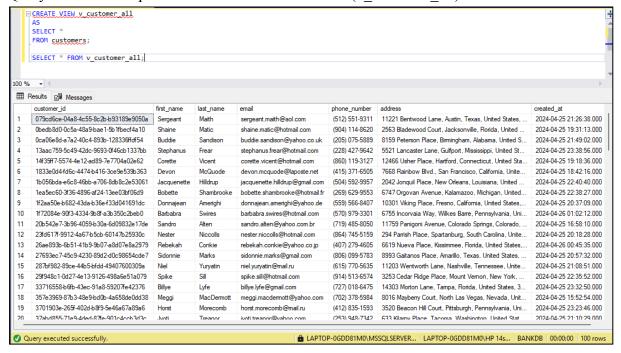## Kelompok 05 Lab A2 :

1. Bagus Athallah   (24060123120002)
2. Akbar Maulana P   (24060123140199)
3. Axel nata kesuma   (24060123130058)
4. Agathan Khairy Bowo L.   (24060123140129)
5. Ahmad Rafi Alhammam   (24060123140138)

Praktikum 1

1. Query untuk menampilkan semua isi tabel customers (v_customer_all)

```sql
CREATE VIEW v_customer_all
AS
SELECT *
FROM customers;

SELECT * FROM v_customer_all;
```

