数据库系统概论

井明

计算机科学与技术学院

Spring 2021

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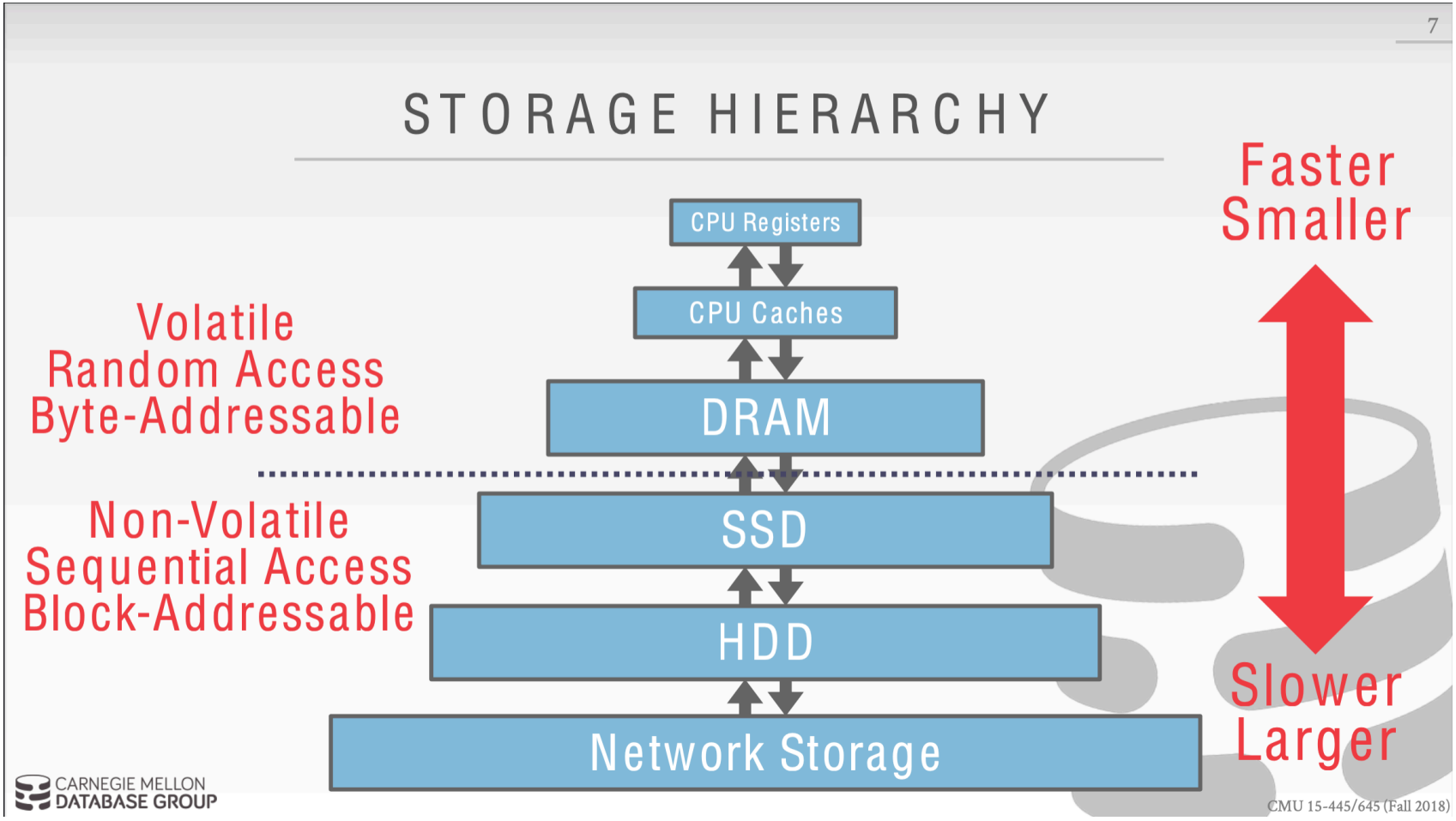
存储级别 (Storage Hierarchy)

