

华东师范大学软件工程学院实验报告

实验课程：数据库实践	姓名：黄凯勋	学号：10235101576
实验名称：SQL-Homework-Lab01	实验日期：2025.3.18	指导老师：姚俊杰

based on database activity

Question 0: Give me the number of faculty members who participate in an activity (easy)

1 SELECT count(DISTINCT FacID) AS sumnum FROM faculty_participates_in;

信息摘要结果 1剖析状态

sumnum

▶18

Question 1: How many activities do we have? (easy)

01

activity

运行 停止 解释

1 SELECT count(activid) as sumnum from activity;

信息摘要结果 1剖析状态

sumnum

▶16

Question 2: How many faculty members does each building have? List the result with the name of the building. (medium)

01

activity

运行

停止

解释

```
1 SELECT count(FacID),Building from faculty GROUP BY Building;
```

信息	摘要	结果 1	剖析	状态								
		<table><thead><tr><th>count(FacID)</th><th>Building</th></tr></thead><tbody><tr><td>18</td><td>NEB</td></tr><tr><td>20</td><td>Barton</td></tr><tr><td>20</td><td>Krieger</td></tr></tbody></table>	count(FacID)	Building	18	NEB	20	Barton	20	Krieger		
count(FacID)	Building											
18	NEB											
20	Barton											
20	Krieger											

Question 3: How many activities does Mark Giuliano participate in? (medium)

```
1 SELECT count(actid) from faculty_participates_in
2 WHERE FacID = (SELECT FacID FROM faculty WHERE Fname = "Mark");
```

信息	摘要	结果 1	剖析	状态		
		<table><thead><tr><th>count(actid)</th></tr></thead><tbody><tr><td>3</td></tr></tbody></table>	count(actid)	3		
count(actid)						
3						

Question 4: Show the ids of the faculty who don't participate in any activity. (hard)

activity

运行 停止 附件

```
1 SELECT Fname,Lname FROM faculty f
2 LEFT JOIN faculty_participates_in ft on f.FacID = ft.FacID
3 WHERE ft.FacID is null ;
```

信息 摘要 结果 1 剖析 状态

Fname	Lname
▶ Gerald	Masson
Thordur	Runolfsson
Frederic	Davidson
William	Brody
Gerard	Meyer
Edward	Scheinerma
Carey	Priebe
James	Fill
Alexander	Kaplan
William	Byrne
Shih-Ping	Han
Paul	Smolensky
Pablo	Iglesias
John	Goutsias

Question 5: What are the ids of the faculty members who do not advise any student. (hard)

```
1 SELECT f.FacID FROM faculty f
2 LEFT JOIN student s on f.FacID = s.Advisor
3 WHERE s.Advisor is null ;
```

信息 摘要 结果 1 剖析 状态

FacID
1082
1172
1177
1193
1823
2028
2119
2291
2738
2881
3457
4230
4432
6112

Question 6: Find the name of the activity that has the largest number of student participants. (extra)

```
1 SELECT activity_name FROM activity a
2 LEFT JOIN participates_in sp on a.actid = sp.actid
3 GROUP BY a.activity_name
4 ORDER BY COUNT(sp.stuid) desc
5 LIMIT 1;
```

信息 摘要 结果 1 剖析 状态

activity_name
Football

Question 7: What are the first name and last name of Linda Smith's advisor? (extra)

```
1 SELECT f.Fname,f.Lname FROM faculty F
2 LEFT JOIN student s on f.FacID = s.Advisor
3 where s.Fname = "Linda";
```

信息 摘要 结果 1 剖析 状态

Fname	Lname
Michael	Goodrich

Question 8: Give me the the first and last name of the faculty who advises the most students. (extra)

01 activity 运行 停止 解释

```
1 SELECT f.Fname,f.Lname FROM faculty F
2 LEFT JOIN student s on f.FacID = s.Advisor
3 GROUP BY f.FacID
4 ORDER BY COUNT(s.StuID) DESC
5 LIMIT 1;
```

