for this submission: 5.00/5.00.

Question **8**

Correct

Mark 5.00 out of 5.00

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



Select one:

- a. Every department has a project.
- b. Every Project is controlled by a department.
- c. Every Department has a manager.
- d. Both b and c.

e. All of the above

f. None of the above

Your answer is correct.

Correct

Marks for this submission: 5.00/5.00.

Question **9**

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: **Fing the maximum, minimun, and average part prices.**

For example:

Test	Result
-- Case 1	max(pprice) min(pprice) avg(pprice) ---------- ---------- ---------- 100.2 0.1 20.4722222222222

Answer: (penalty regime: 0 %)

```
1 select max(pprice), min(pprice), avg(pprice)
2 from parts
```

	Test	Expected			Got			
✔	-- Case 1	max(pprice) ---------- 100.2	min(pprice) ---------- 0.1	avg(pprice) ---------- 20.4722222222222	max(pprice) ---------- 100.2	min(pprice) ---------- 0.1	avg(pprice) ---------- 20.4722222222222	✔
✔	-- Case 2	max(pprice) ---------- 2000.0	min(pprice) ---------- 0.1	avg(pprice) ---------- 198.749090909091	max(pprice) ---------- 2000.0	min(pprice) ---------- 0.1	avg(pprice) ---------- 198.749090909091	✔

Passed all tests! ✔

Correct

Marks for this submission: 5.00/5.00.

Question **10**

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, current price, and price increased by 30% for all steel parts.**

For example:

Test	Result
-- Case 1	pid pname pprice new_price ---------- ---------- ---------- ---------- 1 clavo 0.1 0.13 2 tuerka 0.2 0.26 4 chicharra 10.0 13.0 6 zegueta 3.0 3.9 9 driver 24.55 31.915

Answer: (penalty regime: 0 %)

```
1 select pid, pname, pprice, pprice*1.30 AS new_price from Parts where pmaterial = 'steel';
```

	Test	Expected				Got				
✔	-- Case 1	pid	pname	pprice	new_price	pid	pname	pprice	new_price	✔
		----------	----------	----------	----------	----------	----------	----------	----------	
		1	clavo	0.1	0.13	1	clavo	0.1	0.13	
		2	tuerka	0.2	0.26	2	tuerka	0.2	0.26	
		4	chicharra	10.0	13.0	4	chicharra	10.0	13.0	
		6	zegueta	3.0	3.9	6	zegueta	3.0	3.9	
		9	driver	24.55	31.915	9	driver	24.55	31.915	
✔	-- Case 2	pid	pname	pprice	new_price	pid	pname	pprice	new_price	✔
		----------	----------	----------	----------	----------	----------	----------	----------	
		1	clavo	0.1	0.13	1	clavo	0.1	0.13	
		2	tuerka	0.2	0.26	2	tuerka	0.2	0.26	
		4	chicharra	10.0	13.0	4	chicharra	10.0	13.0	
		6	zegueta	3.0	3.9	6	zegueta	3.0	3.9	
		9	driver	24.55	31.915	9	driver	24.55	31.915	
		10	motor	2000.0	2600.0	10	motor	2000.0	2600.0	

Passed all tests! ✔

Correct

Marks for this submission: 5.00/5.00.

Question **11**

Correct

Mark 5.00 out of 5.00

The purpose of a Data Access Object (DAO) is to:

Select one:

a. Provide a way to hard code the results of a query.

b. Encapsulate the logic to submit read-only queries to the database and collect the results so that applications can access a JSON-based database.

c. Provide access to the database data through a series of methods that encapsulate and hide the details of low-level database operations. ✔

d. Automatically implement SQL-injection protection.

e. None of the above.

Your answer is correct.

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 id, name, and city for suppliers that supply a steel part.**

For example:

Test	Result
-- Case 1	sid sname scity ---------- ---------- ---------- 2 Sears SF 3 Pep Boys NY 4 Lugo PR SJ 6 Manny Boat SJ

Answer: (penalty regime: 0 %)

```
select distinct sid, sname, scity
from supplier inner natural join supplies inner natural join parts
where pmaterial='steel'
order by sid
```

	Test	Expected			Got			
✔	-- Case 1	sid	sname	scity	sid	sname	scity	✔
		----------	----------	----------	----------	----------	----------	
		2	Sears	SF	2	Sears	SF	
		3	Pep Boys	NY	3	Pep Boys	NY	
		4	Lugo PR	SJ	4	Lugo PR	SJ	
		6	Manny Boat	SJ	6	Manny Boat	SJ	
✔	-- Case 2	sid	sname	scity	sid	sname	scity	✔
		----------	----------	----------	----------	----------	----------	
		2	Sears	SF	2	Sears	SF	
		4	Lugo PR	SJ	4	Lugo PR	SJ	
		6	Manny Boat	SJ	6	Manny Boat	SJ	

Passed all tests! ✔

Correct

Marks for this submission: 5.00/5.00.

