

《数据库系统原理》实验报告（3）					
题目：数据库安全性					
学号	2352018	姓名	刘彦	日期	2025.4.26
<p>实验环境：</p> <p>Docker-desktop 4.40.0</p> <p>oceanbase-ce 4.3.5.1</p>					
<p>实验步骤及结果截图：</p> <p>(1)建立数据库 Major，在 Major 数据库中创建表 Players</p> <p>obclient -uroot@sys -h127.1 -P2881;</p> <p>create database Major;</p> <p>use Major;</p> <p>CREATE TABLE Players (</p> <p> Sno VARCHAR(10),</p> <p> Sname VARCHAR(20) UNIQUE,</p> <p> Ssex VARCHAR(1),</p> <p> Sage SMALLINT,</p> <p> Steam VARCHAR(20),</p> <p> PRIMARY KEY (Sno)</p> <p>);</p> <div><pre>sh-4.4# obclient -uroot@sys -h127.1 -P2881; Welcome to the OceanBase. Commands end with ; or \g. Your OceanBase connection id is 3221719521 Server version: OceanBase_CE 4.3.5.1 (r101000042025031818-b6d5706eb3d2c5f501c7fa646ddb32f3dc87069) (Built Mar 18 2025 18:13:36) Copyright (c) 2000, 2018, OceanBase and/or its affiliates. All rights reserved. Type 'help;' or '\h' for help. Type '\c' to clear the current input statement. obclient(root@sys)[(none)]> create database Major; Query OK, 1 row affected (0.031 sec) obclient(root@sys)[(none)]> use Major; Database changed obclient(root@sys)[Major]></pre></div> <div><pre>obclient(root@sys)[Major]> CREATE TABLE Players (-> Sno VARCHAR(10), -> Sname VARCHAR(20) UNIQUE, -> Ssex VARCHAR(1), -> Sage SMALLINT, -> Steam VARCHAR(20), -> PRIMARY KEY (Sno) ->); Query OK, 0 rows affected (0.227 sec) obclient(root@sys)[Major]> desc Players; +-----+-----+-----+-----+-----+-----+ Field Type Null Key Default Extra +-----+-----+-----+-----+-----+-----+ Sno varchar(10) NO PRI NULL Sname varchar(20) YES UNI NULL Ssex varchar(1) YES NULL Sage smallint(6) YES NULL Steam varchar(20) YES NULL +-----+-----+-----+-----+-----+-----+ 5 rows in set (0.016 sec)</pre></div>					
<p>(2)向 Players 表中插入两个元组：('200215121', 'LuLu', 'M', 27, 'G2') ('200215122', 'TiMo', 'M', 18, 'G2')</p> <p>INSERT INTO Players (Sno, Sname, Ssex, Sage, Steam) VALUES</p> <p>('200215121', 'LuLu', 'M', 27, 'G2'),</p>					

```
('200215122', 'TiMo', 'M', 18, 'G2');
```

```
obclient(root@sys)[Major]> INSERT INTO Players (Sno, Sname, Ssex, Sage, Steam) VALUES
-> ('200215121', 'LuLu', 'M', 27, 'G2'),
-> ('200215122', 'TiMo', 'M', 18, 'G2');
Query OK, 2 rows affected (0.003 sec)
Records: 2 Duplicates: 0 Warnings: 0
```

(3)建立用户 Jay，授予用户 Jay create table 的权限，并赋予其再授权的能力

```
CREATE USER 'Jay'@'127.0.0.1' IDENTIFIED BY '2352018';
```

```
GRANT CREATE ON *.* TO 'Jay'@'127.0.0.1';
```

```
GRANT GRANT OPTION ON *.* TO 'Jay'@'127.0.0.1';
```

```
FLUSH PRIVILEGES;
```

```
obclient(root@sys)[Major]> CREATE USER 'Jay'@'127.0.0.1' IDENTIFIED BY '2352018';
ERROR 1396 (HY000): Operation CREATE USER failed for 'Jay'@'127.0.0.1'
[172.17.0.2:2882] [2025-04-23 04:54:25.597553] [YB42AC110002-000633692B74EA5F-0-0]
obclient(root@sys)[Major]> GRANT CREATE ON *.* TO 'Jay'@'127.0.0.1';
Query OK, 0 rows affected (0.022 sec)

obclient(root@sys)[Major]> GRANT GRANT OPTION ON *.* TO 'Jay'@'127.0.0.1';
Query OK, 0 rows affected (0.026 sec)

obclient(root@sys)[Major]> FLUSH PRIVILEGES;
Query OK, 0 rows affected, 1 warning (0.000 sec)
```

