LAPORAN PRAKTIKUM SISTEM TERDISTRIBUSI DAN KEAMANAN D

MODUL PRAKTIKUM 8

REpresentational State Transfer (REST) II

Dosen Pengampu :

Novrindah Alvi Hasanah, M.Kom.

Disusun Oleh
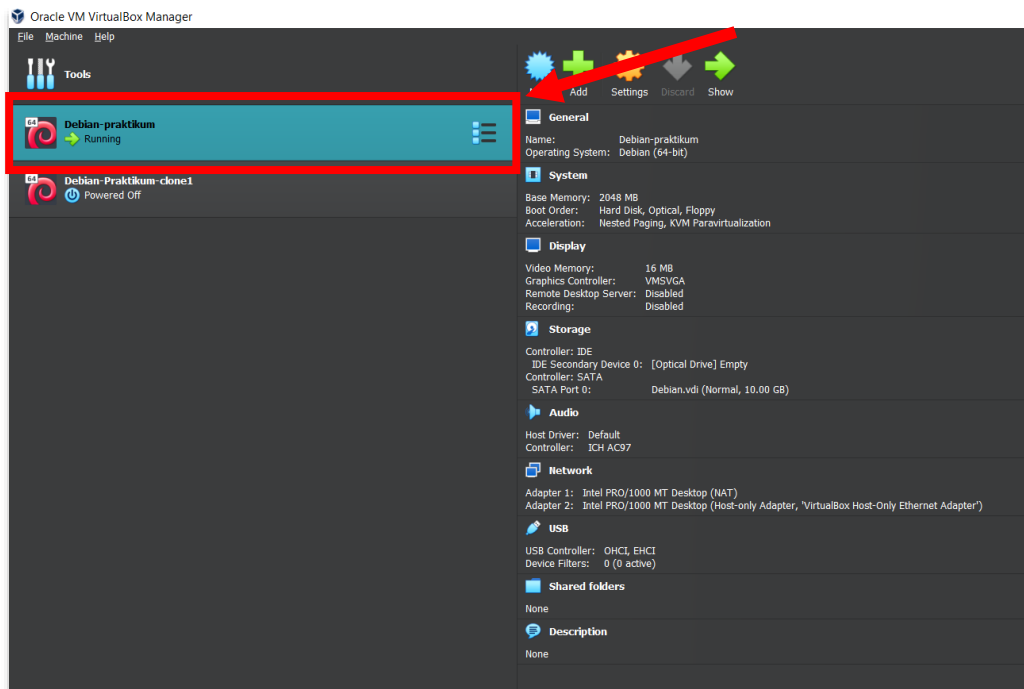
Teguh Darma Pinandhita (220605110119)

