PRAKTIKUM
PEMROGRAMAN FRAMEWORK

MODUL 5
Laravel Database Tahap Dasar

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PROGRAM STUDI S1 SISTEM INFORMASI
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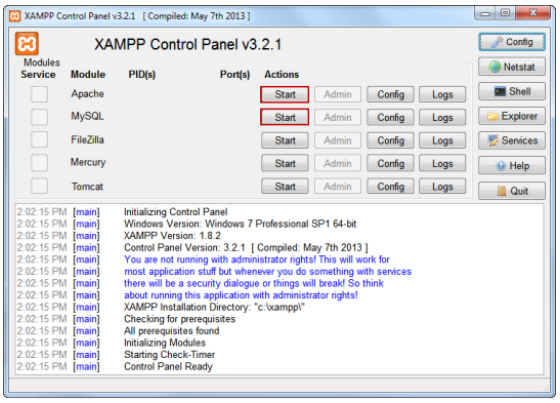
MODUL 5
LARAVEL DATABASE TAHAP DASAR

Pada praktikum kali ini kita akan melanjutkan belajar tentang laravel database. Materi tentang laravel database akan diilustrasikan dalam bentuk studi kasus sederhana secara bertahap. Kegiatan ini agar mahasiswa dapat memahami dan menerapkan manajemen database pada laravel framework.

1. Aktifkan Service MySQL dan PhpMyAdmin

- Buka **XAMPP Control Panel**



- Start service **Apache**
- Start service **MySQL**
- Buka **PhpMyAdmin** via **browser**
- Buat database baru dengan nama “**data_master”** melalui **PhpMyAdmin**.