	customer_id	first_name	last_name	email	phone_number	address	created_at
1	079cd6ce-04a8-4c55-8c2b-b93189e9050a	Sergeant	Maith	sergeant.maith@aol.com	(512) 551-9311	11221 Bentwood Lane, Austin, Texas, United States, ...	2024-04-25 21:26:38.000
2	0bedb8d0-0c5a-48a9-bae1-5b1fbecf4a10	Shaine	Matic	shaine.matic@hotmail.com	(904) 114-8620	2563 Bladewood Court, Jacksonville, Florida, United ...	2024-04-25 19:31:13.000
3	0ca06e8d-a7a2-40c4-893b-128336ffdf54	Buddie	Sandison	buddie.sandison@yahoo.co.uk	(205) 075-5889	8159 Peterson Place, Birmingham, Alabama, United S...	2024-04-25 21:49:02.000
4	13aac759-5c49-42dc-9693-0f46cb1337bb	Stephanus	Frear	stephanus.frear@hotmail.com	(228) 427-9642	5521 Lancaster Lane, Gulfport, Mississippi, United St...	2024-04-25 23:38:56.000
5	14f35ff7-5574-4e12-ad89-7e7704a02e62	Corette	Vicent	corette.vicent@hotmail.com	(860) 119-3127	12466 Usher Place, Hartford, Connecticut, United Sta...	2024-04-25 19:18:36.000
6	1833e0d4-fd6c-4474-b416-3ce9e539b363	Devon	McQuode	devon.mcquode@laposte.net	(415) 371-6505	7668 Rainbow Blvd., San Francisco, California, Unite...	2024-04-25 18:42:16.000
7	1b056bda-e6c8-46bb-a706-8db8c2e53061	Jacquenette	Hilldrup	jacquenette.hilldrup@gmail.com	(504) 592-9957	2042 Jonquil Place, New Orleans, Louisiana, United ...	2024-04-25 22:40:40.000
8	1ea5ec60-3f36-4896-af24-13ee03bf06d9	Bobette	Shambrooke	bobette.shambrooke@hotmail.fr	(269) 629-9553	6747 Orgovan Avenue, Kalamazoo, Michigan, United...	2024-04-25 22:38:27.000
9	1f2aa50e-b682-43da-b36e-f33d041691dc	Donnajean	Amerighi	donnajean.amerighi@yahoo.de	(559) 566-8407	10301 Viking Place, Fresno, California, United States, ...	2024-04-25 20:37:09.000
10	1f72084e-90f3-4334-9b8f-a3b350c2beb0	Barbabra	Swires	barbabra.swires@hotmail.com	(570) 979-3301	6755 Incorvaia Way, Wilkes Barre, Pennsylvania, Uni...	2024-04-26 01:02:12.000
11	20b542e7-3b96-4059b30a-6d09832e17de	Sandro	Alten	sandro.alten@yahoo.com.br	(719) 485-8050	11759 Panigoni Avenue, Colorado Springs, Colorado, ...	2024-04-25 16:58:10.000
12	23fd617f-9912-4a67-b5cb-60147b25930c	Nester	Niccolls	nester.niccolls@hotmail.com	(864) 745-5159	294 Parrish Place, Spartanburg, South Carolina, Unite...	2024-04-25 20:18:28.000
13	26ae893b-6b51-41b9-9b07-a8d07e8a2979	Rebekah	Conkie	rebekah.conkie@yahoo.co.jp	(407) 279-4605	6619 Nueva Place, Kissimmee, Florida, United States, ...	2024-04-26 00:45:35.000
14	27693ec7-45c9-4230-89d2-d0c98654cde7	Sidonnie	Marks	sidonnie.marks@gmail.com	(806) 099-5783	8993 Gaitanos Place, Amarillo, Texas, United States, ...	2024-04-25 20:57:32.000
15	287bf982-89ce-44b5-bfdd-49407600309a	Niel	Yuryatin	niel.yuryatin@mail.ru	(615) 770-5635	11203 Wentworth Lane, Nashville, Tennessee, Unite...	2024-04-25 21:08:51.000
16	29f948c1-0d27-4e13-9126-498a6e51a079	Spike	Sill	spike.sill@hotmail.com	(914) 513-6574	3253 Cedar Ridge Place, Mount Vernon, New York, ...	2024-04-25 22:35:52.000
17	33716558-b6fb-43ec-91a8-55027fe42376	Billye	Lyfe	billye.lyfe@gmail.com	(727) 018-6475	14303 Morton Lane, Tampa, Florida, United States, 3...	2024-04-25 23:32:50.000
18	357e3969-87b3-48e9-bd0b-4a658de0dd38	Meggi	MacDermott	meggi.macdermott@yahoo.com	(702) 378-5984	8016 Mayberry Court, North Las Vegas, Nevada, Unit...	2024-04-25 15:52:54.000
19	3701903e-265f-402d-b8f9-5e46a67a89a6	Horst	Morecomb	horst.morecomb@mail.ru	(412) 835-1593	3520 Beacon Hill Court, Pittsburgh, Pennsylvania, Uni...	2024-04-25 23:23:46.000
20	37abd855-71e9-4ded-87fe-901c4cch3d3c	Jyoti	Treanor	jyoti.treanor@yahoo.com	(253) 948-7342	633 Kilamy Place, Tacoma, Washington, United Stat...	2024-04-25 21:10:29.000

Query executed successfully.   LAPTOP-0GDD81M0\MSSQLSERVER... | LAPTOP-0GDD81M0\HP 14s... | BANKDB | 00:00:00 | 100 rows

2. Query untuk menampilkan semua transaksi deposit (v_deposit_transaction)

```sql
CREATE VIEW v_deposit_transaction
AS
SELECT
    t.transaction_id,
    t.account_id,
    a.account_number,
    t.amount AS deposit_amount,
    t.transaction_date,
    t.description,
    c.first_name + ' ' + c.last_name AS customer_name
FROM
    transactions t
INNER JOIN
    accounts a ON t.account_id = a.account_id
INNER JOIN
    customers c ON a.customer_id = c.customer_id
WHERE
    t.transaction_type_id = 1;

SELECT * FROM v_deposit_transaction;
```