TEKNIK INFORMATIKA

UIN MAULANA MALIK IBRAHIM MALANG
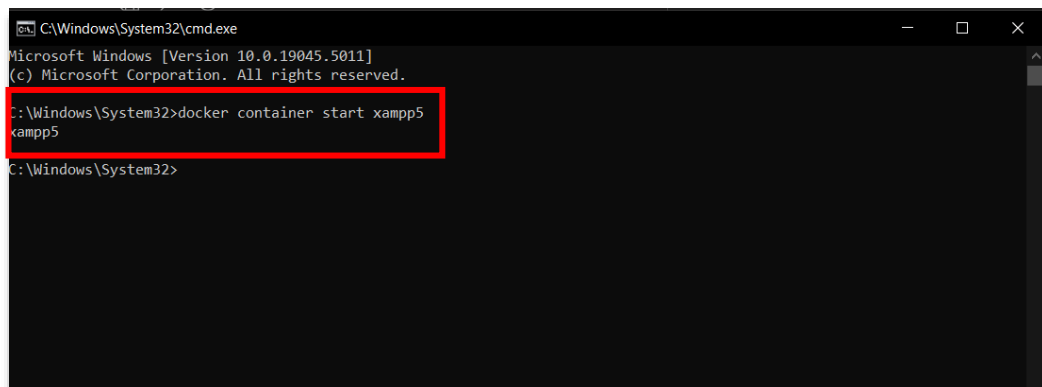
2024

PROSEDUR PRAKTIKUM

1. Siapkan virtual machine debian yang akan digunakan sebagai server

2. Hidupkan Docker dan Start docker container xampp5 dengan perintah di Command prompt

   ➢ *docker container start xampp5*

3. Akses phpinfo pada Server (Debian Server) serta pastikan PHP extension PDO dan pdo_mysql sudah aktif.

4. Pada Debian Server tetap menggunakan database *"toko"* dan tabel *"barang"* seperti praktikum sebelumnya. Buat folder **/opt/lampp/htdocs/modul8/restful-json-toko/server/** lalu buat file Database.php dan server.php.
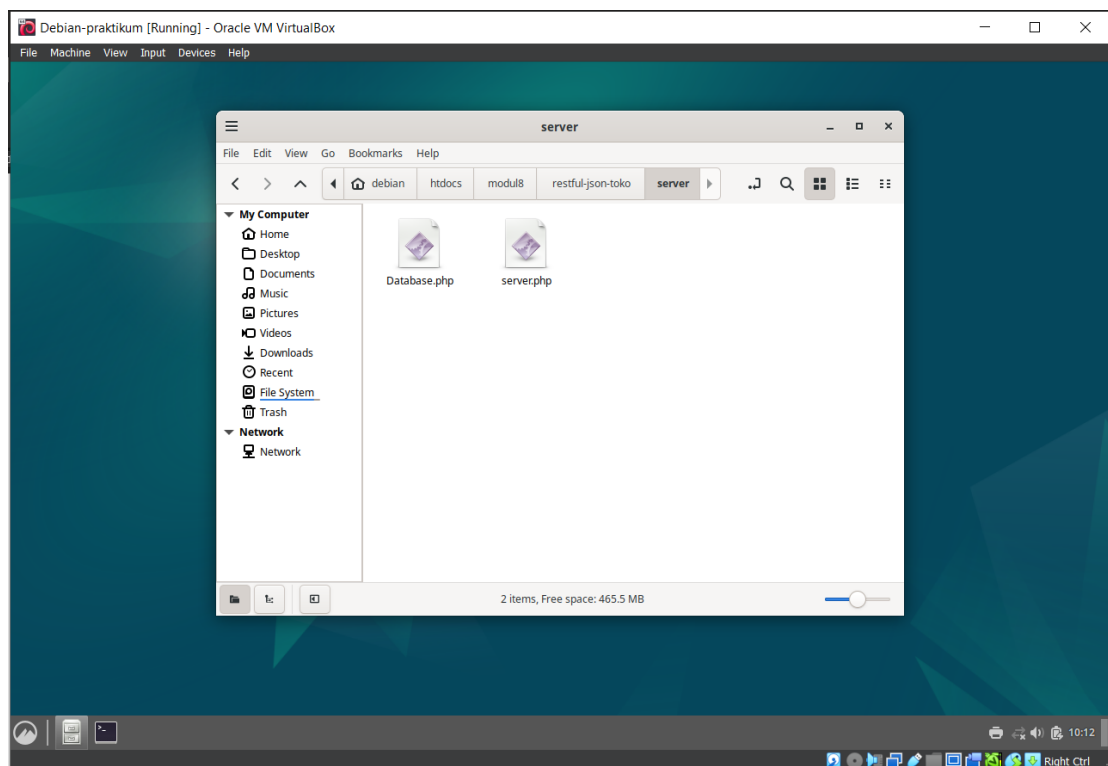
5. Pada Windows, buat juga folder **xampp\htdocs\modul8\restful-json-toko\client** lalu buat file *Client.php*, *proses.php* dan *index.php*.

Name	Date modified	Type	Size
Client.php	11/3/2024 8:04 AM	PHP Source File	4 KB
index.php	11/3/2024 7:59 AM	PHP Source File	3 KB
proses.php	11/3/2024 7:48 AM	PHP Source File	1 KB

6. Source Code

6.1. Sisi Server (Debian)

- **Database.php**

```php
<?php
class Database
{
    private $host="localhost";
    private $dbname="toko";
    private $user="root";
    private $password="";
    private $port="3306";
    private $conn;

    // function yang pertama kali di-load saat class dipanggil
    public function __construct()
    {
        // koneksi database
        try
        {
            $this->conn    =    new    PDO("mysql:host=$this->host;port=$this-
>port;dbname=$this->dbname;charset=utf8",$this->user,$this->password);
        }
        catch (PDOException $e)
        {
            echo "Koneksi gagal";
        }
    }

    public function tampil_semua_data()
    {
        $query = $this->conn->prepare("select id_barang, nama_barang from barang
order by id_barang");
        $query->execute();
        // mengambil banyak data dengan fetchAll
        $data = $query->fetchAll(PDO::FETCH_ASSOC);
        // mengembalikan data
        return $data;
        // hapus variable dari memory
        $query->closeCursor();
        unset($data);
    }
    public function tampil_data($id_barang)
    {
        $query = $this->conn->prepare("select id_barang,nama_barang from barang
where id_barang=?");
        $query->execute(array($id_barang));
        // mengambil satu data dengan fetch
        $data = $query->fetch(PDO::FETCH_ASSOC);
        return $data;
        $query->closeCursor();
        unset($id_barang,$data);
    }
```

```php
        public function tambah_data($data)
        {
            $query    =    $this->conn->prepare("insert    ignore    into    barang
(id_barang,nama_barang) values (?,?)");
            $query->execute(array($data['id_barang'],$data['nama_barang']));
            $query->closeCursor();
            unset($data);
        }

        public function ubah_data($data)
        {
            $query = $this->conn->prepare("update    barang    set    nama_barang=?    where
id_barang=?");
            $query->execute(array($data['nama_barang'],$data['id_barang']));
            $query->closeCursor();
            unset($data);
        }

        public function hapus_data($id_barang)
        {
            $query = $this->conn->prepare("delete from barang where id_barang=?");
            $query->execute(array($id_barang));
            $query->closeCursor();
            unset($id_barang);
        }
}
?>
```

