

Record for lab8

SID: 12310401

Name: 王子恒

1.1

```

    ▶ Run | New Tab
22 BEGIN;
    ▶ Run | New Tab
23 DELETE from emp where age <17;
    ▶ Run | New Tab
24 UPDATE emp SET salary=salary+1000 where id=5;
    ▶ Run | New Tab | JSON
✓ 25 select * from emp; 3ms
    ▶ Run | New Tab
26 COMMIT ;
    ▶ Run | New Tab | JSON
27 select * from emp;
28
29
    ▶ Run | New Tab

```

emp

搜索结果集 耗时: 55ms Total 10

	* id integer	name varchar(30)	age integer	dept_code integer	office_loc varchar(100)	salary integer
	Filter	Filter	Filter	Filter	Filter	Filter
>	1	张三	22	1	宝安	6000
>	2	李四	31	1	宝安	7000
>	3	王五	25	2	福田	6000
>	4	赵六	24	1	宝安	5000
>	6	康八	45	2	福田	15000
>	7	聂九	34	3	光明	7500
>	8	刘二麻子	56	4	光明	17000
>	9	孙小毛	17	1	宝安	3000
>	10	陈老大	37	1	宝安	7000

```

    ▶ Run | New Tab
2 BEGIN;
    ▶ Run | New Tab
3 DELETE from emp where age <17;
    ▶ Run | New Tab
4 UPDATE emp SET salary=salary+1000 where id=5;
    ▶ Run | New Tab | JSON
5 select * from emp;
    ▶ Run | New Tab
5 COMMIT ;
    ▶ Run | New Tab | JSON
7 select * from emp; 4ms
8

```

emp

搜索结果集 耗时: 7ms Total 10

	* id integer	name varchar(30)	age integer	dept_code integer	office_loc varchar(100)	salary integer
	Filter	Filter	Filter	Filter	Filter	Filter
>	1	张三	22	1	宝安	6000
>	2	李四	31	1	宝安	7000
>	3	王五	25	2	福田	6000

>	4	赵六	24	1	宝安	5000
>	6	康八	45	2	福田	15000
>	7	聂九	34	3	光明	7500
>	8	刘二麻子	56	4	光明	17000
>	9	孙小毛	17	1	宝安	3000
>	10	陈老大	37	1	宝安	7000
>	5	庄七	22	3	光明	9000

1.2

```

29      ▷ Run | New Tab
30 BEGIN;
31      ▷ Run | New Tab
32 DELETE from emp where name = '张三';
33      ▷ Run | New Tab
34 UPDATE emp SET salary=salary-1000 where id=6;
35      ▷ Run | New Tab | JSON
36 select * from emp; 3ms
37      ▷ Run | New Tab
38 ROLLBACK;
39      ▷ Run | New Tab | JSON
40 select * from emp;
41

```

emp

	* id integer	name varchar(30)	age integer	dept_code integer	office_loc varchar(100)	salary integer
>	2	李四	31	1	宝安	7000
>	3	王五	25	2	福田	6000
>	4	赵六	24	1	宝安	5000
>	7	聂九	34	3	光明	7500
>	8	刘二麻子	56	4	光明	17000
>	9	孙小毛	17	1	宝安	3000
>	10	陈老大	37	1	宝安	7000
>	5	庄七	22	3	光明	9000
>	6	康八	45	2	福田	14000

```

30      ▷ Run | New Tab
31 BEGIN;
32      ▷ Run | New Tab
33 DELETE from emp where name = '张三';
34      ▷ Run | New Tab
35 UPDATE emp SET salary=salary-1000 where id=6;
36      ▷ Run | New Tab | JSON
37 select * from emp; 2ms
38

```

emp

	* id integer	name varchar(30)	age integer	dept_code integer	office_loc varchar(100)	salary integer
>	1	张三	22	1	宝安	6000
>	2	李四	31	1	宝安	7000

█	>	3	王五	25	2	福田	6000
█	>	4	赵六	24	1	宝安	5000
█	>	6	康八	45	2	福田	15000
█	>	7	聂九	34	3	光明	7500
█	>	8	刘二麻子	56	4	光明	17000
█	>	9	孙小毛	17	1	宝安	3000
█	>	10	陈老大	37	1	宝安	7000
█	>	5	庄七	22	3	光明	9000

1.3

```

37   ▷ Run | New Tab
38 BEGIN TRANSACTION ;
▷ Run | New Tab
39 UPDATE emp SET salary=salary+1000 where id=5;
▷ Run | New Tab
40 SAVEPOINT sp01;
▷ Run | New Tab
41 UPDATE emp SET salary=salary-1000 where id=6;
▷ Run | New Tab | JSON
42 select * from emp; 6ms
▷ Run | New Tab
43 ROLLBACK TO sp01;
▷ Run | New Tab | JSON
...

