Migration

Migration দিয়ে আমরা টেবিল create,delete,update(column add,remove,update) করতে পারি।

- Migrations allow you to create, delete, and update tables.
- Updates include adding, removing, renaming, and modifying columns or tables, as well as handling indexes and constraints.

Using Laravel migrations, you can perform the following tasks:

1. Create Tables

Define the structure of a new table in the database.

2. Delete Tables

Remove a table from the database.

3. Update Tables

Modify the structure of an existing table.

This includes:

- Add Columns: Add new columns to an existing table.
- Remove Columns: Remove existing columns from a table.
- Rename Columns: Change the name of an existing column.
- Update Column Attributes: Modify the data type, default value, or other attributes of an existing column.
- Add/Drop Indexes: Add or remove indexes (e.g., primary key, unique, foreign key).
- Add/Drop Foreign Keys: Define or remove foreign key constraints.

4. Rename Tables

Change the name of an existing table.

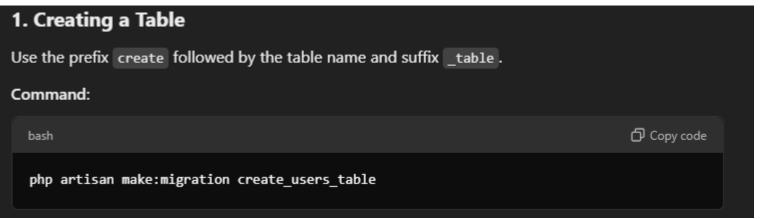
5. Add/Remove Table Options

Set or remove table-specific options (e.g., engine type, collation).

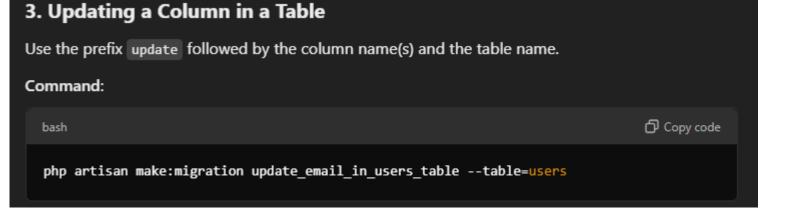
Migration Create করার জন্য Naming Format Follow করতে হয়:

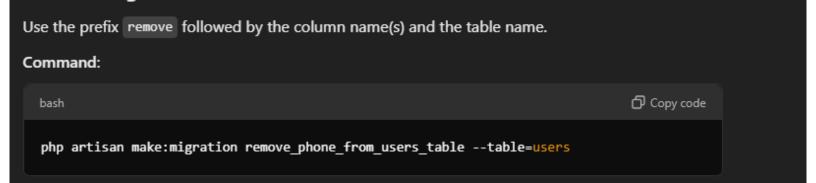
4. Removing a Column from a Table

Sanke Case Follow করতে হয়।

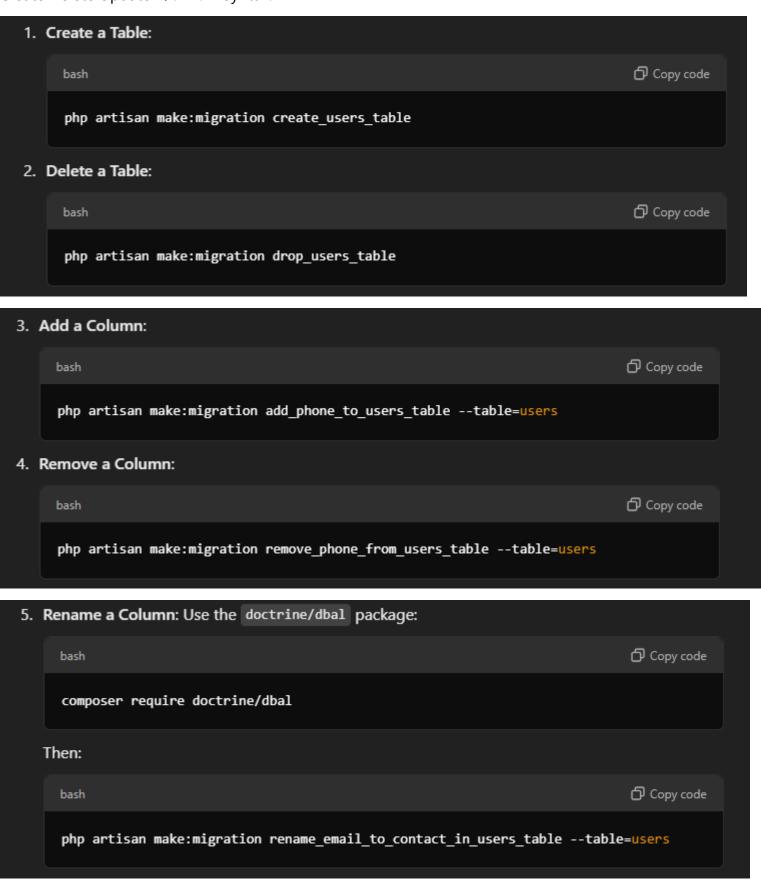


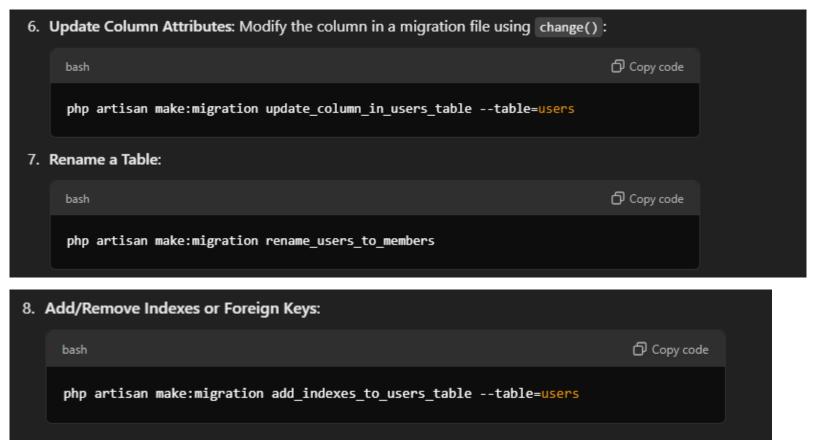






Create Delete Update এর সকল Syntax:







php artisan migrate

Php artisan:migrate execute হলে এটা call হবে।

1. up() Method The up() method is executed when you run the migration using the php artisan migrate command. It contains the instructions to apply the intended changes to the database schema. Example Scenario: Creating a table. Adding a column. Defining a foreign key. Command:

```
code Example:

php

public function up()
{
    Schema::create('users', function (Blueprint $table) {
        $table->id();
        $table->string('name');
        $table->timestamps();
    });
}
```

Down()

এটা দিয়ে create কৃত জিনিস ডিলিট/রিভার্স করার জন্য ব্যবহৃত হবে।

2. down() Method The down() method is executed when you roll back the migration using the php artisan migrate:rollback command. It contains the instructions to revert the changes made by the up() method. Example Scenario: Dropping a table. Removing a column. Undoing a foreign key definition.

```
Dash

Display Copy code

php artisan migrate:rollback

Code Example:

php

Display Copy code

public function down()
{
Schema::dropIfExists('users');
}
```

যে সকল ডাটাটাইপ ডাটাবেসে এর টেবিল এ দিতে পারব তার লিস্ট+কিভাবে ব্যবহার করব।
Integer:

```
Column Types in Laravel Migrations
```

1. Integer Types

- \$table->bigIncrements('id');
 - Auto-incrementing unsigned big integer (primary key).
- \$table->bigInteger('votes');
 - Big integer.
- \$table->increments('id');
 - Auto-incrementing unsigned integer (primary key).

```
$table->integer('age');Integer.
```

- \$table->mediumInteger('population');
 - Medium integer.
- \$table->smallInteger('score');
 - Small integer.
- \$table->tinyInteger('level');
 - Tiny integer.
 - \$table->unsignedBigInteger('user_id');
 - Unsigned big integer (useful for foreign keys).
 - \$table->unsignedInteger('count');
 - Unsigned integer.

String

Date Time

Boolean

4. Boolean Type

- \$table->boolean('is_active');
 - Boolean value (true or false).

Floating Point And Decimal Types

5. Floating Point and Decimal Types

- \$table->float('rating', 8, 2);
 - Floating-point number (total digits: 8, decimal places: 2).
- \$table->double('score', 15, 8);
 - Double precision floating-point number.
- \$table->decimal('price', 10, 2);
 - Decimal number (total digits: 10, decimal places: 2).

Json and Binary

6. JSON Types

- \$table->json('options');
 - JSON column.
- \$table->jsonb('attributes');
 - JSONB column (if supported by the database).