- **Server.php**

```php
<?php
error_reporting(1);
include "Database.php";
$abc = new Database();

if (isset($_SERVER['HTTP_ORIGIN'])) {
    header("Access-Control-Allow-Origin: {$_SERVER['HTTP_ORIGIN']}");
    header('Access-Control-Allow-Credentials: true');
    header('Access-Control-Max-Age: 86400');    // cache for 1 day
}
if ($_SERVER['REQUEST_METHOD'] == 'OPTIONS') {
    if (isset($_SERVER['HTTP_ACCESS_CONTROL_REQUEST_METHOD']))
        header("Access-Control-Allow-Methods: GET, POST, OPTIONS");
    if (isset($_SERVER['HTTP_ACCESS_CONTROL_REQUEST_HEADERS']))
        header("Access-Control-Allow-Headers:
{$_SERVER['HTTP_ACCESS_CONTROL_REQUEST_HEADERS']}");
    exit(0);
}
$postdata = file_get_contents("php://input");

// function untuk menghapus selain huruf dan angka
function filter($data)
{
    $data = preg_replace('/[^a-zA-Z0-9]/', '', $data);
    return $data;
    unset($data);
}
if ($_SERVER['REQUEST_METHOD'] == 'POST') {
    $data = json_decode($postdata);
    $id_barang = $data->id_barang;
    $nama_barang = $data->nama_barang;
    $aksi = $data->aksi;
    if ($aksi == 'tambah') {
        $data2 = array(
            'id_barang' => $id_barang,
            'nama_barang' => $nama_barang
        );
        $abc->tambah_data($data2);
    } elseif ($aksi == 'ubah') {
```
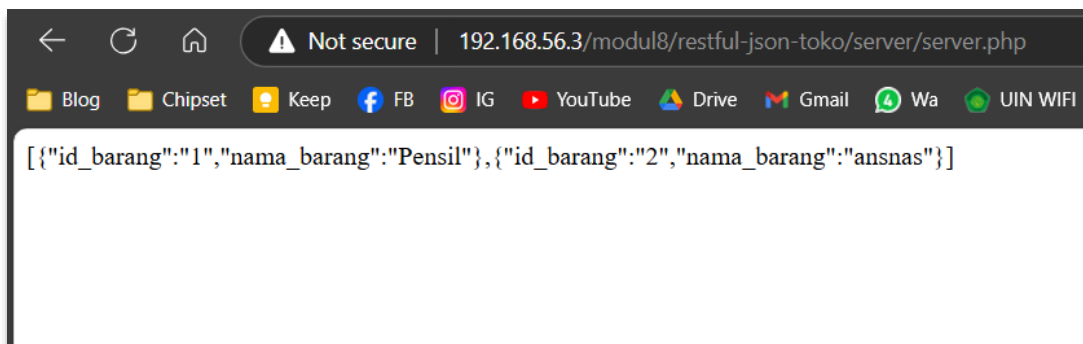
```php
        $data2 = array(
            'id_barang' => $id_barang,
            'nama_barang' => $nama_barang
        );
        $abc->ubah_data($data2);
    } elseif ($aksi == 'hapus') {
        $abc->hapus_data($id_barang);
    }
    // hapus variable dari memory
    unset($postdata, $data, $data2, $id_barang, $nama_barang, $aksi, $abc);
} elseif ($_SERVER['REQUEST_METHOD'] == 'GET') {
    if (($_GET['aksi'] == 'tampil') and (isset($_GET['id_barang']))) {
        $id_barang = filter($_GET['id_barang']);
        $data = $abc->tampil_data($id_barang);
        echo json_encode($data);
    } else //menampilkan semua data
    {
        $data = $abc->tampil_semua_data();
        echo json_encode($data);
    }
    unset($postdata, $data, $id_barang, $abc);
}
?>
```