```

emp

搜索结果集 耗时: 9ms Total 10

	* id integer	name varchar(30)	age integer	dept_code integer	office_loc varchar(100)	salary integer
>	1	张三	22	1	宝安	6000
>	2	李四	31	1	宝安	7000
>	3	王五	25	2	福田	6000
>	4	赵六	24	1	宝安	5000
>	7	聂九	34	3	光明	7500
>	8	刘二麻子	56	4	光明	17000
>	9	孙小毛	17	1	宝安	3000
>	10	陈老大	37	1	宝安	7000
>	5	庄七	22	3	光明	10000
>	6	康八	45	2	福田	14000

```

38   ▷ Run | New Tab
BEGIN TRANSACTION ;
▷ Run | New Tab
39 UPDATE emp SET salary=salary+1000 where id=5;
▷ Run | New Tab
40 SAVEPOINT sp01;
▷ Run | New Tab
41 UPDATE emp SET salary=salary-1000 where id=6;
▷ Run | New Tab | JSON
42 select * from emp;
▷ Run | New Tab
43 ROLLBACK TO sp01;
▷ Run | New Tab | JSON
44 select * from emp; 4ms
▷ Run | New Tab
45 UPDATE emp SET salary=salary-1000 where id=7;

```

emp

搜索结果集 耗时: 6ms Total 10

	* id integer	name varchar(30)	age integer	dept_code integer	office_loc varchar(100)	salary integer
>	1	张三	22	1	宝安	6000

	Filter						
>	1	张三	22	1	宝安	6000	
>	2	李四	31	1	宝安	7000	
>	3	王五	25	2	福田	6000	
>	4	赵六	24	1	宝安	5000	
>	6	康八	45	2	福田	15000	
>	7	聂九	34	3	光明	7500	
>	8	刘二麻子	56	4	光明	17000	
>	9	孙小毛	17	1	宝安	3000	
>	10	陈老大	37	1	宝安	7000	
>	5	庄七	22	3	光明	10000	

```
44    ▶ Run | New Tab | JSON
44    select * from emp;
44    ▶ Run | New Tab
45    UPDATE emp SET salary=salary-1000 where id=7;
45    ▶ Run | New Tab | JSON
✓ 46    select * from emp; 3ms
46    ▶ Run | New Tab
47    COMMIT ;
47    ▶ Run | New Tab | JSON
48    select * from emp;
49
50
```

emp

	* id integer	name varchar(30)	age integer	dept_code integer	office_loc varchar(100)	salary integer
	Filter	Filter	Filter	Filter	Filter	Filter
>	1	张三	22	1	宝安	6000
>	2	李四	31	1	宝安	7000
>	3	王五	25	2	福田	6000
>	4	赵六	24	1	宝安	5000
>	6	康八	45	2	福田	15000
>	8	刘二麻子	56	4	光明	17000
>	9	孙小毛	17	1	宝安	3000
>	10	陈老大	37	1	宝安	7000
>	5	庄七	22	3	光明	10000
>	7	聂九	34	3	光明	6500

```
    ▷ Run | New Tab | JSON
42  select * from emp;
    ▷ Run | New Tab
43  ROLLBACK TO sp01;
    ▷ Run | New Tab | JSON
44  select * from emp;
    ▷ Run | New Tab
45  UPDATE emp SET salary=salary-1000 where id=7;
    ▷ Run | New Tab | JSON
46  select * from emp;
    ▷ Run | New Tab
47  COMMIT ;
    ▷ Run | New Tab | JSON
48  select * from emp; 3ms
49
50
```

emp

	* id integer	name varchar(30)	age integer	dept_code integer	office_loc varchar(100)	salary integer
	Filter	Filter	Filter	Filter	Filter	Filter
>	1	张三	22	1	宝安	6000
>	2	李四	31	1	宝安	7000
>	3	王五	25	2	福田	6000
>	4	赵六	24	1	宝安	5000
>	6	康八	45	2	福田	15000
>	8	刘二麻子	56	4	光明	17000
>	9	孙小毛	17	1	宝安	3000
>	10	陈老大	37	1	宝安	7000
>	5	庄七	22	3	光明	10000
>	7	聂九	34	3	光明	6500

