

## LAPORAN PRAKTIKUM PERTEMUAN 3 MBD A2 KELOMPOK 4

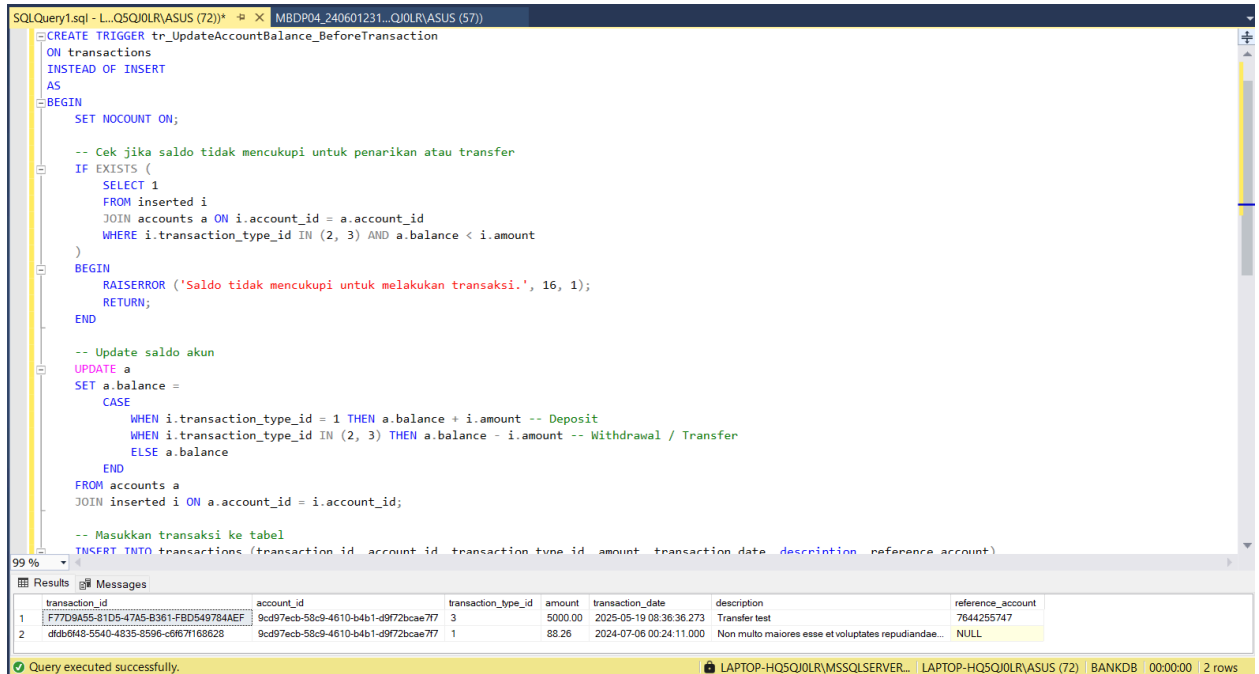
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1. Buatlah index pada tabel accounts untuk mempercepat pencarian. Pilih salah satu kolom pada table tersebut dan berikan alasan pemilihan kolom tersebut sebagai index!



```
SQLQuery1.sql - L:\QSQJOLR\ASUS (72)* X [MBDP04_240601231...QJOLR\ASUS (57)]
CREATE TRIGGER tr_UpdateAccountBalance_BeforeTransaction
ON transactions
INSTEAD OF INSERT
AS
BEGIN
    SET NOCOUNT ON;

    -- Cek jika saldo tidak mencukupi untuk penarikan atau transfer
    IF EXISTS (
        SELECT 1
        FROM inserted i
        JOIN accounts a ON i.account_id = a.account_id
        WHERE i.transaction_type_id IN (2, 3) AND a.balance < i.amount
    )
    BEGIN
        RAISERROR ('Saldo tidak mencukupi untuk melakukan transaksi.', 16, 1);
        RETURN;
    END

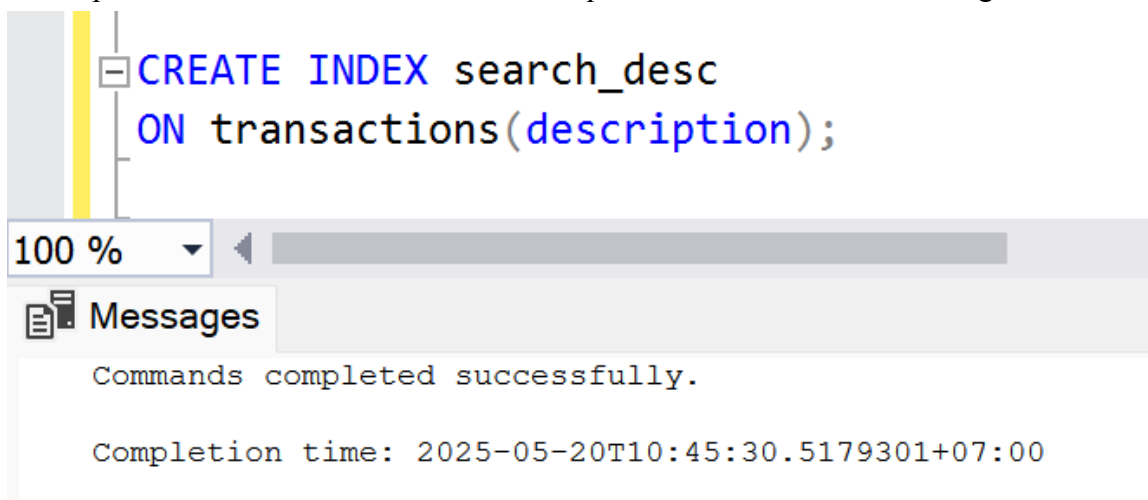
    -- Update saldo akun
    UPDATE a
    SET a.balance =
        CASE
            WHEN i.transaction_type_id = 1 THEN a.balance + i.amount -- Deposit
            WHEN i.transaction_type_id IN (2, 3) THEN a.balance - i.amount -- Withdrawal / Transfer
            ELSE a.balance
        END
    FROM accounts a
    JOIN inserted i ON a.account_id = i.account_id;

    -- Masukkan transaksi ke tabel
    INSERT INTO transactions (transaction_id, account_id, transaction_type_id, amount, transaction_date, description, reference_account)
    VALUES (
        NEWID(),
        i.account_id,
        i.transaction_type_id,
        i.amount,
        GETDATE(),
        i.description,
        i.reference_account
    )
    FROM inserted i;
END
```

