Database Index and Advantages of its use

> Tags: Database, Database Index, Data, Quicksort, Algorithm,

Database Index

A **Database Index** is a data structure that improves the speed of data retrieval operations on a database table at the cost of additional writes and storage space to maintain the index data structure.

- **Indexes** are used to quickly locate data without having to search every row in a database table every time a database table is accessed.
- **Indexes** can be created using one or more columns of a database table.

Algorithms: Quicksort

Quicksort is an efficient sorting algorithm developed by British computer scientist Tony Hoare.

It is a **divide-and-conquer** algorithm. It works by selecting a 'pivot' (central) element from the array and according to whether they are less than or greater than the pivot. The sub-arrays are then sorted *recursively*.

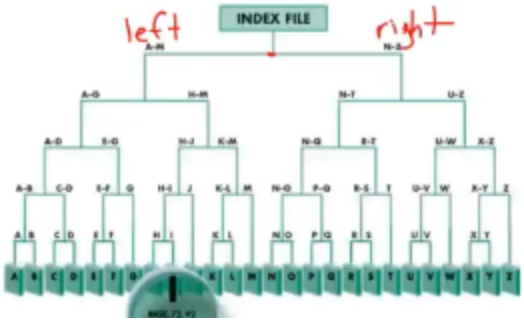
- *recursively* - describes a process or definition that repeats itself, where a function calls itself or a problem is solved by breaking it down into smaller, identical versions of itself, continuing until a simple "base case" is met
  Quicksort is a comparison sort, meaning that it can sort items of any type for which a "less than" relation is defined.

Example:
Quicksort Explanation

Database Index

The database writes the ordered information to an index file that is structured as a **binary tree**. The binary tree, or b-tree, is designed to **speed up** the process of finding information in the

index file.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INDEX FILE
right
A-N
N-Z
A-G
H-M
N-T
U-Z
A-D
E-G
H-J
K-M
N-Q
R-T
U-W
X-Z
A-B
C-D
E-F
G
H-I
J
K-L
M
N-O
P-Q
R-S
T
U-V
W
X-Y
Z
A B
C D
E F
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