2


```

51 -- check the original data in database
52 select * from emp; 19ms
53 BEGIN TRANSACTION ;
54 UPDATE emp SET salary=salary+1000 where id=5;
55 SAVEPOINT sp01;
56 UPDATE emp SET salary=salary-1000 where id=6;
57 select * from emp;
58 ROLLBACK TO sp01;

```

emp

搜索结果集 耗时: 21ms Total 10

	* id integer	name varchar(30)	age integer	dept_code integer	office_loc varchar(100)	salary integer
	Filter	Filter	Filter	Filter	Filter	Filter
	> 1	张三	22	1	宝安	6000
	> 2	李四	31	1	宝安	7000
	> 3	王五	25	2	福田	6000
	> 4	赵六	24	1	宝安	5000
	> 6	康八	45	2	福田	15000
	> 8	刘二麻子	56	4	光明	17000
	> 9	孙小毛	17	1	宝安	3000
	> 10	陈老大	37	1	宝安	7000
	> 5	庄七	22	3	光明	10000
	> 7	聂九	34	3	光明	6500

```

52 select * from emp;
53 BEGIN TRANSACTION ;
54 UPDATE emp SET salary=salary+1000 where id=5;
55 SAVEPOINT sp01;
56 UPDATE emp SET salary=salary-1000 where id=6;
57 select * from emp; 1ms
58 ROLLBACK TO sp01;

```

emp

搜索结果集 耗时: 3ms Total 10

	* id integer	name varchar(30)	age integer	dept_code integer	office_loc varchar(100)	salary integer
	Filter	Filter	Filter	Filter	Filter	Filter
	> 1	张三	22	1	宝安	6000

	>	2	李四	31	1	宝安	7000
	>	3	王五	25	2	福田	6000
	>	4	赵六	24	1	宝安	5000
	>	8	刘二麻子	56	4	光明	17000
	>	9	孙小毛	17	1	宝安	3000
	>	10	陈老大	37	1	宝安	7000
	>	7	聂九	34	3	光明	6500
	>	5	庄七	22	3	光明	11000
	>	6	康八	45	2	福田	14000

```

56 UPDATE emp SET salary=salary-1000 where id=6;
▷ Run | New Tab | JSON
57 select * from emp;
▷ Run | New Tab
58 ROLLBACK TO sp01;
▷ Run | New Tab | JSON
59 select * from emp;| 6ms
60
61

```

emp ×

搜索结果集 1
导出 耗时: 10ms 1 / Total 10

	*	id	name	age	dept_code	office_loc	salary
	Filter	Filter	Filter	Filter	Filter	Filter	Filter
	>	1	张三	22	1	宝安	6000
	>	2	李四	31	1	宝安	7000
	>	3	王五	25	2	福田	6000
	>	4	赵六	24	1	宝安	5000
	>	6	康八	45	2	福田	15000
	>	8	刘二麻子	56	4	光明	17000
	>	9	孙小毛	17	1	宝安	3000
	>	10	陈老大	37	1	宝安	7000
	>	7	聂九	34	3	光明	6500
	>	5	庄七	22	3	光明	11000

```
62
63     ▷ Run | New Tab | JSON
63     select * from emp;
64     ▷ Run | New Tab
64     BEGIN TRANSACTION ;
65     ▷ Run | New Tab
65     TRUNCATE emp;
66     ▷ Run | New Tab
66     COMMIT;
67     ▷ Run | New Tab | JSON
67     select * from emp; 10ms--empty table
68     ▷ Run | New Tab
68     ROLLBACK;
69     ▷ Run | New Tab | JSON
69     select * from emp;--still empty
70



| emp  |         |             |         |           |              |         |
|------|---------|-------------|---------|-----------|--------------|---------|
|      | * id    | name        | age     | dept_code | office_loc   | salary  |
|      | integer | varchar(30) | integer | integer   | varchar(100) | integer |
| TRUE |         |             |         |           |              |         |



68     ROLLBACK;
69     ▷ Run | New Tab | JSON
69     select * from emp; 4ms--still empty
70
71
72



| emp               |         |             |         |           |              |         |
|-------------------|---------|-------------|---------|-----------|--------------|---------|
|                   | * id    | name        | age     | dept_code | office_loc   | salary  |
|                   | integer | varchar(30) | integer | integer   | varchar(100) | integer |
| Sincerely<br>TRUE |         |             |         |           |              |         |


```

4.

