**表结构设计**

产品表（Products）

| 列名 | 数据类型 | 约束条件

|--------------------------|-----------------|------------------------------

| product\_id | INT | PRIMARY KEY

| name | VARCHAR | NOT NULL

| price | DECIMAL | NOT NULL

| description | TEXT |

| category\_id | INT | FOREIGN KEY REFERENCES Categories(category\_id)

| manufacturer\_id | INT | FOREIGN KEY REFERENCES Manufacturers(manufacturer\_id)

分类表（Categories）

| 列名 | 数据类型 | 约束条件

|--------------------------|-----------------|------------------------------

| category\_id | INT | PRIMARY KEY

| name | VARCHAR | NOT NULL

| parent\_id | INT | FOREIGN KEY REFERENCES Categories(category\_id)

制造商表（Manufacturers）

| 列名 | 数据类型 | 约束条件

|--------------------------|----------------|------------------------------

| manufacturer\_id | INT | PRIMARY KEY

| name | VARCHAR | NOT NULL

| logo | VARCHAR |

**SQL查询**

递归查询所有多层级分类商品

WITH RECURSIVE CategoryHierarchy AS (

SELECT

category\_id,

name,

parent\_id,

CAST(name AS VARCHAR(255)) AS full\_path

FROM

Categories

WHERE

parent\_id IS NULL

UNION ALL

SELECT

c.category\_id,

c.name,

c.parent\_id,

CONCAT(ch.full\_path, ' - ', c.name) AS full\_path

FROM

Categories c

INNER JOIN

CategoryHierarchy ch ON c.parent\_id = ch.category\_id

)

SELECT

ch.full\_path,

p.name AS product\_name,

p.price,

p.description,

m.name AS manufacturer\_name,

m.logo

FROM

CategoryHierarchy ch

JOIN

Products p ON ch.category\_id = p.category\_id

JOIN

Manufacturers m ON p.manufacturer\_id = m.manufacturer\_id

ORDER BY

ch.full\_path;