



PROJECT AKHIR

# GODONATE APLIKASI BASIS DATA

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# LATAR BELAKANG

- Perkembangan teknologi informasi mendorong pengelolaan data secara terkomputerisasi.
- Pengelolaan donasi secara manual berisiko terjadi kesalahan pencatatan.
- Sistem manual menyulitkan pemantauan dana dan status donasi.
- Diperlukan basis data terstruktur untuk mengelola data donasi secara akurat dan efisien.

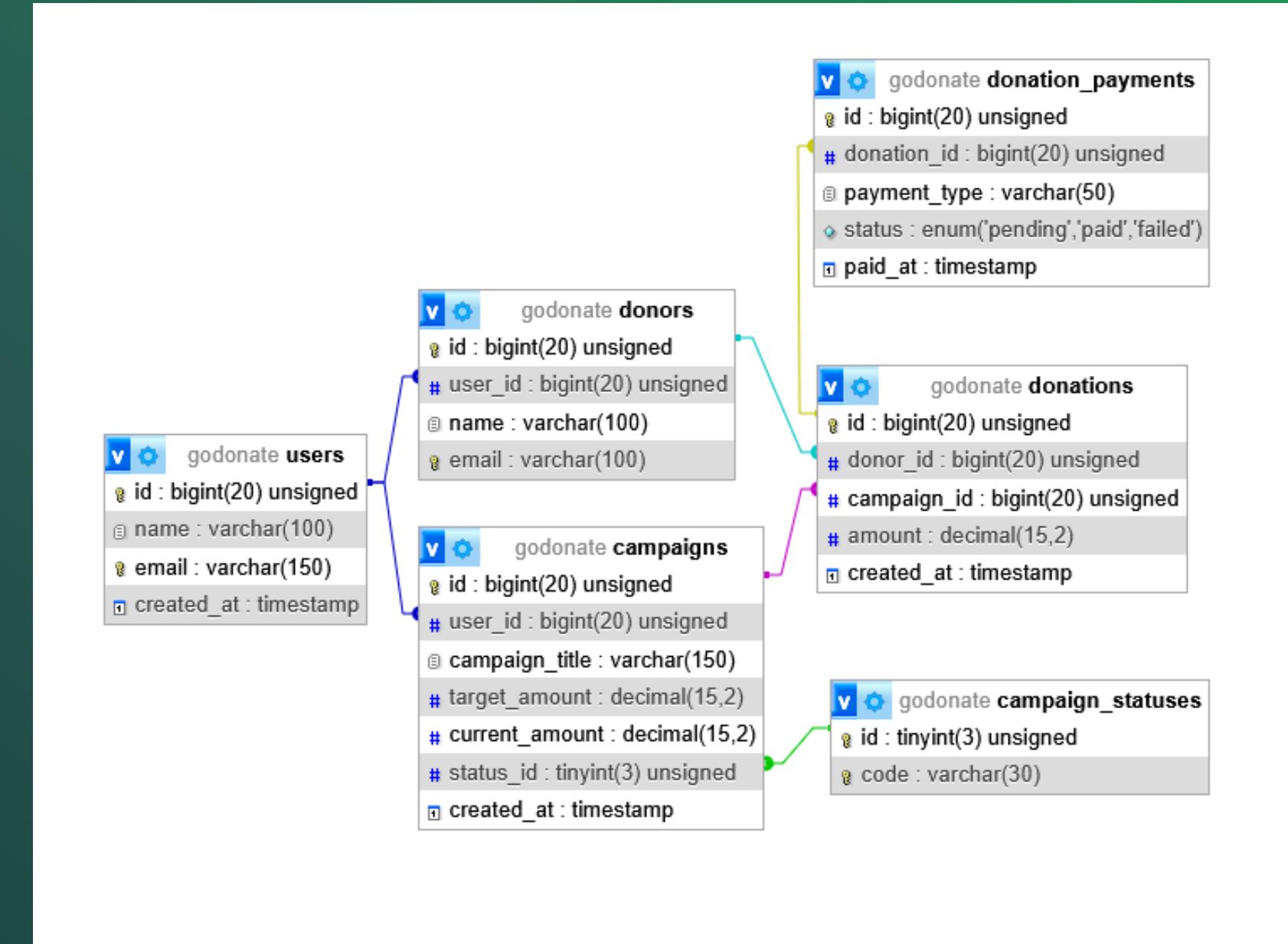


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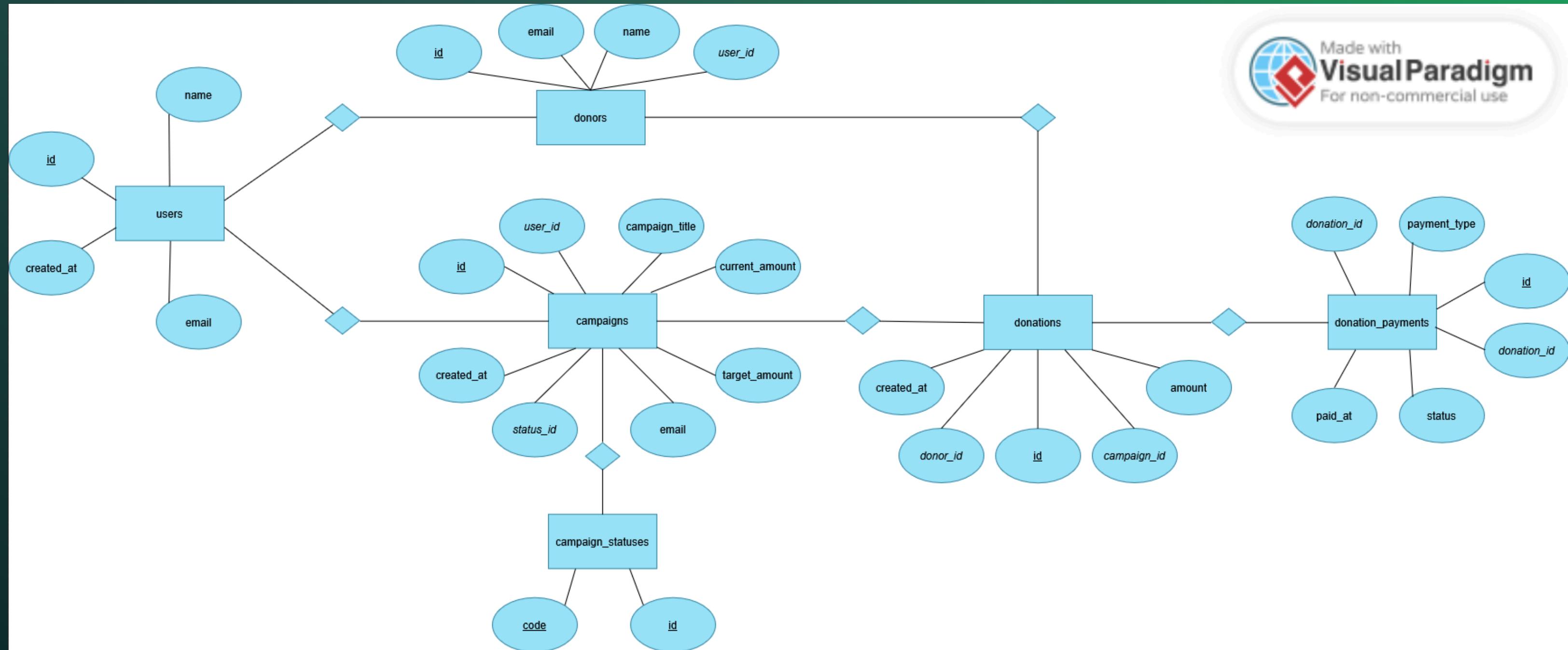
# RUMUSAN MASALAH

- Bagaimana merancang basis data sistem donasi GoDonate?
- Bagaimana membuat relasi antar tabel menggunakan foreign key?
- Bagaimana menerapkan perintah SQL (DDL dan DML)?
- Bagaimana mengelola total donasi secara otomatis?
- Bagaimana menampilkan data menggunakan query SELECT, WHERE, dan ORDER BY?

