SE3DB3 TUTORIAL

Lucia Cristiano

Oct 18-20, 2021

Assignment 1

A1 marks are up on Avenue. I was the TA who marked it please contact me if you have any questions

Lucia Cristiano

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- Office hours: Tue 3:00pm – 4:00pm on MS Teams

Outline

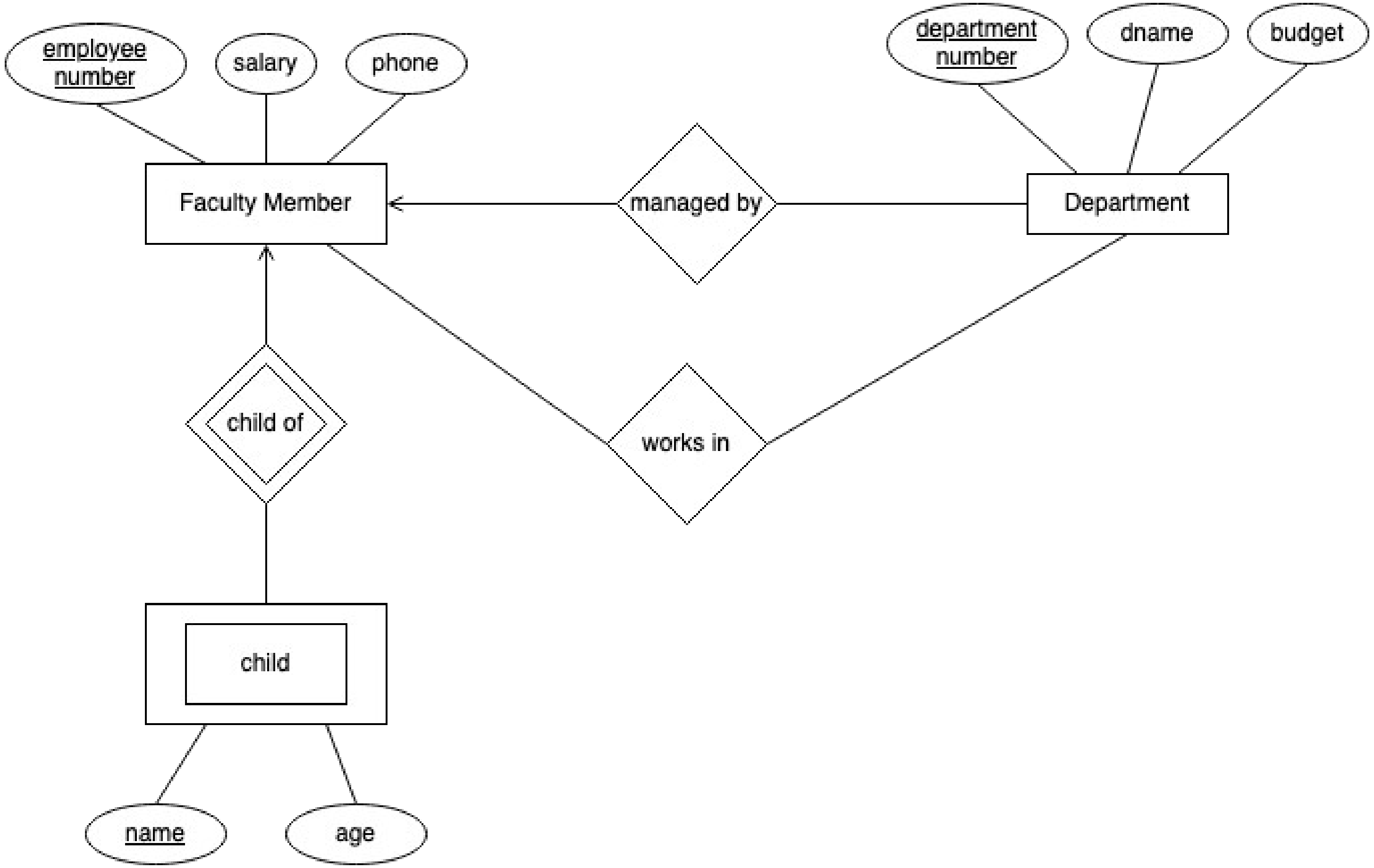
- ERD question
- DDL SQL Statements
- Create a SQL query
- What does this query return?
- Contact

ERD Question

University database that stores info about faculty member with employee number, address and phone, departments with department number, department name, and budget, as well as children of employees with name and age. Faculty work in departments. Each department is managed by a faculty member. A child is identified by name when parent is known. Assume that only 1 parent works for the university.