(4)在 Jay 用户下尝试查询 Players（注意使用 Major.Players）

```
obclient -uJay -p2352018 -h127.1 -P2881;
```

```
SELECT * FROM Major.Players;
```

```
obclient(root@sys)[Major]> exit;
!Bye
sh-4.4# obclient -uJay -p2352018 -h127.1 -P2881;
Welcome to the OceanBase. Commands end with ; or \g.
Your OceanBase connection id is 3221737201
Server version: OceanBase_CE 4.3.5.1 (r101000042025031818-b6d5706eb3d2c5f501c7fa646ddb3f3dc87069) (Built Mar 18 2025 18:13:36)

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Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

obclient(Jay@(none))[(none)]>
```

```
obclient(Jay@(none))[(none)]> SELECT * FROM Major.Players;
ERROR 1142 (42000): SELECT command denied to user 'Jay'@'127.0.0.1' for table 'Players'
[172.17.0.2:2882] [2025-04-23 04:58:34.391517] [YB42AC110002-000633692B54FAD8-0-0]
```

(5)授予用户 Jay 对表 Players 的查询、插入、修改等对象特权，并赋予其再授权的能力

```
obclient -uroot@sys -h127.1 -P2881;
```

```
GRANT SELECT, INSERT, UPDATE ON Major.Players TO 'Jay'@'127.0.0.1';
```

```
GRANT SELECT, INSERT, UPDATE ON Major.Players TO 'Jay'@'127.0.0.1' WITH GRANT OPTION;
```

```
FLUSH PRIVILEGES;
```

```
obclient(root@sys)[Major]> GRANT SELECT, INSERT, UPDATE ON Major.Players TO 'Jay'@'127.0.0.1';
Query OK, 0 rows affected (0.062 sec)

obclient(root@sys)[Major]> GRANT SELECT, INSERT, UPDATE ON Major.Players TO 'Jay'@'127.0.0.1' WITH GRANT OPTION;
Query OK, 0 rows affected (0.020 sec)

obclient(root@sys)[Major]> FLUSH PRIVILEGES;
Query OK, 0 rows affected, 1 warning (0.000 sec)
```

(6)在 Jay 用户下查询 Players（注意使用 Major.Players）

```
obclient -uJay -p2352018 -h127.1 -P2881;
```

SELECT * FROM Major.Players;

```
obclient(Jay@(none))[(none)]> SELECT * FROM Major.Players;
+-----+-----+-----+-----+-----+
| Sno   | Sname | Ssex | Sage | Steam |
+-----+-----+-----+-----+-----+
| 200215121 | LuLu  | M    | 27   | G2     |
| 200215122 | TiMo  | M    | 18   | G2     |
+-----+-----+-----+-----+-----+
2 rows in set (0.001 sec)
```

(7)在 Jay 用户下再插入一个元组的数据('200215123', 'ZywOo', 'M', 23, 'Vit'), 并在 Jay 用户下查询 (注意使用 Major.Players)

INSERT INTO Major.Players (Sno, Sname, Ssex, Sage, Steam)

VALUES ('200215123', 'ZywOo', 'M', 23, 'Vit');