transaction_id	account_id	transaction_type_id	amount	transaction_date	description	reference_account
F77D9A55-81D5-47A5-B361-FBD549784AEF	9cd97ecb-58c9-4610-b4b1-d9f72bcae777	3	5000.00	2025-05-19 08:36:36.273	Transfer test	7644255747
dddb6448-5540-4835-8596-c6b67168628	9cd97ecb-58c9-4610-b4b1-d9f72bcae777	1	88.26	2024-07-06 00:24:11.000	Non multo maiores esse et voluptates repudiandae...	NULL

Query executed successfully. LAPTOP-HQ5QJOLR\MSSQLSERVER... LAPTOP-HQ5QJOLR\ASUS (72) | BANKDB | 00:00:00 | 2 rows

2. Buatlah index pada tabel transactions untuk mempercepat pencarian. Pilih salah satu kolom pada table tersebut dan berikan alasan pemilihan kolom tersebut sebagai index!



```
CREATE INDEX search_desc
ON transactions(description);
```

100 %

Messages

Commands completed successfully.

Completion time: 2025-05-20T10:45:30.5179301+07:00

3. Buatlah composite index pada tabel accounts. Pilih lebih dari satu kolom pada tabel tersebut dan uji performa query sebelum dan setelah menggunakan index! (query pengujian berdasarkan kolom yang dipilih sebagai index)!

### Sebelum Pakai Index

```
-- UJI COBA SEBELUM ADA INDEX
SELECT * FROM accounts WHERE account_type = 'savings' AND balance > 10000;
```

100 %

Results Messages

SQL Server parse and compile time:  
CPU time = 0 ms, elapsed time = 10 ms.  
SQL Server parse and compile time:  
CPU time = 0 ms, elapsed time = 0 ms.

