计算机科学与技术学院 数据库系统 课程实验报告

实验题目：综合实验 5		学号：202300130183
日期：2024/12/20	班级：23 级人工智能	姓名：宋浩宇
Email：2367651943@qq.com		

实验软件和硬件环境：
实验软件：
系统：Windows 11 家庭中文版 23H2 22631.4317
编辑器：Visual Studio Code
数据库：SQL Server 2022
数据库管理工具：Microsoft SQL Server Management Studio 18
硬件环境：
CPU：13th Gen Intel(R) Core(TM) i9-13980HX　　2.20 GHz
内存：32.0 GB (31.6 GB 可用)
磁盘驱动器：NVMe WD_BLACKSN850X2000GB

实验步骤：
第一题：
SQL：

```sql
SELECT
    HOST_TID,
    CNT1 + CNT2 AS CNT
FROM
    (
    SELECT
        HOST_TID,
        COUNT(*) AS CNT1
    FROM
        MATCH
    WHERE
        HOST_WIN = "是"
    GROUP BY
        HOST_TID
    ),
    (
    SELECT
        GUEST_TID,
        COUNT(*)  AS CNT2
    FROM
        MATCH
    WHERE
        HOST_WIN = "否"
```

```
        GROUP BY
            GUEST_TID
    )
WHERE
    HOST_TID = GUEST_TID;
```

结果：

	HOST_TID	CNT
1	0	20
2	1	14
3	2	19
4	3	17
5	4	21
6	5	18
7	6	19

```
执行完成，无错误。
结果：20 行返回，耗时 10ms
在行 1：
SELECT
    HOST_TID,
    CNT1 + CNT2 AS CNT
FROM
    (
        SELECT
            HOST_TID,
            COUNT(*) AS CNT1
        FROM
            MATCH
        WHERE
            HOST_WIN = "是"
        GROUP BY
            HOST_TID
    ),
    (
        SELECT
            GUEST_TID,
            COUNT(*)  AS CNT2
        FROM
            MATCH
        WHERE
```

第二题：

SQL：

```
SELECT
    PICK.CID,
    PICK.MID,
    MATCH.TIME
FROM
    PICK
    JOIN MATCH
    ON PICK.MID = MATCH.MID
WHERE
    CID = 1
ORDER BY
    MATCH.TIME DESC LIMIT 1;
```

结果：

	cid	mid	time
1	1	253	1930

执行完成，无错误。

结果：1 行返回，耗时 10ms

在行 1：

```
SELECT
    PICK.CID,
    PICK.MID,
    MATCH.TIME
FROM
    PICK
    JOIN MATCH
    ON PICK.MID = MATCH.MID
WHERE
    CID = 1
ORDER BY
    MATCH.TIME DESC LIMIT 1;
```

第三题：

SQL：

```
SELECT
    *
```

```
FROM
    CHAMPION
WHERE
    CID NOT IN(
        SELECT
            DISTINCT CID
        FROM
            PICK
    );
```

结果：

cid	name	description	dmg_score	dfd_score	lif_

```
执行完成，无错误。
结果：0 行返回，耗时 9ms
在行 1:
SELECT
    *
FROM
    CHAMPION
WHERE
    CID NOT IN(
        SELECT
            DISTINCT CID
        FROM
            PICK
    );
```

没有没被选择过的英雄
第四题：
SQL：

```sql
SELECT
    NAME
FROM
    (
    SELECT
        CHAMPION.NAME,
        COUNT(
            CASE RANK
                WHEN 1 THEN
                    1
                ELSE
                    NULL
            END) AS TIMES
    FROM
        PICK
```

```
        JOIN CHAMPION
        ON PICK.CID = CHAMPION.CID
    GROUP BY
        PICK.CID
    ORDER BY
        COUNT(
            CASE RANK
                WHEN 1 THEN
                    1
                ELSE
                    NULL
            END) DESC LIMIT 1
);
```

结果:

	NAME
1	gdhruzagwyuxdn

```
执行完成，无错误。
结果：1 行返回，耗时 10ms
在行 1:
SELECT
     NAME
FROM
     (
         SELECT
             CHAMPION.NAME,
             COUNT(
                 CASE RANK
                     WHEN 1 THEN
                         1
                     ELSE
                         NULL
                 END) AS TIMES
         FROM
             PICK
             JOIN CHAMPION
             ON PICK.CID =
CHAMPION.CID
         GROUP BY
             PICK.CID
         ORDER BY
             COUNT(
```

第五题：
SQL：

```sql
SELECT
    PLAYER.NAME,
    COUNT(*) AS CNT
FROM
    KILL
    JOIN PLAYER
    ON KILL.PID_KILLER = PLAYER.PID
GROUP BY
    PID_KILLER
ORDER BY
    COUNT(*) DESC LIMIT 1;
```

结果：

	name	CNT
1	lhzjqmwecjmhnibyhh	487

执行完成，无错误。
结果：1 行返回，耗时 11ms
在行 1：

```sql
SELECT
    PLAYER.NAME,
    COUNT(*) AS CNT
FROM
    KILL
    JOIN PLAYER
    ON KILL.PID_KILLER = PLAYER.PID
GROUP BY
    PID_KILLER
ORDER BY
    COUNT(*) DESC LIMIT 1;
```

第六题：
SQL：

```sql
SELECT
    TEAM.NAME,
```

```
    COUNT(*) AS CNT
FROM
    KILL
    JOIN PLAYER
    ON PLAYER.PID = KILL.PID_KILLER
    JOIN TEAM
    ON PLAYER.TID = TEAM.TID
GROUP BY
    PLAYER.TID
ORDER BY
    COUNT(*) DESC LIMIT 5;
```

结果：

	name	CNT
1	jwceeokkwxqb	1903
2	sifolacmje	1823
3	mbwnqjufktsk	1786
4	wgcbsjymsznvwv	1781
5	bdcvqexzicwjlirw	1774

执行完成，无错误。
结果：5 行返回，耗时 18ms
在行 1:

```sql
SELECT
    TEAM.NAME,
    COUNT(*) AS CNT
FROM
    KILL
    JOIN PLAYER
    ON PLAYER.PID = KILL.PID_KILLER
    JOIN TEAM
    ON PLAYER.TID = TEAM.TID
GROUP BY
    PLAYER.TID
ORDER BY
    COUNT(*) DESC LIMIT 5;
```

第七题：
SQL：

```sql
SELECT
    ID1 AS TID,
    (SUM_TIME1 + SUM_TIME2)/(CNT1+CNT2) AS AVG_TIME
FROM
    (
    SELECT
        HOST_TID AS ID1,
        COUNT(*) AS CNT1,
        SUM(
            CASE
                WHEN DURATION IS NOT NULL THEN
                    DURATION
                ELSE
                    0
            END) AS SUM_TIME1
        FROM
```

```sql
        MATCH
    GROUP BY
        HOST_TID
  ),
  (
    SELECT
        GUEST_TID AS ID2,
        COUNT(*) AS CNT2,
        SUM(
            CASE
                WHEN DURATION IS NOT NULL THEN
                    DURATION
                ELSE
                    0
            END) AS SUM_TIME2
    FROM
        MATCH
    GROUP BY
        GUEST_TID
  )
WHERE
    ID1 = ID2;
```

结果：

	TID	AVG_TIME
1	0	920.578947368421
2	1	874.078947368421
3	2	859.236842105263
4	3	922.526315789474
5	4	904.552631578947
6	5	858.368421052632
7	6	925.5

```
执行完成，无错误。
结果：20 行返回，耗时 9ms
在行 1：
SELECT
    ID1 AS TID,
    (SUM_TIME1 + SUM_TIME2)/
(CNT1+CNT2) AS AVG_TIME
FROM
    (
        SELECT
            HOST_TID AS ID1,
            COUNT(*) AS CNT1,
            SUM(
                CASE
                    WHEN DURATION IS
NOT NULL THEN
                        DURATION
                    ELSE
                        0
                END) AS SUM_TIME1
        FROM
            MATCH
        GROUP BY
            HOST_TID
    ),
```