# STRUKTUR DATABASE



# ERD



# LANDASAN TEORI



## Pengertian Database

1. Database adalah kumpulan data yang tersimpan secara terstruktur di dalam sistem komputer dan saling berelasi, sehingga dapat dikelola, diakses, dan dimanipulasi dengan mudah menggunakan sistem manajemen basis data (DBMS).
2. Pada sistem GoDonate, database digunakan untuk menyimpan dan mengelola data:
  - Pengguna (user)
  - Donatur
  - Campaign donasi
  - Transaksi donasi
  - Pembayaran donasi

# TUJUAN PEMBUATAN DATABASE



Tujuan Pembuatan Database GoDonate

1. Menyimpan data donasi secara terstruktur
2. Menjaga konsistensi dan integritas data
3. Memudahkan proses pencatatan dan pelaporan donasi
4. Mengotomatisasi perhitungan dana melalui trigger
5. Mendukung query laporan menggunakan JOIN, VIEW, dan agregasi

# KONSEP DATABASE YANG DIGUNAKAN



Relational Database :

- Data disimpan dalam bentuk tabel
- Antar tabel saling terhubung menggunakan primary key dan foreign key

Normalisasi :

- Data dipisahkan ke dalam beberapa tabel untuk menghindari redundansi
- Contoh: data status campaign dipisahkan ke tabel campaign\_statuses

Trigger :

- Digunakan untuk menjalankan perintah otomatis
- Contoh: menambah total donasi saat pembayaran berstatus paid

View :

- Digunakan sebagai tabel virtual untuk laporan
- Tidak menyimpan data fisik, hanya hasil query



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# QUERY-QUERY

UNTUK MEMBUAT DAN TESTING GODONATE

# BUAT DATABASE

Gunakan **create database godonate;**

```
MariaDB [(none)]> create database godonate;  
Query OK, 1 row affected (0.001 sec)
```

```
MariaDB [(none)]> .
```

# USE DATABASE

Gunakan **use godonate;**

```
MariaDB [(none)]> use godonate;  
Database changed  
MariaDB [godonate]>
```

# CREATE TABLE

Buatlah table **users, donors, campaign\_statuses, campaigns, donations, donation\_payment**

```
MariaDB [godonate]> CREATE TABLE users (
    ->     id BIGINT UNSIGNED AUTO_INCREMENT PRIMARY KEY,
    ->     name VARCHAR(100) NOT NULL,
    ->     email VARCHAR(100) NOT NULL UNIQUE,
    ->     created_at TIMESTAMP NULL DEFAULT CURRENT_TIMESTAMP
    -> );
Query OK, 0 rows affected (0.076 sec)
```

```
MariaDB [godonate]> CREATE TABLE donors (
    ->     id BIGINT UNSIGNED AUTO_INCREMENT PRIMARY KEY,
    ->     user_id BIGINT UNSIGNED NULL,
    ->     name VARCHAR(100) NOT NULL,
    ->     email VARCHAR(100) NOT NULL UNIQUE
    -> );
Query OK, 0 rows affected (0.024 sec)
```

```
MariaDB [godonate]> CREATE TABLE campaign_statuses (
    ->     id TINYINT UNSIGNED PRIMARY KEY,
    ->     code VARCHAR(30) NOT NULL UNIQUE
    -> );
Query OK, 0 rows affected (0.031 sec)
```

```
MariaDB [godonate]> CREATE TABLE campaigns (
    ->     id BIGINT UNSIGNED AUTO_INCREMENT PRIMARY KEY,
    ->     user_id BIGINT UNSIGNED NOT NULL,
    ->     title VARCHAR(150) NOT NULL,
    ->     target_amount DECIMAL(15,2) NOT NULL,
    ->     current_amount DECIMAL(15,2) DEFAULT 0,
    ->     status_id TINYINT UNSIGNED NOT NULL,
    ->     created_at TIMESTAMP NULL DEFAULT CURRENT_TIMESTAMP
    -> );
Query OK, 0 rows affected (0.007 sec)
```

```
MariaDB [godonate]> CREATE TABLE donations (
    ->     id BIGINT UNSIGNED AUTO_INCREMENT PRIMARY KEY,
    ->     donor_id BIGINT UNSIGNED NOT NULL,
    ->     campaign_id BIGINT UNSIGNED NOT NULL,
    ->     amount DECIMAL(15,2) NOT NULL,
    ->     created_at TIMESTAMP NULL DEFAULT CURRENT_TIMESTAMP
    -> );
Query OK, 0 rows affected (0.006 sec)
```

```
MariaDB [godonate]> CREATE TABLE donation_payments (
    ->     id BIGINT UNSIGNED AUTO_INCREMENT PRIMARY KEY,
    ->     donation_id BIGINT UNSIGNED NOT NULL,
    ->     payment_type VARCHAR(50),
    ->     status ENUM('pending','paid','failed') DEFAULT 'pending',
    ->     paid_at TIMESTAMP NULL
    -> );
Query OK, 0 rows affected (0.006 sec)
```

# CREATE FOREIGN KEY

Gunakan **alter table** untuk menambahkan foreign key

```
MariaDB [godonate]> ALTER TABLE donations
    -> ADD CONSTRAINT fk_donations_campaign
    -> FOREIGN KEY (campaign_id)
    -> REFERENCES campaigns(id)
    -> ON DELETE CASCADE
    -> ON UPDATE CASCADE;
Query OK, 0 rows affected (1.060 sec)
Records: 0  Duplicates: 0  Warnings: 0

MariaDB [godonate]> ALTER TABLE donation_payments
    -> ADD CONSTRAINT fk_payments_donation
    -> FOREIGN KEY (donation_id)
    -> REFERENCES donations(id)
    -> ON DELETE CASCADE
    -> ON UPDATE CASCADE;
Query OK, 0 rows affected (0.059 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

```
MariaDB [godonate]> ALTER TABLE donors
    -> ADD CONSTRAINT fk_donors_user
    -> FOREIGN KEY (user_id)
    -> REFERENCES users(id)
    -> ON DELETE SET NULL
    -> ON UPDATE CASCADE;ALTER TABLE donors
Query OK, 0 rows affected (0.057 sec)
```

```
MariaDB [godonate]> ALTER TABLE campaigns
    -> ADD CONSTRAINT fk_campaigns_status
    -> FOREIGN KEY (status_id)
    -> REFERENCES campaign_statuses(id)
    -> ON DELETE RESTRICT
    -> ON UPDATE CASCADE
    -> ;
Query OK, 0 rows affected (0.043 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

```
MariaDB [godonate]> ALTER TABLE donations
    -> ADD CONSTRAINT fk_donations_donor
    -> FOREIGN KEY (donor_id)
    -> REFERENCES donors(id)
    -> ON DELETE CASCADE
    -> ON UPDATE CASCADE;
Query OK, 0 rows affected (0.042 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

# PENGECEKAN FOREIGN KEY

Lakukan pengecekan apakah sudah ada **foreign key** dengan menggunakan **show create table [nama\_table]**

```
+-----+-----+
| donations | CREATE TABLE `donations` (
  `id` bigint(20) unsigned NOT NULL AUTO_INCREMENT,
  `donor_id` bigint(20) unsigned NOT NULL,
  `campaign_id` bigint(20) unsigned NOT NULL,
  `amount` decimal(15,2) NOT NULL,
  `created_at` timestamp NULL DEFAULT current_timestamp(),
  PRIMARY KEY (`id`),
  KEY `fk_donations_donor` (`donor_id`),
  KEY `fk_donations_campaign` (`campaign_id`),
  CONSTRAINT `fk_donations_campaign` FOREIGN KEY (`campaign_id`) REFERENCES `campaigns` (`id`) ON DELETE CASCADE ON UPDATE CASCADE,
  CONSTRAINT `fk_donations_donor` FOREIGN KEY (`donor_id`) REFERENCES `donors` (`id`) ON DELETE CASCADE ON UPDATE CASCADE
) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_general_ci |
+-----+-----+
1 row in set (0.001 sec)

MariaDB [godonate]> SHOW CREATE TABLE donation_payments;
+-----+-----+
| Table          | Create Table
+-----+-----+
| donation_payments | CREATE TABLE `donation_payments` (
  `id` bigint(20) unsigned NOT NULL AUTO_INCREMENT,
  `donation_id` bigint(20) unsigned NOT NULL,
  `payment_type` varchar(50) DEFAULT NULL,
  `status` enum('pending','paid','failed') DEFAULT 'pending',
  `paid_at` timestamp NULL DEFAULT NULL,
  PRIMARY KEY (`id`),
  KEY `fk_payments_donation` (`donation_id`),
  CONSTRAINT `fk_payments_donation` FOREIGN KEY (`donation_id`) REFERENCES `donations` (`id`) ON DELETE CASCADE ON UPDATE CASCADE
) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_general_ci |
+-----+-----+
```

# PENGECEKAN FOREIGN KEY

