

```
CREATE DATABASE indexexample;  
USE indexexample;
```

```
-- Create the orders table
```

```
CREATE TABLE orders (  
    Order_ID INT PRIMARY KEY,  
    Customer_ID INT,  
    OrderDate DATE,  
    TotalAmount DECIMAL(10, 2));
```

```
-- Insert 10 entries into the orders table
```

```
INSERT INTO orders (Order_ID, Customer_ID, OrderDate, TotalAmount) VALUES  
(1, 101, '2024-12-01', 250.50),  
(2, 102, '2024-12-02', 175.75),  
(3, 103, '2024-12-03', 300.00),  
(4, 104, '2024-12-04', 400.25),  
(5, 105, '2024-12-05', 150.00),  
(6, 106, '2024-12-06', 225.40),  
(7, 107, '2024-12-07', 350.60),  
(8, 108, '2024-12-08', 275.30),  
(9, 109, '2024-12-09', 500.75),  
(10, 110, '2024-12-10', 450.80);
```

```
--index crtn
```

```
CREATE INDEX idx_customer_id ON orders (customer_id);
```

```
CREATE INDEX idx_orderdate_totalamount ON orders (customer_id,orderdate,totalamount);
```

```
--analysiz
```

```
ALTER INDEX idx_customer_id ON Orders DISABLE;
```

```
-- Create the customers table
```

```
CREATE TABLE Customers (  
    Customer_ID INT PRIMARY KEY,  
    Customer_Name VARCHAR(100),  
    City VARCHAR(50),  
    PhoneNumber VARCHAR(15));
```

```
-- Insert values into the customers table
```

```
INSERT INTO Customers (Customer_ID, Customer_Name, City, PhoneNumber) VALUES  
(101, 'Alice Johnson', 'New York', '1234567890'),
```

```
(102, 'Bob Smith', 'Los Angeles', '0987654321'),
(103, 'Charlie Brown', 'Chicago', '1122334455'),
(104, 'Diana Prince', 'Houston', '2233445566'),
(105, 'Edward Cullen', 'Phoenix', '3344556677'),
(106, 'Fiona Gallagher', 'Philadelphia', '4455667788'),
(107, 'George Harrison', 'San Antonio', '5566778899'),
(108, 'Hannah Montana', 'San Diego', '6677889900'),
(109, 'Ian Wright', 'Dallas', '7788990011'),
(110, 'Jessica Jones', 'San Jose', '8899001122');
```

--clusterd and non clustrud

```
CREATE CLUSTERED INDEX idx_customer_id_clustered ON Customers(Customer_ID);
```

```
CREATE NONCLUSTERED INDEX idx_city_nonclustered ON Customers (City);
```

--covering index

```
CREATE INDEX idx_covering ON Orders (Customer_ID) INCLUDE (Order_ID, OrderDate,
TotalAmount);
```

--drop and rebuild

```
DROP INDEX idx_customerid ON Orders;
```

--Rebuild

```
CREATE INDEX idx_customerid ON Orders (Customer_ID);
```

--index maintanance

```
ALTER INDEX idx_customerid ON Orders REORGANIZE;
```

```
ALTER INDEX idx_customerid ON Orders REBUILD;
```

--index with join

-- Create the products table

```
CREATE TABLE Products (
    ProductID INT PRIMARY KEY,
    ProductName VARCHAR(100),
    Price DECIMAL(10, 2));
```

-- Insert values into the products table

```
INSERT INTO Products (ProductID, ProductName, Price) VALUES
(1, 'Laptop', 800.00),
(2, 'Smartphone', 600.00),
```

```
(3, 'Tablet', 400.00),  
(4, 'Headphones', 150.00),  
(5, 'Keyboard', 50.00),  
(6, 'Mouse', 25.00),  
(7, 'Monitor', 200.00),  
(8, 'Printer', 300.00),  
(9, 'Webcam', 100.00),  
(10, 'Charger', 30.00);
```

-- Create the order details table

```
CREATE TABLE OrderDetail (  
    OrderID INT,  
    ProductID INT,  
    Quantity INT,  
    Price DECIMAL(10, 2)  
);
```

