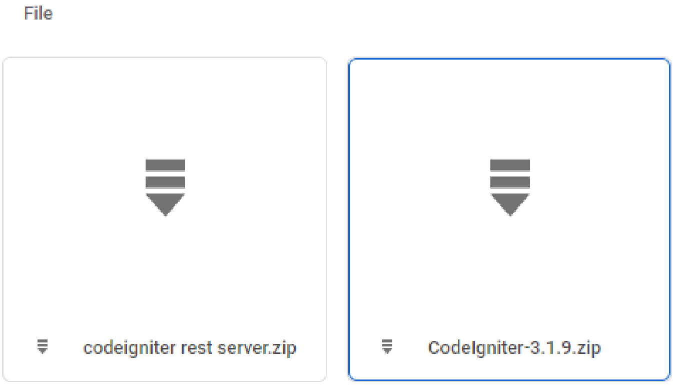
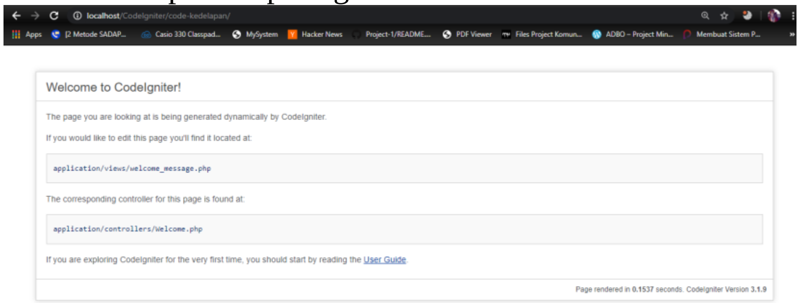
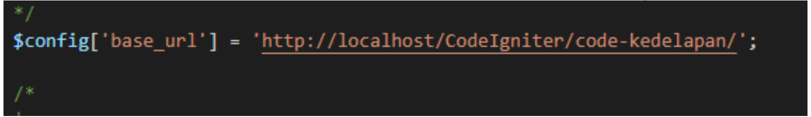
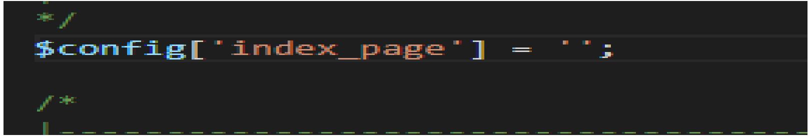
# JOBSHEET 8 : IMPLEMENTASI RESTFUL API

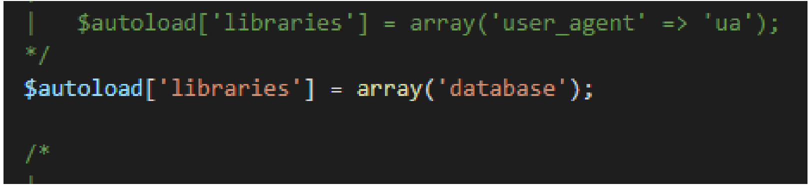
# PEMOGRAMAN WEB LANJUT

POLITEKNIK NEGERI MALANG

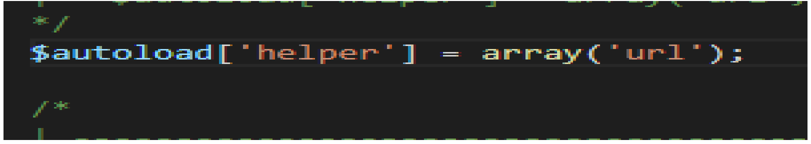
MARET 2020

| Langkah | Keterangan |
|---|---|
| 1. | Silahkan unduh aplikasi Postman terlebih dahulu. |
| 2. | Pada praktikum kali ini kita akan menggunakan source codeigniter yang baru dan Library Rest Server. Untuk versi codeigniter yang digunakan adalah versi 3.1.9. sedangkan untuk Library Rest Server dapat di unduh pada link berikut : https://drive.google.com/drive/folders/10YaCrqrqG2M1Zk0r-trln0hROP9q0hpi?usp=sharing<br><br> File<br>codeigniter rest server.zip<br>CodeIgniter-3.1.9.zip |
| 3. | Extract codeigniter yang sudah di unduh dan letakkan pada folder htdocs. Beri nama Code-kedelapan dan coba akses di http://localhost/Code-kedelapan/. Pastikan tampilan seperti gambar dibawah ini:<br><br> localhost/CodeIgniter/code-kedelapan/<br>Apps<br>[2 Metode SADAP...<br>Casio 330 Classpad...<br>MySystem<br>Hacker News<br>Project-1/README...<br>PDF Viewer<br>Files Project Komun...<br>ADBO – Project Min...<br>Membuat Sistem P...<br>Welcome to CodeIgniter!<br>The page you are looking at is being generated dynamically by CodeIgniter.<br>If you would like to edit this page you'll find it located at:<br>`application/views/welcome_message.php`<br>The corresponding controller for this page is found at:<br>`application/controllers/Welcome.php`<br>If you are exploring CodeIgniter for the very first time, you should start by reading the User Guide.<br>Page rendered in **0.1537** seconds. CodeIgniter Version **3.1.9** |
| 4. | Selanjutnya lakukan konfigurasi dasar pada **config.php** seperti berikut:<br><br>`*/`<br>`$config['base_url'] = 'http://localhost/CodeIgniter/code-kedelapan/';`<br>`/*`<br><br>`*/`<br>`$config['index_page'] = '';`<br>`/*` |