Question **13**

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: **For each supplier id, find the maximum price for parts it supplies, but only keep those where the maximum price is over $3.**

For example:

Test	Result
-- Case 1	sid max_price ---------- ---------- 3 10.0 4 4.2

Answer: (penalty regime: 0 %)

```
select sid, max(pprice) as max_price
from supplier inner natural join supplies inner natural join parts
group by sid
having max(pprice) > 3
```

	Test	Expected		Got		
✔	-- Case 1	sid ---------- 3 4	max_price ---------- 10.0 4.2	sid ---------- 3 4	max_price ---------- 10.0 4.2	✔
✔	-- Case 2	sid ---------- 2 3 4	max_price ---------- 4.2 10.0 4.2	sid ---------- 2 3 4	max_price ---------- 4.2 10.0 4.2	✔

Passed all tests! ✔

Correct

Marks for this submission: 5.00/5.00.

Question **14**

Correct

Mark 5.00 out of 5.00

Updating a column has the effect of erasing the old value in the column for a given record, and replacing the value with a new one.

Which of the following applications could tolerate this type of update without creating problems?

Select one:

- a. Medical application that tracks the vital signs of a person.
- b. Application for a pharmaceutical plant that tracks temperature at the production line for medications.
- c. Financial application that keeps track of the account balances.
- d. Student records application that keeps track of student grades.
- e. Both c and d
- f. None of the above ✔

Your answer is correct.

Correct

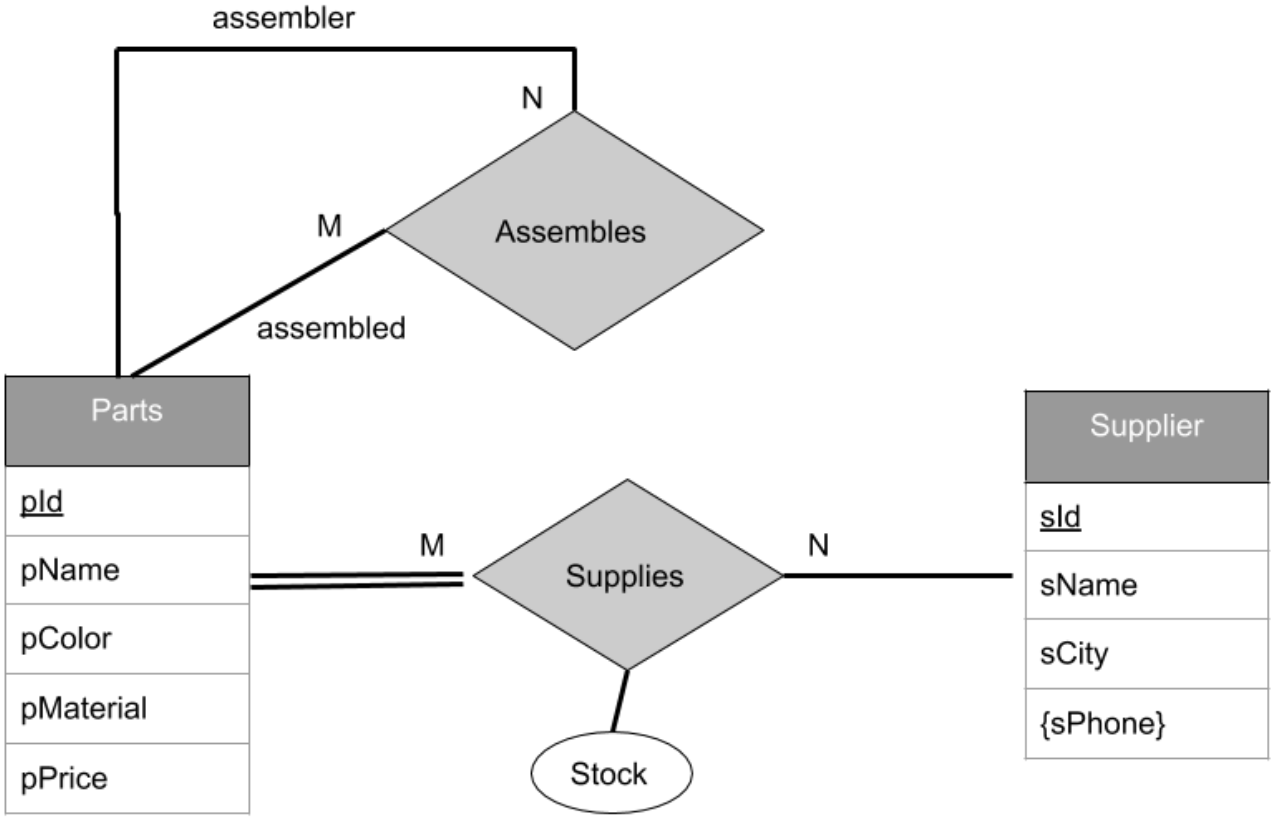
Marks for this submission: 5.00/5.00.

Question **15**

Correct

Mark 1.67 out of 5.00

Consider the following ER Diagram:



*Which of the following SQL table(s) can be obtained after mapping **this** ER diagram to a relational schema?*

Select one:

- a. Supplier(sid serial primary key, sNane varchar(10), scity char(2), sPhone char(10));
- b. Supplies(pid integer, sid integer, primary key(pid, sid));

c. SupplierPhone(phoneId serial primary key, sid integer references Supplier(sid), sphone char(10)) ✔

d. Both a and c.

e. None of the above

Your answer is correct.

Correct

Marks for this submission: 5.00/5.00. Accounting for previous tries, this gives **1.67/5.00**.

◄ Practice Exam 2

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Classroom Project Link