WHAT IS A NON CLUSTERED INDEX?

CLUSTERED INDEX ON ID

BASE TABLE: STUDENTS

ID	FN	LN	AGE
1	BOB	SMITH	25
2	TOM	JONES	32
3	MARY	SAUNDERS	23
4	JOE	KIRKLAND	23
5	SUE	HIGGINS	32

A non clustered index is a separate structure for the base table. As you can see we have a clustered index on ID column; we also know that we can't create another clustered index on another column, as it will violate clustered index logic – we can't have both an organized column on ID and FN. So how do we create an index on a column FN or LN or AGE to get better performance if the SELECT statement is querying the data with the WHERE clause asking TO filter Mary?

```
Select fn, ln from students
where fn = 'mary'
```

This is where non clustered index play an important part; because you can have many non clustered indexes. This is because a non clustered index is SEPERATE STRUCTURE from the base table. As a result, disk space become an issues!

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NON CLUSTERED INDEX ON FN

FN	ROW LOCATOR
BOB	111
TOM	222
MARY	333
JOE	444
SUE	555

NON CLUSTERED INDEX ON LN

LN	ROW LOCATOR
SMITH	111
JONES	222
SAUNDERS	333
KIRKLAND	444
HIGGINS	555

EXTRA SPACE IS NEEDED FOR THESE TWO NON CLUSTERED INDEXES

As you can see, when creating a non clustered index on a column, we can create more than one index; that is because the non clustered index is a SEPARATE STRUCTURE from the base table (just like the back of books have a separate index). We have pointers (row locators) that map the data on the base table. This improves the performance of frequently used queries which are not covered by the clustered index – as we shall see in a demo. Note that when creating non clustered indexes on columns, disk space become an issues! If you have a million rows of FN and you create a non clustered index on FN, then you will also have a separate structure of a million rows with the data, thereby needing more disk space!!