

ACT

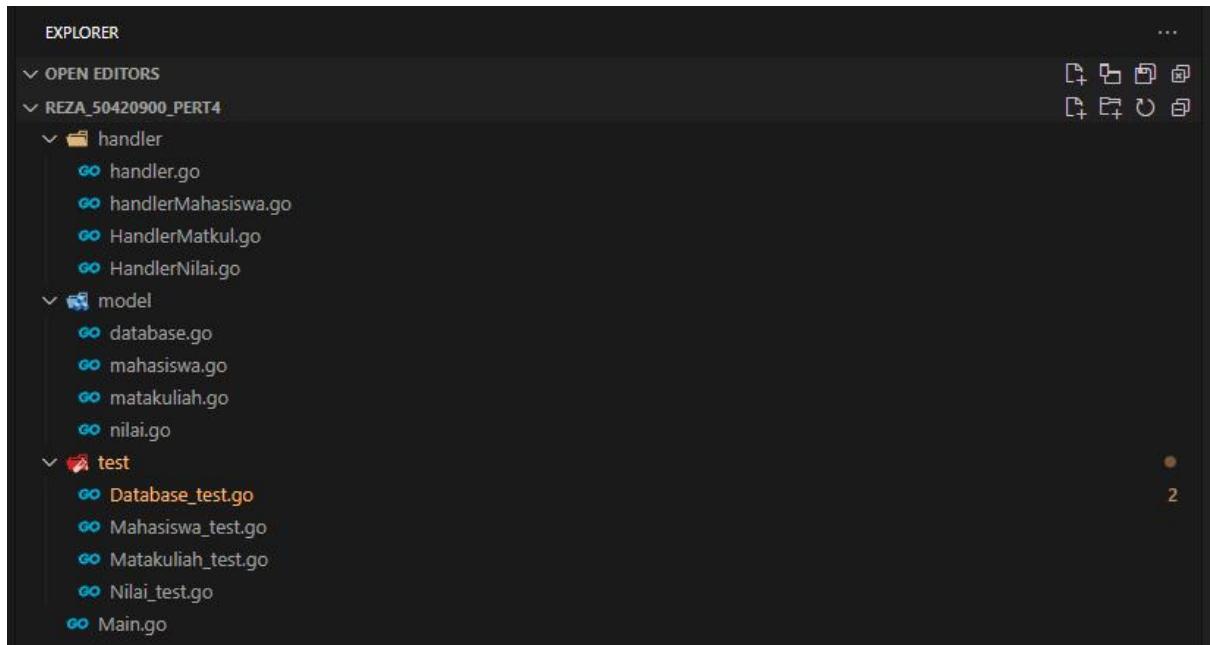


Mata Praktikum : GOLANG INTERMEDIET
Kelas : 3IA20
Praktikum ke- : 4
Tanggal : 4 November 2022
Materi : (HTTP Request Pada Golang)
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Ketua Asisten :
Nama Asisten :
Paraf Asisten :
Jumlah Lembar :



**LABORATORIUM TEKNIK INFORMATIKA
UNIVERSITAS GUNADARMA
2022**

A. LISTING PROGRAM



Main.go

```
reza_50420900_pert4 - Main.go

1 package main
2
3 //Muhammad reza hidayat
4 import (
5     "log"
6     "net/http"
7     "reza_50420900_pert4/handler" // Ganti dengan nama folder kalian masingmasing
8 )
9
10 func main() {
11     http.HandleFunc("/api/", handler.API)
12     log.Println("localhost : 8050")    //Ganti 2 digit akhir port dengan 2 digit akhir NPM anda
13     http.ListenAndServe(":8050", nil) //Ganti 2 digit akhir port dengan 2 digit akhir NPM anda
14 }
```

handler.go

```
● ● ● reza_50420900_pert4 - handler.go
1 package handler
2
3 import (
4     "database/sql"
5     "fmt"
6     "net/http"
7     "reza_50420900_pert4/model" //sesuaikan dengan nama folder (case sensitive)
8     "strings"
9 )
10
11 var username, password, host, namaDB, defaultDB string
12 var db *sql.DB
13 var err error
14
15 func init() {
16     username = "root"
17     password = ""
18     host = "localhost"
19     namaDB = "db_50420900_pert4" // Ganti nama db sesuai dengan NPM masing-masing
20     g
21     defaultDB = "mysql"
22 }
23 func API(w http.ResponseWriter, r *http.Request) {
24     db, err = model.Connect(username, password, host, namaDB)
25     if err != nil {
26         return
27     }
28     defer db.Close()
29     w.Header().Set("Content-Type", "text-html; charset=utf-8; application/json")
30     dataURL := strings.Split(fmt.Sprintf("%s", r.URL.Path), "/")
31     switch dataURL[2] {
32     case "mahasiswa":
33         switch r.Method {
34             case "GET":
35                 HandlerMahasiswaGet(w, r)
36             case "POST":
37                 HandlerMahasiswaPost(w, r)
38             case "PUT":
39                 HandlerMahasiswaPut(w, r)
40             case "DELETE":
41                 HandlerMahasiswaDelete(w, r)
42             default:
43                 w.Write([]byte("method tidak ditemukan"))
44         }
45     case "matkul":
46         switch r.Method {
47             case "GET":
48                 HandlerMatkulGet(w, r)
49             case "POST":
50                 HandlerMatkulPost(w, r)
51             case "PUT":
52                 HandlerMatkulPut(w, r)
53             case "DELETE":
54                 HandlerMatkulDelete(w, r)
55             default:
56                 w.Write([]byte("method tidak ditemukan"))
57         }
58     case "nilai":
59         switch r.Method {
60             case "GET":
61                 HandlerNilaiGet(w, r)
62             case "POST":
63                 HandlerNilaiPost(w, r)
64             case "PUT":
65                 HandlerNilaiPut(w, r)
66             case "DELETE":
67                 HandlerNilaiDelete(w, r)
68             default:
69                 w.Write([]byte("method tidak ditemukan"))
70         }
71     default:
72         w.Write([]byte("request tidak ditemukan"))
73     }
74 }
```

