

DBMS

Reading 64 bit in RAM require 100 ns but in SSD require 150,000 ns but in HDD require 10,000,000 ns

Storage manager

Responsible for maintaining database files

- organize the files as collections of pages
- track read and write to these pages and available storage space.

Page

- Fixed size block of data
- 512B - 16KB
- SQL Server, Postgres => 8KB, MySQL => 16KB
- It contains tuples, meta-data, indexes, log records and more.
- Some systems require the page to be self-contained (all information about the page is inside the page.)
- Each page is given a unique identifier, the storage manager use this ID to find the page.
- Different databases manage pages in files on disks in different ways (Heap file, tree file, hashing file)
- **Heap File**
 - Unordered collection of pages where tuples stored in random pages
 - Need meta-data to know which page have free space and more.
 - Two ways to implement => page directory. linked list
 - Page directory (good one)
 - The DBMS maintains special pages that track the location of each page and a meta-data about each one (ex. number of free slots in each one)
 - The DBMS make sure that the directory pages are in sync with data pages.

- Linked list

