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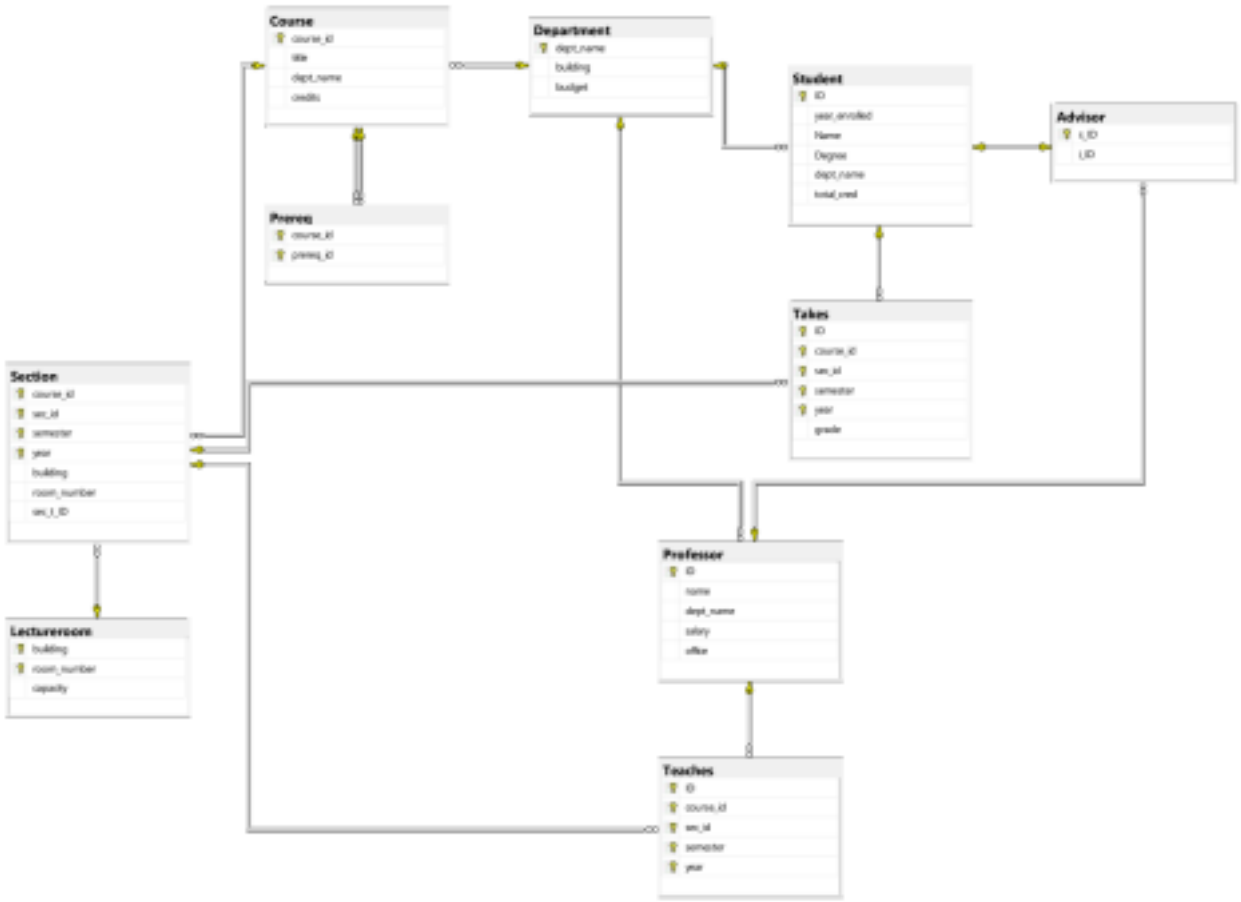
University System Database

Our group employed MS SQL Server to create a database of the university system. Please refer to the submitted file

Group15_MS_SQL_Server_Database_File.sql" that includes SQL codes that show how our group has created the university database with all necessary tables.

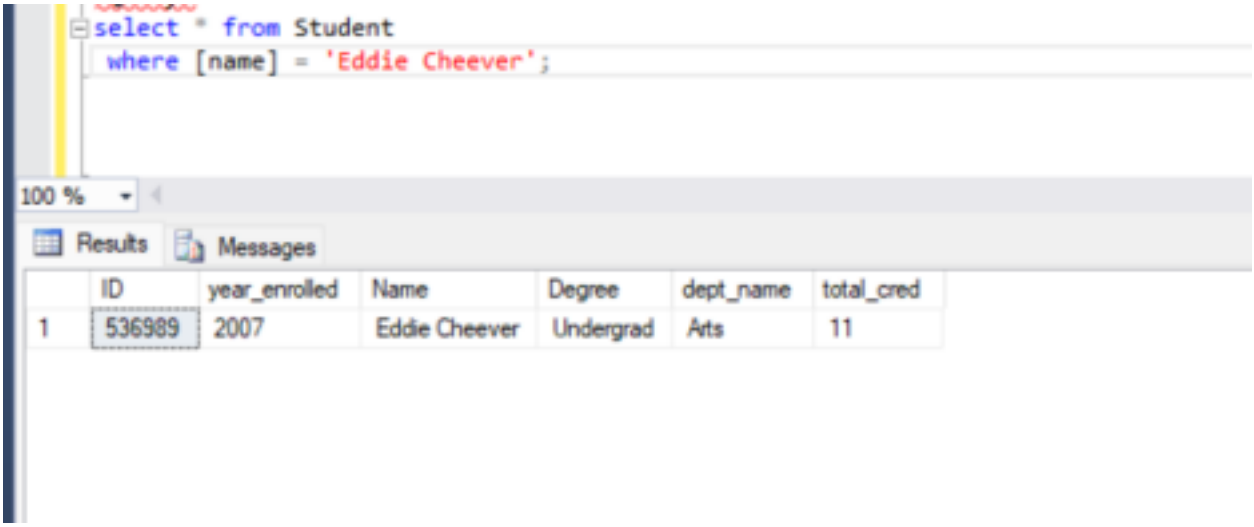
Schema Diagram for the University of System Database from our MS SQL Server:



Below are 20 different purpose SQL queries and unique operations that are deployed for general academic purposes:

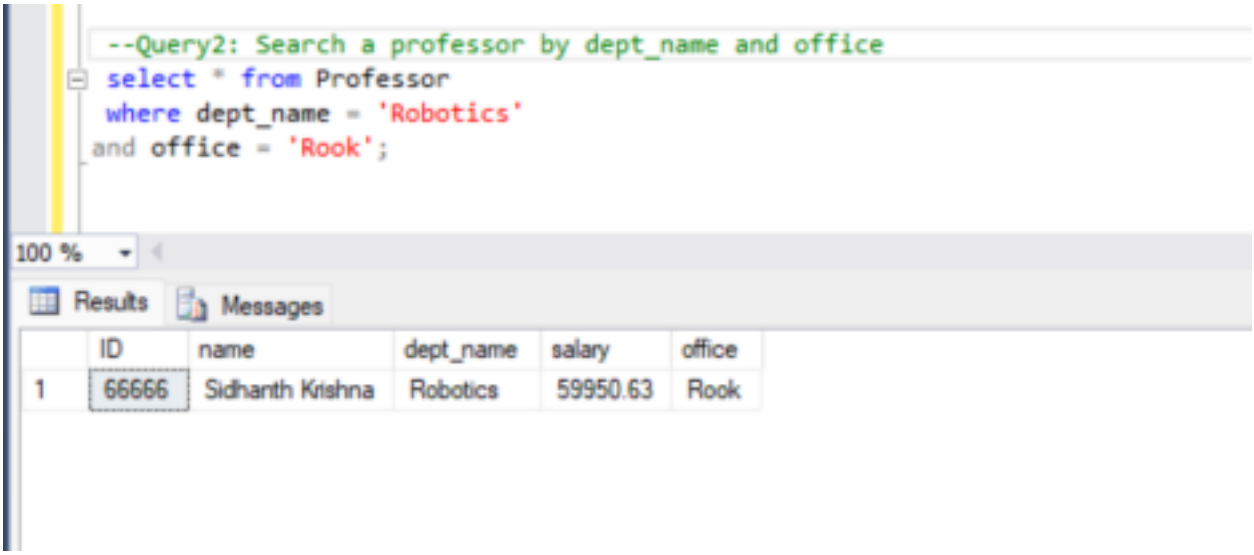
Query 1:Search a student tuple by name

```
select * from Student
where [name] = 'Eddie Cheever';
```



Query 2: Search a professor by dept_name and office

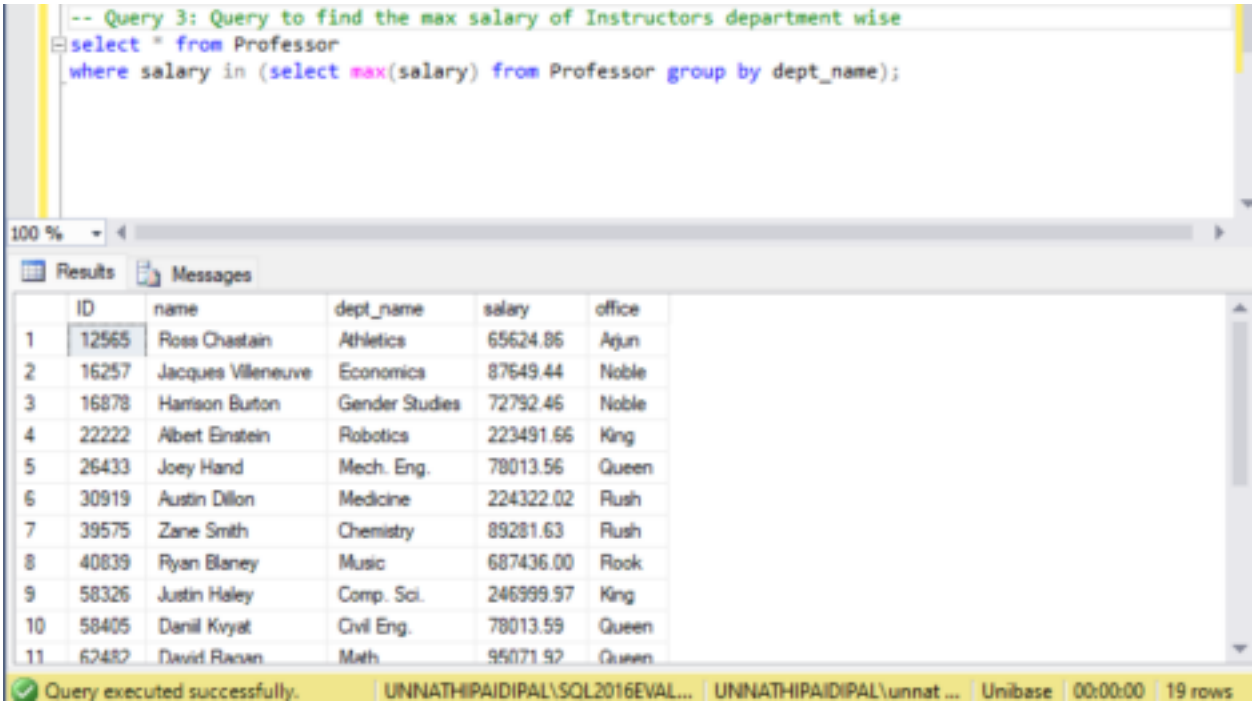
```
select * from Professor
where dept_name = 'Robotics'
and office = 'Rook';
```



Query3: Query to find the max salary of instructors department wise

```
select * from professor
```

where salary in (select max(salary) from instructor group by dept_name);



```
-- Query 3: Query to find the max salary of Instructors department wise
select * from Professor
where salary in (select max(salary) from Professor group by dept_name);
```