```
| donors | CREATE TABLE `donors` (
`id` bigint(20) unsigned NOT NULL AUTO_INCREMENT,
`user_id` bigint(20) unsigned DEFAULT NULL,
`name` varchar(100) NOT NULL,
`email` varchar(100) NOT NULL,
PRIMARY KEY (`id`),
UNIQUE KEY `email` (`email`),
KEY `fk_donors_user` (`user_id`),
CONSTRAINT `fk_donors_user` FOREIGN KEY (`user_id`) REFERENCES `users` (`id`) ON DELETE SET NULL ON UPDATE CASCADE
) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_general_ci |
+-----+
1 row in set (0.004 sec)

MariaDB [godonate]> SHOW CREATE TABLE campaigns;
+-----+-----+
| Table      | Create Table
+-----+-----+
| campaigns | CREATE TABLE `campaigns` (
`id` bigint(20) unsigned NOT NULL AUTO_INCREMENT,
`user_id` bigint(20) unsigned NOT NULL,
`title` varchar(150) NOT NULL,
`target_amount` decimal(15,2) NOT NULL,
`current_amount` decimal(15,2) DEFAULT 0.00,
`status_id` tinyint(3) unsigned NOT NULL,
`created_at` timestamp NULL DEFAULT current_timestamp(),
PRIMARY KEY (`id`),
KEY `fk_campaigns_user` (`user_id`),
KEY `fk_campaigns_status` (`status_id`),
CONSTRAINT `fk_campaigns_status` FOREIGN KEY (`status_id`) REFERENCES `campaign_statuses` (`id`) ON UPDATE CASCADE,
CONSTRAINT `fk_campaigns_user` FOREIGN KEY (`user_id`) REFERENCES `users` (`id`) ON DELETE CASCADE ON UPDATE CASCADE
) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_general_ci |
+-----+
1 row in set (0.004 sec)
```

# STRUKTUR TABLE

Untuk mengecek struktur table gunakan **desc [nama\_table]**;

```
MariaDB [godonate]> desc campaign_statuses; desc campaigns; desc donation_payments; desc donations; desc donors; desc users;
+-----+-----+-----+-----+
| Field | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+
| id    | tinyint(3) unsigned | NO   | PRI  | NULL    |          |
| code  | varchar(30)        | NO   | UNI  | NULL    |          |
+-----+-----+-----+-----+
2 rows in set (0.012 sec)

+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+
| id         | bigint(20) unsigned | NO   | PRI  | NULL    | auto_increment |
| user_id    | bigint(20) unsigned | NO   | MUL  | NULL    |          |
| title      | varchar(150)        | NO   |       | NULL    |          |
| target_amount | decimal(15,2)        | NO   |       | NULL    |          |
| current_amount | decimal(15,2)        | YES  |       | 0.00    |          |
| status_id  | tinyint(3) unsigned | NO   | MUL  | NULL    |          |
| created_at | timestamp           | YES  |       |          | current_timestamp() |
+-----+-----+-----+-----+
7 rows in set (0.003 sec)

+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+
| id         | bigint(20) unsigned | NO   | PRI  | NULL    | auto_increment |
| donation_id | bigint(20) unsigned | NO   | MUL  | NULL    |          |
| payment_type | varchar(50)        | YES  |       | NULL    |          |
| status      | enum('pending','paid','failed') | YES  |       | pending  |          |
| paid_at    | timestamp           | YES  |       | NULL    |          |
+-----+-----+-----+-----+
5 rows in set (0.003 sec)

+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+
| id         | bigint(20) unsigned | NO   | PRI  | NULL    | auto_increment |
| donor_id   | bigint(20) unsigned | NO   | MUL  | NULL    |          |
| campaign_id | bigint(20) unsigned | NO   | MUL  | NULL    |          |
| amount     | decimal(15,2)        | NO   |       | NULL    |          |
| created_at | timestamp           | YES  |       |          | current_timestamp() |
+-----+-----+-----+-----+
5 rows in set (0.003 sec)
```

# STRUKTUR TABLE

```
+-----+-----+-----+-----+-----+-----+
| Field | Type            | Null | Key  | Default | Extra           |
+-----+-----+-----+-----+-----+-----+
| id    | bigint(20) unsigned | NO   | PRI   | NULL    | auto_increment |
| user_id | bigint(20) unsigned | YES  | MUL   | NULL    |                 |
| name   | varchar(100)        | NO   |       | NULL    |                 |
| email  | varchar(100)        | NO   | UNI   | NULL    |                 |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.011 sec)

+-----+-----+-----+-----+-----+-----+
| Field | Type            | Null | Key  | Default | Extra           |
+-----+-----+-----+-----+-----+-----+
| id    | bigint(20) unsigned | NO   | PRI   | NULL    | auto_increment |
| name  | varchar(100)        | NO   |       | NULL    |                 |
| email | varchar(100)        | NO   | UNI   | NULL    |                 |
| created_at | timestamp      | YES  |       | current_timestamp() |                 |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.003 sec)

MariaDB [godonate]> _
```

# MEMBUAT USER

Membuat dua user yaitu **user admin** dan **user biasa**.

```
MariaDB [godonate]> CREATE USER 'admin_godonate'@'localhost'  
    -> IDENTIFIED BY 'admin_godonate';  
Query OK, 0 rows affected (0.002 sec)
```

```
MariaDB [godonate]> CREATE USER 'user_godonate'@'localhost'  
    -> IDENTIFIED BY 'user_godonate';  
Query OK, 0 rows affected (0.002 sec)
```

# HAK AKSES USER

User admin bisa mengakses dan menjalankan apapun tetapi user biasa hanya bisa baca data, insert data seperti donasi dan update data diri.

```
MariaDB [godonate]> GRANT ALL PRIVILEGES  
    -> ON godonate.*  
    -> TO 'admin_godonate'@'localhost';  
Query OK, 0 rows affected (0.001 sec)  
  
MariaDB [godonate]> GRANT SELECT, INSERT, UPDATE ON godonate.* TO 'user_godonate'@'localhost';  
Query OK, 0 rows affected (0.001 sec)  
  
MariaDB [godonate]>
```

# INSERT DATA TABLE

```
MariaDB [godonate]> INSERT INTO users (name, email) VALUES  
-> ('Admin GoDonate', 'admin@godonate.com'),  
-> ('Yanto Santoso', 'yanto@godonate.com'),  
-> ('Siti Aminah', 'siti@godonate.com');
```

Query OK, 3 rows affected (0.003 sec)

Records: 3 Duplicates: 0 Warnings: 0

```
MariaDB [godonate]> INSERT INTO donors (user_id, name, email) VALUES  
-> (2, 'Yanto Santoso', 'yanto.donor@godonate.com'),  
-> (NULL, 'Anonim', 'anonim1@godonate.com'),  
-> (3, 'Siti Aminah', 'siti.donor@godonate.com');
```

Query OK, 3 rows affected (0.003 sec)

Records: 3 Duplicates: 0 Warnings: 0

# INSERT DATA TABLE

```
MariaDB [godonate]> INSERT INTO campaigns
-> (user_id, title, target_amount, current_amount, status_id)
-> VALUES
-> (1, 'Bantu Biaya Operasi Anak', 5000000, 15000000, 2),
-> (2, 'Donasi Pendidikan Desa', 30000000, 30000000, 3),
-> (3, 'Bantuan Korban Banjir', 100000000, 25000000, 2);
Query OK, 3 rows affected (0.003 sec)
Records: 3  Duplicates: 0  Warnings: 0
```

```
MariaDB [godonate]> INSERT INTO donations
-> (donor_id, campaign_id, amount)
-> VALUES
-> (1, 1, 500000),
-> (2, 1, 250000),
-> (3, 3, 1000000),
-> (1, 3, 750000);
Query OK, 4 rows affected (0.002 sec)
Records: 4  Duplicates: 0  Warnings: 0
```

# INSERT DATA TABLE

```
MariaDB [godonate]> INSERT INTO donation_payments
-> (donation_id, payment_type, status, paid_at)
-> VALUES
-> (1, 'transfer_bank', 'paid', NOW()),
-> (2, 'ewallet', 'paid', NOW()),
-> (3, 'qrис', 'pending', NULL),
-> (4, 'transfer_bank', 'paid', NOW());
Query OK, 4 rows affected (0.001 sec)
Records: 4  Duplicates: 0  Warnings: 0
```

Fungsi **NOW()** itu untuk menunjukan saat dimana query itu di jalankan, jadi tidak perlu ketik manual

# INSERT DATA TABLE

```
MariaDB [godonate]> INSERT INTO campaign_statuses (id, code) VALUES
-> (1, 'draft'),
-> (2, 'active'),
-> (3, 'closed');
Query OK, 3 rows affected (0.002 sec)
Records: 3  Duplicates: 0  Warnings: 0
```

# MELIHAT ISI DATA TABLE