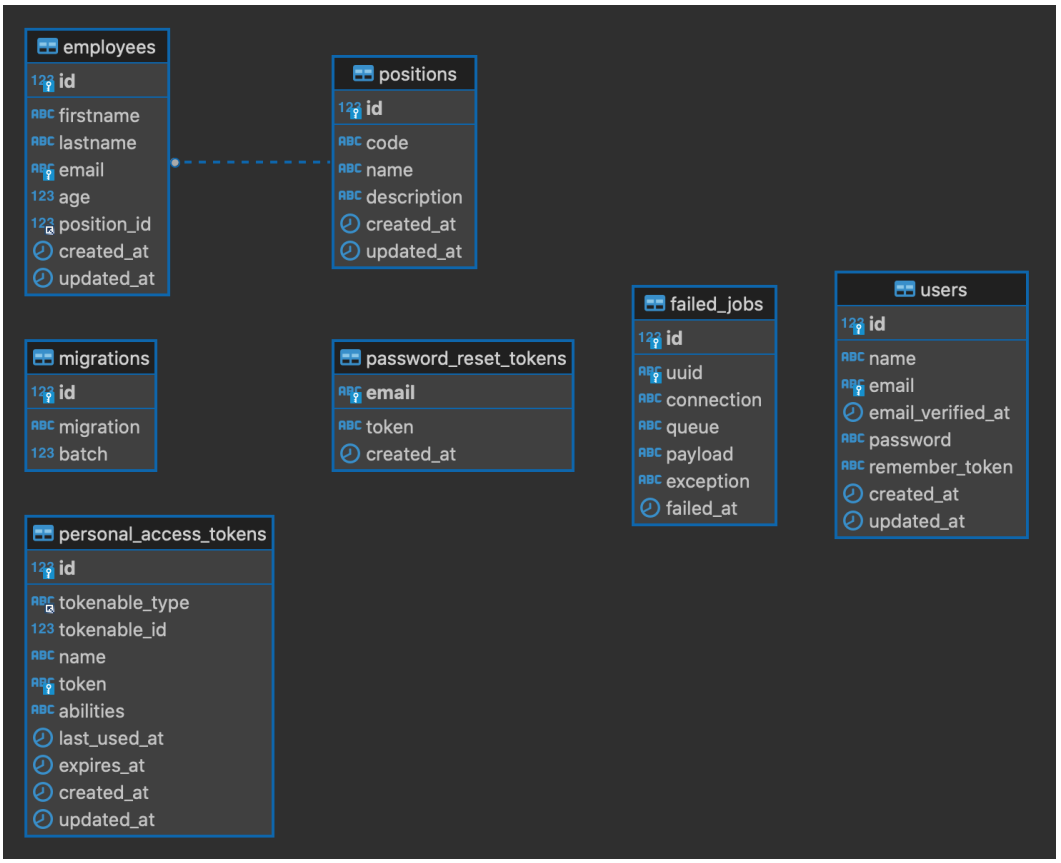
2. Setup Database Config

- Buka file .env pada project laravel kalian.
- Set variabel **DB_DATABASE** dengan nilai **“data_master”** (sesuai dengan nama database yang dibuat melalui PhpMyAdmin)

```
.env
modul-05 > laravel-database > .env
1   APP_NAME=Laravel
2   APP_ENV=local
3   APP_KEY=base64:alKhSXhb2RhvcHlt1pqfh0kqLmP8BgkQ2CYl/2oG+JM=
4   APP_DEBUG=true
5   APP_URL=http://laravel-database.test
6
7   LOG_CHANNEL=stack
8   LOG_DEPRECATIONS_CHANNEL=null
9   LOG_LEVEL=debug
10
11  DB_CONNECTION=mysql
12  DB_HOST=127.0.0.1
13  DB_PORT=3306
14  DB_DATABASE=data_master
15  DB_USERNAME=root
16  DB_PASSWORD=
17
18  BROADCAST_DRIVER=log
19  CACHE_DRIVER=file
20  FILESYSTEM_DISK=local
21  QUEUE_CONNECTION=sync
22  SESSION_DRIVER=file
23  SESSION_LIFETIME=120
```

3. Skema Database

- Kita akan membuat skema database sederhana seperti di bawah ini. Terdapat 2 Tabel yaitu **employees** dan **positions**. Memiliki hubungan **one-to-many**, dimana pada tabel employees terdapat kolom **position_id** yang merujuk pada kolom **id** pada tabel positions.



4. Membuat Skema Database Menggunakan Migration

- Generate file migration untuk tabel **positions** via Artisan

```
php artisan make:migration create_positions_table
```

- Buat kode program pada file migration yang telah dibuat yang mendefinisikan tabel **positions** seperti di bawah ini.

```
<?php

use Illuminate\Database\Migrations\Migration;
use Illuminate\Database\Schema\Blueprint;
use Illuminate\Support\Facades\Schema;

return new class extends Migration
{
    /**
     * Run the migrations.
     */
    public function up(): void
    {
        Schema::create('positions', function (Blueprint $table) {
            $table->id();
            $table->string('code');
            $table->string('name');
            $table->string('description');
            $table->timestamps();
        });
    }

    /**
     * Reverse the migrations.
     */
    public function down(): void
    {
        Schema::dropIfExists('positions');
    }
};
```

- Generate file migration untuk tabel **employees** via Artisan

```
php artisan make:migration create_employees_table
```

- Buat kode program pada file migration yang telah dibuat yang mendefinisikan tabel **employees** seperti di bawah ini.

```
<?php

use Illuminate\Database\Migrations\Migration;
```

```php
use Illuminate\Database\Schema\Blueprint;
use Illuminate\Support\Facades\Schema;

return new class extends Migration
{
    /**
     * Run the migrations.
     */
    public function up(): void
    {
        Schema::create('employees', function (Blueprint $table) {
            $table->id();
            $table->string('firstname');
            $table->string('lastname')->nullable();
            $table->string('email')->unique();
            $table->integer('age');
            $table->foreignId('position_id')->constrained();
            $table->timestamps();
        });
    }

    /**
     * Reverse the migrations.
     */
    public function down(): void
    {
        Schema::dropIfExists('employees');
    }
};
```

- Eksekusi file **migration** yang telah dibuat via Artisan

```
php artisan migrate
```

5. Membuat Data Dummy Menggunakan Seeder

- Generate file seeder untuk tabel **positions** via Artisan

```
php artisan make:seeder PositionSeeder
```

- Buat kode program pada file seeder yang telah dibuat untuk tabel **positions** seperti di bawah ini.

```php
<?php

namespace Database\Seeders;

use Illuminate\Database\Console\Seeds\WithoutModelEvents;
```

```php
use Illuminate\Database\Seeder;
use Illuminate\Support\Facades\DB;

class PositionSeeder extends Seeder
{
    /**
     * Run the database seeds.
     */
    public function run(): void
    {
        DB::table('positions')->insert([
            [
                'code' => 'FE',
                'name' => 'Front End Developer',
                'description' => 'Front End Developer'
            ],
            [
                'code' => 'BE',
                'name' => 'Back End Developer',
                'description' => 'Back End Developer'
            ],
            [
                'code' => 'SA',
                'name' => 'System Analist',
                'description' => 'System Analist'
            ],
        ]);
    }
}
```