SELECT * FROM Major.Players;

```
obclient(Jay@(none))[(none)]> INSERT INTO Major.Players (Sno, Sname, Ssex, Sage, Steam)
-> VALUES ('200215123', 'ZywOo', 'M', 23, 'Vit');
Query OK, 1 row affected (0.004 sec)

obclient(Jay@(none))[(none)]> SELECT * FROM Major.Players;
+-----+-----+-----+-----+-----+
| Sno   | Sname | Ssex | Sage | Steam |
+-----+-----+-----+-----+-----+
| 200215121 | LuLu  | M    | 27   | G2     |
| 200215122 | TiMo  | M    | 18   | G2     |
| 200215123 | ZywOo | M    | 23   | Vit    |
+-----+-----+-----+-----+-----+
3 rows in set (0.000 sec)
```

(8)删除 Jay 用户

obclient -uroot@sys -h127.1 -P2881;

DROP USER 'Jay'@'127.0.0.1';

```
sh-4.4# obclient -uroot@sys -h127.1 -P2881;
Welcome to the OceanBase. Commands end with ; or \g.
Your OceanBase connection id is 3221525484
Server version: OceanBase_CE 4.3.5.1 (r101000042025031818-b6d5706eb3d2c5f501c7fa646ddb32f3dc87069) (Built Mar 18 2025 18:13:36)

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Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

obclient(root@sys)[(none)]> DROP USER 'Jay'@'127.0.0.1';
Query OK, 0 rows affected (0.026 sec)

obclient(root@sys)[(none)]> SELECT user, host FROM mysql.user WHERE user = 'Jay';
Empty set (0.000 sec)
```

出现的问题:

(1)无法成功登录 Jay 用户

使用 obclient -uJay@127.0.0.1 -p2352018 -h127.1 -P2881 命令登录 Jay 用户访问被拒绝, 但经查询 Jay 用户已经被建立且 IP 地址权限正确。

```
sh-4.4# obclient -uJay@127.0.0.1 -p2352018 -h127.1 -P2881;
ERROR 1045 (42000): Access denied for user 'Jay'@'xxx.xxx.xxx.xxx' (using password: YES)
[0.0.0.0:0] [2025-04-23 04:41:06.052783] [Y0-000633692D74EA10-0-0]
```

```
obclient(root@sys)[Major]> SELECT user, host FROM mysql.user WHERE user = 'Jay';
+-----+-----+
| user | host      |
+-----+-----+
| Jay  | 127.0.0.1 |
+-----+-----+
1 row in set (0.005 sec)
```

(2)Jay 用户无法被成功删除

在用户 Jay 中执行删除用户操作失败，显示当前用户没有权限。

```

sh-4.4# obclient -uJay -p2352018 -h127.1 -P2881;
Welcome to the OceanBase.  Commands end with ; or \g.
Your OceanBase connection id is 3221523263
Server version: OceanBase_CE 4.3.5.1 (r101000042025031818-b6d5706eb3d2c5f501c7fa646ddb32f3dc87069) (Built Mar 18 2025 18:13:36)
Copyright (c) 2000, 2018, OceanBase and/or its affiliates. All rights reserved.
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

obclient(Jay@(none))[(none)]> DROP USER 'Jay'@'127.0.0.1';
ERROR 1227 (42501): Access denied; you need (at least one of) the CREATE USER privilege(s) for this operation
![[172.17.0.2:2882] [2025-04-23 05:10:44.115089] [YB42AC110002-000633692B5501B6-0-0]]

```

解决方案：

(1)无法成功登录 Jay 用户问题的解决

原始命令中，-uJay@127.0.0.1 的格式可能被误解为用户名是 Jay@127.0.0.1，而 obclient 可能期望用户名只是 Jay，无需附加主机地址。-h127.1 已经指定了主机地址，用户名不需要重复包含@127.0.0.1。去掉@127.0.0.1，让-uJay 只传递用户名，符合预期格式，系统能正确识别用户。

(2)Jay 用户无法被成功删除问题的解决

当前用户 Jay 没有 CREATE USER 权限，而 DROP USER 操作需要此权限（在 OceanBase 中，DROP USER 通常需要 CREATE USER 或更高权限。直接用 root 用户登录（通常默认有所有权限），执行删除语句即可成功删除。