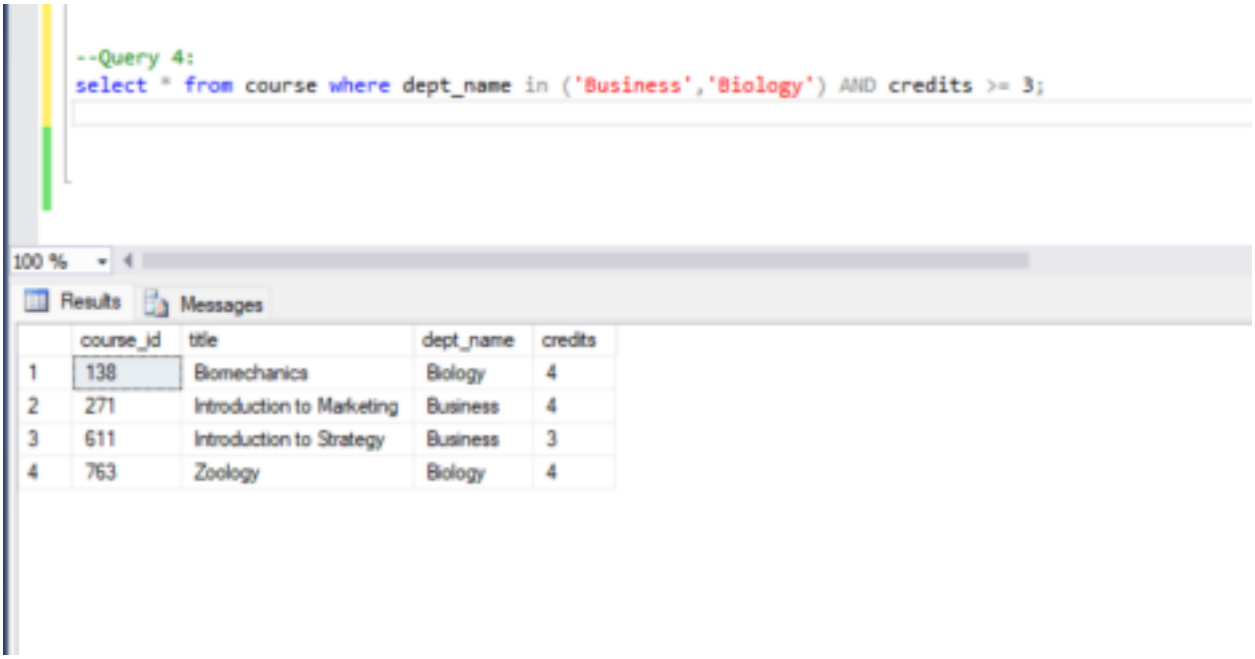
100 %

Results | Messages

	ID	name	dept_name	salary	office
1	12565	Ross Chastain	Athletics	65624.86	Arjun
2	16257	Jacques Villeneuve	Economics	87649.44	Noble
3	16878	Harrison Burton	Gender Studies	72792.46	Noble
4	22222	Albert Einstein	Robotics	223491.66	King
5	26433	Joey Hand	Mech. Eng.	78013.56	Queen
6	30919	Austin Dillon	Medicine	224322.02	Rush
7	39575	Zane Smith	Chemistry	89281.63	Rush
8	40839	Ryan Blaney	Music	687436.00	Rook
9	58326	Justin Haley	Comp. Sci.	246999.97	King
10	58405	Daniil Kvyat	Civil Eng.	78013.59	Queen
11	62482	David Ragan	Math	95071.92	Queen

Query executed successfully. | UNNATHIPAIDIPAL\SQL2016EVAL... | UNNATHIPAIDIPAL\unnat ... | Unibase | 00:00:00 | 19 rows

Query 4: find courses where credits is greater than 3
select * from course where dept_name in ('Business','Biology') AND credits >= 3;



```
--Query 4:
select * from course where dept_name in ('Business','Biology') AND credits >= 3;
```

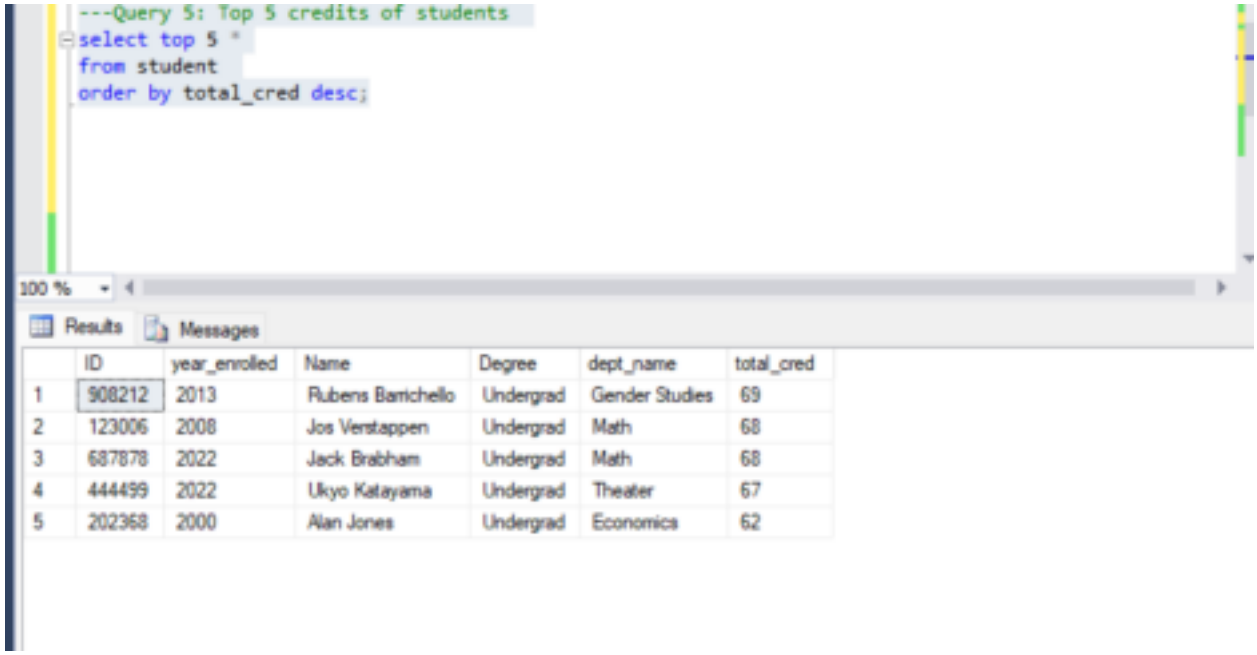
100 %

Results | Messages

	course_id	title	dept_name	credits
1	138	Biomechanics	Biology	4
2	271	Introduction to Marketing	Business	4
3	611	Introduction to Strategy	Business	3
4	763	Zoology	Biology	4

Query 5: Top 5 credits of students

```
select top 5 *
from student
order by total_cred desc;
```