ERD Question

ANSWER



SQL DDL Questions

Employee(eid, ename, age, salary)
Works(eid, did, pcttime)
Department(did, dname, budget, managerid)

Write a create table statement so that every department has a manager

SQL DDL Questions

Write a create table statement so that every department has a manager

ANSWER

```
CREATE TABLE Deparment(
    did INT NOT NULL PRIMARY KEY,
    dnameVARCHAR(20),
    budget REAL,
    managerId INT NOT NULL REFERENCES Employee);
```

SQL DDL Questions

Employee(eid, ename, age, salary)
Works(eid, did, pcttime)
Department(did, dname, budget, managerid)

Write a statement to delete employee with eid = 5.

SQL DDL Questions

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ANSWER

```
DELETE FROM Employee
WHERE eid = 5;
```

SQL DDL Questions

Employee(eid, ename, age, salary)
Works(eid, did, pcttime)
Department(did, dname, budget, managerid)

Write a statement to add department finance with did = 10, budget = 30000 and managerid = 102

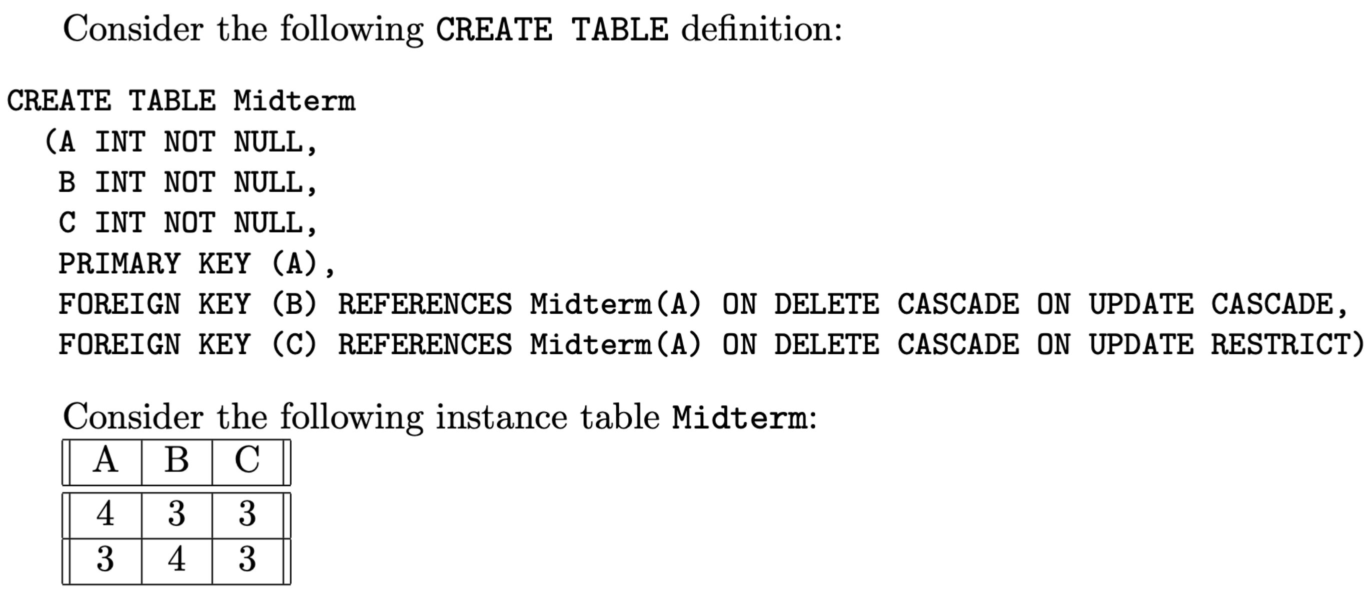
SQL DDL Questions

Write a statement to add department finance with did = 10, budget = 30000 and managerid = 102

ANSWER

```
INSERT INTO Department(did, dname, budget,managerid)
VALUES(10, ‘Fianance’, 30000, 102);
```