信息 摘要 结果 1 剖析 状态

Fname	Lname
David	Yarowsky

Question 9: Find the ids of the students who participate in Canoeing and Kayaking. (extra)

```
1 SELECT DISTINCT s.StuID
2 FROM student s
3 JOIN participates_in sp1 ON s.StuID = sp1.stuid AND sp1.actid IN (SELECT
  actid FROM activity WHERE activity_name = 'Canoeing')
4 JOIN participates_in sp2 ON s.StuID = sp2.stuid AND sp2.actid IN (SELECT
  actid FROM activity WHERE activity_name = 'Kayaking')
5 WHERE sp1.stuid = sp2.stuid;
6
```

息	摘要	结果 1	剖析	状态
---	----	------	----	----

StuID
1002
1001

based on database college

Question 10: List the names of all courses ordered by their titles and credits. (easy)

1 SELECT dept_name from course ORDER BY title AND credits;

信息摘要结果 1剖析状态

dept_name
Mech. Eng.
Astronomy
Mech. Eng.
Geology
Physics
Biology
Finance
English
Cybernetics
Elec. Eng.
Civil Eng.
Languages
Geology

Question 11: Count the number of students who have advisors. (easy)

1 SELECT COUNT(DISTINCT s_ID) FROM advisor;

信息摘要结果 1剖析状态

COUNT(DISTINCT s_ID)
1997

Question 12: How many departments offer courses? (easy)

01

college

运行

停止

解释

```
1 SELECT count(*),dept_name FROM course GROUP BY dept_name;
```

信息

摘要

结果 1

剖析

状态

	count(*)	dept_name
▶	12	Accounting
	10	Astronomy
	9	Athletics
	7	Biology
	10	Civil Eng.
	10	Comp. Sci.
	20	Cybernetics
	8	Elec. Eng.
	8	English
	14	Finance
	10	Geology
	9	History
	10	Languages
	6	Marketing

Question 13: List the information of all instructors ordered by their salary in ascending order. (easy)

```
1 SELECT * FROM instructor ORDER BY salary ASC;
```

信息	摘要	结果 1	剖析	状态
----	----	------	----	----

ID	name	dept_name	salary
14365	Lembr	Accounting	32241.56
50885	Konstantinides	Languages	32570.50
42782	Vicentino	Elec. Eng.	34272.67
28097	Kean	English	35023.18
36897	Morris	Marketing	43770.36
57180	Hau	Accounting	43966.29
64871	Gutierrez	Statistics	45310.53
80759	Queiroz	Biology	45538.32
72553	Yin	English	46397.59
79081	Ullman	Accounting	47307.10
59795	Desyl	Languages	48803.38
41930	Tung	Athletics	50482.03
97302	Bertolino	Mech. Eng.	51647.57
95030	Arinb	Statistics	54805.11

Question 14: How many different courses offered by Physics department? (easy)

```
1 SELECT count(*),dept_name FROM course WHERE dept_name = "Physics";
```

信息	摘要	结果 1	剖析	状态
----	----	------	----	----

count(*)	dept_name
10	Physics

Question 15: What are the titles for courses with two prerequisites? (medium)

```
1 SELECT c.title FROM course c join prereq p on c.course_id = p.course_id
2 GROUP BY c.course_id HAVING COUNT(p.prereq_id)=2;
```

信息	摘要	结果 1	剖析	状态
title				
▶ Graph Theory				
World History				
Embedded Systems				
Differential Geometry				
Game Programming				
International Practicum				
Rock and Roll				
International Practicum				
Immunology				

Question 16: What is the title, credit value, and department name for courses with more than one prerequisite? (medium)

```
1 SELECT c.title,c.credits,c.dept_name FROM course c join prereq p on c.
   course_id = p.course_id
2 GROUP BY c.course_id HAVING COUNT(p.prereq_id)>1;
```