```
MariaDB [godonate]> SELECT * FROM users;
+----+-----+-----+-----+
| id | name           | email          | created_at    |
+----+-----+-----+-----+
| 1  | Admin GoDonate | admin@godonate.com | 2026-01-04 22:46:27 |
| 2  | Yanto Santoso  | yanto@godonate.com | 2026-01-04 22:46:27 |
| 3  | Siti Aminah    | siti@godonate.com | 2026-01-04 22:46:27 |
+----+-----+-----+-----+
3 rows in set (0.001 sec)

MariaDB [godonate]> SELECT * FROM donors;
+----+-----+-----+-----+
| id | user_id | name           | email          |
+----+-----+-----+-----+
| 1  |      2  | Yanto Santoso  | yanto.donor@godonate.com |
| 2  |    NULL  | Anonim         | anonim1@godonate.com   |
| 3  |      3  | Siti Aminah   | siti.donor@godonate.com |
+----+-----+-----+-----+
3 rows in set (0.001 sec)
```

# MELIHAT ISI DATA TABLE

```
MariaDB [godonate]> SELECT * FROM donations;
+----+-----+-----+-----+-----+
| id | donor_id | campaign_id | amount      | created_at        |
+----+-----+-----+-----+-----+
| 1  |       1  |           1 | 500000.00   | 2026-01-04 22:53:13 |
| 2  |       2  |           1 | 250000.00   | 2026-01-04 22:53:13 |
| 3  |       3  |           3 | 1000000.00  | 2026-01-04 22:53:13 |
| 4  |       1  |           3 | 750000.00   | 2026-01-04 22:53:13 |
+----+-----+-----+-----+-----+
4 rows in set (0.000 sec)
```

```
MariaDB [godonate]> SELECT * FROM donation_payments;
+----+-----+-----+-----+-----+
| id | donation_id | payment_type | status    | paid_at        |
+----+-----+-----+-----+-----+
| 1  |       1  | transfer_bank | paid     | 2026-01-04 22:54:22 |
| 2  |       2  | ewallet        | paid     | 2026-01-04 22:54:22 |
| 3  |       3  | qrис          | pending  | NULL           |
| 4  |       4  | transfer_bank | paid     | 2026-01-04 22:54:22 |
+----+-----+-----+-----+-----+
4 rows in set (0.000 sec)
```

# MELIHAT ISI DATA TABLE

```
MariaDB [godonate]> SELECT * FROM campaign_statuses;  
+----+-----+  
| id | code |  
+----+-----+  
| 2  | active |  
| 3  | closed |  
| 1  | draft  |  
+----+-----+
```

# QUERY UPDATE DATA

Kita akan update nama di table **users** atas nama **Yanto Santoso** menjadi **Yanti Santi**

```
MariaDB [godonate]> UPDATE users
    -> SET name = 'Yanti Santi'
    -> WHERE id = 2;
Query OK, 0 rows affected (0.001 sec)
Rows matched: 1  Changed: 0  Warnings: 0

MariaDB [godonate]> SELECT * FROM users
    -> ;
+----+-----+-----+-----+
| id | name           | email            | created_at      |
+----+-----+-----+-----+
| 1  | Admin GoDonate | admin@godonate.com | 2026-01-04 22:46:27 |
| 2  | Yanti Santi    | yanto@godonate.com | 2026-01-04 22:46:27 |
| 3  | Siti Aminah   | siti@godonate.com | 2026-01-04 22:46:27 |
+----+-----+-----+-----+
3 rows in set (0.000 sec)
```

TABLE USERS

# QUERY UPDATE DATA

Kita akan update nama di table **donors** atas nama **Yanto Santoso** menjadi **Yanti Santi**

```
MariaDB [godonate]> UPDATE donors
    -> SET name = 'Yanti Santi'
    -> WHERE user_id = 2;
Query OK, 1 row affected (0.001 sec)
Rows matched: 1  Changed: 1  Warnings: 0
```

```
MariaDB [godonate]> SELECT * FROM donors;
+----+-----+-----+-----+
| id | user_id | name      | email           |
+----+-----+-----+-----+
| 1  |      2 | Yanti Santi | yanto.donor@godonate.com |
| 2  |    NULL | Anonim     | anonim1@godonate.com   |
| 3  |      3 | Siti Aminah | siti.donor@godonate.com |
+----+-----+-----+-----+
3 rows in set (0.000 sec)
```

TABLE DONORS

# QUERY DELETE DATA

Setelah itu kita akan menghapus **Anonim** dari table **donors**

id   user_id   name   email
1   2   Yanti Santi   yanto.donor@godonate.com
2   NULL   Anonim   anonim1@godonate.com
3   3   Siti Aminah   siti.donor@godonate.com



```
MariaDB [godonate]> DELETE FROM donors WHERE name = 'Anonim';
Query OK, 1 row affected (0.001 sec)
```

```
MariaDB [godonate]> SELECT * FROM donors;
+----+-----+-----+-----+
| id | user_id | name | email |
+----+-----+-----+-----+
| 1 | 2 | Yanti Santi | yanto.donor@godonate.com |
| 3 | 3 | Siti Aminah | siti.donor@godonate.com |
+----+-----+-----+
2 rows in set (0.000 sec)
```

TABLE DONORS

# QUERY RENAME TABLE

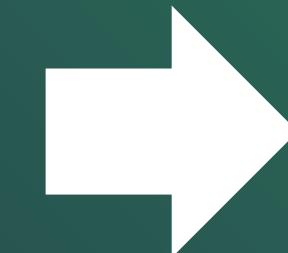
Selanjutnya kita akan rename table **donors** ke **donors\_backup** lalu balik lagi ke **donors**

```
MariaDB [godonate]> RENAME TABLE donors TO donors_backup;
Query OK, 0 rows affected (0.007 sec)
```

```
MariaDB [godonate]> show tables;
+-----+
| Tables_in_godonate |
+-----+
| campaign_statuses |
| campaigns          |
| donation_payments |
| donations           |
| donors_backup     |
| users               |
+-----+
6 rows in set (0.001 sec)

MariaDB [godonate]>
```

donors → donors\_backup



```
MariaDB [godonate]> RENAME TABLE donors_backup TO donors;
Query OK, 0 rows affected (0.006 sec)
```

```
MariaDB [godonate]> show tables;
+-----+
| Tables_in_godonate |
+-----+
| campaign_statuses |
| campaigns          |
| donation_payments |
| donations           |
| donors             |
| users               |
+-----+
6 rows in set (0.000 sec)

MariaDB [godonate]>
```

donors\_backup → donors

# QUERY CHANGE

Lalu kita akan mengganti nama column di table **campaigns** di column yang bernama **title**

```
MariaDB [godonate]> desc campaigns;
+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+
| id | bigint(20) unsigned | NO | PRI | NULL | auto_increment |
| user_id | bigint(20) unsigned | NO | MUL | NULL |
| title | varchar(150) | NO | | NULL |
| target_amount | decimal(15,2) | NO | | NULL |
| current_amount | decimal(15,2) | YES | | 0.00 |
| status_id | tinyint(3) unsigned | NO | MUL | NULL |
| created_at | timestamp | YES | | current_timestamp() |
+-----+-----+-----+-----+-----+
7 rows in set (0.012 sec)

MariaDB [godonate]> ALTER TABLE campaigns CHANGE title campaign_title VARCHAR(150) NOT NULL;
Query OK, 0 rows affected (0.004 sec)
Records: 0  Duplicates: 0  Warnings: 0

MariaDB [godonate]> desc campaigns;
+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+
| id | bigint(20) unsigned | NO | PRI | NULL | auto_increment |
| user_id | bigint(20) unsigned | NO | MUL | NULL |
| campaign_title | varchar(150) | NO | | NULL |
| target_amount | decimal(15,2) | NO | | NULL |
| current_amount | decimal(15,2) | YES | | 0.00 |
| status_id | tinyint(3) unsigned | NO | MUL | NULL |
| created_at | timestamp | YES | | current_timestamp() |
+-----+-----+-----+-----+-----+
7 rows in set (0.010 sec)

MariaDB [godonate]>
```

# QUERY MODIFY

Lalu kita akan modify panjang tipe data dari **VARCHAR(100)** menjadi **VARCHAR(150)**

```
MariaDB [godonate]> desc users;
+-----+-----+-----+-----+-----+
| Field | Type            | Null | Key | Default          | Extra           |
+-----+-----+-----+-----+-----+
| id    | bigint(20) unsigned | NO   | PRI | NULL             | auto_increment |
| name  | varchar(100)        | NO   |      | NULL             |                 |
| email | varchar(100)        | NO   | UNI | NULL             |                 |
| created_at | timestamp        | YES  |      | current_timestamp() |                 |
+-----+-----+-----+-----+-----+
4 rows in set (0.014 sec)