	transaction_id	account_id	account_number	deposit_amount	transaction_date	description
1	027c8cc4-d92d-46cd-8256-d46f395f3e0c	d29c5b3d-6bb3-4248-bf1a-4339bc80b6b0	2075461919	112.34	2024-07-18 13:04:35.000	Ficta pueriliter tum ne efficit quidem quod vult N
2	049519be-3725-44ee-bf7e-f71ea192625e	f9341b55-2686-40af-9e1b-2986672efd92	3493783953	89.76	2025-02-06 03:42:17.000	Beateque vivendo a Platone disputata sunt haec
3	063e014a-839b-4ed2-b3a3-510e528f961c	0937445f-d5eb-4ef9-887f-4173fe662dd4	0925361770	122.10	2025-03-05 00:22:17.000	Et quidem locis pluribus
4	06ae34b6-1723-4b44-baf9-a885f489f723	71c0f7ab-b701-45f0-9c94-802383b3cc36	4439138749	87.25	2025-01-09 09:05:38.000	Quales eius maiores fuissent et in conspectum suum
5	0db669d2-610c-44cd-b5fa-2e3f58051d09	c098f0dd-6434-4f69-afdd-d756849fe1fd	8421559542	124.05	2024-08-28 00:48:45.000	Praeterea neque praesenti nec

Query executed successfully.   LAPTOP-0GDD81M0\MSSQLSERVER... | LAPTOP-0GDD81M0\HP 14s... | BANKDB | 00:00:00 | 33 rows

3. Query untuk menampilkan semua transaksi transfer (v_transfer_transaction)

```sql
CREATE VIEW v_transfer_transaction AS
SELECT
    t.transaction_id,
    t.account_id AS sender_account_id,
    a.account_number AS sender_account_number,
    t.reference_account AS receiver_account_id,
    ra.account_number AS receiver_account_number,
    t.amount,
    t.transaction_date,
    t.description
FROM transactions t
JOIN transaction_types tt ON t.transaction_type_id = tt.transaction_type_id
JOIN accounts a ON t.account_id = a.account_id
LEFT JOIN accounts ra ON t.reference_account = ra.account_id
WHERE tt.name = 'Transfer';

SELECT * FROM v_transfer_transaction;
```

	transaction_id	sender_account_id	sender_account_number	receiver_account_id	receiver_account_number	amount	transaction_date	des
1	0096cba5-4e9c-49f4-b1df-4955a76275e4	802b2efe-e1d1-465b-940f-5cf573a2c985	1704735459	NULL	NULL	80.72	2024-10-17 00:06:59.000	Po
2	01e6c965-00a0-41c8-8fc6-320a25e171e2	f75c87e7-70a8-4fbd-8ad6-9d5e9cefc314	3849055069	NULL	NULL	112.54	2025-01-21 12:01:19.000	Int
3	0e5ccf7d-0803-476b-8405-23e0b5091c08	d094e634-9744-478d-b73b-1a73149b198b	9454584737	NULL	NULL	98.25	2024-06-29 15:41:58.000	Fic
4	13706eb5-aabb-467b-86ca-b1c9999dc7dc	57620a31-a1ee-4dbc-9a72-09bc5bb72b7d	5606148528	NULL	NULL	96.05	2024-11-23 23:08:47.000	Nc
5	189574d3-bf80-449b-a8e6-e0ef42d0a096	3f494e04-a406-4692-a584-19db622e48ac	4295222278	NULL	NULL	123.90	2025-03-13 07:48:13.000	Id
6	1bc0bec8-97de-4720-8278-a18d7538c308	a448f319-9dc4-4c02-b016-e1eab2b49629	6580443064	NULL	NULL	91.54	2024-08-16 04:51:30.000	Bo
7	2ae8fb1c-1844-4602-aa0a-5a13a6507874	ac35eddd-0fb1-4711-9bb8-1985fc566b52	1582257006	NULL	NULL	79.15	2024-06-24 10:22:24.000	Nis
8	34608f20-08ad-42b2-8ac9-6a450b4788b9	c73f146f-aef6-415f-bc17-8bf06ba9819e	2769479719	NULL	NULL	86.91	2024-11-15 04:57:54.000	Nis

Query executed successfully.   LAPTOP-0GDD81M0\MSSQLSERVER... LAPTOP-0GDD81M0\HP 14s... BANKDB 00:00:00 34 rows