第八题：

SQL：

```sql
SELECT
    PLAYER.NAME,
    SUM(AMOUNT) AS SUM_DAMAGE
FROM
    DAMAGE
    JOIN PLAYER
    ON PLAYER.PID = DAMAGE.PID_HITTER
GROUP BY
    PID_HITTER
ORDER BY
    SUM(AMOUNT) DESC LIMIT 1;
```

结果：

	name	SUM_DAMAGE
1	qylowdwhxprxphse	181939.0

执行完成，无错误。

结果：1 行返回，耗时 90ms

在行 1：

```
SELECT
    PLAYER.NAME,
    SUM(AMOUNT) AS SUM_DAMAGE
FROM
    DAMAGE
    JOIN PLAYER
    ON PLAYER.PID = DAMAGE.PID_HITTER
GROUP BY
    PID_HITTER
ORDER BY
    SUM(AMOUNT) DESC LIMIT 1;
```

第九题：
SQL：

```
SELECT
    PLAYER.NAME,
```

```
    COUNT(DISTINCT CID) AS CNT
FROM
    PICK
    JOIN PLAYER
    ON PLAYER.PID = PICK.PID
GROUP BY
    PICK.PID
ORDER BY
    COUNT(DISTINCT CID) DESC LIMIT 1;
```

结果：

	name	CNT
1	bgckfausxljn	35

执行完成，无错误。
结果：1 行返回，耗时 8ms
在行 1:

```
SELECT
    PLAYER.NAME,
    COUNT(DISTINCT CID) AS CNT
FROM
    PICK
    JOIN PLAYER
    ON PLAYER.PID = PICK.PID
GROUP BY
    PICK.PID
ORDER BY
    COUNT(DISTINCT CID) DESC LIMIT 1;
```

第十题
SQL：

```
SELECT
    CHAMPION.NAME,
    BP_CNT
FROM
    (
    SELECT
        CID1,
        PICK_CNT+BAN_CNT AS BP_CNT
    FROM
        (
        SELECT
            CID AS CID1,
            COUNT(*) AS PICK_CNT
        FROM
            PICK
        GROUP BY
```

```
                CID
        ),
        (
            SELECT
                CID AS CID2,
                COUNT(*) AS BAN_CNT
            FROM
                BAN
            GROUP BY
                CID
        )
    WHERE
        CID1 = CID2
    ORDER BY
        PICK_CNT+BAN_CNT DESC LIMIT 1
    ),
    CHAMPION
WHERE
    CHAMPION.CID = CID1;
```

结果：

name	BP_CNT
1 pbfccdonpvdwwix	110

```
执行完成，无错误。
结果：1 行返回，耗时 8ms
在行 1:
SELECT
    CHAMPION.NAME,
    BP_CNT
FROM
    (
        SELECT
            CID1,
            PICK_CNT+BAN_CNT AS
BP_CNT
        FROM
            (
                SELECT
                    CID AS CID1,
                    COUNT(*) AS
PICK_CNT
                FROM
                    PICK
                GROUP BY
                    CID
            ),
            (
                SELECT
```

第十一题
SQL：

```
SELECT
    MATCH.TIME,
    MATCH.LOCATION,
    PLAYER.NAME,
    RATIO
FROM
    (
        SELECT
            SUM_DAMAGE.MID,
            SUM_DAMAGE.PID_HITTER AS PID,
            SUM_DAMAGE.SUM_DAMAGE/SUM_MONEY.SUM_MONEY AS RATIO
        FROM
            (
                SELECT
                    MID,
                    PID_HITTER,
```

```
                SUM(AMOUNT) AS SUM_DAMAGE
            FROM
                DAMAGE
            GROUP BY
                MID,
                PID_HITTER
        ) AS SUM_DAMAGE,
        (
            SELECT
                MID,
                PID,
                SUM(AMOUNT) AS SUM_MONEY
            FROM
                GOLD
            GROUP BY
                MID,
                PID
        ) AS SUM_MONEY
    WHERE
        SUM_DAMAGE.MID=SUM_MONEY.MID
        AND SUM_DAMAGE.PID_HITTER=SUM_MONEY.PID
    ORDER BY
        SUM_DAMAGE.SUM_DAMAGE/SUM_MONEY.SUM_MONEY DESC LIMIT 1
) AS BEST_HITTER
JOIN MATCH
ON BEST_HITTER.MID=MATCH.MID
JOIN PLAYER
ON BEST_HITTER.PID=PLAYER.PID;
```