Dan file **autoload.php**

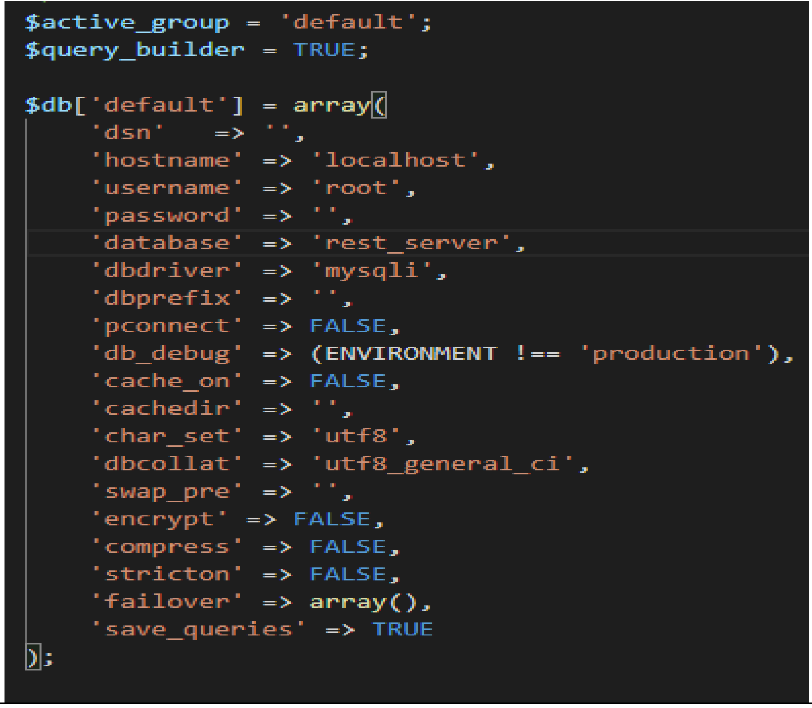


```
|    $autoload['libraries'] = array('user_agent' => 'ua');
*/
$autoload['libraries'] = array('database');

/*
```



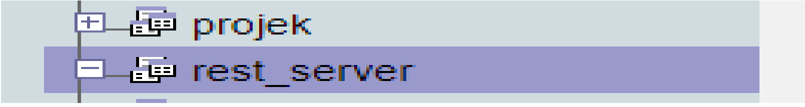
```
*/
$autoload['helper'] = array('url');

/*
```

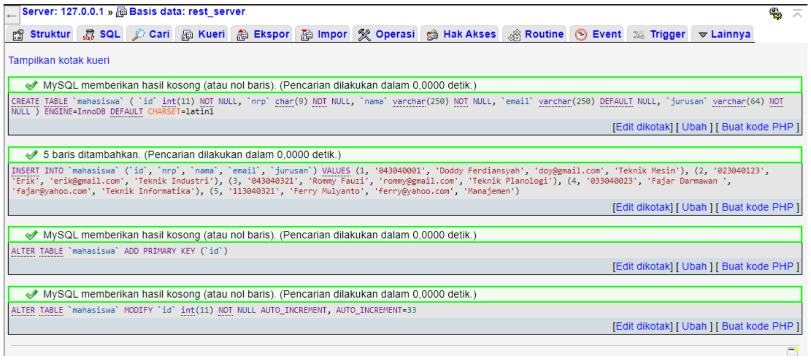
Dan database.php seperti berikut:



```
$active_group = 'default';
$query_builder = TRUE;

$db['default'] = array(
	'dsn'	=> '',
	'hostname' => 'localhost',
	'username' => 'root',
	'password' => '',
	'database' => 'rest_server',
	'dbdriver' => 'mysqli',
	'dbprefix' => '',
	'pconnect' => FALSE,
	'db_debug' => (ENVIRONMENT !== 'production'),
	'cache_on' => FALSE,
	'cachedir' => '',
	'char_set' => 'utf8',
	'dbcollat' => 'utf8_general_ci',
	'swap_pre' => '',
	'encrypt' => FALSE,
	'compress' => FALSE,
	'stricton' => FALSE,
	'failover' => array(),
	'save_queries' => TRUE
);
```

5. Selanjutnya buatlah database **rest_server** pada phpmyadmin dan masukkan data dummy. Untuk data dummy dapat dibuat sebagai berikut:





✓ MySQL memberikan hasil kosong (atau nol baris). (Pencarian dilakukan dalam 0,0000 detik.)

```
CREATE TABLE `mahasiswa` ( `id` int(11) NOT NULL, `nrp` char(9) NOT NULL, `nama` varchar(250) NOT NULL, `email` varchar(250) DEFAULT NULL, `jurusan` varchar(64) NOT NULL ) ENGINE=InnoDB DEFAULT CHARSET=latin1
```

