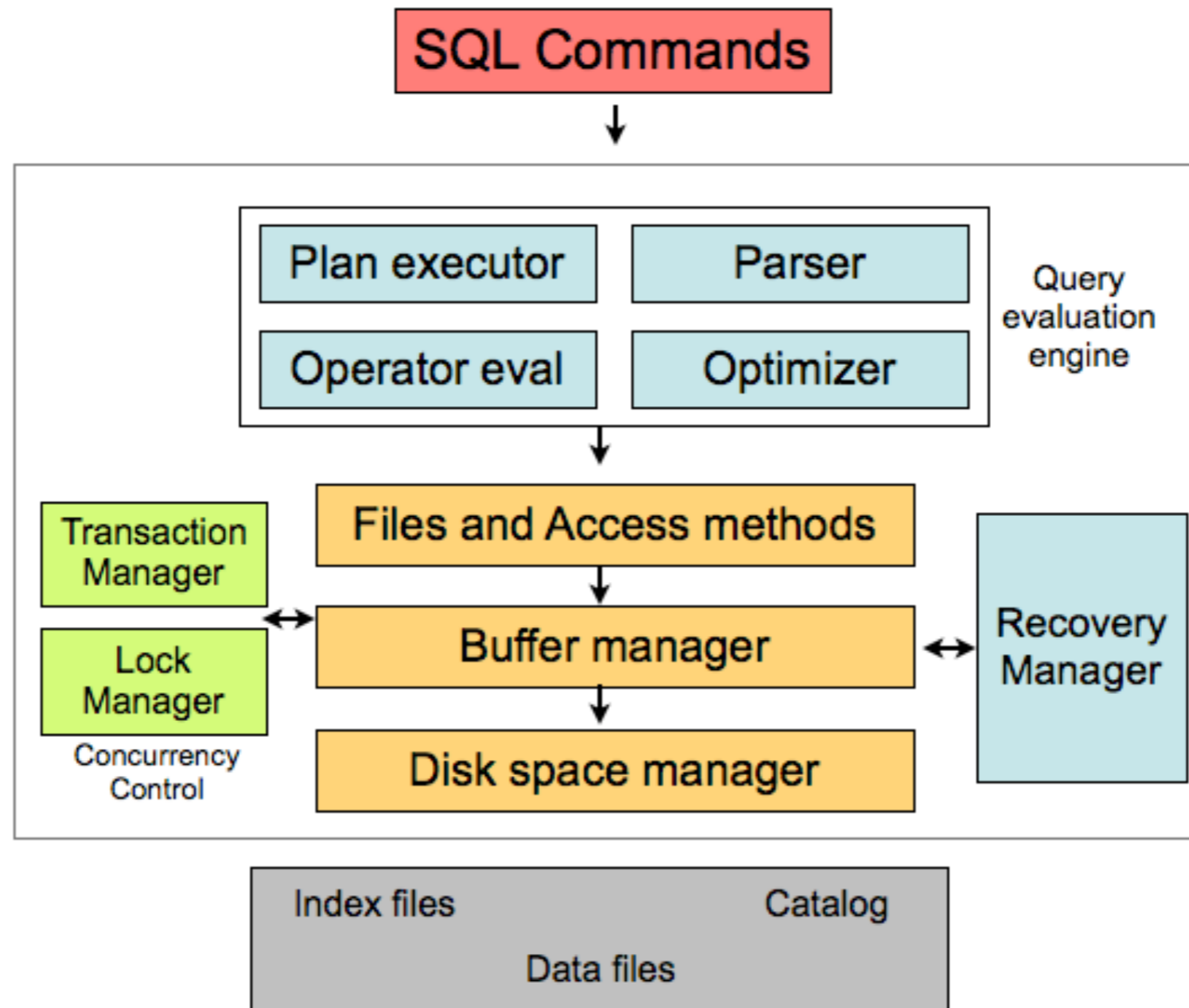


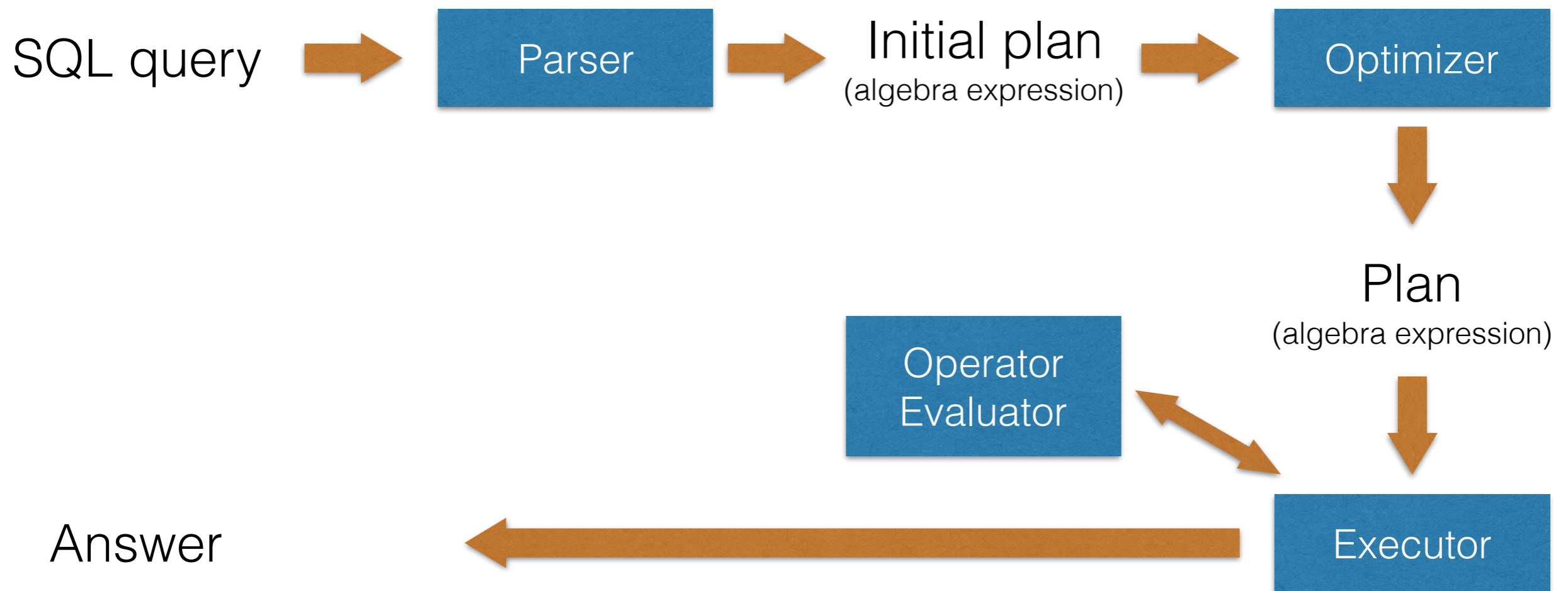
COSC 460 Lecture 12: Query Processing 2

Professor Michael Hay
Fall 2018

Architecture of DBMS



Query processing

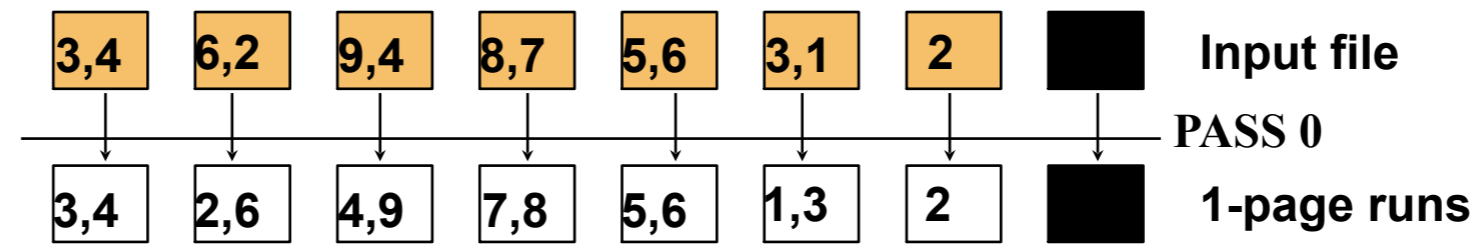


Big questions

1. How execute each operator efficiently?
2. How execute plan? In other words, how do we chain operators together?
3. How choose the best plan?

Sorting is key building block.
(Hashing too.)

Two-Way External Merge Sort



Poll

Instructions: *I will give you 1-2 minutes to think on your own.*

Vote 1.

Then you will discuss w/ neighbor (1 min).

Vote 2.

Then we'll discuss as class.

**Correct answer: D,
RAM and CPU**

Think about the 2-way external merge sort algorithm. Which of the following resources is under utilized?

- A. Disk
- B. RAM
- C. CPU
- D. More than one is under utilized

For each under-utilized resource think about a modification of the algorithm that could improve utilization.

Exercise

Instructions: please work in small groups to complete worksheet.

Moving from 2-way merge sort to k-way merge sort.

The algorithm is a little more complicated.

The cost analysis is a little more involved.

Goal: show cost is $2N * \text{ceiling}(1 + \log_{B-1} \text{ceiling}(N/B))$

Follow up question: Two changes were made to the algorithm: 1) initial run files bigger, and 2) more files merged in each pass. Which change reduces cost more?