The image shows five separate terminal windows, each representing a different session or snapshot of a PostgreSQL database. Each window has a title bar indicating the session ID (e.g., lab1) and the command used to connect (psql -d lab1). The sessions are as follows:

- Session 1 (Top Left):** A single INSERT statement is run, inserting a row into the emp table with id=1, name='张三', age=22, dept_code=1, office_loc='宝安', salary=6000.
- Session 2 (Top Right):** A BEGIN TRANSACTION; statement is run, followed by a SELECT * from emp; query which returns the inserted row.
- Session 3 (Second Row, Left):** A full transaction cycle is shown: BEGIN, INSERT, COMMIT, and a final SELECT * from emp; query showing the data.
- Session 4 (Second Row, Right):** A BEGIN TRANSACTION; statement is run, followed by a SELECT * from emp; query which returns no rows (0行记录).
- Session 5 (Bottom):** A multi-step transaction is shown: 1. Inserting a row for '张三'. 2. A SELECT * from emp; query showing the data. 3. Inserting a row for '李四' with id=2, name='李四', age=31, dept_code=1, office_loc='宝安', salary=7000. 4. A SELECT * from emp; query showing both rows ('张三' and '李四').

5.

```

earendelh - psql -d lab1 - psql - psql -d lab1 - 87x46
Lab1=# show default_transaction_isolation;
default_transaction_isolation
-----
read committed
(1 行记录)

Lab1=# set default_transaction_isolation='repeatable read';
SET
Lab1=# set default_transaction_isolation='repeatable read';
SET
Lab1=# BEGIN TRANSACTION ;
BEGIN
Lab1=# select * from emp;
 id | name | age | dept_code | office_loc | salary
----+-----+-----+-----+-----+-----+
 1 | 张三 | 22 | 1 | 宝安 | 6000
 2 | 李四 | 31 | 1 | 宝安 | 7000
(2 行记录)

Lab1=# insert into emp values (3,'王五',25,2,'福田',6000);
INSERT 0 1
Lab1=# select * from emp;
 id | name | age | dept_code | office_loc | salary
----+-----+-----+-----+-----+-----+
 1 | 张三 | 22 | 1 | 宝安 | 6000
 2 | 李四 | 31 | 1 | 宝安 | 7000
 3 | 王五 | 25 | 2 | 福田 | 6000
(3 行记录)

Lab1=# COMMIT;
COMMIT
Lab1=# select * from emp;
 id | name | age | dept_code | office_loc | salary
----+-----+-----+-----+-----+-----+
 1 | 张三 | 22 | 1 | 宝安 | 6000
 2 | 李四 | 31 | 1 | 宝安 | 7000
 3 | 王五 | 25 | 2 | 福田 | 6000
(3 行记录)

Lab1=# select * from emp;
 id | name | age | dept_code | office_loc | salary
----+-----+-----+-----+-----+-----+
 1 | 张三 | 22 | 1 | 宝安 | 6000
 2 | 李四 | 31 | 1 | 宝安 | 7000
 3 | 王五 | 25 | 2 | 福田 | 6000
(3 行记录)

```



```

earendelh - psql -d lab1 - psql - psql -d lab1 - 87x46
Last login: Tue Nov  5 14:43:44 on ttys004
* ~/psql -d lab1
psql (15.8 (Homebrew))
输入 "help" 来获取帮助信息.

Lab1=# set default_transaction_isolation='repeatable read';
SET
Lab1=# BEGIN TRANSACTION ;
BEGIN
Lab1=# select * from emp;
 id | name | age | dept_code | office_loc | salary
----+-----+-----+-----+-----+-----+
 1 | 张三 | 22 | 1 | 宝安 | 6000
 2 | 李四 | 31 | 1 | 宝安 | 7000
(2 行记录)

Lab1=# select * from emp;
 id | name | age | dept_code | office_loc | salary
----+-----+-----+-----+-----+-----+
 1 | 张三 | 22 | 1 | 宝安 | 6000
 2 | 李四 | 31 | 1 | 宝安 | 7000
(2 行记录)

Lab1=# select * from emp;
 id | name | age | dept_code | office_loc | salary
----+-----+-----+-----+-----+-----+
 1 | 张三 | 22 | 1 | 宝安 | 6000
 2 | 李四 | 31 | 1 | 宝安 | 7000
(2 行记录)

Lab1=# COMMIT;
COMMIT
Lab1=# select * from emp;
 id | name | age | dept_code | office_loc | salary
----+-----+-----+-----+-----+-----+
 1 | 张三 | 22 | 1 | 宝安 | 6000
 2 | 李四 | 31 | 1 | 宝安 | 7000
 3 | 王五 | 25 | 2 | 福田 | 6000
(3 行记录)

Lab1=#

