**Index**

**Index is a database object that improves the speed of data retrieval operations on a database table.**

**An index can be created on 1 or more then 1 columns of a table,**

***Note :***

By Default Index : Primary key, Not Null Colum

Check Index Read Row : (set STATISTICS IO off;) you can Off this (IO , input,output)

***Syntax :***

CREATE INDEX idx\_customerName

ON Customer (customerName);

1. **Index on Single\_Column**

select \* from customer

create table customer(

customerId int primary key identity,

customerName varchar(25),

contactName varchar(25),

country varchar(25),

orderDetail\_id int

)

INSERT INTO Customer (customerName, contactName, country)

VALUES

('Customer 1', 'Contact 1', 'USA'),

('Customer 2', 'Contact 2', 'Canada'),

('Customer 3', 'Contact 3', 'Mexico'),

('Customer 4', 'Contact 4', 'USA'),

('Customer 5', 'Contact 5', 'Canada'),

('Customer 6', 'Contact 6', 'Mexico'),

('Customer 7', 'Contact 7', 'USA'),

('Customer 8', 'Contact 8', 'Canada'),

('Customer 9', 'Contact 9', 'Mexico'),

('Customer 10', 'Contact 10', 'USA'),

('Customer 11', 'Contact 11', 'Canada'),

('Customer 12', 'Contact 12', 'Mexico'),

('Customer 13', 'Contact 13', 'USA'),

('Customer 14', 'Contact 14', 'Canada'),

('Customer 15', 'Contact 15', 'Mexico'),

('Customer 16', 'Contact 16', 'USA'),

('Customer 17', 'Contact 17', 'Canada'),

('Customer 18', 'Contact 18', 'Mexico'),

('Customer 19', 'Contact 19', 'USA'),

('Customer 20', 'Contact 20', 'Canada');

--\_\_ Set Index \_\_\_\_

CREATE INDEX idx\_customerName

ON Customer (customerName);

--\_\_ select Column \_\_\_\_

set STATISTICS IO on; -- turn off after using

select \* from customer where customerName = 'customer 20'

1. **\_one\_Index on Multiple\_Column**

--\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Index on Multiple columns \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

--1 saqib Ali m4377535

--2 Noman A b43577535@gmail.com

--3 Billal Ali m4377535

--4 Sajid akram 4343@gmail.com

--5 saqib Ali m4377535

--6 Noman A b43577535@gmail.com

--7 Billal Ali m4377535

--8 Rakham akram [4343@gmail.com](mailto:4343@gmail.com)

select \* from customers

CREATE INDEX idx\_firtName\_lastname\_email ON Customers (l\_Name, f\_Name);

1. **View All Index of Tables**

sp\_helpIndex \_\_TableName\_\_\_

sp\_helpIndex customers

sp\_helpIndex customer

1. **Actions**

* **Drop Index**

drop Index idx\_firtName\_lastname\_email

on customers

* **Rename Index**

EXEC sp\_rename 'idx\_customers\_new', 'idx\_customers\_old', 'INDEX';

1. **2\_Types of Index**
2. **Clustered Index**

* **Only 1 Clustered Index Allowed in table**
* **Its By Default Created with Primary key**
* **But you Can Create\_\_\_\_\_\_\_\_ Single Clustered Index with 🡪 Multiple Colmns**
* **Its Same as Dictionary Sorting 🡪 by Alphabaticaly (a - > z)**
* **Clustered Index 🡪 Sorting Data with -🡪 physical data of Table.**

1. **Non-Clustered Index**

* **You can Create Many Non-Clustered Index 🡪 1 table**
* **Its Your Books Index Like 🡪 The 1st Page of Book**
* **Non-clustered Index 🡪 Sort Data with 🡪 Virtualy Table**

**Yaa Alagg saaa Column bn gataa ha 🡪 table kaa**

**Physical Table 🡪 per Sort nhin krtaa**

**\_\_\_\_\_\_1. Clustered Index \_\_\_\_\_\_**

--=================================================

--\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 1. Auto Created Clustered Index with ---------- Primary key

--=================================================

create table customer\_clustered\_Primarykey(

id int primary key,

name varchar(25),

email varchar(25),

phoneNumber varchar(20)

)

insert into customer\_clustered\_Primarykey values

(5,'Ahamad','m43577353','234234234'),

(1,'Sajid','m43577353','234234234'),

(3,'Ahamad','m43577353','234234234'),

(2,'Nomand','m43577353','234234234'),

(4,'Ahamad','m43577353','234234234')

--\_\_\_\_ check Index \_\_\_\_\_\_

sp\_helpIndex customer\_clustered\_Primarykey

--What \_ Automaticly created clusterd Index by ----> Primarykey

--\_\_\_ u can't dorp this \_\_\_ due to primary key \_\_\_\_\_\_\_\_\_ delete from table => Index => delete

drop Index PK\_\_customer\_\_3213E83F3DED5F2A

on customer\_clustered\_Primarykey

-- say droping is not allow --> you can not delete by

--=================================================

--\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 2. Creating Custom \_ Clustered Index \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

--=================================================

create table customer\_clustered(

id int,

name varchar(25),

email varchar(25),

phoneNumber varchar(20)

)

insert into customer\_clustered values

(5,'Ahamad','m43577353','234234234'),

(1,'Sajid','m43577353','234234234'),

(3,'Ahamad','m43577353','234234234'),

(2,'Nomand','m43577353','234234234'),

(4,'Ahamad','m43577353','234234234')

select \* from customer\_clustered

--\_\_\_\_\_\_\_\_\_\_ check Clustered Index \_\_\_\_\_\_\_\_\_

---\_\_\_\_\_\_\_\_\_ Banifints of Clustered Index \_\_\_\_\_\_\_\_\_\_\_\_\_

--1. Make physical Order of Sorted data

--2. make unique data

create clustered index idx\_customerId

on customer\_clustered (id)

select \* from customer\_clustered

--=================================================

--\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 3. Single Clustered on Multipe Column \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

--=================================================

--\_drop old

drop Index idx\_customerId

on customer\_clustered

sp\_helpIndex customer\_clustered

--\_\_ create for id,Name,email

create clustered index idx\_customerId

on customer\_clustered(id,name,email)

**\_\_\_\_\_\_2. Non Clustered Index \_\_\_\_\_\_**

CREATE TABLE customerNonClusteredIndex (

EmployeeID int PRIMARY KEY,

FirstName varchar(50),

LastName varchar(50),

DepartmentID int,

Salary decimal(10,2)

);

INSERT INTO customerNonClusteredIndex (EmployeeID, FirstName, LastName, DepartmentID, Salary) VALUES (1, 'John', 'Smith', 1, 50000.00), (2, 'Jane', 'Doe', 1, 60000.00), (3, 'Bob', 'Johnson', 2, 55000.00), (4, 'Sarah', 'Williams', 2, 65000.00), (5, 'Mike', 'Brown', 3, 70000.00), (6, 'Lisa', 'Jones', 3, 75000.00);

select \* from customerNonClusteredIndex

CREATE INDEX idx\_cNCI\_FirstName\_Salary

ON customerNonClusteredIndex (FirstName,Salary);

select \* from customerNonClusteredIndex where firstName= 'lisa'