信息	摘要	结果 1	剖析	状态
title credits dept_name				
▶ Graph Theory 3 Psychology				
World History 4 Athletics				
Fiction Writing 3 Mech. Eng.				
Embedded Systems 4 Finance				
Differential Geometry 3 Statistics				
Game Programming 4 Cybernetics				
International Practicum 4 Comp. Sci.				
Rock and Roll 3 Marketing				
International Practicum 3 History				
Immunology 3 Biology				

Question 17: Give the title of the course offered in Chandler during the Fall of 2010. (medium)

```
1 SELECT c.title FROM course c
2 LEFT JOIN section s on c.course_id = s.course_id
3 WHERE s.`year` = 2010 and s.building = "Chandler" and s.semester = 'Fall';
```

信息 摘要 结果 1 剖析 状态

title

▶ International Trade

Question 18: List the names and buildings of all departments sorted by the budget from large to small. (medium)

```
1 SELECT d.building FROM department d
2 ORDER BY d.budget ASC;
```

信息 摘要 结果 1 剖析 状态

building

▶ Lamberton

Lambeau

Chandler

Main

Taylor

Palmer

Saucon

Rauch

Whitman

Linderman

Question 19: Find the names and average salaries of all departments whose average salary is greater than 42000. (medium)

```

1 SELECT i.dept_name,AVG(i.salary) as asy FROM instructor i
2 GROUP BY i.dept_name HAVING asy > 42000;|
3

```

信息	摘要	结果 1	剖析	状态																						
		<table> <thead> <tr> <th>dept_name</th> <th>asy</th> </tr> </thead> <tbody> <tr><td>▶ Accounting</td><td>48716.592500</td></tr> <tr><td>Astronomy</td><td>79070.080000</td></tr> <tr><td>Athletics</td><td>77098.198000</td></tr> <tr><td>Biology</td><td>61287.250000</td></tr> <tr><td>Comp. Sci.</td><td>98133.470000</td></tr> <tr><td>Cybernetics</td><td>96346.567500</td></tr> <tr><td>Elec. Eng.</td><td>74162.740000</td></tr> <tr><td>English</td><td>72089.050000</td></tr> <tr><td>Finance</td><td>105311.380000</td></tr> <tr><td>Geology</td><td>99382.590000</td></tr> </tbody> </table>	dept_name	asy	▶ Accounting	48716.592500	Astronomy	79070.080000	Athletics	77098.198000	Biology	61287.250000	Comp. Sci.	98133.470000	Cybernetics	96346.567500	Elec. Eng.	74162.740000	English	72089.050000	Finance	105311.380000	Geology	99382.590000		
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English	72089.050000																									
Finance	105311.380000																									
Geology	99382.590000																									

Question 20: Find the number of rooms with more than 50 capacity for each building. (medium)

```

1 SELECT building,COUNT(room_number) FROM classroom
2 WHERE capacity > 50
3 GROUP BY building;|

```

信息	摘要	结果 1	剖析	状态																						
		<table> <thead> <tr> <th>building</th> <th>COUNT(room_number)</th> </tr> </thead> <tbody> <tr><td>Garfield</td><td>1</td></tr> <tr><td>Gates</td><td>1</td></tr> <tr><td>Lambeau</td><td>1</td></tr> <tr><td>Nassau</td><td>1</td></tr> <tr><td>Painter</td><td>1</td></tr> <tr><td>Rathbone</td><td>1</td></tr> <tr><td>Saucon</td><td>1</td></tr> <tr><td>▶ Stabler</td><td>1</td></tr> <tr><td>Taylor</td><td>2</td></tr> <tr><td>Wheaton</td><td>1</td></tr> </tbody> </table>	building	COUNT(room_number)	Garfield	1	Gates	1	Lambeau	1	Nassau	1	Painter	1	Rathbone	1	Saucon	1	▶ Stabler	1	Taylor	2	Wheaton	1		
building	COUNT(room_number)																									
Garfield	1																									
Gates	1																									
Lambeau	1																									
Nassau	1																									
Painter	1																									
Rathbone	1																									
Saucon	1																									
▶ Stabler	1																									
Taylor	2																									
Wheaton	1																									