handlerMahasiswa.go

```
reza_50420900_per4 - handlerMahasiswa.go

1 package handler
2
3 import (
4     "encoding/json"
5     "io/ioutil"
6     "net/http"
7     "reza_50420900_per4/model" // Ganti dengan nama folder kalian masing-masing
8 )
9
10 func HandlerMahasiswaGet(w http.ResponseWriter, r *http.Request) {
11     var data interface{}
12     var err error
13     npm := r.URL.Query()["npm"]
14     if len(npm) != 0 {
15         data, err = model.GetMahasiswa(db, npm[0])
16     } else {
17         data, err = model.GetAllMahasiswa(db)
18     }
19     if err != nil {
20         http.Error(w, err.Error(), http.StatusInternalServerError)
21     }
22     jsonData, _ := json.Marshal(data)
23     w.Write(jsonData)
24 }
25 func HandlerMahasiswaPost(w http.ResponseWriter, r *http.Request) {
26     defer r.Body.Close()
27     body, err := ioutil.ReadAll(r.Body)
28     if err != nil {
29         http.Error(w, err.Error(), http.StatusInternalServerError)
30         return
31     }
32     var data model.Mahasiswa
33     if err = json.Unmarshal(body, &data); err != nil {
34         http.Error(w, err.Error(), http.StatusInternalServerError)
35         return
36     }
37     if err = data.Insert(db); err != nil {
38         http.Error(w, err.Error(), http.StatusInternalServerError)
39         return
40     }
41     jsonData, err := json.Marshal(data)
42     if err != nil {
43         http.Error(w, err.Error(), http.StatusInternalServerError)
44     }
45     w.Write(jsonData)
46 }
47 func HandlerMahasiswaDelete(w http.ResponseWriter, r *http.Request) {
48     npm := r.URL.Query()["npm"]
49     if len(npm) != 0 {
50         data := model.Mahasiswa{NPM: npm[0]}
51         if err := data.Delete(db); err != nil {
52             http.Error(w, "ID tidak ditemukan", http.StatusBadRequest)
53             return
54         }
55         w.Write([]byte("Data telah dihapus"))
56     } else {
57         http.Error(w, "ID tidak ditemukan", http.StatusInternalServerError)
58     }
59 }
60 func HandlerMahasiswaPut(w http.ResponseWriter, r *http.Request) {
61     npm := r.URL.Query()["npm"]
62     if len(npm) == 0 {
63         http.Error(w, "ID tidak ditemukan", http.StatusBadRequest)
64         return
65     }
66     defer r.Body.Close()
67     body, err := ioutil.ReadAll(r.Body)
68     if err != nil {
69         http.Error(w, err.Error(), http.StatusInternalServerError)
70         return
71     }
72     jsonmap := make(map[string]interface{})
73     err = json.Unmarshal(body, &jsonmap)
74     if err != nil {
75         http.Error(w, err.Error(), http.StatusInternalServerError)
76         return
77     }
78     data := model.Mahasiswa{NPM: npm[0]}
79     err = data.Update(db, jsonmap)
80     if err != nil {
81         http.Error(w, err.Error(), http.StatusInternalServerError)
82         return
83     }
84     result, err := model.GetMahasiswa(db, npm[0])
85     if err != nil {
86         http.Error(w, err.Error(), http.StatusInternalServerError)
87         return
88     }
89     jsonData, err := json.Marshal(result)
90     if err != nil {
91         http.Error(w, err.Error(), http.StatusInternalServerError)
92         return
93     }
94     w.Write(jsonData)
95 }
```

HandlerMatkul.go

```
● ● ● rez_50420900_pert4 - HandlerMatkul.go
1 package handler
2
3 import (
4     "encoding/json"
5     "io/ioutil"
6     "net/http"
7     "reza_50420900_pert4/model" // Ganti dengan nama folder kalian masing-masing
8 )
9
10 func HandlerMatkulGet(w http.ResponseWriter, r *http.Request) {
11     var data interface{}
12     var err error
13     Kd_mk := r.URL.Query()["Kd_mk"]
14     if len(Kd_mk) != 0 {
15         data, err = model.GetMatkul(db, Kd_mk[0])
16     } else {
17         data, err = model.GetAllMatkul(db)
18     }
19     if err != nil {
20         http.Error(w, err.Error(), http.StatusInternalServerError)
21     }
22     jsonData, _ := json.Marshal(data)
23     w.Write(jsonData)
24 }
25 func HandlerMatkulPost(w http.ResponseWriter, r *http.Request) {
26     defer r.Body.Close()
27     body, err := ioutil.ReadAll(r.Body)
28     if err != nil {
29         http.Error(w, err.Error(), http.StatusInternalServerError)
30         return
31     }
32     var data model.Matkul
33     if err = json.Unmarshal(body, &data); err != nil {
34         http.Error(w, err.Error(), http.StatusInternalServerError)
35         return
36     }
37     if err = data.Insert(db); err != nil {
38         http.Error(w, err.Error(), http.StatusInternalServerError)
39         return
40     }
41     jsonData, err := json.Marshal(data)
42     if err != nil {
43         http.Error(w, err.Error(), http.StatusInternalServerError)
44     }
45     w.Write(jsonData)
46 }
47 func HandlerMatkulDelete(w http.ResponseWriter, r *http.Request) {
48     kd_mk := r.URL.Query()["kd_mk"]
49     if len(kd_mk) != 0 {
50         data := model.Matkul{Kd_mk: kd_mk[0]}
51         if err := data.Delete(db); err != nil {
52             http.Error(w, "ID tidak ditemukan", http.StatusBadRequest)
53             return
54         }
55         w.Write([]byte("Data telah dihapus"))
56     } else {
57         http.Error(w, "ID tidak ditemukan", http.StatusInternalServerError)
58     }
59 }
60 func HandlerMatkulPut(w http.ResponseWriter, r *http.Request) {
61     kd_mk := r.URL.Query()["kd_mk"]
62     if len(kd_mk) == 0 {
63         http.Error(w, "ID tidak ditemukan", http.StatusBadRequest)
64         return
65     }
66     defer r.Body.Close()
67     body, err := ioutil.ReadAll(r.Body)
68     if err != nil {
69         http.Error(w, err.Error(), http.StatusInternalServerError)
70         return
71     }
72     jsonmap := make(map[string]interface{})
73     err = json.Unmarshal(body, &jsonmap)
74     if err != nil {
75         http.Error(w, err.Error(), http.StatusInternalServerError)
76         return
77     }
78     data := model.Matkul{Kd_mk: kd_mk[0]}
79     err = data.Update(db, jsonmap)
80     if err != nil {
81         http.Error(w, err.Error(), http.StatusInternalServerError)
82         return
83     }
84     result, err := model.GetMatkul(db, kd_mk[0])
85     if err != nil {
86         http.Error(w, err.Error(), http.StatusInternalServerError)
87         return
88     }
89     jsonData, err := json.Marshal(result)
90     if err != nil {
91         http.Error(w, err.Error(), http.StatusInternalServerError)
92         return
93     }
94     w.Write(jsonData)
95 }
```