SQL DDL Questions

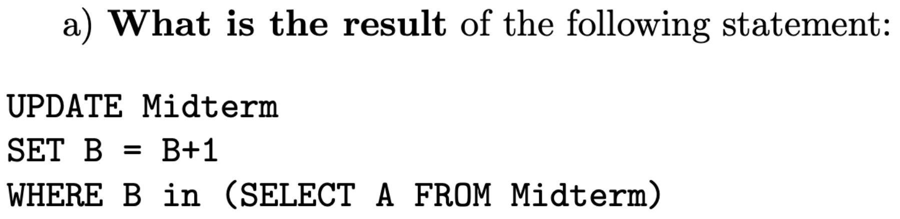


Consider the following CREATE TABLE definition:

```
CREATE TABLE Midterm
  (A INT NOT NULL,
   B INT NOT NULL,
   C INT NOT NULL,
   PRIMARY KEY (A),
   FOREIGN KEY (B) REFERENCES Midterm(A) ON DELETE CASCADE ON UPDATE CASCADE,
   FOREIGN KEY (C) REFERENCES Midterm(A) ON DELETE CASCADE ON UPDATE RESTRICT)
```

Consider the following instance table Midterm:

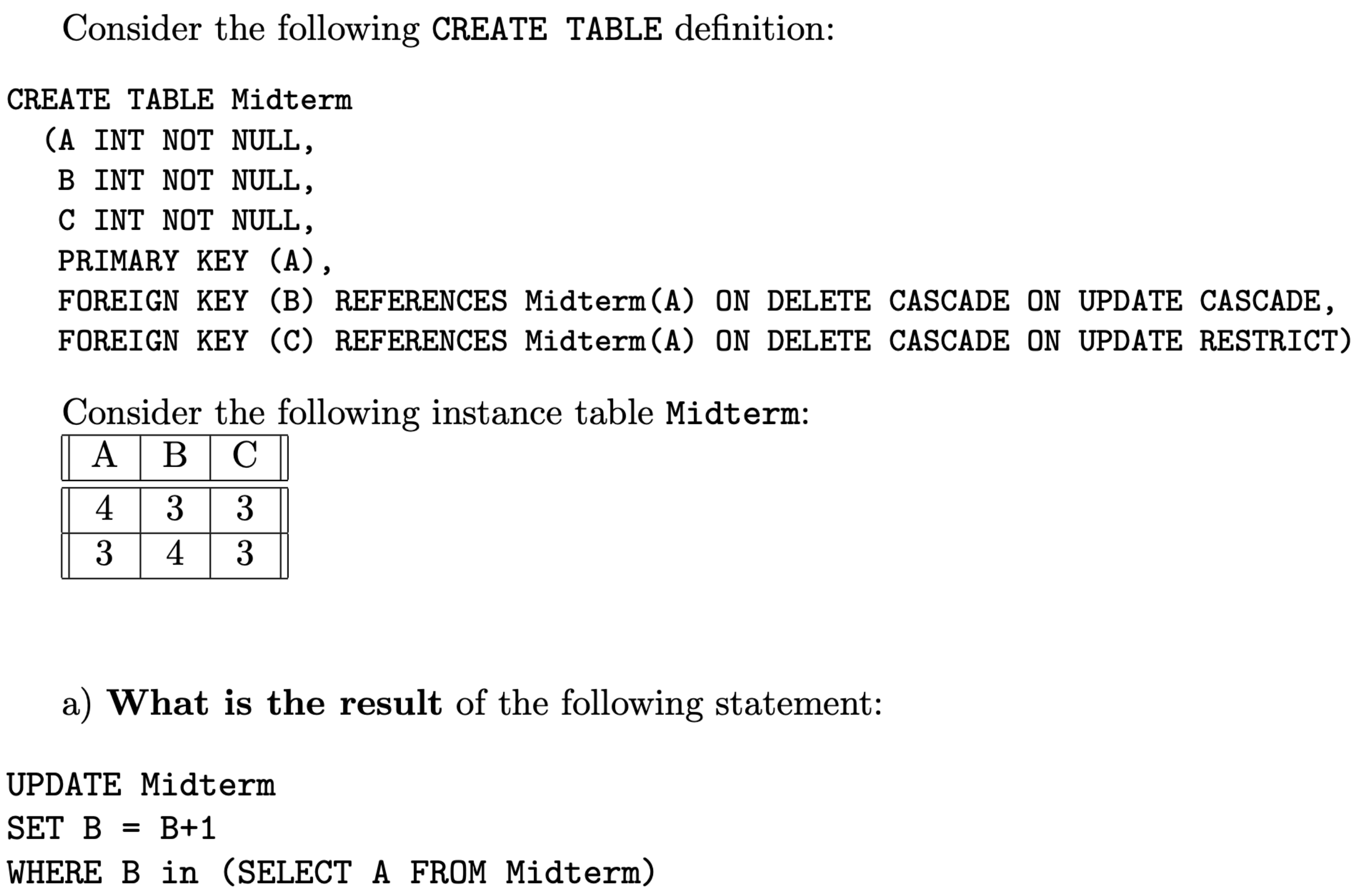
A	B	C
4	3	3
3	4	3



a) **What is the result** of the following statement:

```
UPDATE Midterm
SET B = B+1
WHERE B in (SELECT A FROM Midterm)
```