[Edit dikotak] [ Ubah ] [ Buat kode PHP ]

✓ 5 baris ditambahkan. (Pencarian dilakukan dalam 0,0000 detik.)

```
INSERT INTO `mahasiswa` (`id`, `nrp`, `nama`, `email`, `jurusan`) VALUES (1, '043040001', 'Doddy Ferdiansyah', 'doy@gmail.com', 'Teknik Mesin'), (2, '023040123', 'Erik', 'erik@gmail.com', 'Teknik Industri'), (3, '043040321', 'Rommy Fauzi', 'rommy@gmail.com', 'Teknik Planologi'), (4, '033040023', 'Fajar Darmawan ', 'fajar@yahoo.com', 'Teknik Informatika'), (5, '113040321', 'Ferry Mulyanto', 'ferry@yahoo.com', 'Manajemen')
```

[Edit dikotak] [ Ubah ] [ Buat kode PHP ]

✓ MySQL memberikan hasil kosong (atau nol baris). (Pencarian dilakukan dalam 0,0000 detik.)

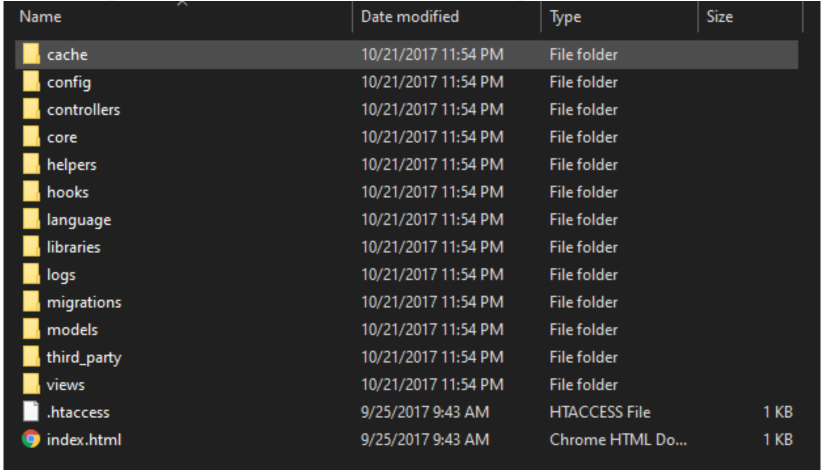
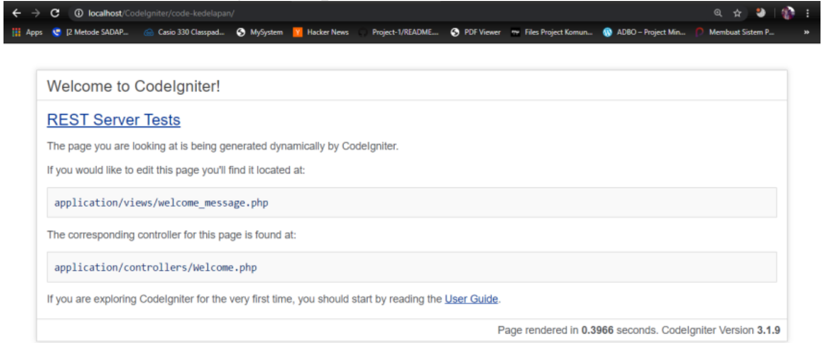
```
ALTER TABLE `mahasiswa` ADD PRIMARY KEY (`id`)
```

[Edit dikotak] [ Ubah ] [ Buat kode PHP ]

✓ MySQL memberikan hasil kosong (atau nol baris). (Pencarian dilakukan dalam 0,0000 detik.)

```
ALTER TABLE `mahasiswa` MODIFY `id` int(11) NOT NULL AUTO_INCREMENT, AUTO_INCREMENT=33
```

[Edit dikotak] [ Ubah ] [ Buat kode PHP ]