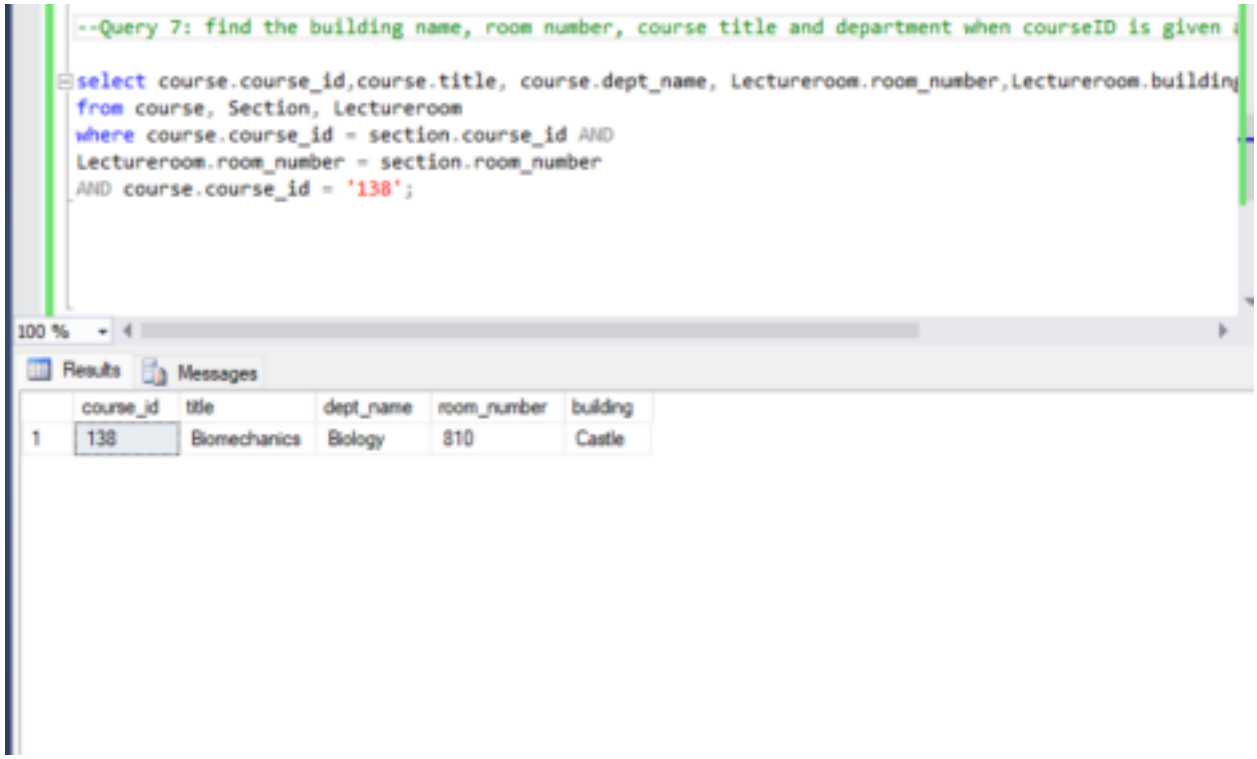
	ID	year_enrolled	Name	Degree	dept_name	total_cred
1	908212	2013	Rubens Barrichello	Undergrad	Gender Studies	69
2	123006	2008	Jos Verstappen	Undergrad	Math	68
3	687878	2022	Jack Brabham	Undergrad	Math	68
4	444499	2022	Ukyo Katayama	Undergrad	Theater	67
5	202368	2000	Alan Jones	Undergrad	Economics	62

Query 6: the names of all the courses which were offered in Fall 2009 or Spring 2010 semester

```
select b.title
from Section a
join course b on a.course_id = b.course_id where a.semester in ('FALL','SPRING') and a.year in (2009,2010);
```

Query 7: find the building name, room number, course title and department when courseID is given as input

```
select course.course_id,course.title, course.dept_name,
Lectureroom.room_number,Lectureroom.building
from course, Section, Lectureroom
where course.course_id = section.course_id AND
Lectureroom.room_number = section.room_number
AND course.course_id = '138';
```



```
--Query 7: find the building name, room number, course title and department when courseID is given
select course.course_id,course.title, course.dept_name, Lectureroom.room_number,Lectureroom.building
from course, Section, Lectureroom
where course.course_id = section.course_id AND
Lectureroom.room_number = section.room_number
AND course.course_id = '138';
```

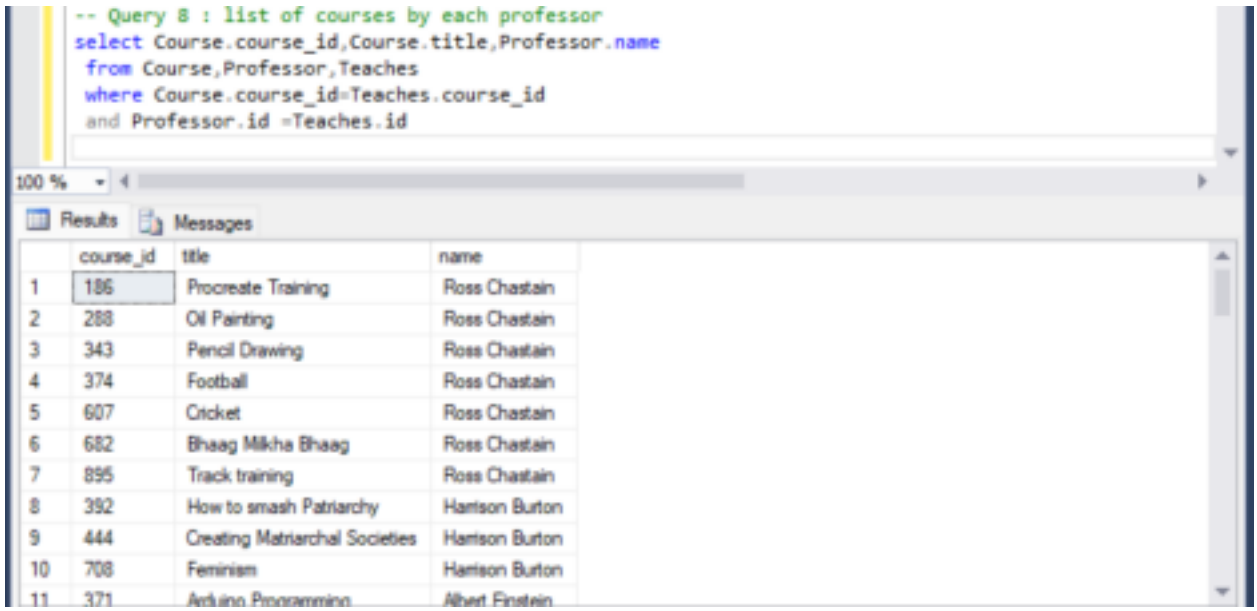
100 %

Results | Messages

	course_id	title	dept_name	room_number	building
1	138	Biomechanics	Biology	810	Castle