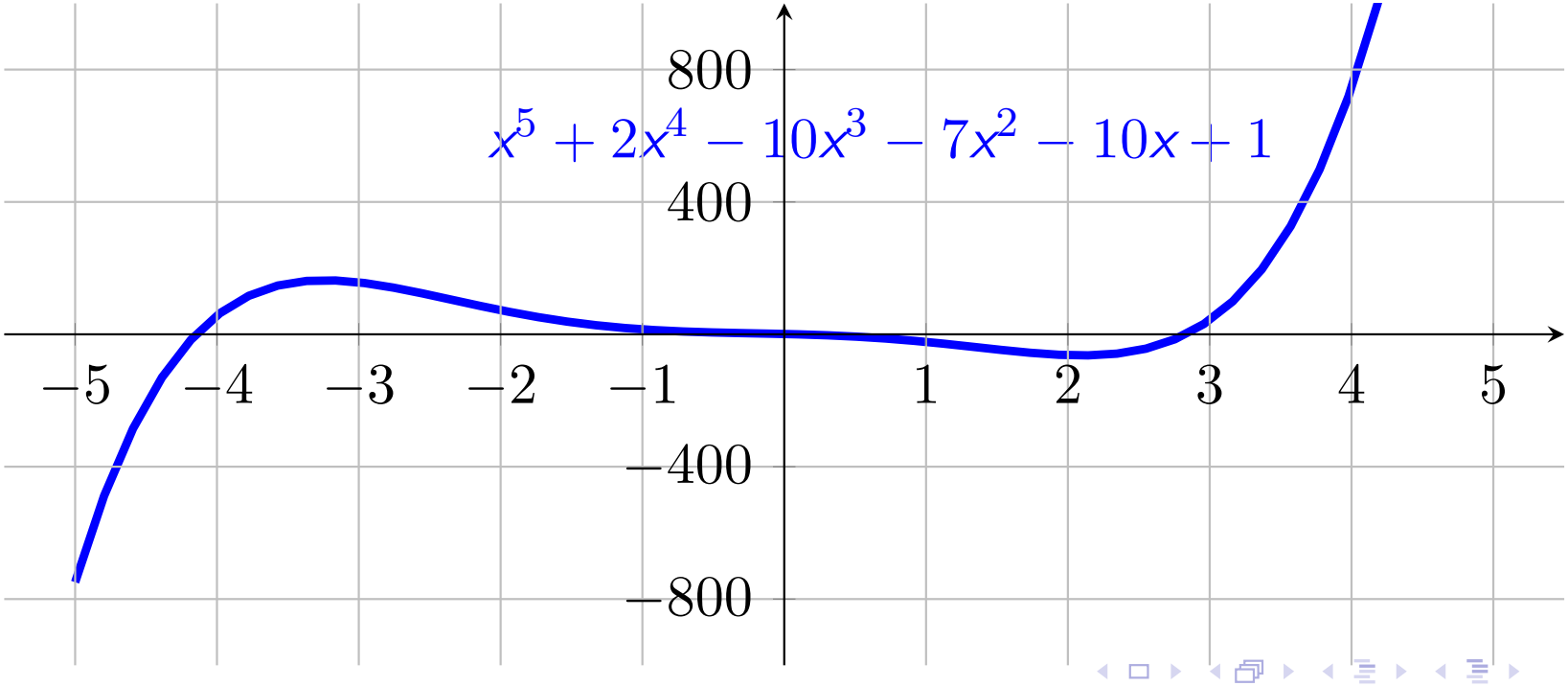


Galois theory

Quintic Equation:

$$ax^5 + bx^4 + cx^3 + dx^2 + ex + f = 0 (a, b, c, d, e, f \in \mathbb{R}, a \neq 0)$$

Example: $x^5 + 2x^4 - 10x^3 - 7x^2 - 10x + 1 = 0$



SQL Server Recursive CTE

A recursive common table expression (CTE) is a CTE that references itself.