Question 21: Find the total number of students in each department. (medium)

```
1 SELECT dept_name,COUNT(ID) FROM student GROUP BY dept_name;
```

信息	摘要	结果 1	剖析	状态
		dept_name	COUNT(ID)	
▶		Accounting	99	
		Astronomy	106	
		Athletics	92	
		Biology	100	
		Civil Eng.	120	
		Comp. Sci.	108	
		Cybernetics	86	
		Elec. Eng.	98	
		English	95	
		Finance	96	

Question 22: How many rooms whose capacity is less than 50 does the Lamberton building have? (medium)

01	college	运行	停止	解释
1	SELECT count(room_number) FROM classroom c WHERE c.capacity<50 and c. building like 'Lamberton';			
信息	摘要	结果 1	剖析	状态
		count(room_number)		
▶		2		

Question 23: What are the names of students who have more than one advisor? (medium)

```
1 SELECT s.`name` FROM student s join advisor a on s.ID = a.s_ID
2 GROUP BY s.ID HAVING count(a.i_ID) > 1;
```

信息	摘要	结果 1	剖析	状态
		name		
		▶ (N/A)		

Question 24: Find the department name of the instructor whose name contains 'Soisalon'. (medium)

01 college 运行 停止 解释

```
1 SELECT dept_name FROM instructor WHERE name like '%Soisalon%';
```

信息	摘要	结果 1	剖析	状态
		dept_name		
		▶ Psychology		

Question 25: Give the name of the department with the lowest budget. (medium)

```
1 SELECT dept_name FROM department
2 ORDER BY budget
3 LIMIT 1;
```

信息	摘要	结果 1	剖析	状态
		dept_name		
		▶ Comp. Sci.		

Question 26: What is the title of the course that is a prerequisite for Mobile Computing? (hard)

```
1 SELECT c.title AS prerequisite_title
2 FROM course c
3 JOIN prereq p ON c.course_id = p.prereq_id
4 WHERE p.course_id in (
5     SELECT course_id
6     FROM course
7     WHERE title = 'Mobile Computing'
8 );
9
```

信息	摘要	结果 1	剖析	状态
----	----	------	----	----

prerequisite_title

► Differential Equations

Sanitary Engineering

Question 27: What are the names of the 3 departments with the most courses? (hard)

```
1 SELECT dept_name FROM course
2 GROUP BY dept_name
3 order BY count(course_id) DESC
4 limit 3;
```

信息	摘要	结果 1	剖析	状态
----	----	------	----	----

dept_name

► Cybernetics

Finance

Psychology

Question 28: Find the id of the courses that do not have any prerequisite? (hard)

```
1 SELECT c.course_id FROM course c
2 LEFT JOIN prereq p on c.course_id = p.course_id
3 WHERE p.prereq_id is null;
```

信息 摘要 结果 1 剖析 状态

course_id
401
421
442
761
391
415
702
190
456
468

Question 29: What are the names of students who took a course in the Fall of 2003? (hard)

```
1 SELECT s.name FROM takes t
2 JOIN student s on t.ID = s.ID
3 WHERE t.semester = 'Fall' and t.`year` = 2003;
```

信息 摘要 结果 1 剖析 状态

name
Allard
More
Marlet
Roses
Kerridge
Heckman
Marcus
Power
Sin
Okano

Question 30: Find the semester and year which has the least number of student taking any class. (hard)

```
1 SELECT `year`,semester FROM takes GROUP BY `year`,semester
2 ORDER BY count(ID)
3 LIMIT 1;
```

