### Create the table ​​College

+------------+-------------+------+-----+---------+-------+

| Field | Type | Null | Key | Default | Extra |

+------------+-------------+------+-----+---------+-------+

| cName | varchar(30) | NO | PRI | NULL |

| state | varchar(2) | YES | | NULL | |

| enrollment | int | YES | | NULL | |

+------------+-------------+------+-----+---------+-------+

Insert the records into the table

+----------+-------+------------+

| cName | state | enrollment |

+----------+-------+------------+

| Berkeley | CA | 36000 |

| Cornell | NY | 21000 |

| MIT | MA | 10000 |

| Stanford | CA | 15000 |

+----------+-------+------------+

### Create table students

+--------+-------------+------+-----+---------+-------+

| Field | Type | Null | Key | Default | Extra |

+--------+-------------+------+-----+---------+-------+

| sID | int | NO | PRI | NULL | |

| sName | varchar(30) | YES | | NULL | |

| GPA | float(3,2) | YES | | NULL | |

| sizeHS | int | YES | | NULL | |

+--------+-------------+------+-----+---------+-------+

Insert the records into the table

+-----+--------+------+--------+

| sID | sName | GPA | sizeHS |

+-----+--------+------+--------+

| 123 | Amy | 3.90 | 1000 |

| 234 | Bob | 3.60 | 1500 |

| 345 | Craig | 3.50 | 500 |

| 456 | Doris | 3.90 | 1000 |

| 543 | Craig | 3.40 | 2000 |

| 567 | Edward | 2.90 | 2000 |

| 654 | Amy | 3.90 | 1000 |

| 678 | Fay | 3.80 | 200 |

| 765 | Jay | 2.90 | 1500 |

| 789 | Gary | 3.40 | 800 |

| 876 | Irene | 3.90 | 400 |

| 987 | Helen | 3.70 | 800 |

+-----+--------+------+--------+

### Create table Apply

+----------+-------------+------+-----+---------+-------+

| Field | Type | Null | Key | Default | Extra |

+----------+-------------+------+-----+---------+-------+

| sID | int | NO | PRI | NULL | |

| cName | varchar(30) | NO | PRI | NULL | |

| major | varchar(30) | NO | PRI | NULL | |

| decision | text | YES | | NULL | |

+----------+-------------+------+-----+---------+-------+

+-----+----------+----------------+----------+

| sID | cName | major | decision |

+-----+----------+----------------+----------+

| 123 | Berkeley | CS | Y |

| 123 | Cornell | EE | Y |

| 123 | Stanford | CS | Y |

| 123 | Stanford | EE | N |

| 234 | Berkeley | biology | N |

| 345 | Cornell | bioengineering | N |

| 345 | Cornell | CS | Y |

| 345 | Cornell | EE | N |

| 345 | MIT | bioengineering | Y |

| 543 | MIT | CS | N |

| 678 | Stanford | history | Y |

| 765 | Cornell | history | N |

| 765 | Cornell | psychology | Y |

| 765 | Stanford | history | Y |

| 876 | MIT | biology | Y |

| 876 | MIT | marine biology | N |

| 876 | Stanford | CS | N |

| 987 | Berkeley | CS | Y |

| 987 | Stanford | CS | Y |

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### CREATE DATABASE Admission;

### Tasks

Q Get all pairs of students who have same GPA

select S1.sID, S1.sName, S1.GPA, S2.sID, S2.sName, S2.GPA

from Student S1, Student S2

where S1.GPA = S2.GPA;

# <> not equals

select S1.sID, S1.sName, S1.GPA, S2.sID, S2.sName, S2.GPA

from Student S1, Student S2

where S1.GPA = S2.GPA and S1.sID <> S2.sID;

select S1.sID, S1.sName, S1.GPA, S2.sID, S2.sName, S2.GPA

from Student S1, Student S2

where S1.GPA = S2.GPA and S1.sID < S2.sID;

Q can we say S1.sID > S2.sID ? Will that work ?