MariaDB [godonate]> ALTER TABLE users MODIFY email VARCHAR(150) NOT NULL;
Query OK, 0 rows affected (0.004 sec)
Records: 0  Duplicates: 0  Warnings: 0

MariaDB [godonate]> desc users;
+-----+-----+-----+-----+-----+
| Field | Type            | Null | Key | Default          | Extra           |
+-----+-----+-----+-----+-----+
| id    | bigint(20) unsigned | NO   | PRI | NULL             | auto_increment |
| name  | varchar(100)        | NO   |      | NULL             |                 |
| email | varchar(150)        | NO   | UNI | NULL             |                 |
| created_at | timestamp        | YES  |      | current_timestamp() |                 |
+-----+-----+-----+-----+-----+
4 rows in set (0.016 sec)
```

# QUERY ADD

Di query ini kita akan menambahkan column baru yaitu column **phone** di table **donors**

```
MariaDB [godonate]> desc donors;
+-----+-----+-----+-----+-----+
| Field | Type            | Null | Key | Default | Extra          |
+-----+-----+-----+-----+-----+
| id    | bigint(20) unsigned | NO   | PRI  | NULL    | auto_increment |
| user_id | bigint(20) unsigned | YES  | MUL  | NULL    |                |
| name   | varchar(100)        | NO   |       | NULL    |                |
| email  | varchar(100)        | NO   | UNI  | NULL    |                |
+-----+-----+-----+-----+-----+
4 rows in set (0.012 sec)

MariaDB [godonate]> ALTER TABLE donors
      -> ADD phone VARCHAR(20) AFTER email;
Query OK, 0 rows affected (0.006 sec)
Records: 0  Duplicates: 0  Warnings: 0

MariaDB [godonate]> desc donors;
+-----+-----+-----+-----+-----+
| Field | Type            | Null | Key | Default | Extra          |
+-----+-----+-----+-----+-----+
| id    | bigint(20) unsigned | NO   | PRI  | NULL    | auto_increment |
| user_id | bigint(20) unsigned | YES  | MUL  | NULL    |                |
| name   | varchar(100)        | NO   |       | NULL    |                |
| email  | varchar(100)        | NO   | UNI  | NULL    |                |
| phone  | varchar(20)         | YES  |       | NULL    |                |
+-----+-----+-----+-----+-----+
5 rows in set (0.012 sec)

MariaDB [godonate]>
```

# QUERY DROP

Lalu kita drop column **phone** yang kita buat tadi

```
MariaDB [godonate]> desc donors;
+-----+-----+-----+-----+-----+
| Field | Type            | Null | Key | Default | Extra          |
+-----+-----+-----+-----+-----+
| id    | bigint(20) unsigned | NO   | PRI  | NULL    | auto_increment |
| user_id | bigint(20) unsigned | YES  | MUL  | NULL    |                 |
| name   | varchar(100)        | NO   |       | NULL    |                 |
| email  | varchar(100)        | NO   | UNI  | NULL    |                 |
| phone  | varchar(20)         | YES  |       | NULL    |                 |
+-----+-----+-----+-----+-----+
5 rows in set (0.012 sec)

MariaDB [godonate]> ALTER TABLE donors
-> DROP phone;
Query OK, 0 rows affected (0.004 sec)
Records: 0  Duplicates: 0  Warnings: 0

MariaDB [godonate]> desc donors;
+-----+-----+-----+-----+-----+
| Field | Type            | Null | Key | Default | Extra          |
+-----+-----+-----+-----+-----+
| id    | bigint(20) unsigned | NO   | PRI  | NULL    | auto_increment |
| user_id | bigint(20) unsigned | YES  | MUL  | NULL    |                 |
| name   | varchar(100)        | NO   |       | NULL    |                 |
| email  | varchar(100)        | NO   | UNI  | NULL    |                 |
+-----+-----+-----+-----+-----+
4 rows in set (0.012 sec)

MariaDB [godonate]>
```

# QUERY SELECT+

Kita melihat hasil nominal donasi yang bernilai diantara 700000 dan 1000000 dengan **BETWEEN** dan **AND**.

```
MariaDB [godonate]> SELECT * FROM donations WHERE amount BETWEEN 700000 AND 1000000;
+----+-----+-----+-----+-----+
| id | donor_id | campaign_id | amount      | created_at           |
+----+-----+-----+-----+-----+
|  3 |         3 |             3 | 1000000.00 | 2026-01-04 22:53:13 |
|  4 |         1 |             3 | 750000.00  | 2026-01-04 22:53:13 |
+----+-----+-----+-----+-----+
2 rows in set (0.000 sec)

MariaDB [godonate]>
```

# QUERY TRIGGERS



Apa itu TRIGGER?

Trigger adalah perintah otomatis di database yang akan dijalankan ketika suatu event terjadi, seperti:

- INSERT
- UPDATE
- DELETE

# MEMBUAT TRIGGER DONASI MASUK

TRIGGER ini dibuat untuk kondisi jika status donasi sudah menjadi **PAID** atau sudah terbayar dan akan otomatis bertambah total dana dari campaign

```
MariaDB [godonate]> CREATE TRIGGER trg_after_payment_paid
-> AFTER UPDATE ON donation_payments
-> FOR EACH ROW
-> BEGIN
->     IF NEW.status = 'paid' AND OLD.status <> 'paid' THEN
->         UPDATE campaigns
->             SET current_amount = current_amount + (
->                 SELECT amount
->                     FROM donations
->                         WHERE id = NEW.donation_id
->             )
->             WHERE id = (
->                 SELECT campaign_id
->                     FROM donations
->                         WHERE id = NEW.donation_id
->             );
->     END IF;
-> END$$
Query OK, 0 rows affected (0.006 sec)
```

# TESTING TRIGGER DONASI MASUK

Ini hasil testing dari trigger donasi masuk, status dari donation\_payments pending menjadi paid

```
MariaDB [godonate]> SELECT id, campaign_title, current_amount
-> FROM campaigns
-> WHERE id = 3;
+-----+-----+
| id | campaign_title | current_amount |
+-----+-----+
| 3 | Bantuan Korban Banjir | 25000000.00 |
+-----+-----+
1 row in set (0.000 sec)

MariaDB [godonate]> UPDATE donation_payments
-> SET status = 'paid', paid_at = NOW()
-> WHERE id = 3;
Query OK, 1 row affected (0.003 sec)
Rows matched: 1  Changed: 1  Warnings: 0
```

```
MariaDB [godonate]> SELECT id, campaign_title, current_amount
-> FROM campaigns
-> WHERE id = 3;
+-----+-----+
| id | campaign_title | current_amount |
+-----+-----+
| 3 | Bantuan Korban Banjir | 26000000.00 |
+-----+-----+
1 row in set (0.000 sec)

MariaDB [godonate]>
```

```
MariaDB [godonate]> SELECT * FROM donation_payments;
+-----+-----+-----+-----+-----+
| id | donation_id | payment_type | status | paid_at |
+-----+-----+-----+-----+-----+
| 1 | 1 | transfer_bank | paid | 2026-01-04 22:54:22 |
| 2 | 2 | ewallet | paid | 2026-01-04 22:54:22 |
| 3 | 3 | qrис | pending | NULL |
| 4 | 4 | transfer_bank | paid | 2026-01-04 22:54:22 |
+-----+-----+-----+-----+-----+
4 rows in set (0.000 sec)
```



```
MariaDB [godonate]> select * from donation_payments;
+-----+-----+-----+-----+-----+
| id | donation_id | payment_type | status | paid_at |
+-----+-----+-----+-----+-----+
| 1 | 1 | transfer_bank | paid | 2026-01-04 22:54:22 |
| 3 | 3 | qrис | paid | 2026-01-05 01:11:16 |
| 4 | 4 | transfer_bank | paid | 2026-01-04 22:54:22 |
| 5 | 5 | ewallet | paid | 2026-01-05 01:21:32 |
+-----+-----+-----+-----+-----+
```

# MEMBUAT TRIGGER DONASI GAGAL

Kita juga bisa membuat TRIGGER tambahan untuk kondisi jika donasi yang sebelumnya **paid** berubah menjadi **failed**, maka jumlah dana campaign dikurangi otomatis.