Query 8 : list of courses by each professor

select Course.course_id,Course.title,Professor.name
from Course,Professor,Teaches where Course.course_id=Teaches.course_id and Professor.id =Teaches.id



```
-- Query 8 : list of courses by each professor
select Course.course_id,Course.title,Professor.name
 from Course,Professor,Teaches
 where Course.course_id=Teaches.course_id
 and Professor.id =Teaches.id
```

100 %

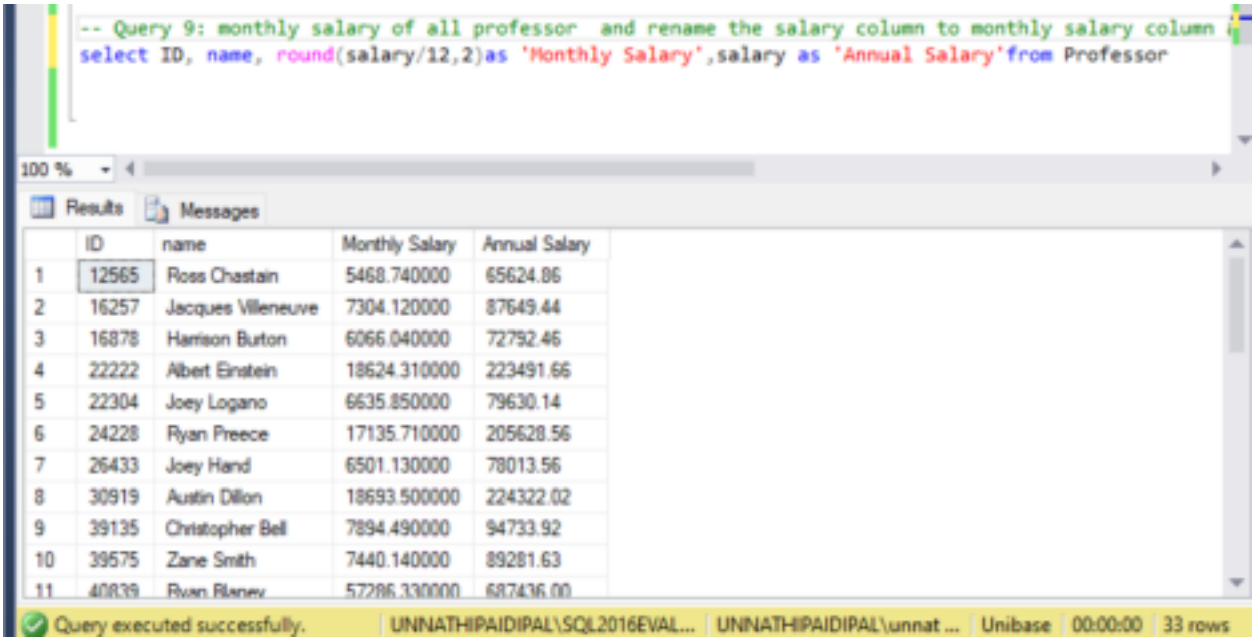
Results | Messages

	course_id	title	name
1	186	Procreate Training	Ross Chastain
2	288	Oil Painting	Ross Chastain
3	343	Pencil Drawing	Ross Chastain
4	374	Football	Ross Chastain
5	607	Cricket	Ross Chastain
6	682	Bhaag Milkha Bhaag	Ross Chastain
7	895	Track training	Ross Chastain
8	392	How to smash Patriarchy	Harrison Burton
9	444	Creating Matriarchal Societies	Harrison Burton
10	708	Feminism	Harrison Burton
11	371	Arduino Programming	Albert Einstein

Query 9:

monthly salary of all professor and rename the salary column to monthly salary column and Annual Salary Column and return the list

select ID, name, round(salary/12,2)as 'Monthly Salary',salary as 'Annual Salary' from Professor



```
-- Query 9: monthly salary of all professor  and rename the salary column to monthly salary column
select ID, name, round(salary/12,2)as 'Monthly Salary',salary as 'Annual Salary'from Professor
```

