软件工程学院数据库系统及其应用作业

实验课程：数据库系统及其应用　　**年级**：2023 级　　**姓名**：顾翌炜

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5.7

Consider the bank database of Figure 5.21. Write an SQL trigger to carry out the following action: On **delete** of an account, for each customer-owner of the account, check if the owner has any remaining accounts, and if she does not, delete her from the *depositor* relation.

Banking Database

```
branch (branch_name, branch_city, assets)
customer (customer_name, customer_street, customer_city)
loan (loan_number, branch_name, amount)
borrower (customer_name, loan_number)
account (account_number, branch_name, balance)
depositor (customer_name, account_number)
```

5.7 解答

```
CREATE TRIGGER delete_check
AFTER DELETE ON account
  REFERENCING old row as orow
  FOR EACH ROW
  BEGIN
    DELETE FROM depositor
    WHERE customer_name NOT IN (SELECT d1.customer_name
                                FROM depositor d1
                                WHERE d1.account_number <> orow.account_number)
   END
```

5.8

Given a relation $S(\textbf{student}, \textbf{subject}, \textbf{marks})$, write a query to find the top 10 students by total marks, by using SQL ranking. Include all students tied for the final spot in the ranking, even if that results in more than 10 total students.

5.8 解答

```
SELECT *
FROM (SELECT student, total_marks, RANK() OVER (ORDER BY total_marks DESC) AS s_rank
      FROM (SELECT student, sum(marks) AS total_marks
            FROM S
            GROUP BY student)
     )
WHERE s_rank <= 10
```

5.10

Using the relation from Exercise 5.9, write an SQL query to generate a report showing the number of shares traded, number of trades, and total dollar volume broken down by year, each month of each year, and each trading day.

Relation for 5.10: nyse (**year**, **month**, **day**,shares_traded,dollar_volume,num_trades)
['nyse' means: New York Stock Exchange]

5.10 解答

```
SELECT year, month, day,
  sum(shares_traded) as sum_share,
  sum(num_trades) as num_trades,
  sum(dollar_volume) as total_dollar
FROM nyse
GROUP BY ROLLUP (year, month, day)
```