HandlerNilai.go

```
reza_50420900_pert4 - HandlerNilai.go
1 package handler
2
3 import (
4     "encoding/json"
5     "io/ioutil"
6     "net/http"
7     "reza_50420900_pert4/model" // Ganti dengan nama folder kalian masing-masing
8 )
9
10 func HandlerNilaiGet(w http.ResponseWriter, r *http.Request) {
11     var data interface{}
12     var err error
13     npm := r.URL.Query()["npm"]
14     if len(npm) != 0 {
15         data, err = model.GetNilai(db, npm[0])
16     } else {
17         data, err = model.GetAllNilai(db)
18     }
19     if err != nil {
20         http.Error(w, err.Error(), http.StatusInternalServerError)
21     }
22     jsonData, _ := json.Marshal(data)
23     w.Write(jsonData)
24 }
25 func HandlerNilaiPost(w http.ResponseWriter, r *http.Request) {
26     defer r.Body.Close()
27     body, err := ioutil.ReadAll(r.Body)
28     if err != nil {
29         http.Error(w, err.Error(), http.StatusInternalServerError)
30         return
31     }
32     var data model.Nilai
33     if err = json.Unmarshal(body, &data); err != nil {
34         http.Error(w, err.Error(), http.StatusInternalServerError)
35         return
36     }
37     if err = data.Insert(db); err != nil {
38         http.Error(w, err.Error(), http.StatusInternalServerError)
39         return
40     }
41     jsonData, err := json.Marshal(data)
42     if err != nil {
43         http.Error(w, err.Error(), http.StatusInternalServerError)
44     }
45     w.Write(jsonData)
46 }
47 func HandlerNilaiDelete(w http.ResponseWriter, r *http.Request) {
48     npm := r.URL.Query()["npm"]
49     if len(npm) != 0 {
50         data := model.Nilai{NPM: npm[0]}
51         if err := data.Delete(db); err != nil {
52             http.Error(w, "ID tidak ditemukan", http.StatusBadRequest)
53             return
54         }
55         w.Write([]byte("Data telah dihapus"))
56     } else {
57         http.Error(w, "ID tidak ditemukan", http.StatusInternalServerError)
58     }
59 }
60 func HandlerNilaiPut(w http.ResponseWriter, r *http.Request) {
61     npm := r.URL.Query()["npm"]
62     if len(npm) == 0 {
63         http.Error(w, "ID tidak ditemukan", http.StatusBadRequest)
64         return
65     }
66     defer r.Body.Close()
67     body,
68     err := ioutil.ReadAll(r.Body)
69     if err != nil {
70         http.Error(w, err.Error(), http.StatusInternalServerError)
71         return
72     }
73     jsonmap := make(map[string]interface{})
74     err = json.Unmarshal(body, &jsonmap)
75     if err != nil {
76         http.Error(w, err.Error(), http.StatusInternalServerError)
77         return
78     }
79     data := model.Nilai{NPM: npm[0]}
80     err = data.Update(db, jsonmap)
81     if err != nil {
82         http.Error(w, err.Error(), http.StatusInternalServerError)
83         return
84     }
85     result,
86     err := model.GetNilai(db, npm[0])
87     if err != nil {
88         http.Error(w, err.Error(), http.StatusInternalServerError)
89         return
90     }
91     jsonData,
92     err := json.Marshal(result)
93     if err != nil {
94         http.Error(w, err.Error(), http.StatusInternalServerError)
95         return
96     }
97     w.Write(jsonData)
98 }
99 }
```

database.go

```
● ● ● reza_50420900_pert4 - database.go

1 package model
2
3 import (
4     "database/sql"
5     "fmt"
6
7     _ "github.com/go-sql-driver/mysql"
8 )
9
10 type Table interface {
11     Name() string
12     Field() ([]string, []interface{})
13 }
14
15 func Connect(username string, password string, host string, database string) (*sql.DB, error) {
16     conn := fmt.Sprintf("%s:%s@tcp(%s:3306)/%s", username, password, host, database)
17     db, err := sql.Open("mysql", conn)
18     return db, err
19 }
20
21 func CreateDB(db *sql.DB, name string) error {
22     query := fmt.Sprintf("CREATE DATABASE %v", name)
23     _, err := db.Exec(query)
24     return err
25 }
26
27 func CreateTable(db *sql.DB, query string) error {
28     _, err := db.Exec(query)
29     return err
30 }
31
32 func DropDB(db *sql.DB, name string) error {
33     query := fmt.Sprintf("DROP DATABASE %v", name)
34     _, err := db.Exec(query)
35     return err
36 }
37
```