Syntax:

```
WITH expression_name (column_list)
AS
(
    -- Anchor member
    initial_query
    UNION ALL
    -- Recursive member that references expression_name.
    recursive_query
)
-- references expression name
SELECT * FROM expression_name
```

SQL Server Recursive CTE (Cont.)

In general, a recursive CTE has three parts:

1. An initial query that returns the base result set of the CTE. The initial query is called an anchor member.
2. A recursive query that references the common table expression, therefore, it is called the recursive member. The recursive member is union-ed with the anchor member using the UNION ALL operator.
3. A termination condition specified in the recursive member that terminates the execution of the recursive member.

SQL Server Recursive CTE (Cont.)

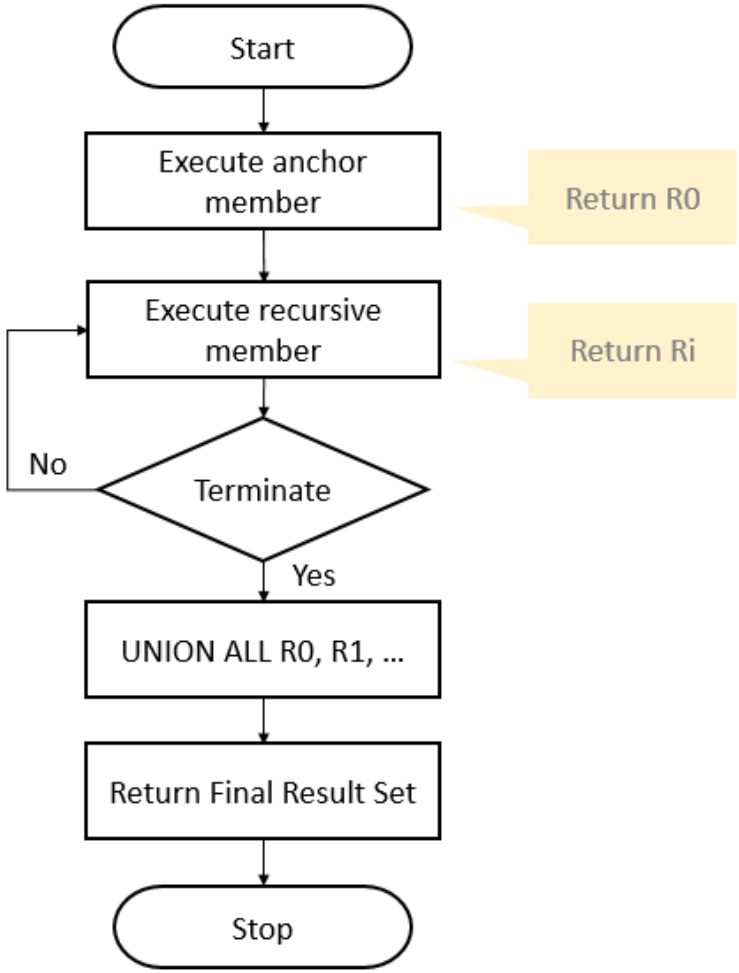


Figure: flowchart illustrates the execution of a recursive CTE

SQL Server Recursive CTE (Cont.)

Example:

```
WITH RECURSIVE temp (n, fact) AS
(SELECT 0, 1 -- Initial Subquery
  UNION ALL
 SELECT n+1, (n+1)*fact FROM temp -- Recursive Subquery
        WHERE n < 9)
SELECT * FROM temp;
```

```
+------+--------+
| n    | fact   |
+------+--------+
|    0 |      1 |
|    1 |      1 |
|    2 |      2 |
|    3 |      6 |
|    4 |     24 |
|    5 |    120 |
|    6 |    720 |
|    7 |   5040 |
|    8 |  40320 |
|    9 | 362880 |
+------+--------+
```