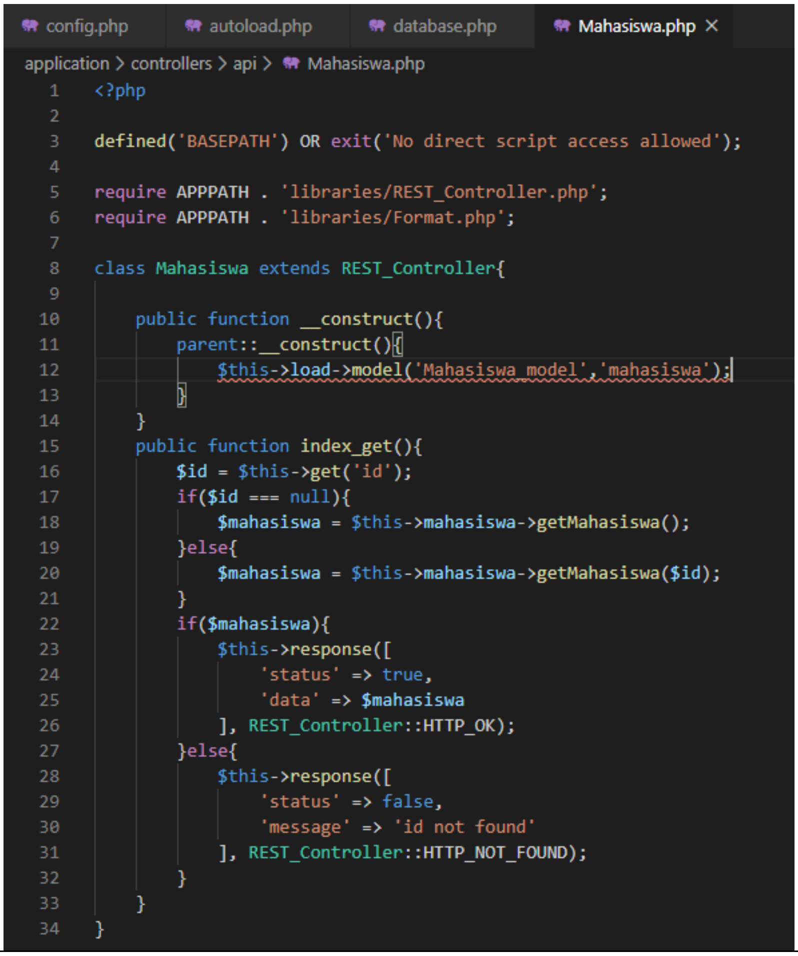
<table>
<tr><td>6.</td><td>Selanjutnya extract file Library Rest Server, buka folder <b>application</b> dan duplikasi file dan folder tersebut kedalam folder <b>application</b> pada project <b>Code-kedelapan</b>. Klik <b>Replace</b> files jika ada notifikasi duplikat.<br>

<table>
<tr><th>Name</th><th>Date modified</th><th>Type</th><th>Size</th></tr>
<tr><td>cache</td><td>10/21/2017 11:54 PM</td><td>File folder</td><td></td></tr>
<tr><td>config</td><td>10/21/2017 11:54 PM</td><td>File folder</td><td></td></tr>
<tr><td>controllers</td><td>10/21/2017 11:54 PM</td><td>File folder</td><td></td></tr>
<tr><td>core</td><td>10/21/2017 11:54 PM</td><td>File folder</td><td></td></tr>
<tr><td>helpers</td><td>10/21/2017 11:54 PM</td><td>File folder</td><td></td></tr>
<tr><td>hooks</td><td>10/21/2017 11:54 PM</td><td>File folder</td><td></td></tr>
<tr><td>language</td><td>10/21/2017 11:54 PM</td><td>File folder</td><td></td></tr>
<tr><td>libraries</td><td>10/21/2017 11:54 PM</td><td>File folder</td><td></td></tr>
<tr><td>logs</td><td>10/21/2017 11:54 PM</td><td>File folder</td><td></td></tr>
<tr><td>migrations</td><td>10/21/2017 11:54 PM</td><td>File folder</td><td></td></tr>
<tr><td>models</td><td>10/21/2017 11:54 PM</td><td>File folder</td><td></td></tr>
<tr><td>third_party</td><td>10/21/2017 11:54 PM</td><td>File folder</td><td></td></tr>
<tr><td>views</td><td>10/21/2017 11:54 PM</td><td>File folder</td><td></td></tr>
<tr><td>.htaccess</td><td>9/25/2017 9:43 AM</td><td>HTACCESS File</td><td>1 KB</td></tr>
<tr><td>index.html</td><td>9/25/2017 9:43 AM</td><td>Chrome HTML Do...</td><td>1 KB</td></tr>
</table>
Setelah proses duplikasi file selesai, pastikan file-file yang kita sudah konfigurasi di awal tetap terkonfigurasi.</td></tr>
<tr><td>7.</td><td>Selanjutnya buka project http://localhost/Code-kedelapan/. Jika berhasil, tampilan akan berubah menjadi seperti ini:<br>


Welcome to CodeIgniter!<br>
REST Server Tests<br>
The page you are looking at is being generated dynamically by CodeIgniter.<br>
If you would like to edit this page you'll find it located at:<br>
application/views/welcome_message.php<br>
The corresponding controller for this page is found at:<br>
application/controllers/Welcome.php<br>
If you are exploring CodeIgniter for the very first time, you should start by reading the User Guide.<br>
Page rendered in <b>0.3966</b> seconds. CodeIgniter Version <b>3.1.9</b></td></tr>
<tr><td>8.</td><td>Tahap instalasi Library Rest Server selesai</td></tr>
</table>