SQL DDL Questions



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a) **What is the result** of the following statement:

```
UPDATE Midterm
SET B = B+1
WHERE B in (SELECT A FROM Midterm)
```

ANSWER

This results in an error as the foreign key constraint is violated.

Create a SQL Query

- Write a query that finds the numbers, names, and ages of employees who earn more than 40k
  - Schema: Employee(Number, Name, Age, Salary)

Create a SQL Query

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  - Schema: Employee(Number, Name, Age, Salary)

ANSWER

```
SELECT Number, Name, Ages
FROM Employee
WHERE Salary > 40,000
```

Create a SQL Query

- Write a query that finds beer and average price for each beer.
    - Schema: Sells(bar, beer, price)

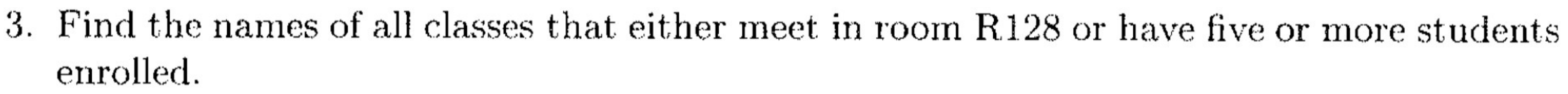
Create a SQL Query

- Write a query that finds beer and average price for each beer.
  - Schema: Sells(bar, beer, price)

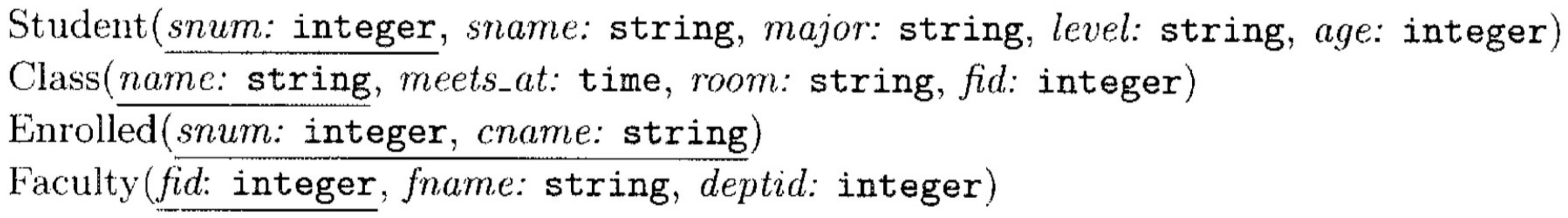
ANSWER

```
SELECT beer, AVG(price)
FROM Sells
GROUP BY beer
```