- Generate file seeder untuk tabel **employees** via Artisan

```
php artisan make:seeder EmployeeSeeder
```

- Buat kode program pada file seeder yang telah dibuat untuk tabel **employees** seperti di bawah ini.

```php
<?php

namespace Database\Seeders;

use Illuminate\Database\Console\Seeds\WithoutModelEvents;
use Illuminate\Database\Seeder;
use Illuminate\Support\Facades\DB;

class EmployeeSeeder extends Seeder
{
    /**
     * Run the database seeds.
     */
```

```
    public function run(): void
    {
        DB::table('employees')->insert([
            [
                'firstname' => 'Purnama',
                'lastname' => 'Anaking',
                'email'=> 'purnama.anaking@gmail.com',
                'age' => 20,
                'position_id' => 1
            ],
            [
                'firstname' => 'Adzanil',
                'lastname' => 'Rachmadhi',
                'email'=> 'adzanil.rachmadhi@gmail.com',
                'age' => 25,
                'position_id' => 2
            ],
            [
                'firstname' => 'Berlian',
                'lastname' => 'Rahmy',
                'email'=> 'berlian.rahmy@gmail.com',
                'age' => 23,
                'position_id' => 3
            ],
        ]);
    }
}
```

- Definiskan file seeder yang akan dieksekusi pada function **run()** di dalam file **DatabaseSeeder.php**

```
<?php

namespace Database\Seeders;

// use Illuminate\Database\Console\Seeds\WithoutModelEvents;
use Illuminate\Database\Seeder;

class DatabaseSeeder extends Seeder
{
    /**
     * Seed the application's database.
     */
    public function run(): void
    {
        $this->call([
            PositionSeeder::class,
            EmployeeSeeder::class
        ]);
    }
```

```
}
```

- Eksekusi file **seeder** yang telah dibuat via Artisan

```
php artisan db:seed
```

6. Menampilkan List Data dari Database

- Buat Raw SQL Query pada method **index()** di dalam file **EmployeeController** dan Passing data employee dari controller ke View.

```
public function index()
{
    $pageTitle = 'Employee List';

    // RAW SQL QUERY
    $employees = DB::select('
        select *, employees.id as employee_id, positions.name as
position_name
        from employees
        left join positions on employees.position_id = positions.id
    ');

    return view('employee.index', [
        'pageTitle' => $pageTitle,
        'employees' => $employees
    ]);
}
```

- Pastikan **Facade DB** telah terpanggil di bagian atas file Controller.

```
use Illuminate\Support\Facades\DB;
```

- Tampilkan data employee pada file View.

```
<table class="table table-bordered table-hover table-striped mb-0
bg-white">
    <thead>
        <tr>
            <th>First Name</th>
            <th>Last Name</th>
            <th>Email</th>
            <th>Age</th>
            <th>Position</th>
            <th></th>
        </tr>
    </thead>
```

```
    <tbody>
        @foreach ($employees as $employee)
            <tr>
                <td>{{ $employee->firstname }}</td>
                <td>{{ $employee->lastname }}</td>
                <td>{{ $employee->email }}</td>
                <td>{{ $employee->age }}</td>
                <td>{{ $employee->position_name }}</td>
                <td>
                    <div class="d-flex">
                        <a href="{{ route('employees.show', ['employee'
=> $employee->employee_id]) }}" class="btn btn-outline-dark btn-sm
me-2"><i class="bi-person-lines-fill"></i></a>
                        <a href="{{ route('employees.edit', ['employee'
=> $employee->employee_id]) }}" class="btn btn-outline-dark btn-sm
me-2"><i class="bi-pencil-square"></i></a>

                        <div>
                            <form action="{{ route('employees.destroy',
['employee' => $employee->employee_id]) }}" method="POST">
                                @csrf
                                @method('delete')
                                <button type="submit" class="btn
btn-outline-dark btn-sm me-2"><i class="bi-trash"></i></button>
                            </form>
                        </div>
                    </div>
                </td>
            </tr>
        @endforeach
    </tbody>
</table>
```