## Praktikum – Bagian 1: Instalasi library restful codeigniter

<table>
<tr><th>Langkah</th><th>Keterangan</th></tr>
<tr><td>1.</td><td>

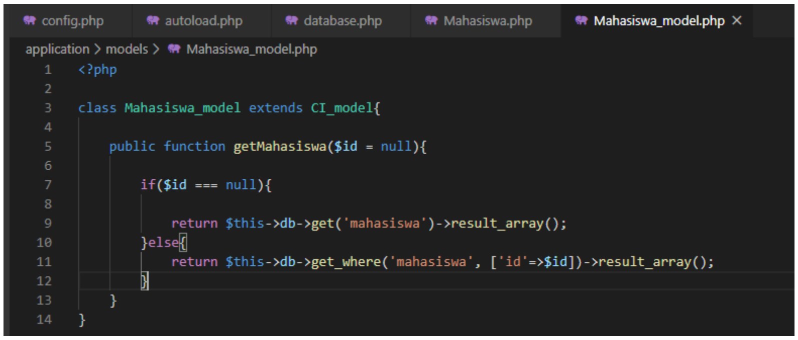
Buatlah file **Mahasiswa.php** pada **controller/api**. Selanjutnya tuliskan kode berikut:



```php
<?php

defined('BASEPATH') OR exit('No direct script access allowed');

require APPPATH . 'libraries/REST_Controller.php';
require APPPATH . 'libraries/Format.php';

class Mahasiswa extends REST_Controller{

    public function __construct(){
        parent::__construct(){
            $this->load->model('Mahasiswa_model','mahasiswa');
        }
    }
    public function index_get(){
        $id = $this->get('id');
        if($id === null){
            $mahasiswa = $this->mahasiswa->getMahasiswa();
        }else{
            $mahasiswa = $this->mahasiswa->getMahasiswa($id);
        }
        if($mahasiswa){
            $this->response([
                'status' => true,
                'data' => $mahasiswa
            ], REST_Controller::HTTP_OK);
        }else{
            $this->response([
                'status' => false,
                'message' => 'id not found'
            ], REST_Controller::HTTP_NOT_FOUND);
        }
    }
}
```

</td></tr>
<tr><td>2.</td><td>

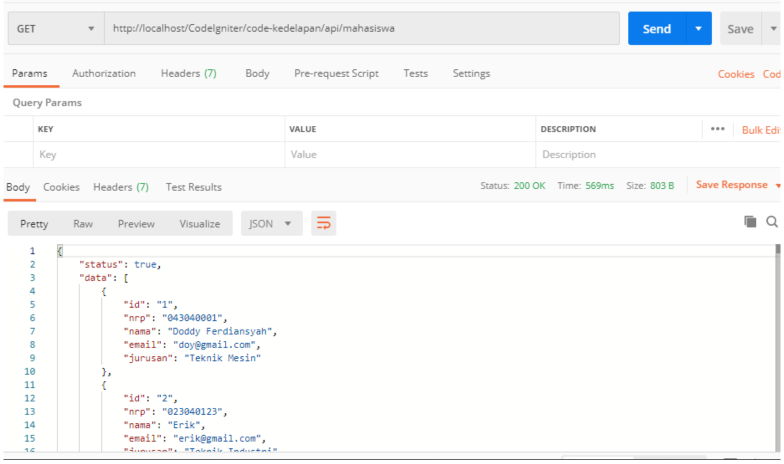
Selanjutnya Buatlah file **Mahasiswa_model.php** pada model. Selanjutnya tuliskan kode berikut:



```php
<?php

class Mahasiswa_model extends CI_model{

    public function getMahasiswa($id = null){

        if($id === null){

            return $this->db->get('mahasiswa')->result_array();
        }else{
            return $this->db->get_where('mahasiswa', ['id'=>$id])->result_array();
        }
    }
}
```

</td></tr>
</table>

3. Buka aplikasi postman, masukkan alamat [http://localhost/Code-kedelapan/api/mahasiswa](http://localhost/Code-kedelapan/api/mahasiswa) dengan metode **GET**. dan jika berhasil maka tampilannya akan seperti ini:

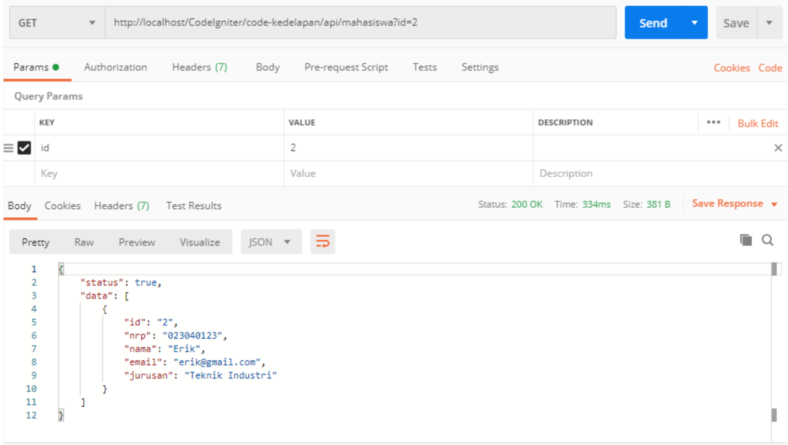


GET http://localhost/CodeIgniter/code-kedelapan/api/mahasiswa

Status: 200 OK Time: 569ms Size: 803 B

```
{
    "status": true,
    "data": [
        {
            "id": "1",
            "nrp": "043040001",
            "nama": "Doddy Ferdiansyah",
            "email": "doy@gmail.com",
            "jurusan": "Teknik Mesin"
        },
        {
            "id": "2",
            "nrp": "023040123",
            "nama": "Erik",
            "email": "erik@gmail.com",
            "jurusan": "Teknik Industri"
```