```
MariaDB [godonate]> CREATE TRIGGER trg_after_payment_failed
-> AFTER UPDATE ON donation_payments
-> FOR EACH ROW
-> BEGIN
->     IF OLD.status = 'paid' AND NEW.status = 'failed' THEN
->         UPDATE campaigns
->             SET current_amount = current_amount - (
->                 SELECT amount
->                     FROM donations
->                     WHERE id = NEW.donation_id
->             )
->             WHERE id = (
->                 SELECT campaign_id
->                     FROM donations
->                     WHERE id = NEW.donation_id
->             );
->     END IF;
-> END$$
Query OK, 0 rows affected (0.006 sec)
```

# TESTING TRIGGER DONASI GAGAL

Ini hasil dari TRIGGER failed dimana status **paid** menjadi **failed**

```
MariaDB [godonate]> SELECT id, campaign_title, current_amount
    -> FROM campaigns
    -> WHERE id = 3;
+-----+-----+
| id | campaign_title      | current_amount |
+-----+-----+
| 3  | Bantuan Korban Banjir | 26000000.00 |
+-----+-----+
1 row in set (0.000 sec)

MariaDB [godonate]> UPDATE donation_payments
    -> SET status = 'failed'
    -> WHERE id = 3;
Query OK, 1 row affected (0.004 sec)
Rows matched: 1  Changed: 1  Warnings: 0

MariaDB [godonate]> SELECT id, campaign_title, current_amount
    -> FROM campaigns
    -> WHERE id = 3;
+-----+-----+
| id | campaign_title      | current_amount |
+-----+-----+
| 3  | Bantuan Korban Banjir | 25000000.00 |
+-----+-----+
1 row in set (0.000 sec)

MariaDB [godonate]>
```

```
MariaDB [godonate]> select * from donation_payments;
+-----+-----+-----+-----+
| id | donation_id | payment_type | status | paid_at
+-----+-----+-----+-----+
| 1  | 1           | transfer_bank | paid   | 2026-01-04 22:54:22
| 3  | 3           | qrис          | paid   | 2026-01-05 01:11:16
| 4  | 4           | transfer_bank | paid   | 2026-01-04 22:54:22
| 5  | 5           | ewallet        | paid   | 2026-01-05 01:21:32
+-----+-----+-----+-----+
```



```
MariaDB [godonate]> SELECT * FROM donation_payments;
+-----+-----+-----+-----+
| id | donation_id | payment_type | status | paid_at
+-----+-----+-----+-----+
| 1  | 1           | transfer_bank | paid   | 2026-01-04 22:54:22
| 3  | 3           | qrис          | failed | 2026-01-05 01:11:16
| 4  | 4           | transfer_bank | paid   | 2026-01-04 22:54:22
| 5  | 5           | ewallet        | paid   | 2026-01-05 01:21:32
+-----+-----+-----+-----+
4 rows in set (0.000 sec)
```

# QUERY INNER JOIN

Berikutnya kita menggunakan **INNER JOIN** untuk menampilkan data campaign beserta nama pembuat dan status campaign.

```
MariaDB [godonate]> SELECT
->     c.id,
->     c.campaign_title,
->     u.name AS creator,
->     cs.code AS status
-> FROM campaigns c
-> INNER JOIN users u ON c.user_id = u.id
-> INNER JOIN campaign_statuses cs ON c.status_id = cs.id;
+-----+-----+-----+
| id | campaign_title | creator      | status |
+-----+-----+-----+
| 1  | Bantu Biaya Operasi Anak | Admin GoDonate | active |
| 2  | Donasi Pendidikan Desa   | Yanti Santi    | closed  |
| 3  | Bantuan Korban Banjir   | Siti Aminah    | active |
+-----+-----+-----+
```

# QUERY LEFT JOIN

Dengan **LEFT JOIN**, kita menampilkan semua donor, termasuk yang tidak terhubung ke user

```
MariaDB [godonate]> SELECT
->     d.id,
->     d.name AS donor_name,
->     u.name AS user_name
-> FROM donors d
-> LEFT JOIN users u ON d.user_id = u.id;
+-----+
| id | donor_name | user_name |
+-----+
| 1 | Yanti Santi | Yanti Santi |
| 3 | Siti Aminah | Siti Aminah |
+-----+
```

# QUERY RIGHT JOIN

**RIGHT JOIN** kita digunakan untuk menampilkan semua user, termasuk yang belum pernah berdonasi.

```
MariaDB [godonate]> SELECT
    ->     u.id,
    ->     u.name,
    ->     d.id AS donor_id
    -> FROM donors d
    -> RIGHT JOIN users u ON d.user_id = u.id;
+-----+-----+
| id | name          | donor_id |
+-----+-----+
| 1  | Admin GoDonate |      NULL   |
| 2  | Yanti Santi    |        1    |
| 3  | Siti Aminah   |        3    |
+-----+-----+
3 rows in set (0.001 sec)
```

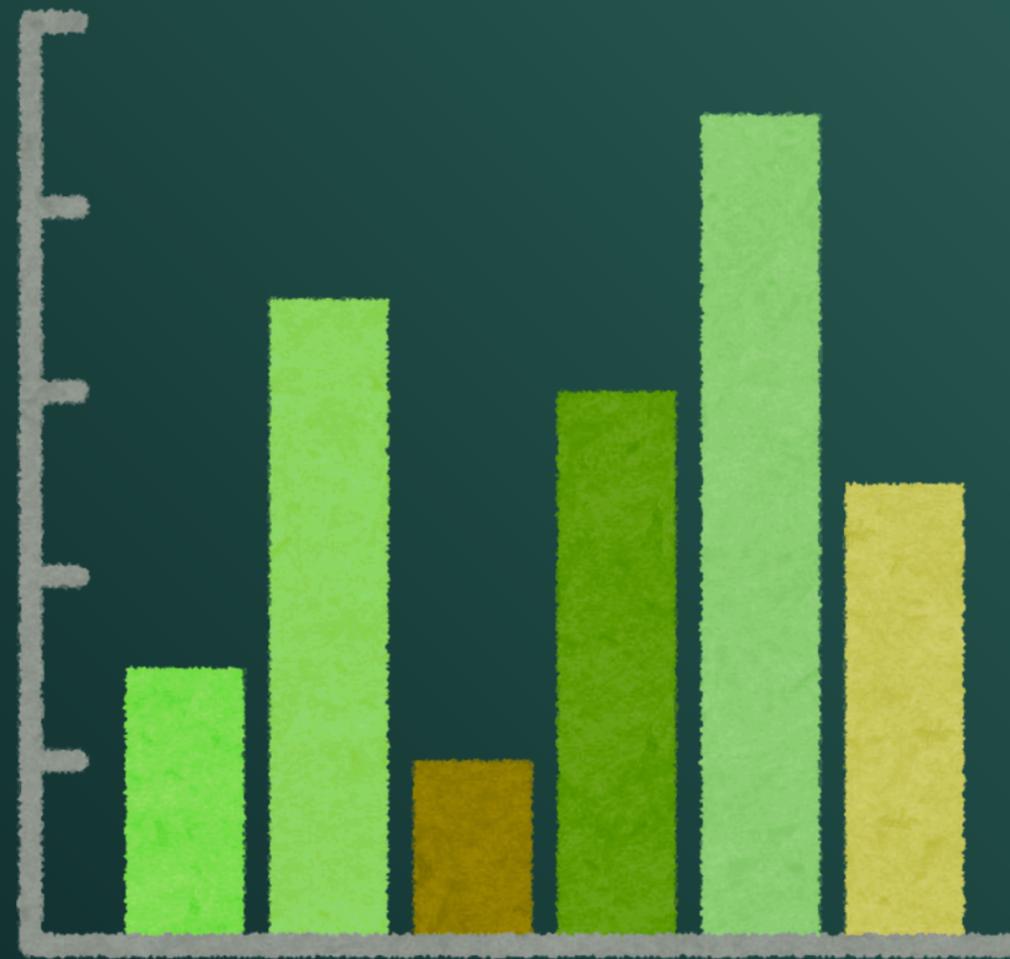
# QUERY SUM & GROUP BY

Menggunakan SUM dan GROUP BY, kita bisa menghitung total donasi untuk setiap campaign.

```
MariaDB [godonate]> SELECT
    ->     c.campaign_title,
    ->     SUM(d.amount) AS total_donasi
    -> FROM donations d
    -> JOIN campaigns c ON d.campaign_id = c.id
    -> GROUP BY c.id;

+-----+-----+
| campaign_title | total_donasi |
+-----+-----+
| Bantu Biaya Operasi Anak | 750000.00 |
| Bantuan Korban Banjir | 1750000.00 |
+-----+-----+
2 rows in set (0.002 sec)
```

# QUERY VIEW



Apa itu VIEW?

View adalah tabel virtual yang berasal dari hasil query SQL.

- Tidak menyimpan data fisik
- Data diambil langsung dari tabel asli

# QUERY VIEW

Kita juga bisa membuat VIEW untuk menyimpan query laporan, sehingga bisa digunakan berulang tanpa menulis ulang query.