mahasiswa.go

```
reza_50420900_perl4 - mahasiswa.go

1 package model
2
3 import (
4     "database/sql"
5     "fmt"
6     "strings"
7 )
8
9 var TabelMahasiswa string = `
10     CREATE TABLE mahasiswa(
11         npm VARCHAR(10) PRIMARY KEY,
12         nama VARCHAR(30),
13         kelas VARCHAR(10)
14     );
15
16
17 type Mahasiswa struct {
18     NPM string `json:"NPM"`
19     Nama string `json:"Nama"`
20     Kelas string `json:"Kelas"`
21 }
22
23 func (m *Mahasiswa) Fields() ([]string, []interface{}) {
24     fields := []string{"npm", "nama", "kelas"}
25     temp := []interface{}{&m.NPM, &m>Nama, &m.Kelas}
26     return fields, temp
27 }
28
29 func (m *Mahasiswa) Structur() *Mahasiswa {
30     return &Mahasiswa{}
31 }
32
33 func (m *Mahasiswa) Insert(db *sql.DB) error {
34     query := fmt.Sprintf("INSERT INTO %v values(%?,%?,%?)", "mahasiswa")
35     _, err := db.Exec(query, &m.NPM, &m>Nama, &m.Kelas)
36     return err
37 }
38
39 func (m *Mahasiswa) Update(db *sql.DB, data map[string]interface{}) error {
40
41     var kolom = []string{}
42     var args []interface{}
43
44     i := 1
45
46     // Ini loop data untuk dimasukan kedalam set,
47     for key, value := range data {
48         updateData := fmt.Sprintf("%v = ", strings.ToLower(key))
49         kolom = append(kolom, updateData)
50         args = append(args, value)
51         i++
52     }
53
54     // Ubah array menjadi string dengan pemisah koma
55     dataUpdate := strings.Join(kolom, ", ")
56
57     query := fmt.Sprintf("UPDATE %s SET %s WHERE %s = ?", "mahasiswa", dataUpdate, "NPM")
58     args = append(args, m.NPM)
59     // Exec dengan query yang ada
60     _, err := db.Exec(query, args...)
61     return err
62 }
63
64 func (m *Mahasiswa) Delete(db *sql.DB) error {
65     query := fmt.Sprintf("DELETE FROM %s WHERE %s = ?", "mahasiswa", "NPM")
66     // Exec dengan query yang ada
67     _, err := db.Exec(query, m.NPM)
68     return err
69 }
70
71 func GetMahasiswa(db *sql.DB, id string) (*Mahasiswa, error) {
72
73     m := &Mahasiswa{}
74     each := m.Structur()
75     _, dst := each.Fields()
76     query := fmt.Sprintf("SELECT * FROM %s WHERE %s = ?", "mahasiswa", "NPM")
77
78     // isinya akan dimasukan kedalam var dst yang dideklarasikan diatas
79     err := db.QueryRow(query, id).Scan(dst...)
80     if err != nil {
81         fmt.Println(err)
82         return nil, err
83     }
84     return each, nil
85 }
86
87 func GetAllMahasiswa(db *sql.DB) ([]*Mahasiswa, error) {
88     m := &Mahasiswa{}
89     query := fmt.Sprintf("SELECT * FROM %s", "mahasiswa")
90     data, err := db.Query(query)
91     if err != nil {
92         return nil, err
93     }
94
95     defer data.Close()
96
97     var result []*Mahasiswa
98
99     for data.Next() {
100         each := m.Structur()
101         _, dst := each.Fields()
102
103         err := data.Scan(dst...)
104         if err != nil {
105             return nil, err
106         }
107         fmt.Println(each)
108         result = append(result, each)
109     }
110
111     return result, nil
112 }
113
114 }
```

matakuliah.go

```
● ● ● reza_50420900_pert4 - matakuliah.go
1 package model
2
3 import (
4     "database/sql"
5     "fmt"
6     "strings"
7 )
8
9 var TabelMatkul string = `
10     CREATE TABLE matkul(
11         kd_mk VARCHAR(10) PRIMARY KEY,
12         matakuliah VARCHAR(20)
13     );
14 `
15
16 func (m *Matkul) Structur() *Matkul {
17     return &Matkul{}
18 }
19
20 type Matkul struct {
21     Kd_mk      string `json:"Kd_mk"`
22     Matakuliah string `json:"Matakuliah"`
23 }
24
25 func (m *Matkul) Fields() ([]string, []interface{}) {
26     fields := []string{"kd_mk", "matakuliah"}
27     temp := []interface{}{&m.Kd_mk, &m.Matakuliah}
28     return fields, temp
29 }
30
31 func (m *Matkul) Insert(db *sql.DB) error {
32     query := fmt.Sprintf("INSERT INTO %v values(%?,?)", "matkul")
33     _, err := db.Exec(query, &m.Kd_mk, &m.Matakuliah)
34     return err
35 }
36
37 func (m *Matkul) Update(db *sql.DB, data map[string]interface{}) error {
38
39     var kolom = []string{}
40     var args []interface{}
41     i := 1
42
43     // Ini loop data untuk dimasukan kedalam set,
44     for key, value := range data {
45         updateData := fmt.Sprintf("%v = ?", strings.ToLower(key))
46         kolom = append(kolom, updateData)
47         args = append(args, value)
48         i++
49     }
50
51     // Ubah array menjadi string dengan pemisah koma
52     dataUpdate := strings.Join(kolom, ", ")
53
54     query := fmt.Sprintf("UPDATE %s SET %s WHERE %s = ?", "matkul", dataUpdate, "kd_mk")
55     args = append(args, m.Kd_mk)
56     // Exec dengan query yang ada
57     _, err := db.Exec(query, args...)
58     return err
59 }
60
61 func (m *Matkul) Delete(db *sql.DB) error {
62     query := fmt.Sprintf("DELETE FROM %s WHERE %s = ?", "matkul", "kd_mk")
63     // Exec dengan query yang ada
64     _, err := db.Exec(query, m.Kd_mk)
65     return err
66 }
67
68 func GetMatkul(db *sql.DB, id string) (*Matkul, error) {
69
70     m := &Matkul{}
71     each := m.Structur()
72     _, dst := each.Fields()
73     query := fmt.Sprintf("SELECT * FROM %s WHERE %s = ?", "matkul", "kd_mk")
74
75     // isinya akan dimasukan kedalam var dst yang dideklarasikan diatas
76     err := db.QueryRow(query, id).Scan(dst...)
77     if err != nil {
78         return nil, err
79     }
80     return each, nil
81 }
82
83 func GetAllMatkul(db *sql.DB) ([]*Matkul, error) {
84     m := &Matkul{}
85     query := fmt.Sprintf("SELECT * FROM %s", "matkul")
86     data, err := db.Query(query)
87     if err != nil {
88         return nil, err
89     }
90     defer data.Close()
91
92     var result []*Matkul
93     for data.Next() {
94         each := m.Structur()
95         _, dst := each.Fields()
96         err := data.Scan(dst...)
97
98         if err != nil {
99             return nil, err
100        }
101    }
102    result = append(result, each)
103 }
104
105    return result, nil
106
107 }
108
```