```

6.

```

earendelh - psql -d lab1 - psql - psql -d lab1 - 87x46
Last login: Tue Nov  5 14:48:03 on ttys003
* ~/psql -d lab1
psql (15.8 (Homebrew))
输入 "help" 来获取帮助信息.

Lab1=# show default_transaction_isolation;
default_transaction_isolation
-----
read committed
(1 行记录)

Lab1=# set default_transaction_isolation='serializable';
SET
Lab1=# BEGIN TRANSACTION ;
BEGIN
Lab1=# select * from emp;
 id | name | age | dept_code | office_loc | salary
----+-----+-----+-----+-----+-----+
 1 | 张三 | 22 | 1 | 宝安 | 6000
 2 | 李四 | 31 | 1 | 宝安 | 7000
 3 | 王五 | 25 | 2 | 福田 | 6000
(3 行记录)

Lab1=# insert into emp values (4,'赵六',24,1,'宝安',5000);
INSERT 0 1
Lab1=# select * from emp;
 id | name | age | dept_code | office_loc | salary
----+-----+-----+-----+-----+-----+
 1 | 张三 | 22 | 1 | 宝安 | 6000
 2 | 李四 | 31 | 1 | 宝安 | 7000
 3 | 王五 | 25 | 2 | 福田 | 6000
 4 | 赵六 | 24 | 1 | 宝安 | 5000
(4 行记录)

Lab1=# COMMIT;
COMMIT
Lab1=# select * from emp;
 id | name | age | dept_code | office_loc | salary
----+-----+-----+-----+-----+-----+
 1 | 张三 | 22 | 1 | 宝安 | 6000
 2 | 李四 | 31 | 1 | 宝安 | 7000
 3 | 王五 | 25 | 2 | 福田 | 6000
 4 | 赵六 | 24 | 1 | 宝安 | 5000
(4 行记录)

```



```

earendelh - psql -d lab1 - psql - psql -d lab1 - 87x46
Last login: Tue Nov  5 14:43:51 on ttys001
* ~/psql -d lab1
psql (15.8 (Homebrew))
输入 "help" 来获取帮助信息.

Lab1=# set default_transaction_isolation='serializable';
SET
Lab1=# BEGIN TRANSACTION ;
BEGIN
Lab1=# select * from emp;
 id | name | age | dept_code | office_loc | salary
----+-----+-----+-----+-----+-----+
 1 | 张三 | 22 | 1 | 宝安 | 6000
 2 | 李四 | 31 | 1 | 宝安 | 7000
 3 | 王五 | 25 | 2 | 福田 | 6000
(3 行记录)

Lab1=# select * from emp;
 id | name | age | dept_code | office_loc | salary
----+-----+-----+-----+-----+-----+
 1 | 张三 | 22 | 1 | 宝安 | 6000
 2 | 李四 | 31 | 1 | 宝安 | 7000
 3 | 王五 | 25 | 2 | 福田 | 6000
(3 行记录)

Lab1=# insert into emp values (5,'庄七',22,3,'光明',8000);
ERROR: could not serialize access due to read/write dependencies among transactions
描述: Reason code: Canceled on identification as a pivot, during write.
提示: The transaction might succeed if retried.
Lab1=#! COMMIT;
ROLLBACK
Lab1=# select * from emp;
 id | name | age | dept_code | office_loc | salary
----+-----+-----+-----+-----+-----+
 1 | 张三 | 22 | 1 | 宝安 | 6000
 2 | 李四 | 31 | 1 | 宝安 | 7000
 3 | 王五 | 25 | 2 | 福田 | 6000
 4 | 赵六 | 24 | 1 | 宝安 | 5000
(4 行记录)

Lab1=#

```