```
MariaDB [godonate]> CREATE VIEW view_campaign_donations AS
-> SELECT
->     c.campaign_title,
->     SUM(d.amount) AS total_donasi
-> FROM donations d
-> JOIN campaigns c ON d.campaign_id = c.id
-> GROUP BY c.id;
Query OK, 0 rows affected (0.002 sec)

MariaDB [godonate]> SELECT * FROM view_campaign_donations;
+-----+-----+
| campaign_title | total_donasi |
+-----+-----+
| Bantu Biaya Operasi Anak | 750000.00 |
| Bantuan Korban Banjir | 1750000.00 |
+-----+-----+
2 rows in set (0.001 sec)
```

# QUERY ORDER BY

Dengan ORDER BY, kita bisa menampilkan campaign dari total donasi terbesar ke terkecil.

```
MariaDB [godonate]> SELECT
->     c.campaign_title,
->     SUM(d.amount) AS total_donasi
-> FROM donations d
-> JOIN campaigns c ON d.campaign_id = c.id
-> GROUP BY c.id
-> ORDER BY total_donasi DESC;
+-----+-----+
| campaign_title | total_donasi |
+-----+-----+
| Bantuan Korban Banjir | 1750000.00 |
| Bantu Biaya Operasi Anak | 750000.00 |
+-----+-----+
2 rows in set (0.041 sec)
```

# QUERY CURDATE

Menggunakan CURDATE(), kita bisa menampilkan campaign atau donasi yang terjadi hari ini atau kemarin.

Contoh, Donasi Hari ini:

```
MariaDB [godonate]> SELECT *
->   FROM campaigns
-> WHERE DATE(created_at) = CURDATE();
Empty set (0.002 sec)
```

Contoh, Donasi Kemarin :

```
MariaDB [godonate]> SELECT *
->   FROM campaigns
-> WHERE DATE(created_at) = CURDATE() - INTERVAL 1 DAY;
+-----+-----+-----+-----+-----+
| id | user_id | campaign_title           | target_amount | current_amount | status_id | created_at      |
+-----+-----+-----+-----+-----+
| 1  |      1  | Bantu Biaya Operasi Anak | 50000000.00  | 15000000.00  | 2         | 2026-01-04 22:53:05 |
| 2  |      2  | Donasi Pendidikan Desa    | 30000000.00  | 30000000.00  | 3         | 2026-01-04 22:53:05 |
| 3  |      3  | Bantuan Korban Banjir     | 10000000.00  | 25000000.00  | 2         | 2026-01-04 22:53:05 |
+-----+-----+-----+-----+-----+
3 rows in set (0.000 sec)