nilai.go

```
reza_56420900_per4-nilai.go
1 package model
2
3 import (
4     "database/sql"
5     "fmt"
6     "strings"
7 )
8
9 var TabelNilai string = `
10     CREATE TABLE nilai(
11         id_nilai INT PRIMARY KEY AUTO_INCREMENT,
12         kd_mk VARCHAR(10) ,
13         npm VARCHAR(10) ,
14         uts REAL NOT NULL,
15         uas REAL NOT NULL,
16         total REAL NOT NULL,
17         grade VARCHAR(5) NOT NULL
18     )
19 `
20
21 type Nilai struct {
22     Id_nilai int     `json:"id_nilai"`
23     Kd_mk    string  `json:"kd_mk"`
24     NPM      string  `json:"npm"`
25     UAS      float64 `json:"uas"`
26     UTS      float64 `json:"uts"`
27     Total    float64 `json:"total"`
28     Grade    string  `json:"grade"`
29 }
30
31 func (m *Nilai) Structur() *Nilai {
32     return &Nilai{}
33 }
34
35 func (m *Nilai) Fields() ([]string, []interface{}) {
36     fields := []string{"id_nilai", "kd_mk", "npm", "uts", "uas", "total", "grade"}
37     temp := []interface{}{&m.Id_nilai, &m.Kd_mk, &m.NPM, &m.UAS, &m.UTS, &m.Total, &m.Grade}
38     return fields, temp
39 }
40
41 func (m *Nilai) Insert(db *sql.DB) error {
42     query := fmt.Sprintf("INSERT INTO %v values(%?,%?,%?,%?,%?,%?)", "nilai")
43     _, err := db.Exec(query, &m.Id_nilai, &m.Kd_mk, &m.NPM, &m.UAS, &m.UTS, &m.Total, &m.Grade)
44     return err
45 }
46
47 func (m *Nilai) Update(db *sql.DB, data map[string]interface{}) error {
48
49     var kolumn = []string{}
50     var args []interface{}
51
52     i := 1
53
54     // Ini loop data untuk dimasukan kedalam set,
55     for key, value := range data {
56         updateData := fmt.Sprintf("%v = ?", strings.ToLower(key))
57         kolumn = append(kolumn, updateData)
58         args = append(args, value)
59         i++
60     }
61
62     // Ubah array menjadi string dengan pemisah koma
63     dataUpdate := strings.Join(kolumn, ",")+
64
65     query := fmt.Sprintf("UPDATE %s SET %s WHERE %s = ? ", "nilai", dataUpdate, "npm")
66     args = append(args, m.NPM)
67     // Exec dengan query yang ada
68     _, err := db.Exec(query, args...)
69     return err
70 }
71
72 func (m *Nilai) Delete(db *sql.DB) error {
73     query := fmt.Sprintf("DELETE FROM %s WHERE %s = ? ", "nilai", "npm")
74     // Exec dengan query yang ada
75     _, err := db.Exec(query, m.NPM)
76     return err
77 }
78
79 func GetNilai(db *sql.DB, id string) (*Nilai, error) {
80
81     m := &Nilai{}
82     each := m.Structur()
83     _, dst := each.Fields()
84     query := fmt.Sprintf("SELECT * FROM %s WHERE %s = ? ", "nilai", "npm")
85
86     // isinya akan dimasukan kedalam var dst yang dideklarasikan diatas
87     err := db.QueryRow(query, id).Scan(dst...)
88     if err != nil {
89         return nil, err
90     }
91     return each, nil
92 }
93
94 func GetAllNilai(db *sql.DB) ([]Nilai, error) {
95     m := &Nilai{}
96     query := fmt.Sprintf("SELECT * FROM %s", "nilai")
97     data, err := db.Query(query)
98     if err != nil {
99         return nil, err
100    }
101
102    defer data.Close()
103
104    var result []Nilai
105    for data.Next() {
106        each := m.Structur()
107        _, dst := each.Fields()
108        err := data.Scan(dst...)
109
110        if err != nil {
111            return nil, err
112        }
113        result = append(result, each)
114    }
115
116    return result, nil
117
118 }
119
```

Database_test.go

```
reza_50420900_pert4 - Database_test.go

1 package test
2
3 import (
4     "database/sql"
5     "fmt"
6     "reza_50420900_pert4/model" // Ganti dengan nama folder kalian masing-masing
7     "testing"
8 )
9
10 var username, password, host, namaDB, defaultDB string
11
12 func init() {
13     username = "root"
14     password = ""
15     host = "localhost"
16     namaDB = "db_50420900_pert4" // Ganti nama db sesuai dengan NPM masing-masing
17     defaultDB = "mysql"
18 }
19 func TestDatabase(t *testing.T) {
20     t.Run("Testing untuk membuat database", func(t *testing.T) {
21         db, err := model.Connect(username, password, host, defaultDB)
22         defer db.Close()
23         if err != nil {
24             t.Fatal(err)
25         }
26         err = model.CreateDB(db, namaDB)
27         if err != nil {
28             t.Fatal(err)
29         }
30     })
31     t.Run("Testing untuk memeriksa koneksi database", func(t *testing.T) {
32         db, err := model.Connect(username, password, host, defaultDB)
33         defer db.Close()
34         if err != nil {
35             t.Fatal(err)
36         }
37     })
38     /* Syntax dibawah ini berfungsi untuk menghapus DB (Apabila ingin
39      melakukan testing,
40      silahkan di comment terlebih dahulu)
41     */
42     // t.Run("Testing untuk menghapus database", func(t *testing.T) {
43     // db, err := model.Connect(username, password, host, defaultDB)
44     // defer db.Close()
45     // if err != nil {
46     // t.Fatal(err)
47     // }
48     // err = model.DropDB(db, namaDB)
49     // if err != nil {
50     // t.Fatal(err)
51     // }
52     // })
53 }
54 func initDatabase() (*sql.DB, error) {
55     dbInit, err := model.Connect(username, password, host, defaultDB)
56     if err != nil {
57         fmt.Println("Gagal melakukan koneksi")
58     }
59     if err = model.DropDB(dbInit, namaDB); err != nil {
60         fmt.Println("Gagal menghapus database")
61         return nil, err
62     }
63     if err = model.CreateDB(dbInit, namaDB); err != nil {
64         fmt.Println("Gagal membuat database")
65         return nil, err
66     }
67     dbInit.Close()
68     db, err := model.Connect(username, password, password, namaDB)
69     if err != nil {
70         fmt.Println("Gagal melakukan koneksi")
71         return nil, err
72     }
73     if err = model.CreateTable(db, model.TabelMahasiswa); err != nil {
74         fmt.Println("Gagal membuat table mahasiswa")
75         return nil, err
76     }
77     if err = model.CreateTable(db, model.TabelMatkul); err != nil {
78         fmt.Println("Gagal membuat table matkul")
79         return nil, err
80     }
81     if err = model.CreateTable(db, model.TabelNilai); err != nil {
82         fmt.Println("Gagal membuat table nilai")
83         return nil, err
84     }
85     return db, nil
86 }
```