-- Insert values into the order details table

```
INSERT INTO OrderDetail (OrderID, ProductID, Quantity, Price) VALUES  
(1, 1, 1, 800.00),  
(1, 2, 2, 1200.00),  
(2, 3, 1, 400.00),  
(2, 4, 1, 150.00),  
(3, 5, 3, 150.00),  
(3, 6, 2, 50.00),  
(4, 7, 1, 200.00),  
(4, 8, 1, 300.00),  
(5, 9, 2, 200.00),  
(5, 10, 4, 120.00);
```

```
CREATE INDEX idx_productid_orders ON Orderdetail (ProductID);
```

```
CREATE INDEX idx_productid_orderdetails ON OrderDetail (ProductID);
```

--ecommerce db

```
CREATE TABLE emorders (OrderID INT PRIMARY KEY, CustomerID INT, OrderDate  
DATETIME, TotalAmount DECIMAL (10, 2));
```

```
INSERT INTO emOrders (OrderID, CustomerID, OrderDate, TotalAmount)  
VALUES
```

```
(1, 12345, '2024-12-01 10:00:00', 500.00),  
(2, 12346, '2024-12-02 11:00:00', 750.50),  
(3, 12345, '2024-12-03 14:00:00', 320.75),  
(4, 12347, '2024-12-04 16:30:00', 620.25);
```

```
SELECT orderid, OrderDate, TotalAmount  
FROM emOrders  
WHERE customerid= 12345;  
CREATE INDEX idx_custom@rid ON Orders (Customer_ID);
```

```
--social media app  
CREATE TABLE Posts (  
PostID INT PRIMARY KEY,  
UserID INT, PostDate DATETIME, PostContent NVARCHAR (MAX));
```

```
INSERT INTO Posts (PostID, UserID, PostDate, PostContent)  
VALUES  
(1, 101, '2024-11-15 10:00:00', 'This is the first post content.'),  
(2, 102, '2024-11-20 14:30:00', 'Second post with different user.'),  
(3, 101, '2024-12-01 09:15:00', 'A recent post from user 101.'),  
(4, 103, '2024-11-28 17:45:00', 'Another post from a different user.'),  
(5, 101, '2024-12-07 12:00:00', 'The most recent post by user 101.');
```

```
SELECT PostID, PostDate, PostContent  
FROM Posts  
WHERE UserID = 101  
AND PostDate> DATEADD (MONTH, -1, GETDATE());  
CREATE INDEX idx_userid_postdate ON Posts (UserID, PostDate);
```

```
--banking app  
CREATE TABLE Transactions (  
TransactionID INT PRIMARY KEY,  
AccountID INT, TransactionDate DATETIME, TransactionAmount DECIMAL (10, 2), Description  
NVARCHAR (255) );
```

```
INSERT INTO Transactions (TransactionID, AccountID, TransactionDate, TransactionAmount,  
Description)  
VALUES  
(1, 2001, '2024-06-10 10:00:00', 6000.00, 'Salary Deposit'),  
(2, 2002, '2024-07-15 14:00:00', 4500.00, 'Utility Payment'),  
(3, 2001, '2024-08-20 16:30:00', 8000.50, 'Investment Return'),  
(4, 2001, '2024-09-25 09:45:00', 3000.00, 'Grocery Purchase'),
```

```
(5, 2001, '2024-11-05 11:00:00', 7000.00, 'Bonus Payment'),  
(6, 2003, '2024-10-12 13:30:00', 9000.00, 'Property Rent'),  
(7, 2001, '2024-12-01 15:00:00', 10000.00, 'Freelance Work Income');
```

```
SELECT TransactionID, TransactionDate, TransactionAmount, Description FROM Transactions  
WHERE AccountID =2001  
AND TransactionAmount > 5000  
AND TransactionDate > DATEADD (MONTH, -6, GETDATE());  
CREATE INDEX idx_accountid_date_amount ON Transactions (AccountID,  
TransactionDate, TransactionAmount);
```