MariaDB [godonate]> -
```

# SPEC FILE USERS



Nama File : users

Akronim :USR

Fungsi : Menyimpan data akun pengguna sistem (admin & user)

Tipe File : Master

Organisasi File : Indexed Sequential

Akses File : Read, Insert, Update, Delete

Media : Harddisk / SSD

Software : MariaDB

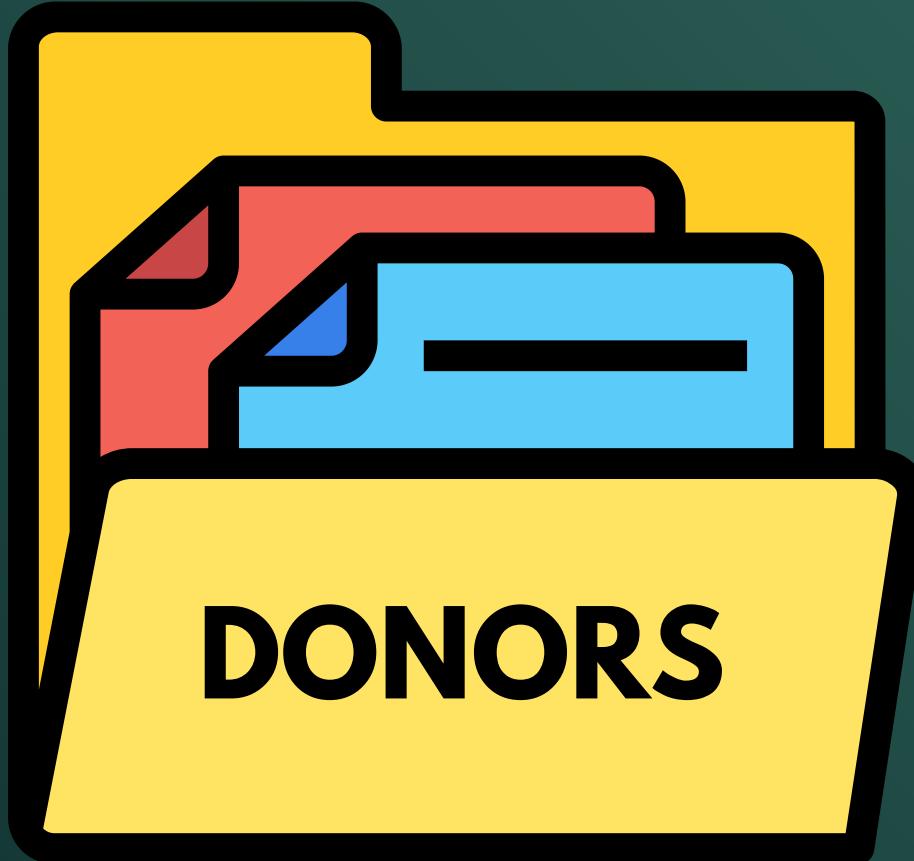
Panjang Record : Variabel

Kunci Field : id

Struktur Tabel

- id (BIGINT UNSIGNED, PK)
- name (VARCHAR)
- email (VARCHAR)
- created\_at (TIMESTAMP)

# SPEC FILE DONORS



Nama File : donors

Akronim : DNR

Fungsi : Menyimpan data donatur yang melakukan donasi

Tipe File : Master

Organisasi File : Indexed Sequential

Akses File : Read, Insert, Update, Delete

Media : Harddisk / SSD

Software : MariaDB

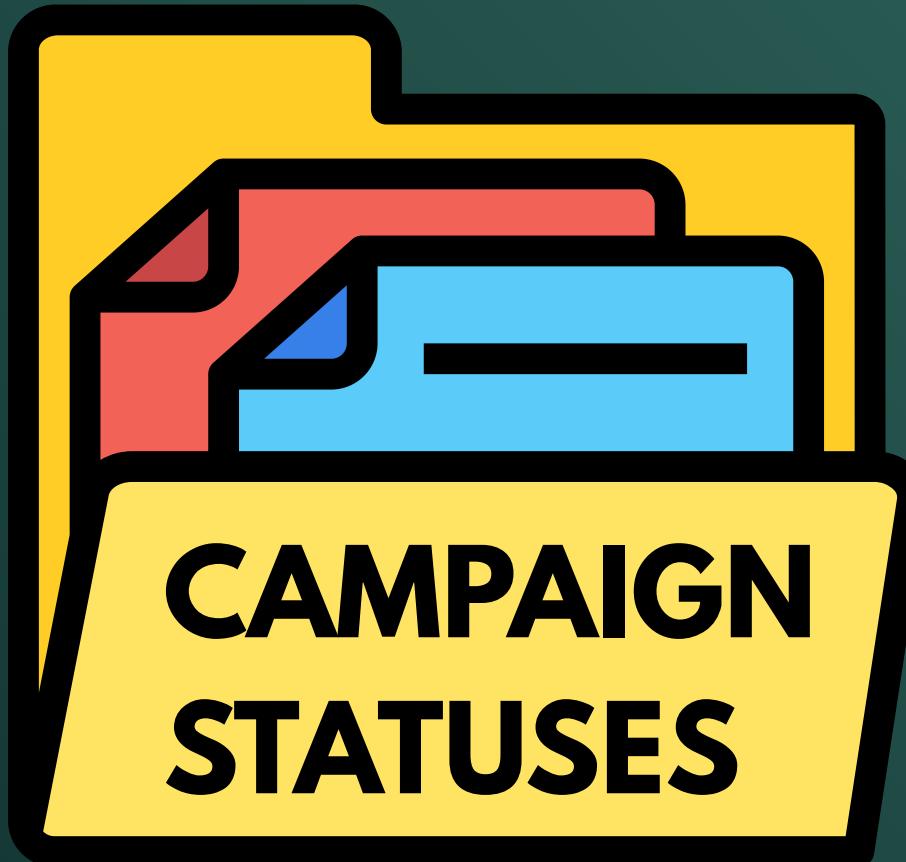
Panjang Record : Variabel

Kunci Field : id

Struktur Tabel

- id (BIGINT UNSIGNED, PK)
- user\_id (BIGINT)
- name (VARCHAR)
- email (VARCHAR)

# SPEC FILE CAMPAIGN\_STATUSES



Nama File : campaign\_statuses

Akronim : CST

Fungsi : Menyimpan daftar status campaign

Tipe File : Referensi

Organisasi File : Indexed Sequential

Akses File : Read

Media : Harddisk / SSD

Software : MariaDB

Panjang Record : Tetap

Kunci Field : id

Struktur Tabel

- id (TINYINT UNSIGNED, PK)
- code (VARCHAR)

# SPEC FILE CAMPAIGNS



Nama File : campaigns

Akronim : CMP

Fungsi : Menyimpan data campaign donasi

Tipe File : Master

Organisasi File : Indexed Sequential

Akses File : Read, Insert, Update, Delete

Media : Harddisk / SSD

Software : MariaDB

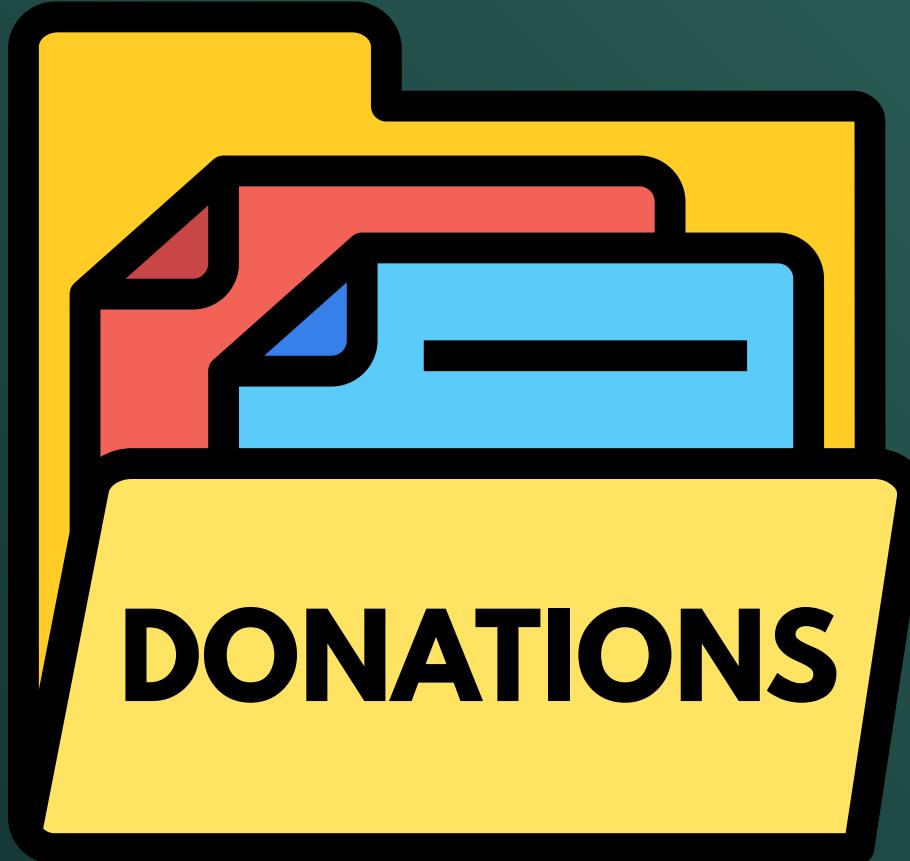
Panjang Record : Variabel

Kunci Field : id

Struktur Tabel

- id (BIGINT UNSIGNED, PK)
- user\_id (BIGINT)
- campaign\_title (VARCHAR)
- target\_amount (DECIMAL)
- current\_amount (DECIMAL)
- status\_id (TINYINT)
- created\_at (TIMESTAMP)

# SPEC FILE DONATIONS



Nama File : donations

Akronim : DON

Fungsi : Menyimpan data transaksi donasi

Tipe File : Transaksi

Organisasi File : Indexed Sequential

Akses File : Read, Insert

Media : Harddisk / SSD

Software : MariaDB

Panjang Record : Variabel

Kunci Field : id

Struktur Tabel

- id (BIGINT UNSIGNED, PK)
- donor\_id (BIGINT)
- campaign\_id (BIGINT)
- amount (DECIMAL)
- created\_at (TIMESTAMP)

# SPEC FILE DONATION\_PAYMENTS



Nama File : donation\_payments

Akronim : DPM

Fungsi : Menyimpan status pembayaran donasi

Tipe File : Transaksi

Organisasi File : Indexed Sequential

Akses File : Read, Insert, Update

Media : Harddisk / SSD

Software : MariaDB

Panjang Record : Variabel

Kunci Field : id

Struktur Tabel

- id (BIGINT UNSIGNED, PK)
- donation\_id (BIGINT)
- payment\_type (VARCHAR)
- status (ENUM)
- paid\_at (TIMESTAMP)



# KESIMPULAN



- Basis data GoDonate berhasil dirancang untuk mendukung pengelolaan donasi secara terstruktur.
- Relasi antar tabel diterapkan menggunakan foreign key untuk menjaga konsistensi data.
- Pengelolaan data dilakukan menggunakan DDL dan DML.
- Trigger digunakan untuk otomatisasi perhitungan dan pembaruan total donasi.
- Query WHERE dan ORDER BY memudahkan pengambilan serta pengurutan data donasi.
- Sistem database mendukung proses donasi yang efektif, akurat, dan terintegrasi.



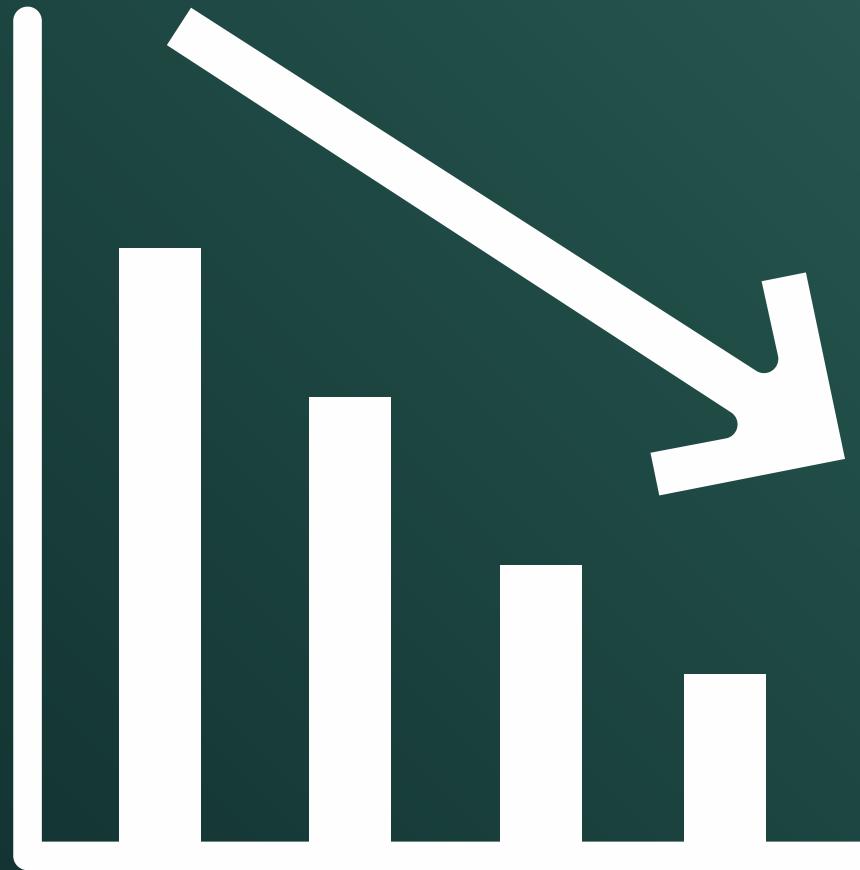
# KELEBIHAN



- Struktur database terorganisir dengan relasi foreign key
- Pengelolaan data menggunakan DDL dan DML
- Trigger membantu otomatisasi data donasi
- Query WHERE dan ORDER BY memudahkan pencarian data
- Mendukung proses donasi yang efisien dan terintegrasi



# KEKURANGAN



- Keamanan data belum dibahas secara mendalam
- Belum mendukung transaksi berskala besar (high traffic)
- Validasi data masih terbatas di level database
- Belum terdapat fitur backup dan recovery otomatis



PROJECT AKHIR

# TERIMA KASIH

SUDAH MENDENGARKAN PRESENTASI