7. Binary Types

- \$table->binary('data');
 - Binary data.



Enumeration

8. Enumeration Types \$table->enum('status', ['draft', 'published', 'archived']); Enum column with predefined values.

IP address

```
9. IP Address and UUID Types
$table->ipAddress('visitor_ip');
IP address column.
$table->macAddress('device_mac');
MAC address column.
$table->uuid('unique_id');
UUID column.
```

Timestamp

\$table->timestamps(); Adds created_at and updated_at columns. \$table->softDeletes(); Adds deleted_at column for soft deletes. \$table->rememberToken(); Adds remember_token column for authentication.

```
$table->geometry('location');
Spatial data column.
$table->point('coordinates');
Geographic point column.
$table->lineString('path');
Line string column.
```

```
    $table->polygon('area');
    Polygon column.
    $table->morphs('taggable');
    Adds taggable_id and taggable_type columns for polymorphic relationships.
    $table->nullableMorphs('taggable');
    Nullable version of morphs .
```

```
class CreateExampleTable extends Migration
{
    public function up()
    {
        Schema::create('examples', function (Blueprint $table) {
            $table->id();
            $table->string('name', 100);
            $table->integer('age');
            $table->boolean('is_active')->default(true);
            $table->text('description');
            $table->float('rating', 8, 2);
            $table->json('meta_data');
            $table->timestamps();
            $table->softDeletes();
        });
                                           \downarrow
    public function down()
    {
        Schema::dropIfExists('examples');
    }
```

Column Attribute:

Column এ যে সকল Attribute apply করা যায় তার লিস্ট দেয়া হল:

Nullable:

```
1. Nullable

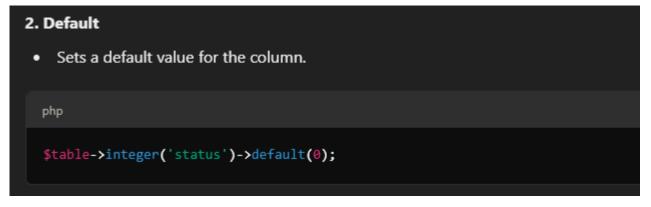
• Allows the column to accept NULL values.

php

Copy code

$table->string('email')->nullable();
```

2.Default



3.Unsigned

3. Unsigned

Specifies that an integer column should not allow negative values (useful for IDs or counts).

4.Unique

4. Unique • Enforces uniqueness for the column values. php \$table->string('email')->unique();

5.Primary

```
5. Primary

• Sets the column as the primary key.

php

$table->bigInteger('id')->primary();
```

Index

```
• Adds an index to the column for faster queries.

php

Copy code

$table->string('name')->index();
```

After

7. After Specifies the order of the column by placing it after another column. php Copy code \$table->string('last_name')->after('first_name');

First

8. First

· Adds the column as the first column in the table.

Change

9. Change • Modifies an existing column (requires the doctrine/dbal package). php Copy code \$table->string('email', 150)->change();

Comment

10. Comment

Adds a comment to the column.

Auto Increament

11. Auto-Increment

• Specifies that the column should auto-increment (used for IDs).

Foreign

Collation



Charset

14. Charset • Sets the character set for a string column. php Copy code \$table->string('name')->charset('utf8mb4');

Stored and Virtual Columns

```
To Copy code

Stable->integer('total')->storedAs('price * quantity');

15. Stored and Virtual Columns

Creates a computed column (stored or virtual).

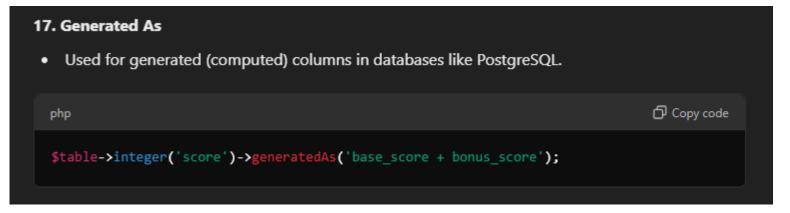
Copy code

Stable->integer('total')->storedAs('price * quantity');
```

Use Current



Generated As



Spatial Index



```
Copy code
class CreateUsersTable extends Migration
{
   public function up()
   {
       Schema::create('users', function (Blueprint $table) {
            $table->id();
           $table->string('name')->unique()->comment('User name');
           $table->string('email')->unique();
           $table->timestamp('email_verified_at')->nullable();
            $table->string('password');
           $table->rememberToken();
           $table->timestamps();
           $table->softDeletes();
       });
  public function down()
  {
      Schema::dropIfExists('users');
```