Mahasiswa_test.go

```
reza_50420900_pert4 - Mahasiswa_test.go

1 package test
2
3 import (
4     "reza_50420900_pert4/model" // Ganti dengan nama folder kalian masing-masing
5     "testing"
6 )
7
8 func TestMahasiswa(t *testing.T) {
9     var dataInsertMhs = []model.Mahasiswa{
10         model.Mahasiswa{
11             NPM:    "12345678",
12             Nama:   "Budi Doremi",
13             Kelas:  "3IA20",
14         },
15         model.Mahasiswa{
16             NPM:    "50420900",
17             Nama:   "REZA",
18             Kelas:  "4IA20",
19         },
20         model.Mahasiswa{
21             NPM:    "44444444",
22             Nama:   "DoBud",
23             Kelas:  "4IA21",
24         },
25     }
26     db, err := initDatabase()
27     if err != nil {
28         t.Fatal(err)
29     }
30     t.Run("Testing insert mahasiswa", func(t *testing.T) {
31         for _, dataInsert := range dataInsertMhs {
32             err := dataInsert.Insert(db)
33             if err != nil {
34                 t.Fatal(err)
35             }
36         }
37     })
38     t.Run("Testing update mahasiswa", func(t *testing.T) {
39         var updateData = map[string]interface{}{
40             "nama": "Abdi Teh reza"
41         }
42         data := dataInsertMhs[0]
43         if err := data.Update(db, updateData); err != nil {
44             t.Fatal(err)
45         }
46     })
47     t.Run("Testing Get mahasiswa", func(t *testing.T) {
48         _, err := model.GetMahasiswa(db, "44444444")
49         if err != nil {
50             t.Fatal(err)
51         }
52     })
53     t.Run("Testing Get mahasiswa", func(t *testing.T) {
54         _, err := model.GetAllMahasiswa(db)
55         if err != nil {
56             t.Fatal(err)
57         }
58     })
59     // t.Run("Testing delete mahasiswa", func(t *testing.T) {
60     //     data := dataInsertMhs[0]
61     //     if err := data.Delete(db); err != nil {
62     //         t.Fatal(err)
63     //     }
64     defer db.Close()
65 }
```

Matakuliah_test.go

```
reza_50420900_pert4 - Matakuliah_test.go
1 package test
2
3 import (
4     "fmt"
5     "reza_50420900_pert4/model"
6     "testing"
7 )
8
9 func TestMatkul(t *testing.T) {
10
11     var dataInsertMatkul = []model.Matkul{
12         model.Matkul{
13             Kd_mk:      "IA01",
14             Matakuliah: "MTK Dasar",
15         },
16         model.Matkul{
17             Kd_mk:      "IA02",
18             Matakuliah: "B.Indo Dasar",
19         },
20         model.Matkul{
21             Kd_mk:      "IA3",
22             Matakuliah: "IPA Dasar",
23         },
24     }
25
26     db, err := initDatabase()
27
28     if err != nil {
29         t.Fatal(err)
30     }
31
32     t.Run("Testing insert mahasiswa", func(t *testing.T) {
33         for _, dataInsert := range dataInsertMatkul {
34             err := dataInsert.Insert(db)
35             if err != nil {
36                 t.Fatal(err)
37             }
38         }
39     })
40
41     t.Run("Testing update mahasiswa", func(t *testing.T) {
42         var updateData = map[string]interface{}{
43             "matakuliah": "Algoritma 1",
44         }
45
46         data := dataInsertMatkul[0]
47         if err := data.Update(db, updateData); err != nil {
48             t.Fatal(err)
49         }
50     })
51
52     t.Run("Testing Get matkul", func(t *testing.T) {
53         // data := dataInsertMatkul[0]
54         _, err := model.GetMatkul(db, "IA3")
55         if err != nil {
56             t.Fatal(err)
57         }
58         // fmt.Println(result)
59     })
60
61     t.Run("Testing GetAll matkul", func(t *testing.T) {
62         result, err := model.GetAllMatkul(db)
63         if err != nil {
64             t.Fatal(err)
65         }
66
67         fmt.Println(result[0])
68     })
69
70     t.Run("Testing delete matkul", func(t *testing.T) {
71         data := dataInsertMatkul[0]
72         if err := data.Delete(db); err != nil {
73             t.Fatal(err)
74         }
75     })
76 }
77
78 defer db.Close()
79 }
```

Nilai_test.go

```
reza_50420900_pert4 - Nilai_test.go

1 package test
2
3 import (
4     "fmt"
5     "reza_50420900_pert4/model" // Ganti dengan nama folder kalian masing-masing
6     "testing"
7 )
8
9 func TestNilai(t *testing.T) {
10     var dataInsertNilai = []model.Nilai{
11         model.Nilai{
12             Id_nilai: 1,
13             Kd_mk: "IA02",
14             NPM: "50420900",
15             UTS: 70,
16             UAS: 70,
17             Total: 70,
18             Grade: "B",
19         },
20         model.Nilai{
21             Id_nilai: 2,
22             Kd_mk: "IA03",
23             NPM: "44444444",
24             UTS: 50,
25             UAS: 50,
26             Total: 50,
27             Grade: "D",
28         },
29     }
30     db, err := initDatabase()
31     if err != nil {
32         t.Fatal(err)
33     }
34     t.Run("Testing insert nilai", func(t *testing.T) {
35         for _, dataInsert := range dataInsertNilai {
36             err := dataInsert.Insert(db)
37             if err != nil {
38                 t.Fatal(err)
39             }
40         }
41     })
42     t.Run("Testing update nilai", func(t *testing.T) {
43         var updateData = map[string]interface{}{
44             "uts": 30,
45             "uas": 30,
46             "total": 30,
47             "grade": "E"
48         }
49         data := dataInsertNilai[0]
50         if err := data.Update(db, updateData); err != nil {
51             t.Fatal(err)
52         }
53     })
54     t.Run("Testing GetAll nilai", func(t *testing.T) {
55         // data := dataInsertNilai[0]
56         _, err := model.GetNilai(db, "44444444")
57         if err != nil {
58             t.Fatal(err)
59         }
60         // fmt.Println(result)
61     })
62     t.Run("Testing Get nilai", func(t *testing.T) {
63         result, err := model.GetAllNilai(db)
64         if err != nil {
65             t.Fatal(err)
66         }
67         fmt.Println(result[0])
68     })
69     // t.Run("Testing delete nilai", func(t *testing.T) {
70     //     data := dataInsertNilai[0]
71     //     if err := data.Delete(db); err != nil {
72     //         t.Fatal(err)
73     //     }
74     defer db.Close()
75 }
```