--online retail store

```
CREATE TABLE Product (ProductID INT PRIMARY KEY,CategoryID INT, ProductName  
NVARCHAR (255), Price DECIMAL(10, 2), Stock INT);
```

```
INSERT INTO Product (ProductID, CategoryID, ProductName, Price, Stock)  
VALUES  
(1, 5, 'Wireless Mouse', 250.00, 100),  
(2, 3, 'Keyboard', 150.00, 50),  
(3, 5, 'Bluetooth Speaker', 450.00, 30),  
(4, 2, 'Monitor', 12000.00, 20),  
(5, 5, 'USB Cable', 120.00, 200),  
(6, 4, 'Power Bank', 800.00, 60),  
(7, 5, 'Laptop Sleeve', 300.00, 75);
```

```
SELECT ProductID, ProductName, Price FROM Product  
WHERE CategoryID=5  
AND Price BETWEEN 100 AND 500;  
CREATE INDEX idx_categoryid_price ON Product (CategoryID, Price);
```

--hotel reservation

-- Create the Rooms table

```
CREATE TABLE Room (  
    RoomID INT PRIMARY KEY,  
    RoomType NVARCHAR(50),  
    Price DECIMAL(10, 2),  
    AvailabilityStatus NVARCHAR(20));
```

-- Example: Insert some data into the Rooms table

```
INSERT INTO Room (RoomID, RoomType, Price, AvailabilityStatus) VALUES
```

```
(1, 'Deluxe', 300.00, 'Available'),  
(2, 'Standard', 150.00, 'Occupied'),  
(3, 'Deluxe', 250.00, 'Available'),  
(4, 'Suite', 500.00, 'Available'),  
(5, 'Deluxe', 350.00, 'Occupied');
```

```
SELECT RoomID, RoomType, Price FROM Room  
WHERE RoomType = 'Deluxe'  
AND Price BETWEEN 200 AND 400  
AND AvailabilityStatus = 'Available';  
CREATE INDEX idx_roomtype_price_availability ON Room (RoomType, Price,  
AvailabilityStatus);
```

```
--shipment tracking  
CREATE TABLE Shipments (  
ShipmentID INT PRIMARY KEY,  
Trackingnumber NVARCHAR(50),  
ShipmentDate DATETIME,  
Status NVARCHAR (50)  
);
```

```
-- Insert values into the Shipments table  
INSERT INTO Shipments (ShipmentID, Trackingnumber, ShipmentDate, Status) VALUES  
(1, '123ABC', '2024-11-15 10:30:00', 'In Transit'),  
(2, '456DEF', '2024-11-20 14:00:00', 'Delivered'),  
(3, '789GHI', '2024-12-01 09:45:00', 'In Transit'),  
(4, '101JKL', '2024-12-05 16:20:00', 'Pending'),  
(5, '112MNO', '2024-12-08 08:15:00', 'Shipped');
```

```
SELECT ShipmentID, Trackingnumber, ShipmentDate, Status  
FROM Shipments  
WHERE Trackingnumber = '123ABC'  
AND ShipmentDate >= DATEADD(MONTH, -1, GETDATE());  
CREATE INDEX idx_Trackingnumber_date on shipments (Trackingnumber,  
ShipmentDate);
```

```
--healthcare  
CREATE TABLE PatientRecords (  
PatientID INT,  
VisitDate DATETIME,
```

```
Diagnosis NVARCHAR (255),  
Treatment NVARCHAR (255)  
);
```

```
-- Insert values into the PatientRecords table
```

```
INSERT INTO PatientRecords (PatientID, VisitDate, Diagnosis, Treatment) VALUES  
(1001, '2023-12-01 09:00:00', 'Flu', 'Rest and hydration'),  
(1001, '2024-01-15 10:30:00', 'Allergy', 'Antihistamines'),  
(1002, '2023-11-20 14:00:00', 'Back Pain', 'Physical therapy'),  
(1003, '2024-02-10 11:45:00', 'Hypertension', 'Medication adjustment'),  
(1004, '2023-10-05 08:15:00', 'Diabetes', 'Diet control and medication');
```

```
SELECT PatientID, VisitDate, Diagnosis, Treatment  
FROM PatientRecords  
WHERE PatientID =1001  
AND VisitDate > DATEADD (YEAR, -1, GETDATE());  
CREATE INDEX idx_patientid_visitdate ON PatientRecords (PatientID, VisitDate);
```