Akses RESTful menggunakan web browser http://192.168.56.3/modul8/restful-json-toko/server/server.php

[{"id_barang":"1","nama_barang":"Pensil"},{"id_barang":"2","nama_barang":"ansnas"}]

6.2. Sisi Client (Windows)

- **Client.php**

```php
<?php
error_reporting(1); // error ditampilkan
class Client
{   private $url;
    // function yang pertama kali di-load saat class dipanggil
    public function __construct($url)
    {   $this->url = $url;
        unset($url);
    }
    // function untuk menghapus selain huruf dan angka
    public function filter($data)
    {   $data = preg_replace('/[^a-zA-Z0-9]/', '', $data);
        return $data;
        unset($data);
    }
    public function tampil_semua_data()
    {   $client = curl_init($this->url);
        curl_setopt($client, CURLOPT_RETURNTRANSFER, 1);
        $response = curl_exec($client);
        curl_close($client);
        $data = json_decode($response);
        // mengembalikan data
        return $data;
        // menghapus variabel dari memory
        unset($data, $client, $response);
```

```php
        }
        public function tampil_data($id_barang)
        {   $id_barang = $this->filter($id_barang);
            $client = curl_init($this->url . "?aksi=tampil&id_barang=" . $id_barang);
            curl_setopt($client, CURLOPT_RETURNTRANSFER, 1);
            $response = curl_exec($client);
            curl_close($client);
            $data = json_decode($response);
            return $data;
            unset($id_barang, $client, $response, $data);
        }
        public function tambah_data($data)
        {   $data = '{  "id_barang":"' . $data['id_barang'] . '",
                    "nama_barang":"' . $data['nama_barang'] . '",
                    "aksi":"' . $data['aksi'] . '"
                    }';
            $c = curl_init();
            curl_setopt($c, CURLOPT_URL, $this->url);
            curl_setopt($c, CURLOPT_RETURNTRANSFER, true);
            curl_setopt($c, CURLOPT_POST, true);
            curl_setopt($c, CURLOPT_POSTFIELDS, $data);
            $response = curl_exec($c);
            curl_close($c);
            unset($data, $c, $response);
        }
        public function ubah_data($data)
        {   $data = '{  "id_barang":"' . $data['id_barang'] . '",
                    "nama_barang":"' . $data['nama_barang'] . '",
                    "aksi":"' . $data['aksi'] . '"
                    }';
            $c = curl_init();
            curl_setopt($c, CURLOPT_URL, $this->url);
            curl_setopt($c, CURLOPT_RETURNTRANSFER, true);
            curl_setopt($c, CURLOPT_POST, true);
            curl_setopt($c, CURLOPT_POSTFIELDS, $data);
            $response = curl_exec($c);
            curl_close($c);
            unset($data, $c, $response);
        }
        public function hapus_data($data)
        {   $id_barang = $this->filter($data['id_barang']);
            $data = '{  "id_barang":"' . $id_barang . '",
                    "aksi":"' . $data['aksi'] . '"
                    }';
            $c = curl_init();
            curl_setopt($c, CURLOPT_URL, $this->url);
            curl_setopt($c, CURLOPT_RETURNTRANSFER, true);
            curl_setopt($c, CURLOPT_POST, true);
            curl_setopt($c, CURLOPT_POSTFIELDS, $data);
            $response = curl_exec($c);
            curl_close($c);
            unset($data, $c, $response);
        }
        // function yang terakhir kali di-load saat class dipanggil
        public function __destruct()
        {   // hapus variable dari memory
            unset($this->url);
        }
    }
}
$url = 'http://192.168.56.3/modul8/restful-json-toko/server/server.php';
// buat objek baru dari class Client
$abc = new Client($url);
?>
```