}

Real Example:

1.Create Users Table

Php artisan make:migration create_users_table

```
User@DESKTOP-TSJIMAQ MINGW64 /c/xampp/htdocs/module_17_migration

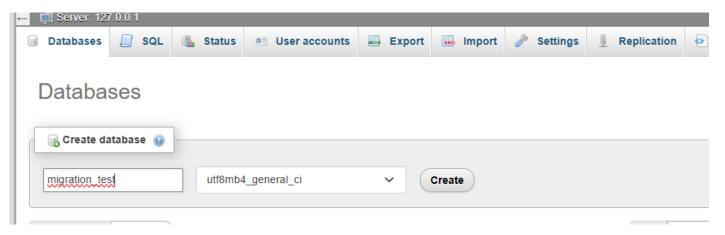
$ php artisan make:migration create_users_table

INFO Migration [C:\xampp\htdocs\module_17_migration\database\migrations/2024_12_13_081315_create_users_table.p

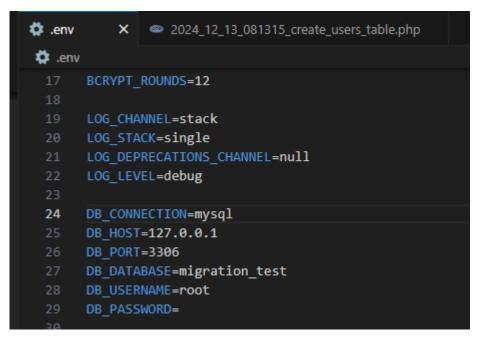
hp] created successfully.
```

Create table

Database Create



Database এর সাথে লিঙ্ক



Migration



Table Created



Migration Table যা automatically create হবে এখানে migration এর History থাকে।

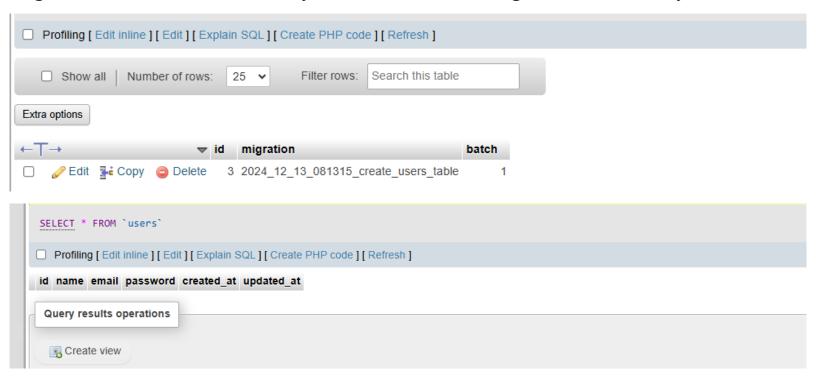


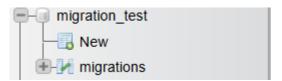
Table এ ডাটা ইনসার্ট:



Rollback:

Rollback করলে পূর্বের migration delete হবে এবং যদি ঐ টেবিল এ ডাটা থাকে তাহলে ঐ ডাটাও ডিলিট হয়ে যাবে।

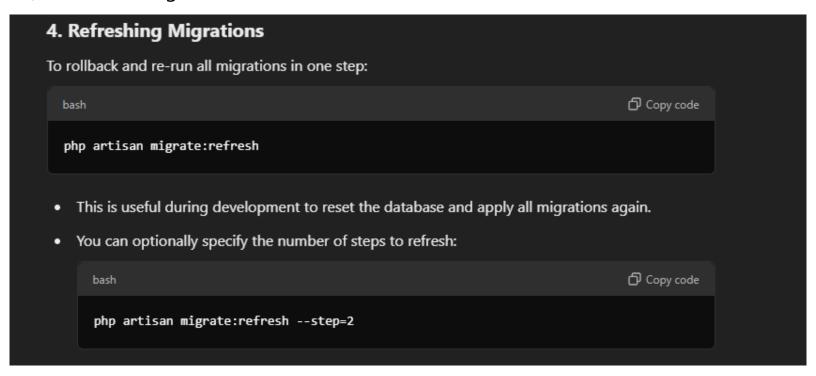
Table delete হয়ে যাবে:



পূর্বের Table ফিরে পেতে চাইলে আবার migration create করব(ডাটা insert করতে হবে আবার।)

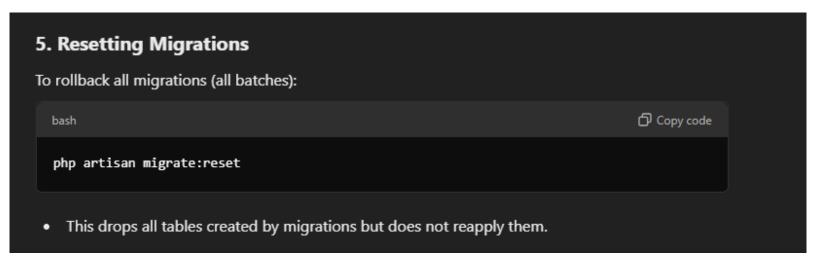


Refresh: এর মাধ্যমে migration সব rollback(ডিলিট হবে/টেবিল ডিলিট হবে) হবে এবং নতুন করে সব migration create(টেবিল create) হবে।

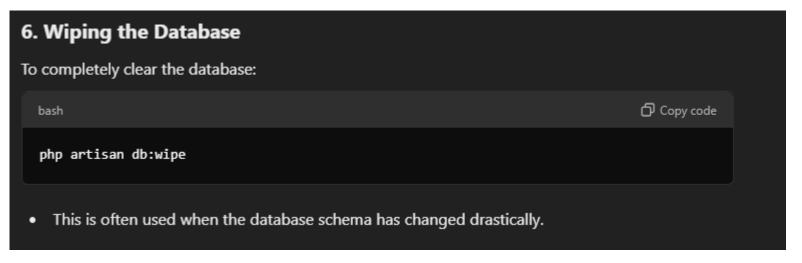


Reset(সব migration delete হয়ে যাবে তবে নতুন করে migration চলবে

ন। 🅽



Wiping The Database:



Migration Status



Add New Column:

Migration create:

```
User@DESKTOP-TSJIMAQ MINGW64 /c/xampp/htdocs/module_17_migration

$ php artisan make:migration add_mobile_number_to_users --table=users

INFO Migration [C:\xampp\htdocs\module_17_migration\database\migrations/2024_12_13_104418_add_mobile_number_to_users.php] created successfully.
```

```
return new class extends Migration
    {
         * Run the migrations.
        public function up(): void
        {
            Schema::table('users', function (Blueprint $table) {
                 //add new column
                 $table->string('mobile_number')->nullable()->unique();
11
            });
        }
12
13
15
         * Reverse the migrations.
        public function down(): void
17
18
        {
            Schema::table('users', function (Blueprint $table) {
19
                 $table->dropColumn('mobile number');
21
22
            });
        }
23
    };
```

Migration:

```
$ php artisan migrate

INFO Running migrations.

INFO Running migrations.

INFO Running migrations.

2024_12_13_104418_add_mobile_number_to_users

Activate Windows
```

Migration Table এ সব রেকর্ড হচ্ছে:



Rename Column:

Rename এর জন্য package install করতে হবে



```
C:\Users\User>composer require doctrine/dbal
./composer.json has been created
Running composer update doctrine/dbal
Loading composer repositories with package information
Updating dependencies
Lock file operations: 4 installs, 0 updates, 0 removals
- Locking doctrine/dbal (4.2.1)
- Locking doctrine/deprecations (1.1.4)
- Locking psr/cache (3.0.0)
- Locking psr/log (3.0.2)
Writing lock file
Installing dependencies from lock file (including require-dev)
Package operations: 4 installs, 0 updates, 0 removals
Failed to download psr/log from dist: The zip extension and unzip/7z commands are both missing, skipping.
```

Migration Create করব:

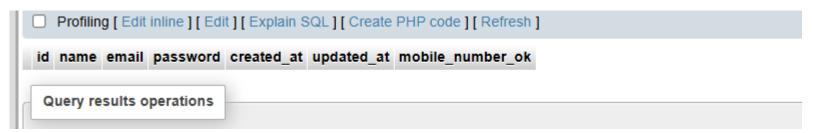
```
User@DESKTOP-TSJIMAQ MINGW64 /c/xampp/htdocs/module_17_migration

$ php artisan make:migration rename_mobile_number_in_users --table=users

INFO Migration [C:\xampp\htdocs\module_17_migration\database\migrations/2024_12_13_110745_rename_mobile_number_in_users.php] created successfully.
```