B. OUPUT PROGRAM

Database_test.go

```
go test -run TestDatabase
```



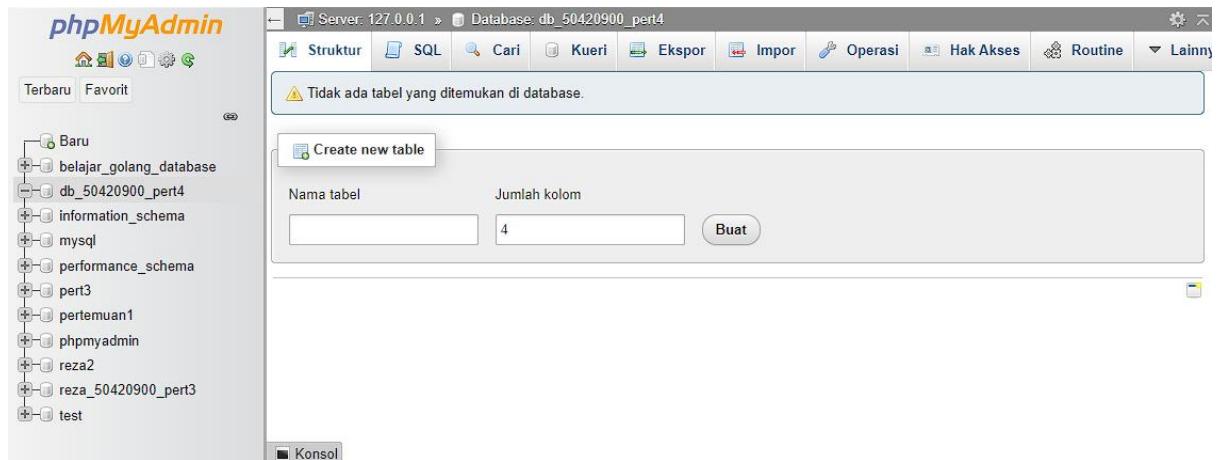
```
reza_50420900_pert4 - Database_test.go

Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Program Files\Go\src\reza_50420900_pert4\test> go test -run TestDatabase
PASS
ok      reza_50420900_pert4/test      0.221s
PS C:\Program Files\Go\src\reza_50420900_pert4\test>
```

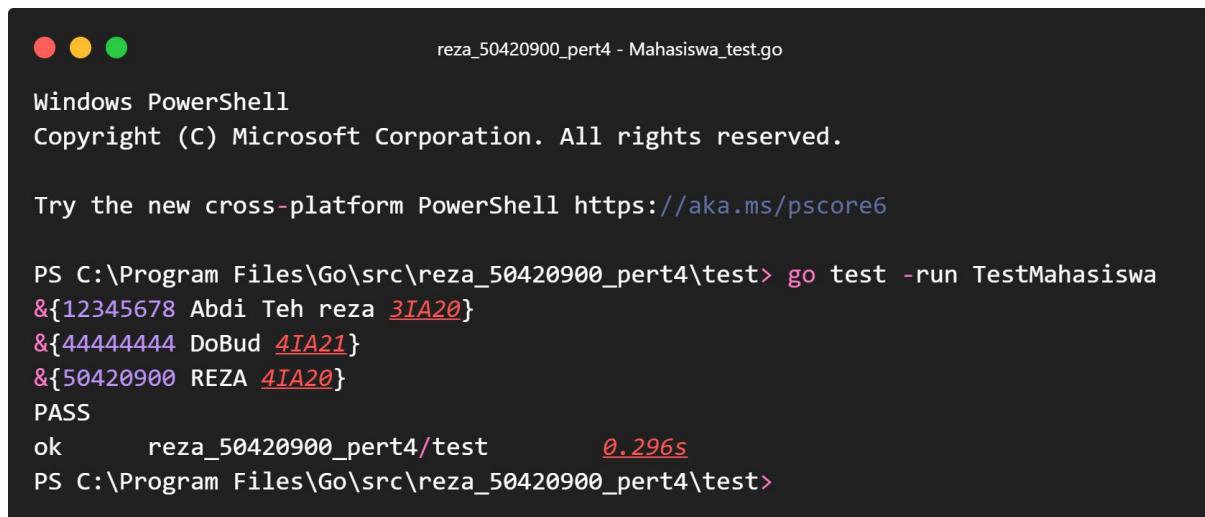
<http://localhost/phpmyadmin/>



The screenshot shows the phpMyAdmin interface. The left sidebar lists databases: Baru, belajar_golang_database, db_50420900_pert4, information_schema, mysql, performance_schema, pert3, pertemuan1, phpmyadmin, reza, reza_50420900_pert3, and test. The main panel shows the structure of the db_50420900_pert4 database. The 'Struktur' tab is selected. A message at the top says 'Tidak ada tabel yang ditemukan di database.' Below it, there's a 'Create new table' form with fields for 'Nama tabel' (containing '4') and 'Jumlah kolom' (containing '4'). A 'Buat' button is visible. The bottom of the screen shows a 'Konsol' (Console) section.

Mahasiswa_test.go

```
go test -run TestMahasiswa
```



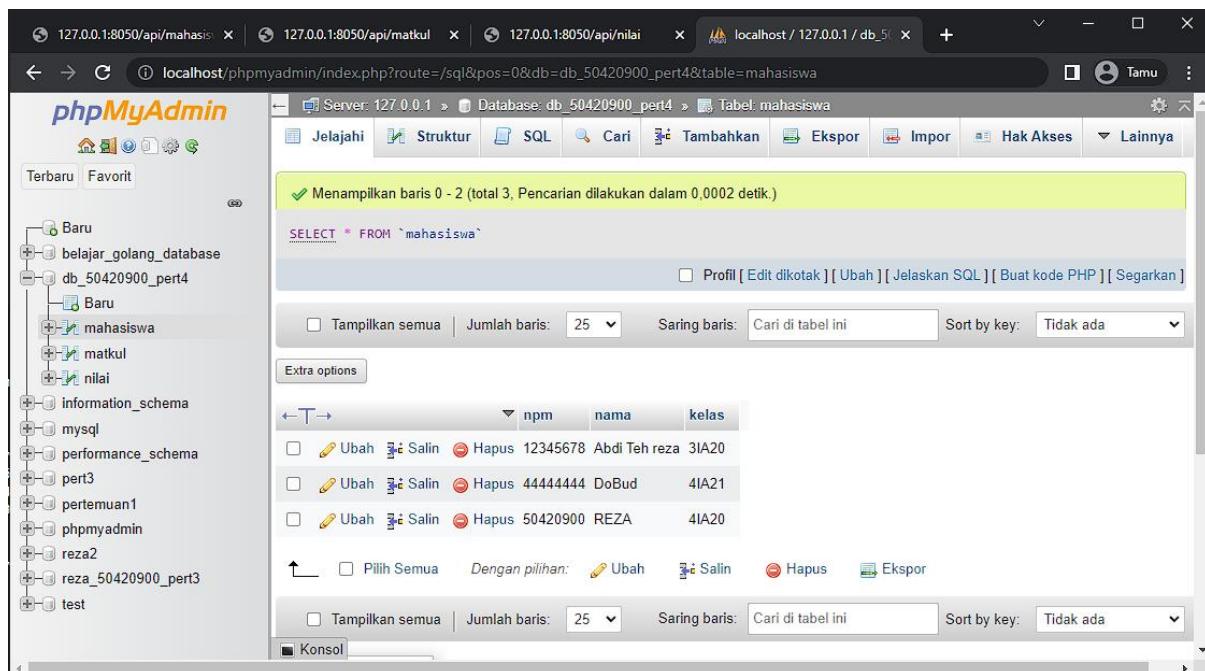
```
reza_50420900_pert4 - Mahasiswa_test.go

Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Program Files\Go\src\reza_50420900_pert4\test> go test -run TestMahasiswa
&{12345678 Abdi Teh reza 3IA20}
&{44444444 DoBud 4IA21}
&{50420900 REZA 4IA20}
PASS
ok      reza_50420900_pert4/test          0.296s
PS C:\Program Files\Go\src\reza_50420900_pert4\test>
```