4. Query untuk Procedure sp_CreateCustomer untuk menambahkan customer baru ke dalam tabel customers: input first_name, last_name, email, phone_number, address.

```sql
CREATE PROCEDURE sp_CreateCustomer
    @first_name     VARCHAR(50),
    @last_name      VARCHAR(50),
    @email          VARCHAR(50),
    @phone_number   VARCHAR(20),
    @address        VARCHAR(255)
AS
BEGIN
    SET NOCOUNT ON;

    INSERT INTO customers (
        customer_id, first_name, last_name, email, phone_number, address
    )
    VALUES (
        NEWID(), @first_name, @last_name, @email, @phone_number, @address
    );
END;
```

Contoh penggunaan procedure:

```sql
EXEC sp_CreateCustomer
    @first_name = 'Jane',
    @last_name = 'Doe',
    @email = 'jane.doe@example.com',
    @phone_number = '081234567890',
    @address = 'Jl. Mawar No. 123, Jakarta';


SELECT * FROM customers where first_name = 'Jane';
```

	customer_id	first_name	last_name	email	phone_number	address	created_at
1	9B8FFDBB-9C8C-4E58-9125-758C385B288F	Jane	Doe	jane.doe@example.com	081234567890	Jl. Mawar No. 123, Jakarta	2025-05-05 19:03:45.697

5. Query untuk Procedure sp_CreateAccount untuk membuat akun baru untuk customer yang sudah ada: input customer_id, account_number, account_type, balance. Notes: Tambahkan validasi untuk memastikan bahwa customer_id benar benar ada pada table customers.

```sql
CREATE PROCEDURE sp_CreateAccount
    @customer_id CHAR(36),
    @account_number VARCHAR(20),
    @account_type VARCHAR(20),
    @balance DECIMAL(15,2)
AS
BEGIN
    IF EXISTS (SELECT 1 FROM customers WHERE customer_id = @customer_id)
    BEGIN
        INSERT INTO accounts (customer_id, account_number, account_type, balance)
        VALUES (@customer_id, @account_number, @account_type, @balance);
    END
    ELSE
    BEGIN
        RAISERROR('Customer ID tidak ditemukan.', 16, 1);
    END
END
```

Contoh penggunaan procedure   :

```sql
EXEC sp_CreateAccount
    @customer_id = '079cd6ce-04a8-4c55-8c2b-b93189e9050a',
    @account_number = 'ACC123456',
    @account_type = 'Savings',
    @balance = 1500000.00;
```

91 %

Messages

Commands completed successfully.

Completion time: 2025-05-05T20:26:50.4327113+07:00

6. Query untuk Procedure sp_MakeTransaction untuk menambahkan transaksi baru: input account_id, transaction_type_id, amount, description, reference_account (opsional). Notes: Tambahkan validasi untuk transfer, jika jumlah transfer melebihi balance maka transaksi dihentikan.

```sql
-- Procedure sp_MakeTransaction
CREATE OR ALTER PROCEDURE sp_MakeTransaction
    @account_id CHAR(36),
    @transaction_type_id INT,
    @amount DECIMAL(18,2),
    @description VARCHAR(MAX),
    @reference_account CHAR(36) = NULL -- opsional
    -- parameter input prosedur
AS
BEGIN
    SET NOCOUNT ON;
    -- mematikan respon balik sistem basis data

    DECLARE @current_balance DECIMAL(18,2);
    -- variabel sementara tabungan saat ini

    -- Validasi: Pastikan account_id ada
    IF NOT EXISTS (SELECT 1 FROM accounts WHERE account_id = @account_id)
    BEGIN
        RAISERROR('Account ID tidak ditemukan.', 16, 1);
        RETURN;
    END

    -- Ambil saldo sekarang
    SELECT @current_balance = balance FROM accounts WHERE account_id = @account_id;

    -- Ambil saldo sekarang
    SELECT @current_balance = balance FROM accounts WHERE account_id = @account_id;

    -- Cek: kalau ini transaksi transfer
    IF (@transaction_type_id = 2)
    BEGIN
        -- Kalau saldo kurang
        IF @current_balance < @amount
        BEGIN
            RAISERROR('Saldo tidak cukup untuk transfer.', 16, 1);
            RETURN;
        END

        -- Kurangi saldo account asal
        UPDATE accounts
        SET balance = balance - @amount
        WHERE account_id = @account_id;

        -- Tambah saldo ke rekening tujuan jika reference_account tidak NULL
        IF @reference_account IS NOT NULL
        BEGIN
            -- Validasi reference_account ada
            IF NOT EXISTS (SELECT 1 FROM accounts WHERE account_id = @reference_account)
            BEGIN
                RAISERROR('Reference Account ID tidak ditemukan.', 16, 1);
                RETURN;
            END
```

```sql
                UPDATE accounts
                SET balance = balance + @amount
                WHERE account_id = @reference_account;
            END
        END

        -- Insert transaksi
        INSERT INTO transactions (account_id, transaction_type_id, amount, description, reference_account)
        VALUES (@account_id, @transaction_type_id, @amount, @description, @reference_account);
END
```