Migration Execute (database এ store):

Rename ইয়েছে



Remove Column Name:

Migration Create

```
User@DESKTOP-TSJIMAQ MINGW64 /c/xampp/htdocs/module_17_migration

• $ php artisan make:migration remove_mobile_number_ok_from_users --table=users

INFO Migration [C:\xampp\htdocs\module_17_migration\database\migrations/2024_12_13_125455_remove_mobile_number
_ok_from_users.php] created successfully.
```

```
return new class extends Migration
    {
         * Run the migrations.
        public function up(): void
            Schema::table('users', function (Blueprint $table) {
                $table->dropColumn('mobile_number_ok');
            });
11
13
         * Reverse the migrations.
        public function down(): void
            Schema::table('users', function (Blueprint $table) {
                $table->string('mobile_number_ok'); // Recreate the column if needed
            });
    };
```

Migration Execute

Column Deleted



Update Column:

Migration Create:

```
User@DESKTOP-TSJIMAQ MINGW64 /c/xampp/htdocs/module_17_migration

$ php artisan make:migration update_mobile_number_ok_in_users --table=users

INFO Migration [C:\xampp\htdocs\module_17_migration\database\migrations/2024_12_13_131714_update_mobile_number ok_in_users.php] created successfully.
```

```
return new class extends Migration
         * Run the migrations.
        public function up(): void
            Schema::table('users', function (Blueprint $table) {
                $table->string('mobile_number_ok',255)->nullable()->unique()->change();
            });
        }
         * Reverse the migrations.
        public function down(): void
17
            Schema::table('users', function (Blueprint $table) {
                //for rollback
                $table->string('mobile_number_ok',100)->nullable(false)->change();
            });
        }
    };
```

Table Store

Table এর property change হয়ে গেছে:

Table Rename:

Migration Create

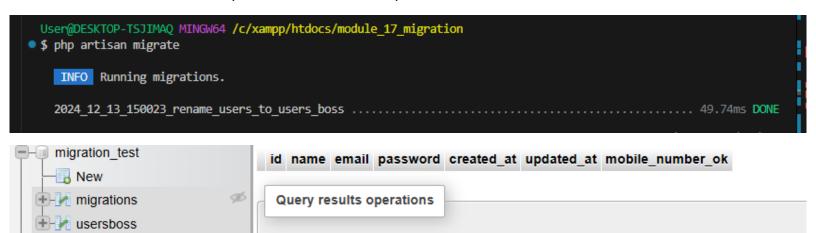
```
User@DESKTOP-TSJIMAQ MINGW64 /c/xampp/htdocs/module_17_migration

$ php artisan make:migration rename_users_to_usersBoss

INFO Migration [C:\xampp\htdocs\module_17_migration\database\migrations/2024_12_13_150023_rename_users_to_users_boss.php] created successfully.
```

```
<?php
    use Illuminate\Database\Migrations\Migration;
    use Illuminate\Database\Schema\Blueprint;
    use Illuminate\Support\Facades\Schema;
    return new class extends Migration
    {
         * Run the migrations.
11
        public function up(): void
12
13
            Schema::rename('users', 'usersBoss');
14
15
        }
17
18
         * Reverse the migrations.
19
        public function down(): void
20
21
            Schema::table('users', function (Blueprint $table) {
22
                 Schema::rename('usersBoss', 'users');
23
            });
25
        }
26
    };
```

Table Rename To Database(ডাটাবেসে পরিবর্তন।)



DROP TABLE

Migration Create:

```
use Illuminate\Database\Migrations\Migration;
   use Illuminate\Database\Schema\Blueprint;
   use Illuminate\Support\Facades\Schema;
   return new class extends Migration
       public function up(): void
           Schema::dropIfExists('usersBoss');
        * Reverse the migrations.
       public function down(): void
           Schema::create('users', function (Blueprint $table) {
               $table->id(); // Unsigned Big integer Primary key(auto increment)
               $table->string('name');
               $table->string('email')->unique();
               $table->string('password');
               $table->timestamp('created_at')->useCurrent(); // Default to CURRENT_TIMESTAMP
               $table->timestamp('updated_at')->useCurrent()->useCurrentOnUpdate(); // Updates to CURRENT_TIMESTAMP on update
```

Table Deleted