100 %

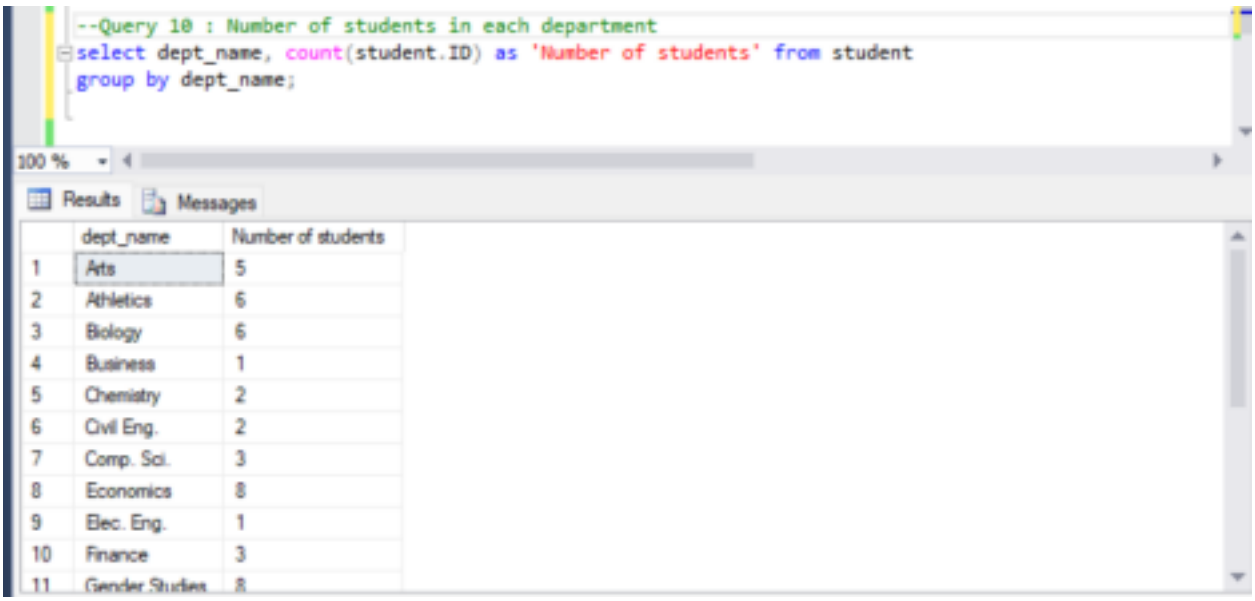
Results | Messages

	ID	name	Monthly Salary	Annual Salary
1	12565	Ross Chastain	5468.740000	65624.86
2	16257	Jacques Villeneuve	7304.120000	87649.44
3	16878	Harrison Burton	6066.040000	72792.46
4	22222	Albert Einstein	18624.310000	223491.66
5	22304	Joey Logano	6635.850000	79630.14
6	24228	Ryan Preece	17135.710000	205628.56
7	26433	Joey Hand	6501.130000	78013.56
8	30919	Austin Dillon	18693.500000	224322.02
9	39135	Christopher Bell	7894.490000	94733.92
10	39575	Zane Smith	7440.140000	89281.63
11	40839	Ryan Blaney	57286.330000	687436.00

Query executed successfully. | UNNATHIPAIDIPAL\SQL2016EVAL... | UNNATHIPAIDIPAL\unnat ... | Unibase | 00:00:00 | 33 rows

Query 10: Number of students in each department

select dept_name, count(student.ID) as 'Number of students' from student
group by dept_name;



```
--Query 10 : Number of students in each department
select dept_name, count(student.ID) as 'Number of students' from student
group by dept_name;
```

100 %

Results | Messages

	dept_name	Number of students
1	Arts	5
2	Athletics	6
3	Biology	6
4	Business	1
5	Chemistry	2
6	Civil Eng.	2
7	Comp. Sci.	3
8	Economics	8
9	Elec. Eng.	1
10	Finance	3
11	Gender Studies	8

Query 11 : Inner join of two tables section and Takes

SELECT Section.building,section.sec_t_ID, Takes.semester, Section.sec_id FROM Section

INNER JOIN Takes ON section.course_id=Takes.course_id;

```
--Query 11 Inner join of two tables section and Takes
SELECT Section.building,section.sec_t_ID, Takes.semester, Section.sec_id
FROM Section
INNER JOIN Takes ON section.course_id=Takes.course_id;
```

100 %

Results | Messages

	building	sec_t_ID	semester	sec_id
1	Queen	H	Fall	1
2	Castle	N	Fall	1
3	Pawn	Y	Spring	1
4	Chess	Y	Spring	2
5	King	D	Spring	1
6	Rook	B	Spring	1
7	Chess	G	Summer	1
8	Queen	A	Fall	1
9	Queen	R	Fall	1
10	Rook	QF	Fall	1
11	Queen	G	Fall	2

Query executed successfully. | UNNATHIPAIDIPAL\SQL2016EVAL... | UNNATHIPAIDIPAL\unnat ... | Unibase | 00:00:00 | 364 rows

Query 12 : Classes on Mondays and in the building queen

```
select
course.course_id,course.title,section.room_number,section.building,time_slot.day,Time_
Slot.start_time
from course, section,time_slot
where course.course_id = section.course_id and Section.building = 'Queen' AND
day = 'M';
```

```
-- Query 12 : Classes on Mondays and in the building queen
select course.course_id,course.title,section.room_number,section.building,time_slot.day,Time_Slot.st
from course, section,time_slot
where course.course_id = section.course_id and Section.building = 'Queen'
AND day = 'M';
```

100 %

Results | Messages

	course_id	title	room_number	building	day	start_time
1	100	Discrete Mathematics	312	Queen	M	08:00:00.0000000
2	100	Discrete Mathematics	312	Queen	M	09:00:00.0000000
3	100	Discrete Mathematics	312	Queen	M	11:00:00.0000000
4	100	Discrete Mathematics	312	Queen	M	13:00:00.0000000
5	100	Discrete Mathematics	312	Queen	M	14:00:00.0000000
6	124	Organic Chemistry	313	Queen	M	08:00:00.0000000
7	124	Organic Chemistry	313	Queen	M	09:00:00.0000000
8	124	Organic Chemistry	313	Queen	M	11:00:00.0000000
9	124	Organic Chemistry	313	Queen	M	13:00:00.0000000
10	124	Organic Chemistry	313	Queen	M	14:00:00.0000000
11	186	Procreate Training	312	Queen	M	08:00:00.0000000

--Query 13: To find total grade of a student

```
select student_id,sum(credits * grade) as 'total'
from
(select takes.ID as 'student_id', course.title,course.credits as 'credits',grade = Case
takes.grade
when 'A+' then 1
when 'B+' then 2
when 'C+' then 3
when 'D' then 4
else 0
end from takes,course,section where takes.sec_id = section.sec_id AND
section.course_id = course.course_id AND takes.ID= '226414') t2
group by student_id;
```

```
--Query 13: To find total grade of a student
select student_id,sum(credits * grade) as 'total'
from
(select takes.ID as 'student_id', course.title,course.credits as 'credits',grade =
Case takes.grade
when 'A+' then 1
when 'B+' then 2
when 'C+' then 3
when 'D' then 4
else 0
end from takes,course,section where takes.sec_id = section.sec_id AND
section.course_id = course.course_id AND takes.ID= '226414') t2
group by student_id;
```

100 %

Results | Messages

	student_id	total
1	226414	950

Query 14 : top 5 salaries of professors

select top 5 * from Professor order by salary desc;

```
--Query 14 : top 5 salaries of professors
select  top 5  * from Professor order by salary desc;
```