Kita juga dapat melakukan pencarian berdasarkan id, hasilnya akan seperti ini:



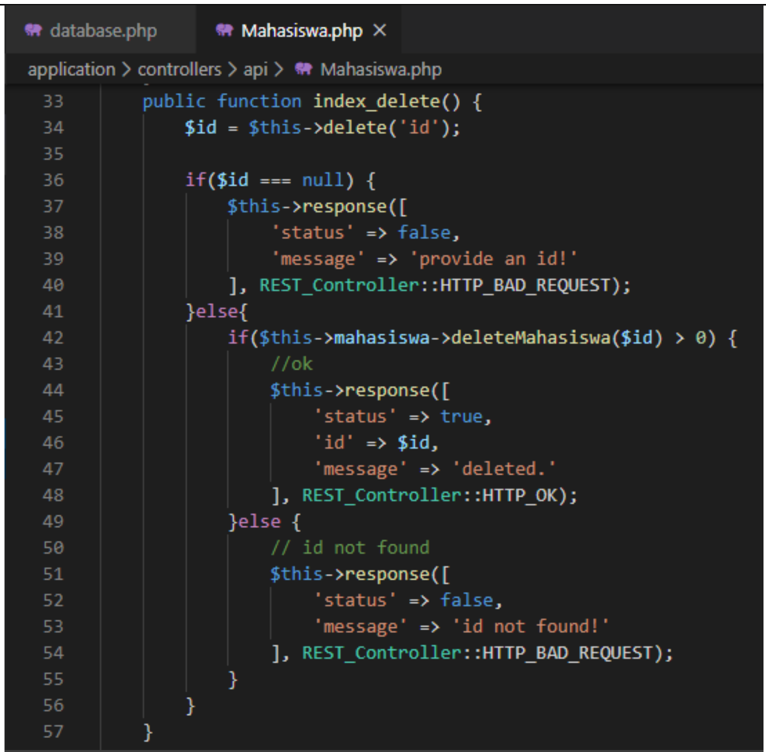
GET http://localhost/CodeIgniter/code-kedelapan/api/mahasiswa?id=2

| KEY | VALUE | DESCRIPTION |
|---|---|---|
| ☑ id | 2 | |
| Key | Value | Description |

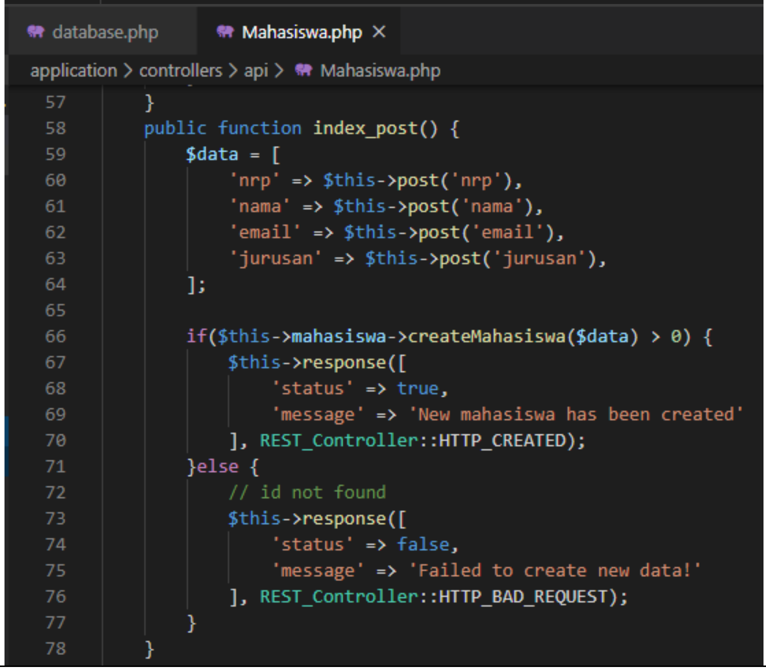
Status: 200 OK Time: 334ms Size: 381 B

```
{
    "status": true,
    "data": [
        {
            "id": "2",
            "nrp": "023040123",
            "nama": "Erik",
            "email": "erik@gmail.com",
            "jurusan": "Teknik Industri"
        }
    ]
}
```