7. Input Data ke Database

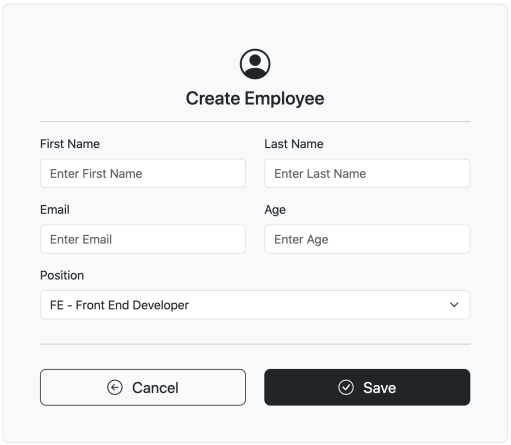
- Buat Raw SQL Query pada method **create()** di dalam file **EmployeeController** untuk pilihan **“Position”** pada Form Create Employee. Kemudian Passing data tersebut dari controller ke View.

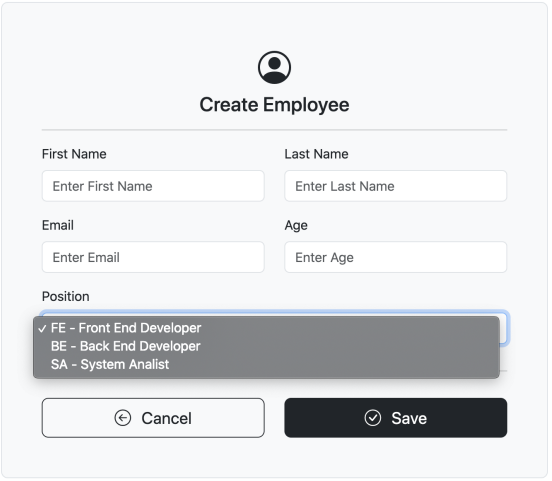
```
public function create()
{
    $pageTitle = 'Create Employee';
    // RAW SQL Query
    $positions = DB::select('select * from positions');

    return view('employee.create', compact('pageTitle', 'positions'));
}
```

- Baca data **positions** pada file View.

```
<div class="col-md-12 mb-3">
    <label for="position" class="form-label">Position</label>
    <select name="position" id="position" class="form-select">
        @foreach ($positions as $position)
            <option value="{{ $position->id }}" {{ old('position') ==
$position->id ? 'selected' : '' }}>{{ $position->code.' -
'.$position->name }}</option>
        @endforeach
    </select>
    @error('position')
        <div class="text-danger"><small>{{ $message }}</small></div>
    @enderror
</div>
```

- Hasil Akhir **Form Create Employee** adalah seperti di bawah ini.





- Buat Query Insert pada method **store()** di dalam **EmployeeController**. Kemudian **redirect** Route ke halaman Employee List.

```
public function store(Request $request)
{
    $messages = [
        'required' => ':Attribute harus diisi.',
        'email' => 'Isi :attribute dengan format yang benar',
        'numeric' => 'Isi :attribute dengan angka'
    ];

    $validator = Validator::make($request->all(), [
        'firstName' => 'required',
        'lastName' => 'required',
        'email' => 'required|email',
        'age' => 'required|numeric',
    ], $messages);

    if ($validator->fails()) {
        return redirect()->back()->withErrors($validator)->withInput();
```

```
    }

    // INSERT QUERY
    DB::table('employees')->insert([
        'firstname' => $request->firstName,
        'lastname' => $request->lastName,
        'email' => $request->email,
        'age' => $request->age,
        'position_id' => $request->position,
    ]);

    return redirect()->route('employees.index');
}
```

8. Menampilkan Detail Data dari Database

- Buat Raw SQL Query pada method **show()** di dalam file **EmployeeController** dan Passing data employee dari controller ke View.

```
public function show(string $id)
{
    $pageTitle = 'Employee Detail';

    // RAW SQL QUERY
    $employee = collect(DB::select('
        select *, employees.id as employee_id, positions.name as
position_name
        from employees
        left join positions on employees.position_id = positions.id
        where employees.id = ?
    ', [$id]))->first();

    return view('employee.show', compact('pageTitle', 'employee'));
}
```

- Buat file baru di **/views/employee/show.blade.php**. Tampilkan data employee pada file View tersebut.