(17 rows affected)  
Table 'accounts'. Scan count 1, logical reads 4, physical reads 0, page served

SQL Server Execution Times:  
CPU time = 0 ms, elapsed time = 0 ms.

Completion time: 2025-05-23T22:16:30.4382221+07:00

100 %

✓ Query executed successfully. | WINDOWS-PCPNI

### Pembuatan Index

```
-- PEMBUATAN INDEX
CREATE INDEX idx_acc_type_balance
ON accounts(account_type, balance);
```

100 %

Messages

SQL Server parse and compile time:  
CPU time = 0 ms, elapsed time = 1 ms.  
Table 'accounts'. Scan count 1, logical reads 4, phys

SQL Server Execution Times:  
CPU time = 16 ms, elapsed time = 6 ms.

Completion time: 2025-05-23T22:22:23.5495928+07:00

100 %

✓ Query executed successfully.

## Setelah Pakai Index

```
-- UJI COBA SETELAH ADA INDEX
SELECT * FROM accounts WHERE account_type = 'savings' AND balance > 10000;
```

100 %

Results Messages

SQL Server parse and compile time:  
CPU time = 0 ms, elapsed time = 0 ms.  
SQL Server parse and compile time:  
CPU time = 0 ms, elapsed time = 0 ms.

(17 rows affected)  
Table 'accounts'. Scan count 1, logical reads 4, physical reads 0, page serv

SQL Server Execution Times:  
CPU time = 0 ms, elapsed time = 0 ms.

Completion time: 2025-05-23T22:24:18.3119149+07:00

100 %

✓ Query executed successfully. WINDOWS-PCPN

4. Buat cursor untuk membaca semua akun dari tabel accounts, lalu periksa balance masing-masing. Jika balance < 9.000, tampilkan pesan: "Saldo rendah untuk account\_id: [account\_id]".

```
--Nomor 4
DECLARE @account_id CHAR(36);
DECLARE @balance DECIMAL(18,2);

DECLARE read_accounts_cursor CURSOR FOR
SELECT account_id, balance
FROM accounts;

OPEN read_accounts_cursor;

FETCH NEXT FROM read_accounts_cursor INTO @account_id, @balance;

WHILE @@FETCH_STATUS = 0
BEGIN
    IF @balance < 9000
    BEGIN
        PRINT 'Saldo rendah untuk account_id: ' + @account_id;
    END;

    FETCH NEXT FROM read_accounts_cursor INTO @account_id, @balance;
END;

CLOSE read_accounts_cursor;
DEALLOCATE read_accounts_cursor;
```

```
100 %
Messages
Saldo rendah untuk account_id: 07a36a4b-7943-4634-b17a-7c7eb4407cd3
Saldo rendah untuk account_id: 0937445f-d5eb-4ef9-887f-4173fe662dd4
Saldo rendah untuk account_id: 1d97bce1-5c94-49e4-8e2a-6ad56b99afb0
Saldo rendah untuk account_id: 2fdf706a-7187-470c-a1c3-f3e747b72f20
Saldo rendah untuk account_id: 318c43bf-9511-4030-bd13-81a47a4b8cac
Saldo rendah untuk account_id: 34e9be76-4674-4d0f-b7c0-a39e43548747
Saldo rendah untuk account_id: 36f3d280-2886-4e51-adcd-dfc644e59d80
Saldo rendah untuk account_id: 418a133e-5e1f-4377-8d48-63de24b5b08e
Saldo rendah untuk account_id: 418fedb1-da8f-4c67-8073-4a147e2f5ded
Saldo rendah untuk account_id: 441aa9d2-bdf2-4b65-a79f-c18e66de0e17
Saldo rendah untuk account_id: 48eef121-050c-4362-b2b1-96a32f5fe6a9
Saldo rendah untuk account_id: 6d17ee21-72d5-4fb5-a638-ef220307dcd9
Saldo rendah untuk account_id: 73b13073-025d-45c9-bed2-6b6760e7e10d
Saldo rendah untuk account_id: 8a54f7b6-3ac0-4aee-88c4-ff386444e673
Saldo rendah untuk account_id: 8d8d1450-995a-4db8-84d1-47779bd7d233
Saldo rendah untuk account_id: 905660c8-d6a7-40e9-9be3-e6711d22efb6
Saldo rendah untuk account_id: a9eb22fe-d2a1-4f58-b903-ba06bfab92c4
Saldo rendah untuk account_id: bff8f8bd-3931-4f3f-b0c1-636597f97db5
Saldo rendah untuk account_id: c044b4de-6caf-4d33-91d3-50c621e194b0
Saldo rendah untuk account_id: c098f0dd-6434-4f69-afdd-d756849fe1fd
Saldo rendah untuk account_id: c4dd8020-5b57-4739-9d49-0f7172ffa3f3f
Saldo rendah untuk account_id: d7461fd9-005f-47c5-aed6-98c6b03f378b

Completion time: 2025-05-23T19:31:53.3772101+07:00
```