Create a SQL Query

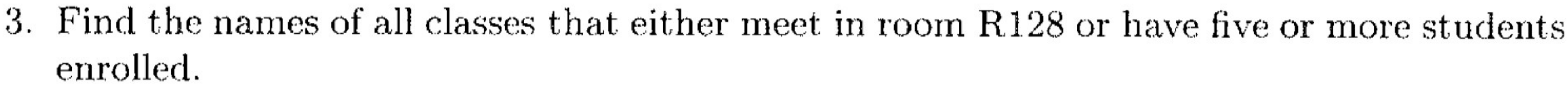


3. Find the names of all classes that either meet in room R128 or have five or more students enrolled.

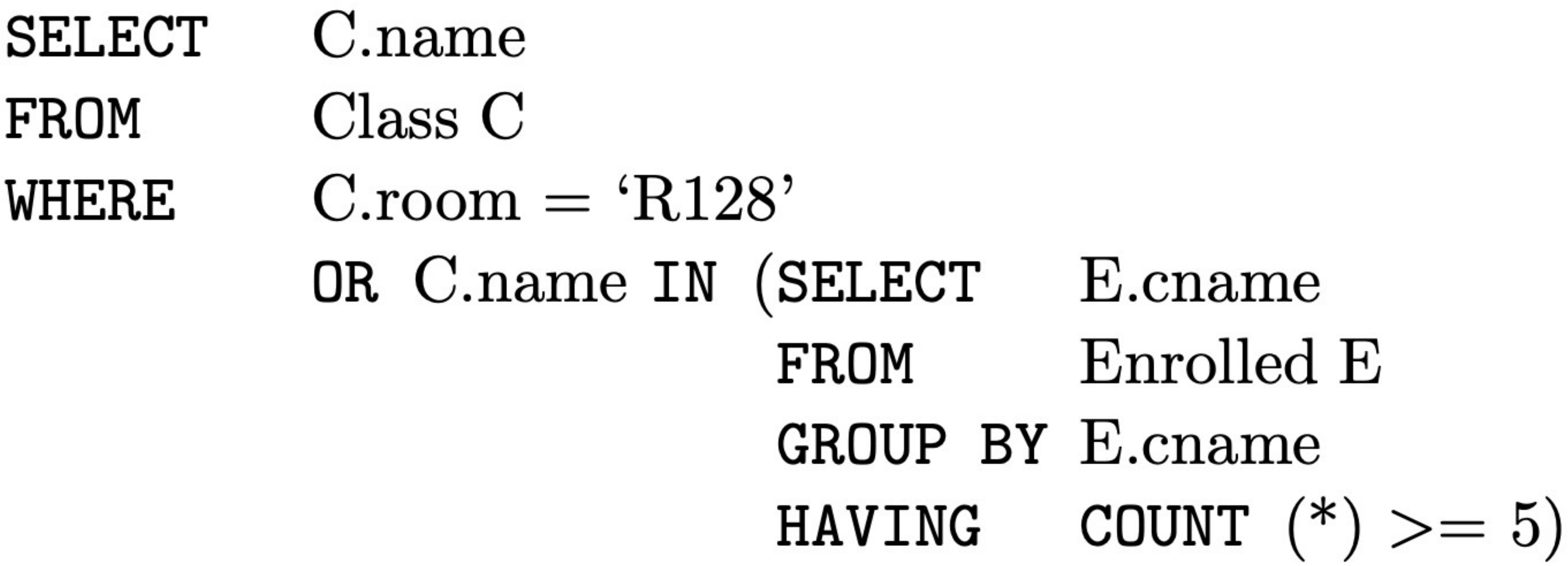


Student(*snum:* integer, *sname:* string, *major:* string, *level:* string, *age:* integer)
Class(*name:* string, *meets_at:* time, *room:* string, *fid:* integer)
Enrolled(*snum:* integer, *cname:* string)
Faculty(*fid:* integer, *fname:* string, *deptid:* integer)

Create a SQL Query



3. Find the names of all classes that either meet in room R128 or have five or more students enrolled.



```
SELECT     C.name
FROM       Class C
WHERE      C.room = 'R128'
           OR C.name IN (SELECT    E.cname
                         FROM      Enrolled E
                         GROUP BY  E.cname
                         HAVING    COUNT (*) >= 5)
```

What does this query return?

```
SELECT DISTINCT R.A
FROM R
WHERE R.A NOT IN (
    SELECT DISTINCT S.B AS A
    FROM S
    WHERE S.B = S.C);
```

R

A	B
1	2
3	4
1	3

S

B	C
1	3
2	4

What does this query return?

```
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FROM R
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    FROM S
    WHERE S.B = S.C);
```

R

A	B
1	2
3	4
1	3

S

B	C
1	3
2	4

ANSWER

A
1
3

What does this query return?

```
SELECT DISTINCT R.A, S.C, avg(R.B), as av
FROM R, S
WHERE R.B < 4
GROUP BY R.A S.C
HAVING max(R.B) >= 2;
```

R

A	B
1	2
3	4
1	3

S

B	C
1	3
2	4

What does this query return?

R

A	B
1	2
3	4
1	3

S

B	C
1	3
2	4

First Join R and S on B

A	R.B	S.B	C
1	2	1	3
1	2	2	4
3	4	1	3
3	4	2	4
1	3	1	3
1	3	2	4

Then remove the values
of R.B < 4
(WHERE clause)

A	R.B	S.B	C
1	2	1	3
1	2	2	4
1	3	1	3
1	3	2	4

Group by R.A and R.C

A	R.B	S.B	C
1	2	1	3
1	2	1	3
1	3	2	4
1	3	2	4

Final table

A	C	av
1	3	2.5
1	4	2.5

Contact

If you have any questions or feedback, please email me or attend my office hours:

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