结果：

	time	location	name	RATIO
1	1319	cytpfcfqshwjnzulxcshlalpblj	rjfniwptcft	0.0538144177691746

```
执行完成，无错误。
结果：1 行返回，耗时 1610ms
在行 1：
SELECT
    MATCH.TIME,
    MATCH.LOCATION,
    PLAYER.NAME,
    RATIO
FROM
    (
        SELECT
            SUM_DAMAGE.MID,
            SUM_DAMAGE.PID_HITTER AS PID,
            SUM_DAMAGE.SUM_DAMAGE/SUM_MONEY.SUM_MONEY AS RATIO
        FROM
            (
                SELECT
                    MID,
                    PID_HITTER,
                    SUM(AMOUNT) AS SUM_DAMAGE
                FROM
                    DAMAGE
                GROUP BY
                    MID,
                    PID_HITTER
```

第十二题
SQL：

```
SELECT
    PLAYER.NAME,
    RATIO
FROM
    (
        SELECT
            PLAYER_DAMAGE.PID,
            PLAYER_DAMAGE.TID,
            PLAYER_DAMAGE.SUM_DAMAGE/TEAM_DAMAGE.TOTAL_DAMAGE AS RATIO
        FROM
            (
                SELECT
                    PLAYER.TID,
                    SUM(SUM_DAMAGE) AS TOTAL_DAMAGE
                FROM
                    (
                        SELECT
                            PID_HITTER,
                            SUM(AMOUNT) AS SUM_DAMAGE
                        FROM
                            DAMAGE
                        GROUP BY
                            PID_HITTER
                    ) AS DAMAGE_TABLE
```

```
                JOIN PLAYER
                    ON DAMAGE_TABLE.PID_HITTER = PLAYER.PID
            GROUP BY
                PLAYER.TID
        ) AS TEAM_DAMAGE,
        (
            SELECT
                PLAYER.TID,
                PLAYER.PID,
                SUM_DAMAGE
            FROM
                (
                    SELECT
                        PID_HITTER,
                        SUM(AMOUNT) AS SUM_DAMAGE
                    FROM
                        DAMAGE
                    GROUP BY
                        PID_HITTER
                )
                JOIN PLAYER
                    ON PLAYER.PID = PID_HITTER
        ) AS PLAYER_DAMAGE
    WHERE
        PLAYER_DAMAGE.TID = TEAM_DAMAGE.TID
    ORDER BY
        PLAYER_DAMAGE.SUM_DAMAGE/TEAM_DAMAGE.TOTAL_DAMAGE DESC LIMIT 1
) AS BEST_PLAYER
JOIN PLAYER
ON BEST_PLAYER.PID = PLAYER.PID;
```
结果：

	name	RATIO
1	rjfniwptcft	0.260515413345064

执行完成，无错误。
结果：1 行返回，耗时 165ms
在行 1:
```
SELECT
    PLAYER.NAME,
    RATIO
FROM
    (
        SELECT
            PLAYER_DAMAGE.PID,
            PLAYER_DAMAGE.TID,
            PLAYER_DAMAGE.SUM_DAMAGE/
TEAM_DAMAGE.TOTAL_DAMAGE AS RATIO
        FROM
            (
                SELECT
                    PLAYER.TID,
                    SUM(SUM_DAMAGE)
AS TOTAL_DAMAGE
                FROM
                    (
                        SELECT
                            PID_HITTE
R,
                            SUM(AMOUN
```