Q get ids of all students who have applied for CS and EE ? (with set operator and without set operator)

* select \* from apply where major = 'CS' or major = 'EE';
* select SID from apply where major = 'CS' ; Intersect select SID from apply where major = 'EE';
* select distinct a1.sid

from apply a1 , apply a2

where a1.sid = a2.sid and a1.major = 'CS' and a2.major = 'EE' ;

Q find ids of students who applied to CS but did not apply to EE (with set operator and without set operator)

SELECT sID

FROM Apply

WHERE major = 'CS'

AND sID NOT IN (SELECT sID FROM Apply WHERE major = 'EE');

Q IDS and names of students who have applied to major in CS in college (using subquery and join by both ways)

SELECT sID, sName

FROM Students

WHERE sID IN (SELECT sID FROM Apply WHERE major = 'CS');

SELECT DISTINCT Students.sID, Students.sName

FROM Students

JOIN Apply ON Students.sID = Apply.sID

WHERE Apply.major = 'CS';

Q Students who have applied to major in CS but have not applied to major in EE ?

SELECT DISTINCT sID

FROM Apply

WHERE major = 'CS'

AND sID NOT IN (SELECT sID FROM Apply WHERE major = 'EE');

Q all colleges such that some other college is in the same state?

SELECT DISTINCT C1.cName

FROM College C1, College C2

WHERE C1.state = C2.state AND C1.cName <> C2.cName;

Q write a query to find student with highest GPA (in 2 different ways 1) using subquery 2) using join)

SELECT sID, sName, GPA

FROM Students

WHERE GPA = (SELECT MAX(GPA) FROM Students);

SELECT S1.sID, S1.sName, S1.GPA

FROM Students S1

LEFT JOIN Students S2 ON S1.GPA < S2.GPA

WHERE S2.GPA IS NULL;

Q What does the following query do

select distinct enrollment from College as A

where 1 = (

select count(distinct enrollment) from College as B

where A.enrollment <= B.enrollment)

select cname, enrollment from College as A

where 1 = (

select count(enrollment) from College as B

where A.enrollment <= B.enrollment)

Change 1, to 2,3,4 in above and see what happens?

Q Colleges paired with the highest GPA of their applicants?

SELECT cName, MAX(GPA) AS HighestGPA

FROM Apply

JOIN Students ON Apply.sID = Students.sID

GROUP BY cName;

Q Name and GPA of students who came from a HSsize < 1000 and who applied to CS major at Stanford

SELECT Students.sName, Students.GPA

FROM Students

JOIN Apply ON Students.sID = Apply.sID

WHERE Students.sizeHS < 1000

AND Apply.cName = 'Stanford'

AND Apply.major = 'CS';

Q CREATE TABLE IF NOT EXISTS College1 (name varchar(30),

state varchar(2)

);

INSERT INTO College1 (name, state) VALUES ('A', 'CA');

INSERT INTO College1 (name, state) VALUES ('B', 'CA');

INSERT INTO College1 (name, state) VALUES ('C', 'CA');

INSERT INTO College1 (name, state) VALUES ('D', 'CA');

INSERT INTO College1 (name, state) VALUES ('E', 'CA');

INSERT INTO College1 (name, state) VALUES ('F', 'DA');

INSERT INTO College1 (name, state) VALUES ('G', 'DA');

INSERT INTO College1 (name, state) VALUES ('H', 'DA');

INSERT INTO College1 (name, state) VALUES ('I', 'DA');

INSERT INTO College1 (name, state) VALUES ('J', 'DA');

+------+-------+

| name | state |

+------+-------+

| A | CA |

| B | CA |

| C | CA |

| D | CA |

| E | CA |

| F | DA |

| G | DA |

| H | DA |

| I | DA |

| J | DA |

+------+-------+

Q Write a query that will list pairs of 2 colleges from the same state where state = 'CA'

eg A B, A C etc. The query should not repeat A B in any other combination

for eg: B A.

Q Write a query that will list pairs of 3 colleges from the same state where state = 'CA'

eg A B C, A C D etc. The query should not repeat A B C in any other combination

for eg: B A C or A C B.

Q number of students applying to Cornell

select count(\*)

from Apply

where cName = 'Cornell';

select count(distinct sID)

from Apply

where cName = 'Cornell';

Guess the output

Q Get the Students such that number of other students with same GPA is

equal to number of other students with same sizeHS

Q Amount by which average GPA of students applying to CS

exceeds average of students not applying to CS

Q Minimum and Maximum GPAs of applicants to each college and major

Q Number of colleges applied to by each student

Q Need to include student ID of students who have not applied and give a zero

select Student.sID, count(distinct cName)

from Student, Apply

where Student.sID = Apply.sID

group by Student.SID

union

select sID, 0

from Student

where sID not in (select sID from Apply);