信息 摘要 结果 1 剖析 状态

year	semester
2008	Fall

Question 31: Find the id of instructors who didn't teach any courses? (hard)

```
1 SELECT i.`name` FROM instructor i
2 LEFT JOIN teaches t on i.ID = t.ID
3 WHERE t.ID is null ;|
```

信息 摘要 结果 1 剖析 状态

name
Yazdi
Moreira
Soisalon-Soininen
Arias
Murata
Konstantinides
Bancilhon
Hau
Dusserre

Question 32: Find the name of students who took some course offered by Statistics department. (hard)

```
1 SELECT s.`name` FROM takes t
2 inner JOIN student s on s.ID = t.ID
3 INNER JOIN course c on t.course_id = c.course_id
4 WHERE c.dept_name like 'Statistics';
```

信息 摘要 结果 1 剖析 状态

name
▶ Zelty
Colin
Rzecz
Ugarte
Kieras
Reed
More
Marlet
Schultz
Na

Question 33: What are the titles of courses without prerequisites? (hard)

```
1 SELECT c.title FROM course c
2 LEFT JOIN prereq p on c.course_id = p.course_id
3 WHERE p.prereq_id is null;
```

信息 摘要 结果 1 剖析 状态

title
▶ Diffusion and Phase Trans
Image Processing
Differential Equations
Thermodynamics
Differential Geometry
Manufacturing
Number Theory
Romantic Literature
Drama
Numerical Methods

Question 34: Find names of instructors with salary greater than that of some (at least one) instructor in the Biology department. (hard)

```
1 SELECT DISTINCT i1.name FROM instructor i1
2 WHERE i1.salary > (SELECT min(i2.salary) FROM instructor i2
3 WHERE i2.dept_name like 'Bio%')
4 limit 1;
```

信息 摘要 结果 1 剖析 状态

name

► Rawa

Question 35: How many instructors are in the department with the highest budget, and what is their average salary? (hard)

```
2 GROUP BY dept_name
3 HAVING dept_name =
4 (SELECT d1.dept_name FROM department d1
5 WHERE budget =(SELECT max(budget) FROM department));|
```

信息 摘要 结果 1 剖析 状态

dept_name	count(id)	avg(DISTINCT salary)
► Physics	2	114576.900000

Question 36: What are the names of students who haven't taken any Biology courses? (hard)

```
1 SELECT DISTINCT s.ID FROM student s
2 WHERE s.id not in
3 (
4   SELECT Id FROM takes t
5   JOIN course c on t.course_id = c.course_id
6   WHERE c.dept_name like 'Bio%');
```

信息	摘要	结果 1	剖析	状态
ID				
▶ 1000				
1018				
10204				
10267				
10454				
10527				
10556				
107				

Question 37: Give the title of the prerequisite to the course International Finance. (hard)

```
1 SELECT c2.title FROM course c1
2 JOIN prereq p on c1.course_id = p.course_id
3 JOIN course c2 on p.prereq_id = c2.course_id
4 WHERE c1.title = 'International Finance';
```

信息	摘要	结果 1	剖析	状态
title				
▶ Elastic Structures				

Question 38: What is the name of the department with the most credits? (hard)

```
1 SELECT dept_name,sum(credits) s FROM course
2 GROUP BY dept_name
3 ORDER BY s DESC
4 LIMIT 1;
```

信息	摘要	结果 1	剖析	状态
	dept_name	s		
▶	Cybernetics	67		

Question 39: Give the name and building of the departments with greater than average budget. (extra)

```
1 SELECT dept_name ,building FROM department WHERE budget >
2 (
3   SELECT avg(budget) FROM department
4 );
```

信息	摘要	结果 1	剖析	状态
	dept_name	building		
▶	Astronomy	Taylor		
	Athletics	Bronfman		
	Biology	Candlestick		
	Cybernetics	Mercer		
	English	Palmer		
	Finance	Candlestick		
	History	Taylor		
	Lanquages	Linderman		