Contoh Penggunaan:

```sql
-- Transfer berhasil: dari A ke B sebesar 20.000
EXEC sp_MakeTransaction
    @account_id = 'accid-A',
    @transaction_type_id = 2, -- Transfer
    @amount = 20000,
    @description = 'Transfer ke B',
    @reference_account = 'accid-B';

-- Transfer gagal: saldo kurang
EXEC sp_MakeTransaction
    @account_id = 'accid-A',
    @transaction_type_id = 2,
    @amount = 999999,
    @description = 'Transfer besar gagal',
    @reference_account = 'accid-B';

-- Transfer gagal: reference_account tidak ada
EXEC sp_MakeTransaction
    @account_id = 'accid-A',
    @transaction_type_id = 2,
    @amount = 10000,
    @description = 'Transfer ke rekening palsu',
    @reference_account = 'XXXXXXXX-XXXX-XXXX-XXXX-XXXXXXXXXXXX';

-- Setoran langsung (bukan transfer, transaction_type_id misalnya 1 = deposit)
EXEC sp_MakeTransaction
    @account_id = 'accid-B',
    @transaction_type_id = 1,
    @amount = 5000,
    @description = 'Setor tunai',
    @reference_account = NULL;
```

7. Query untuk Procedure sp_GetCustomerSummary untuk menampilkan ringkasan data customer berdasarkan customer_id:
   ● Nama lengkap customer
   ● Jumlah akun yang dimiliki
   ● Jumlah total saldo semua akun
   ● Jumlah pinjaman aktif
   ● Total pinjaman amount aktif

```sql
CREATE PROCEDURE sp_GetCustomerSummary
    @customer_id CHAR(36)
AS
BEGIN
    SET NOCOUNT ON;

    -- Validasi: pastikan customer_id ada
    IF NOT EXISTS (
        SELECT 1 FROM customers WHERE customer_id = @customer_id
    )
    BEGIN
        RAISERROR('Customer ID tidak ditemukan.', 16, 1);
        RETURN;
    END

    -- Ringkasan customer
    SELECT
        CONCAT(first_name, ' ', last_name) AS full_name,
        (SELECT COUNT(*) FROM accounts WHERE customer_id = c.customer_id) AS total_accounts,
        (SELECT ISNULL(SUM(balance), 0) FROM accounts WHERE customer_id = c.customer_id) AS total_balance,
        (SELECT COUNT(*) FROM loans WHERE customer_id = c.customer_id AND status = 'active') AS active_loans,
        (SELECT ISNULL(SUM(loan_amount), 0) FROM loans WHERE customer_id = c.customer_id AND status = 'active') AS total_active_loan_amount
    FROM customers c
    WHERE c.customer_id = @customer_id;
END;
```

Contoh penggunaan procedure   :

```sql
EXEC sp_GetCustomerSummary
    @customer_id = '1f2aa50e-b682-43da-b36e-f33d041691dc';
```