The first question many would regarding “indexing”, is, what exactly is indexing? Well, the term indexing is used in databases, and it means to optimize the performance of said database. It does this by minimizing the number of disk accesses required when a query is processed. In other words, an index, is a data structure technique that is used to be able to quickly and efficiently locate and access data that is held within a database.

So, when should you make an index for a database? Logically, you should make an index whenever you seem to think that it would be beneficial to create one for a certain process that you do many times. This could be something along the lines as querying the same columns in a table multiple times a day. However, you shouldn’t use an index if you are working on a table which has little records held within it, as it would actually use up more time than just doing a standard query.

Furthermore, there are two differing types of indexes that would be used in database. They are both known as, clustered, and non-clustered indexes. These types of indexes work in the sense of being stored within a tree like data-structure.

So, for example with a clustered index, it is created very simply. When you create a data table, you have the option to set an id field, which acts as the primary key, that would be the index of the table. Here’s and example of clustered index.

|  |  |  |  |
| --- | --- | --- | --- |
| Index | People | | |
| People\_primary\_key | Id | Name | City |
| 1 | 1 | Mike | New York City |
| 2 | 2 | Janice | Detroit |
| 3 | 3 | Zack | Atlanta |

The above arrows show the index’s connection to the table, this would be fast only if you look up via id, which is where non clustered indexes take the lead.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Index | | Points to | Table | | |
| Name | Id |  | Id | name | city |
| Zack | 3 |  | 1 | Mike | New York City |
| Mike | 1 |  | 2 | Janice | Detroit |
| Janice | 2 |  | 3 | Zack | Atlanta |

The above index allows for faster searching through a table.