- **index.php**

```php
<?php
include "Client.php";
?>
<!doctype html>
<html>
<head>
```

```html
        <title></title>
</head>
<body>
    <a   href="?page=home">Home</a>   |   <a   href="?page=tambah">Tambah   Data</a>   |   <a
href="?page=daftar-data">Data Server</a>
    <br /><br />

    <fieldset>
        <? if ($_GET['page'] == 'tambah') { ?>
            <legend>Tambah Data</legend>
            <form name="form" method="POST" action="proses.php">
                <input type="hidden" name="aksi" value="tambah" />
                <label>ID Barang</label>
                <input type="text" name="id_barang" />
                <br />
                <label>Nama Barang</label>
                <input type="text" name="nama_barang" />
                <br />
                <button type="submit" name="simpan">Simpan</button>
            </form>

        <? } elseif ($_GET['page'] == 'ubah') {
            $r = $abc->tampil_data($_GET['id_barang']);
            ?>
            <legend>Ubah Data</legend>
            <form name="form" method="post" action="proses.php">
                <input type="hidden" name="aksi" value="ubah" />
                <input type="hidden" name="id_barang" value="<?= $r->id_barang ?>" />
                <label>ID Barang</label>
                <input type="text" value="<?= $r->id_barang ?>" disabled>
                <br />
                <label>Nama Barang</label>
                <input type="text" name="nama_barang" value="<?= $r->nama_barang ?>">
                <br />
                <button type="submit" name="ubah">Ubah</button>
            </form>
            <? unset($r);
        } else if ($_GET['page'] == 'daftar-data') {
            ?>
                <legend>Daftar Data Server</legend>
                <table border="1">
                    <tr>
                        <th width="5%">No</th>
                        <th width="10%">ID Barang</th>
                        <th width="75%">Nama</th>
                        <th width="5%" colspan="2">Aksi</th>
                    </tr>
                <?  $no = 1;
                    $data_array = $abc->tampil_semua_data();
                    foreach ($data_array as $r) {
                    ?><tr><td><?= $no ?></td>
                            <td><?= $r->id_barang ?></td>
                            <td><?= $r->nama_barang ?></td>
                            <td><a      href="?page=ubah&id_barang=<?=      $r->id_barang
?>">Ubah</a></td>
                            <td><a  href="proses.php?aksi=hapus&id_barang=<?=  $r->id_barang
?>"onclick="return confirm('Apakah Anda ingin menghapus data ini?')">Hapus</a></td>
                        </tr>
                    <? $no++;
                }
                unset($data_array, $r, $no);
                ?>
                </table>

        <? } else { ?>
                <legend>Home</legend>
                Aplikasi sederhana ini menggunakan RESTful dengan format data JSON (JavaScript
Object Notation).
        </fieldset>
    <? } ?>
</body>
</html>
```

- **proses.php**

```php
<?php
include "Client.php";
if ($_POST['aksi'] == 'tambah') {
    $data = array(
        "id_barang" => $_POST['id_barang'],
        "nama_barang" => $_POST['nama_barang'],
        "aksi" => $_POST['aksi']
    );
    $abc->tambah_data($data);
    header('location:index.php?page=daftar-data');
} else if ($_POST['aksi'] == 'ubah') {
    $data = array(
        "id_barang" => $_POST['id_barang'],
        "nama_barang" => $_POST['nama_barang'],
        "aksi" => $_POST['aksi']
    );
    $abc->ubah_data($data);
    header('location:index.php?page=daftar-data');
} else if ($_GET['aksi'] == 'hapus') {
    $data = array(
        "id_barang" => $_GET['id_barang'],
        "aksi" => $_GET['aksi']
    );
    $abc->hapus_data($data);
    header('location:index.php?page=daftar-data');
}
unset($abc, $data);
?>
```

Akses melalui web browser **"http://localhost:8081/www/modul8/restful-json toko/client/index.php"** di Windows. Coba jalankan aplikasi sederhana ini dengan menambah, menampilkan, mengubah dan menghapus datanya. Data akan dikirim dari Windows ke Debian Server dan data hanya disimpan di database Debian Server. Data yang tersimpan tersebut akan ditampilkan ke Client di Windows.

OUTPUT PROGRAM

a. **Dashboard**
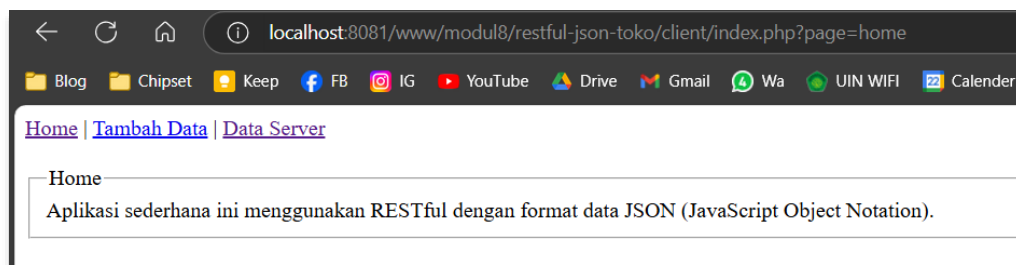
b. **Proses menampilkan data**

c. Proses mengubah data

d. Proses menghapus data

e. Proses menambah data