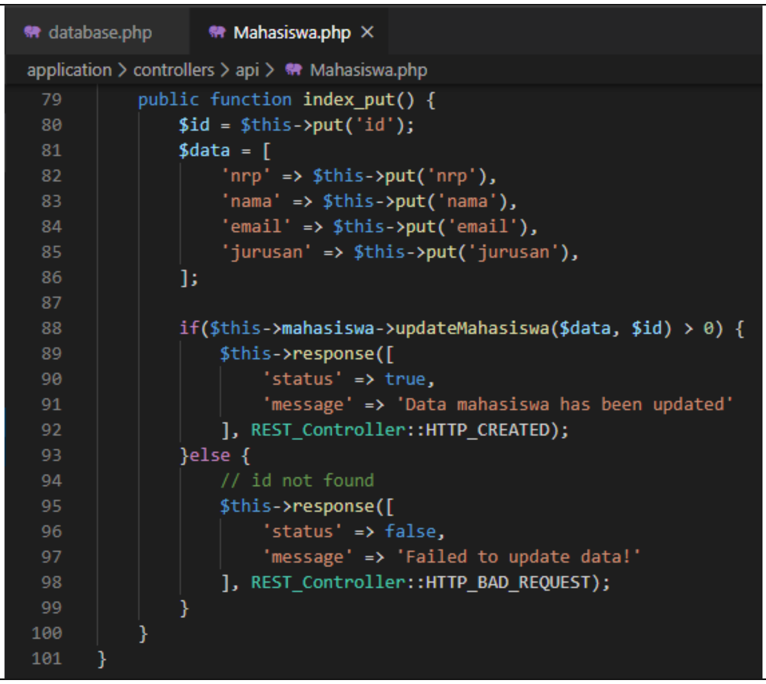
4. Untuk fungsi lain **Create**, **Update** dan **Delete**. Lanjutkan kode berikut pada file **mahasiswa.php**:



```php
    public function index_delete() {
        $id = $this->delete('id');

        if($id === null) {
            $this->response([
                'status' => false,
                'message' => 'provide an id!'
            ], REST_Controller::HTTP_BAD_REQUEST);
        }else{
            if($this->mahasiswa->deleteMahasiswa($id) > 0) {
                //ok
                $this->response([
                    'status' => true,
                    'id' => $id,
                    'message' => 'deleted.'
                ], REST_Controller::HTTP_OK);
            }else {
                // id not found
                $this->response([
                    'status' => false,
                    'message' => 'id not found!'
                ], REST_Controller::HTTP_BAD_REQUEST);
            }
        }
    }
```

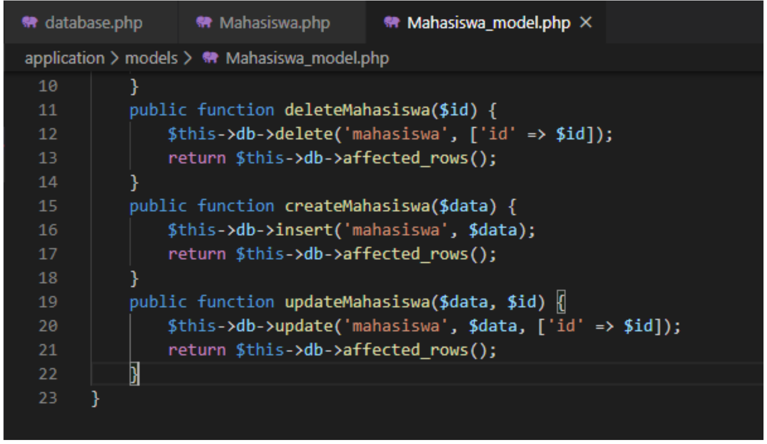


```php
    }
    public function index_post() {
        $data = [
            'nrp' => $this->post('nrp'),
            'nama' => $this->post('nama'),
            'email' => $this->post('email'),
            'jurusan' => $this->post('jurusan'),
        ];

        if($this->mahasiswa->createMahasiswa($data) > 0) {
            $this->response([
                'status' => true,
                'message' => 'New mahasiswa has been created'
            ], REST_Controller::HTTP_CREATED);
        }else {
            // id not found
            $this->response([
                'status' => false,
                'message' => 'Failed to create new data!'
            ], REST_Controller::HTTP_BAD_REQUEST);
        }
    }
```