5. Buat cursor untuk membaca semua pelanggan (customers) dan gabungkan first\_name dan last\_name untuk ditampilkan dengan format: "Customer: [Nama Lengkap]".

```
DECLARE @first_name CHAR(50);
DECLARE @last_name VARCHAR(50);

-- Deklarasi cursor
DECLARE customer_cursor CURSOR FOR
SELECT first_name, last_name
FROM customers;

-- Buka cursor
OPEN customer_cursor;

-- Ambil baris pertama
FETCH NEXT FROM customer_cursor INTO @first_name, @last_name;

-- Loop selama masih ada data
WHILE @@FETCH_STATUS = 0
BEGIN
    -- Cetak data (bisa diganti dengan proses lain)
    PRINT 'Customer: ' + concat(@first_name, @last_name)
    -- Ambil baris berikutnya
    FETCH NEXT FROM customer_cursor INTO @first_name,
    @last_name;
END;

-- Tutup dan hapus cursor
CLOSE customer_cursor;
DEALLOCATE customer_cursor;
```

100 %

Messages	
Customer: Sergeant	Maith
Customer: Shaine	Matic
Customer: Buddie	Sandison
Customer: Stephanus	Frear
Customer: Corette	Vicent
Customer: Devon	McQuode
Customer: Jacquenette	Hilldrup
Customer: Bobette	Shambrooke
Customer: Donnajean	Amerighi
Customer: Barbabra	Swires
Customer: Sandro	Alten
Customer: Nester	Niccolls
Customer: Rebekah	Conkie
Customer: Sidonnie	Marks
Customer: Niel	Yuryatin
Customer: Spike	Sill
Customer: Billye	Lyfe
Customer: Meggi	MacDermott
Customer: Horst	Morecomb
Customer: Jyoti	Treanor
Customer: Boy	Rowesby
Customer: Galen	Biddy
Customer: Olivia	Speedin
Customer: Jamie	Beirne
Customer: Anabella	Vaulkhard
Customer: Zebedee	Goley
Customer: Rafe	Cornwell
Customer: Arlina	Tofts
Customer: Ikey	Le Fevre
Customer: Donny	Bamsey
Customer: Anjanette	Callf
Customer: Meade	McSkin
Customer: Antonetta	Cavey
Customer: Estrella	Glentworth
Customer: Giordano	Schutter
Customer: Hillie	Wyrall
Customer: Chanda	Brunnstein
Customer: Kellia	Bowler
Customer: Ogdon	Ferrand
Customer: Gustie	Ravillas
Customer: Philippe	Bartolomeazzi
Customer: Kendricks	Casper
Customer: Seka	Rabbe
Customer: Wilden	De Paoli
Customer: Rachael	Giacopetti
Customer: Bendite	Godsafe
Customer: Feodora	Muess
Customer: Dorella	Clavey
Customer: Daisie	Gabala
Customer: Shalne	Lowers
Customer: Hobie	Skirving
Customer: Hortense	Munsey
Customer: Noellyn	Crinage

100 %

✓ Query executed successfully.