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <meta name="viewport" content="width=device-width,
initial-scale=1.0">
    <title>{{ $pageTitle }}</title>
    @vite('resources/sass/app.scss')
</head>
<body>
```

```
    <nav class="navbar navbar-expand-md navbar-dark bg-primary">
        <div class="container">
            <a href="{{ route('home') }}" class="navbar-brand mb-0 h1"><i
class="bi-hexagon-fill me-2"></i> Data Master</a>

            <button type="button" class="navbar-toggler"
data-bs-toggle="collapse" data-bs-target="#navbarSupportedContent">
                <span class="navbar-toggler-icon"></span>
            </button>

            <div class="collapse navbar-collapse"
id="navbarSupportedContent">
                <hr class="d-lg-none text-white-50">

                <ul class="navbar-nav flex-row flex-wrap">
                    <li class="nav-item col-2 col-md-auto"><a href="{{
route('home') }}" class="nav-link">Home</a></li>
                    <li class="nav-item col-2 col-md-auto"><a href="{{
route('employees.index') }}" class="nav-link active">Employee
List</a></li>
                </ul>

                <hr class="d-lg-none text-white-50">

                <a href="{{ route('profile') }}" class="btn
btn-outline-light my-2 ms-md-auto"><i class="bi-person-circle me-1"></i>
My Profile</a>
            </div>
        </div>
    </nav>

    <div class="container-sm my-5">
        <div class="row justify-content-center">
            <div class="p-5 bg-light rounded-3 col-xl-4 border">
                <div class="mb-3 text-center">
                    <i class="bi-person-circle fs-1"></i>
                    <h4>Detail Employee</h4>
                </div>
                <hr>
                <div class="row">
                    <div class="col-md-12 mb-3">
                        <label for="firstName" class="form-label">First
Name</label>
                        <h5>{{ $employee->firstname }}</h5>
                    </div>
                    <div class="col-md-12 mb-3">
                        <label for="lastName" class="form-label">Last
Name</label>
                        <h5>{{ $employee->lastname }}</h5>
                    </div>
                    <div class="col-md-12 mb-3">
```

```
                        <label for="email"
class="form-label">Email</label>
                        <h5>{{ $employee->email }}</h5>
                    </div>
                    <div class="col-md-12 mb-3">
                        <label for="age" class="form-label">Age</label>
                        <h5>{{ $employee->age }}</h5>
                    </div>
                    <div class="col-md-12 mb-3">
                        <label for="age"
class="form-label">Position</label>
                        <h5>{{ $employee->position_name }}</h5>
                    </div>
                </div>
                <hr>
                <div class="row">
                    <div class="col-md-12 d-grid">
                        <a href="{{ route('employees.index') }}"
class="btn btn-outline-dark btn-lg mt-3"><i class="bi-arrow-left-circle
me-2"></i> Back</a>
                    </div>
                </div>
            </div>
        </div>
    </div>

    @vite('resources/js/app.js')
</body>
</html>
```

9. Menghapus Data dari Database

- Buat Builder Query pada method **destroy()** di dalam file **EmployeeController** kemudian redirect Route ke halaman Employee List.

```
public function destroy(string $id)
{
    // QUERY BUILDER
    DB::table('employees')
        ->where('id', $id)
        ->delete();

    return redirect()->route('employees.index');
}
```

10. Tugas

1. **Praktekkan** seluruh poin praktikum yang ada di atas secara **INDIVIDU**.
2. Buat **Fitur Edit** untuk melengkapi hasil akhir dari praktikum ini.

3. Ubah semua query yang ditulis dengan **RAW SQL QUERY** menjadi dengan pendekatan **QUERY BUILDER**.
4. Dokumentasikan seluruhnya **(screenshot kode program, output pada browser, jawaban pertanyaan)** dalam bentuk Laporan Praktikum.
5. **Upload manual** project laravel hasil praktikum ke github (hapus folder **node_modules** & **vendor**).
    a. Buat **repository public** baru pada akun github anda.
    b. Klik link **"Uploading an existing file"** untuk meng-upload project laravel yang telah anda buat.
    a. Cantumkan **URL repository** yang telah dibuat pada **Laporan Praktikum**.
6. Kumpulkan Laporan Praktikum **(.pdf)** yang telah dibuat di dalam praktikum via **E-Learning** paling lambat sebelum jadwal praktikum minggu depan.