100 %

Results | Messages

	ID	name	dept_name	salary	office
1	40839	Ryan Blaney	Music	687436.00	Rook
2	78622	William Byron	Theater	350419.22	King
3	58326	Justin Haley	Comp. Sci.	246999.97	King
4	30919	Austin Dillon	Medicine	224322.02	Rush
5	22222	Albert Einstein	Robotics	223491.66	King

Query 15: Average salary of each department

```
select dept_name,avg(salary) as Avg_Salary
   from Professor
   group by dept_name ;
```

```
--Query 15 : Average salary of each department
  select dept_name,avg(salary) as Avg_Salary
     from Professor
     group by dept_name ;
```

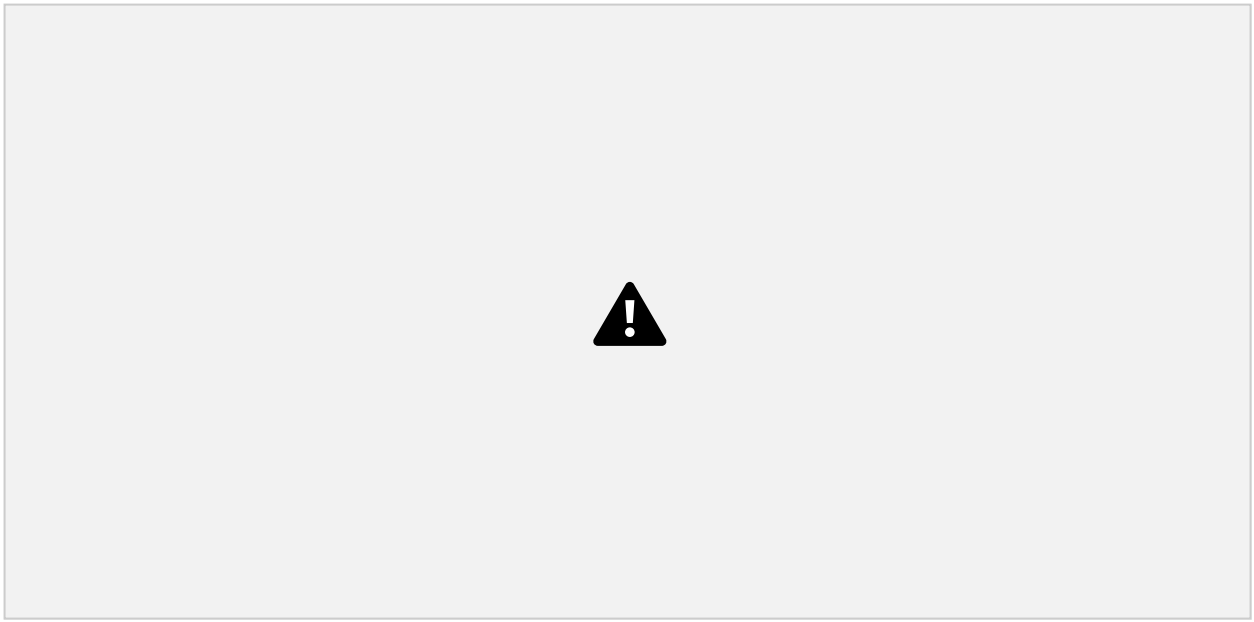
100 %

Results | Messages

	dept_name	Avg_Salary
10	Gender Studies	62576.230000
11	History	127583.255000
12	Law	135750.610000
13	Math	76832.890000
14	Mech. Eng.	78013.560000
15	Medicine	214975.290000
16	Music	376125.430000
17	Physics	74250.415000
18	Robotics	141721.145000
19	Theater	350419.220000

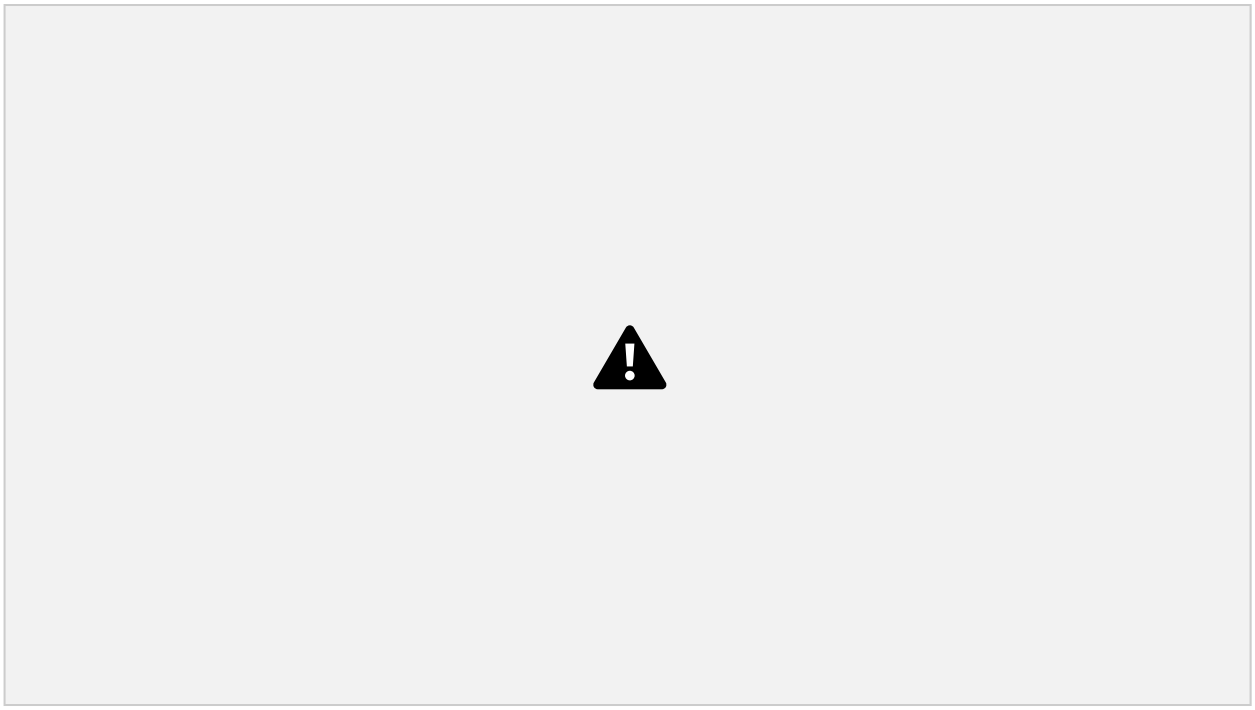
Query 16: find courses that require Prerequisites

select course.course_id, prereq.prereq_id ,Course.title from prereq, course where prereq.course_id = course.course_id;