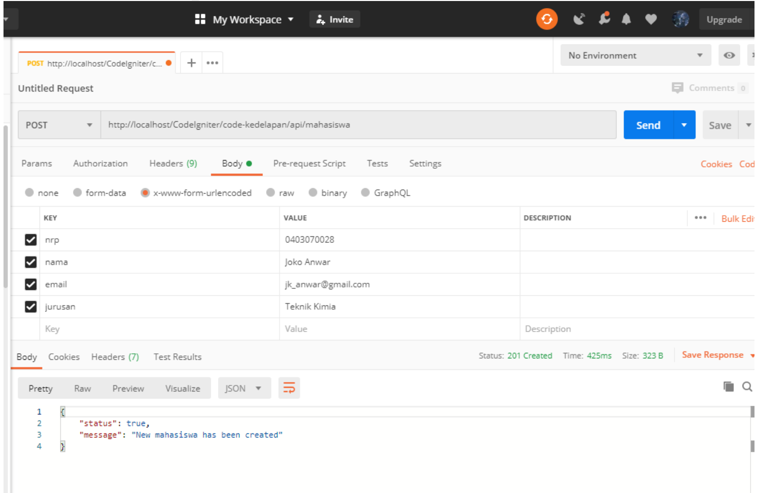
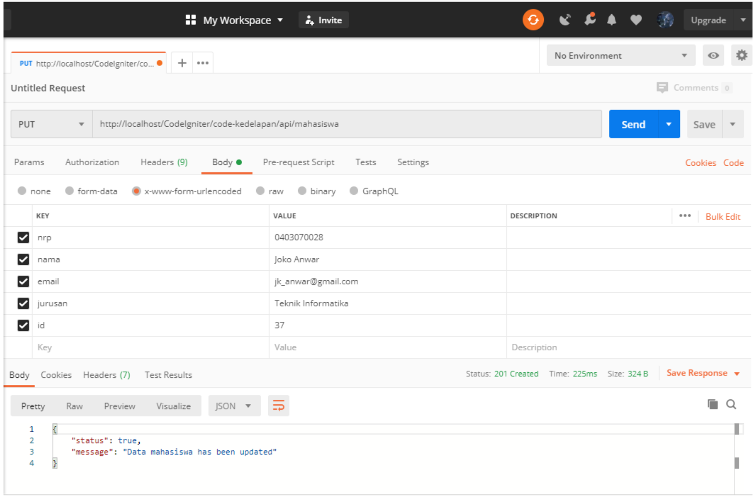
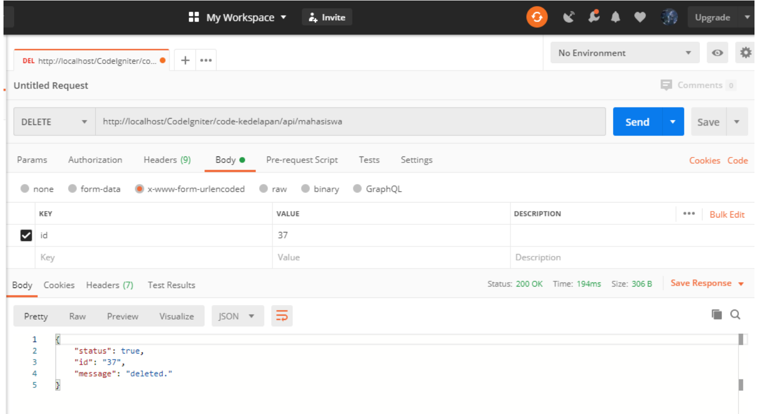


```php
    public function index_put() {
        $id = $this->put('id');
        $data = [
            'nrp' => $this->put('nrp'),
            'nama' => $this->put('nama'),
            'email' => $this->put('email'),
            'jurusan' => $this->put('jurusan'),
        ];

        if($this->mahasiswa->updateMahasiswa($data, $id) > 0) {
            $this->response([
                'status' => true,
                'message' => 'Data mahasiswa has been updated'
            ], REST_Controller::HTTP_CREATED);
        }else {
            // id not found
            $this->response([
                'status' => false,
                'message' => 'Failed to update data!'
            ], REST_Controller::HTTP_BAD_REQUEST);
        }
    }
}
```

5. Dan lanjutkan kode pada file **Mahasiswa_model.php**:



```php
    }
    public function deleteMahasiswa($id) {
        $this->db->delete('mahasiswa', ['id' => $id]);
        return $this->db->affected_rows();
    }
    public function createMahasiswa($data) {
        $this->db->insert('mahasiswa', $data);
        return $this->db->affected_rows();
    }
    public function updateMahasiswa($data, $id) {
        $this->db->update('mahasiswa', $data, ['id' => $id]);
        return $this->db->affected_rows();
    }
}
```

| | |
|---|---|
| 6. | Selanjutnya lakukan operasi **Create** data pada aplikasi postman, untuk operasi **Create**, **Update** dan **Delete**, arahkan parameter ke **Body** dan **x-www-form-urlencoded** seperti berikut:<br><br>Untitled Request<br>POST http://localhost/CodeIgniter/code-kedelapan/api/mahasiswa<br>Body: ● x-www-form-urlencoded<br>KEY / VALUE:<br>☑ nrp: 0403070028<br>☑ nama: Joko Anwar<br>☑ email: jk_anwar@gmail.com<br>☑ jurusan: Teknik Kimia<br>Status: 201 Created Time: 425ms Size: 323 B<br>`{`<br>`    "status": true,`<br>`    "message": "New mahasiswa has been created"`<br>`}` |
| 7. | Lakukan juga operasi **Update** data pada aplikasi postman, masukkan parameter id seperti berikut:<br><br>Untitled Request<br>PUT http://localhost/CodeIgniter/code-kedelapan/api/mahasiswa<br>Body: ● x-www-form-urlencoded<br>KEY / VALUE:<br>☑ nrp: 0403070028<br>☑ nama: Joko Anwar<br>☑ email: jk_anwar@gmail.com<br>☑ jurusan: Teknik Informatika<br>☑ id: 37<br>Status: 201 Created Time: 225ms Size: 324 B<br>`{`<br>`    "status": true,`<br>`    "message": "Data mahasiswa has been updated"`<br>`}` |
| 8. | Lakukan juga operasi **Delete** data pada aplikasi postman, parameter yang dimasukkan cukup id saja, seperti berikut:<br><br>Untitled Request<br>DELETE http://localhost/CodeIgniter/code-kedelapan/api/mahasiswa<br>Body: ● x-www-form-urlencoded<br>KEY / VALUE:<br>☑ id: 37<br>Status: 200 OK Time: 194ms Size: 306 B<br>`{`<br>`    "status": true,`<br>`    "id": "37",`<br>`    "message": "deleted."`<br>`}` |

## **Praktikum – Bagian 2: Membuat Aplikasi CRUD Restful Codeigniter**