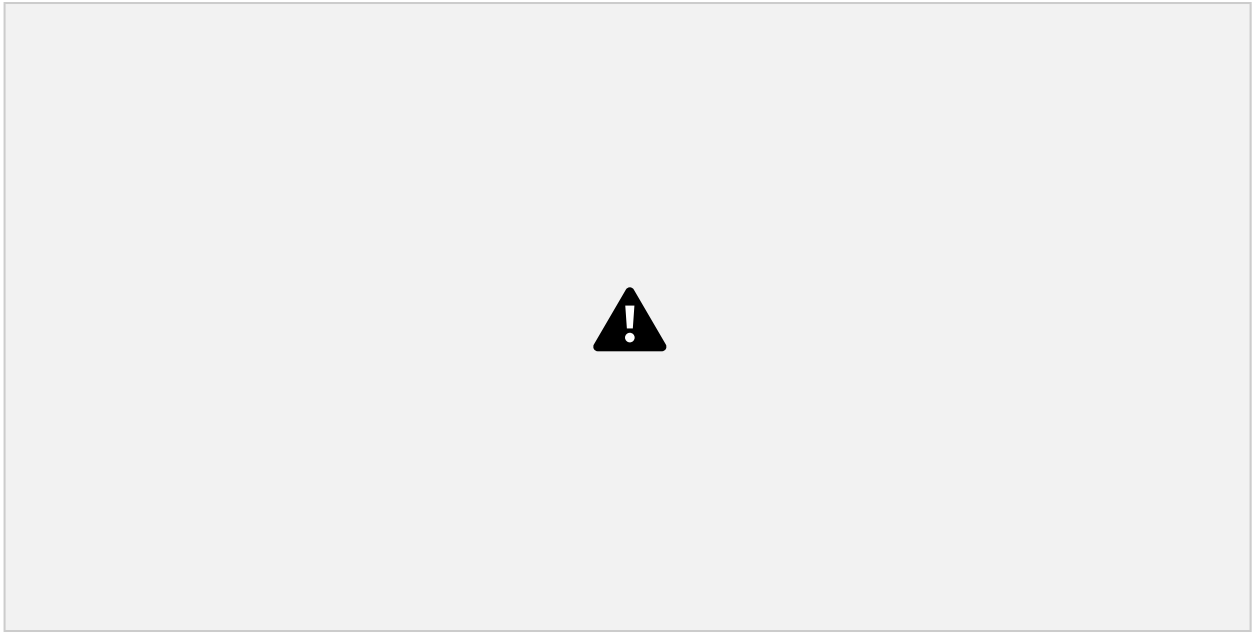


Query 17: list of students name , credits from math

select name, total_cred from student where dept_name = 'Math'

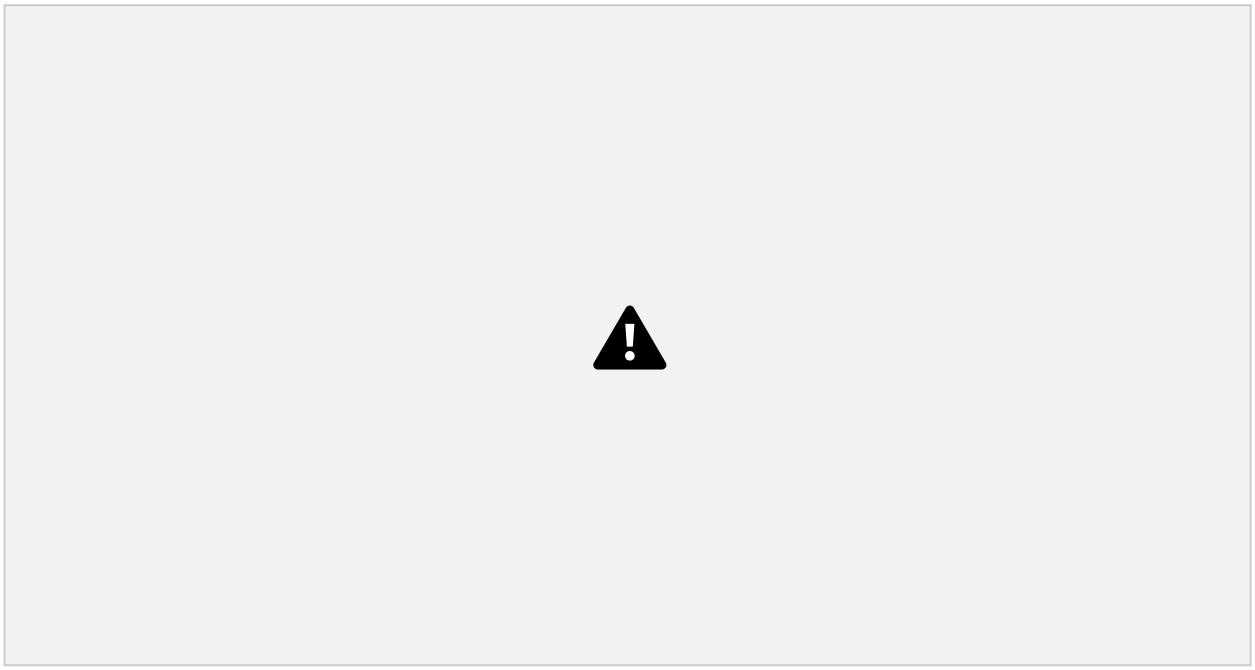


Query 18: Names of all the professors whose department is in King select
a.name
from Professor a
join Department b on a.dept_name = b.dept_name where building = 'King';



-- Query 19 : Number of 2,3,4 credit courses in each department Select
dept_name,credits,count(1) no_of_courses
from COURSE

```
group by dept_name,credits
order by credits desc;
```



Query 20 : find advisor of a student

```
select Professor.name as 'Professor Name', student.name as 'Student Name',
student.ID from Professor,student
where Professor.dept_name = student.dept_name and student.id='226414';
```