http://localhost/phpmyadmin/index.php?route=/sql&pos=0&db=db_50420900_pert4&table=mahasiswa



Server: 127.0.0.1 > Database: db_50420900_pert4 > Tabel: mahasiswa

Jelajahi Struktur SQL Cari Tambahan Eksport Impor Hak Akses Lainnya

Menampilkan baris 0 - 2 (total 3, Pencarian dilakukan dalam 0,0002 detik.)

SELECT * FROM `mahasiswa`

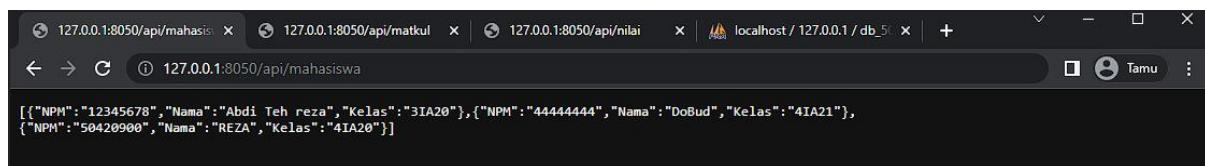
Tampilan semua Jumlah baris: 25 Saring baris: Cari di tabel ini Sort by key: Tidak ada

	npm	nama	kelas
Ubah Salin Hapus	12345678	Abdi Teh reza	3IA20
Ubah Salin Hapus	44444444	DoBud	4IA21
Ubah Salin Hapus	50420900	REZA	4IA20

Pilih Semua Dengan pilihan: Ubah Salin Hapus Eksport

Tampilan semua Jumlah baris: 25 Saring baris: Cari di tabel ini Sort by key: Tidak ada

<http://127.0.0.1:8050/api/mahasiswa>



```
[{"NPM": "12345678", "Nama": "Abdi Teh reza", "Kelas": "3IA20"}, {"NPM": "44444444", "Nama": "DoBud", "Kelas": "4IA21"}, {"NPM": "50420900", "Nama": "REZA", "Kelas": "4IA20"}]
```

Matakuliah_test.go

```
go test -run TestMatkul
```



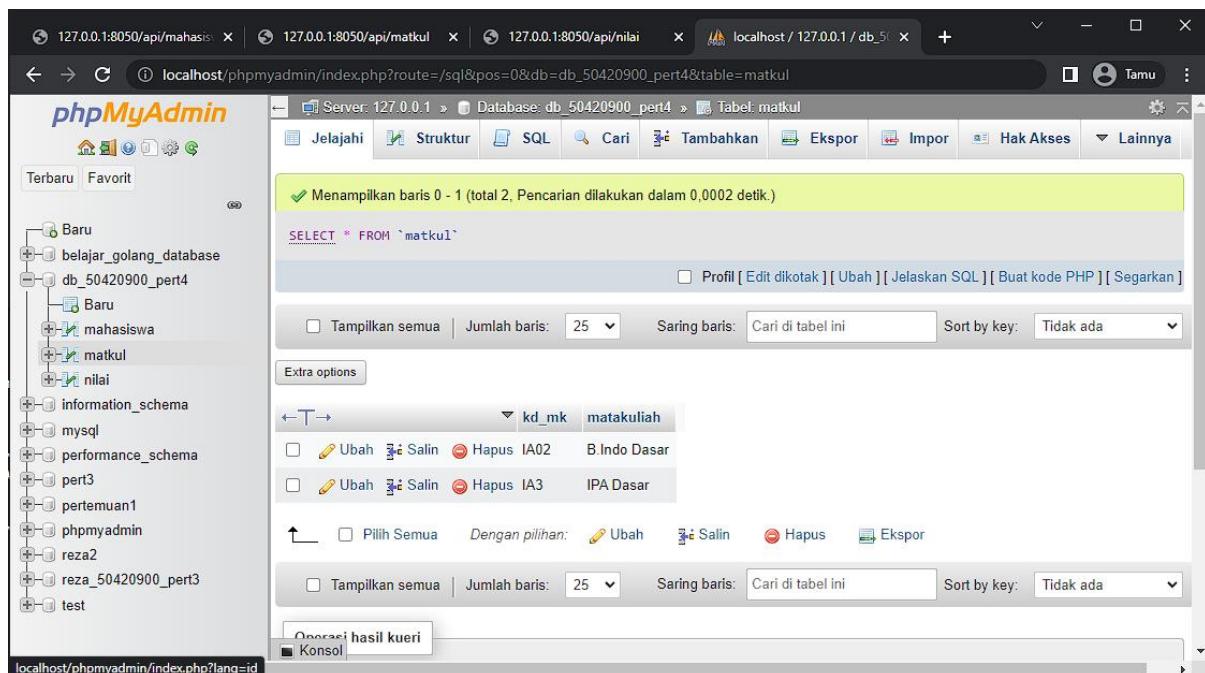
```
reza_50420900_pert4 - Matakuliah_test.go

Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Program Files\Go\src\reza_50420900_pert4\test> go test -run TestMatkul
&{IA01 Algoritma 1}
PASS
ok      reza_50420900_pert4/test      0.280s
PS C:\Program Files\Go\src\reza_50420900_pert4\test>
```

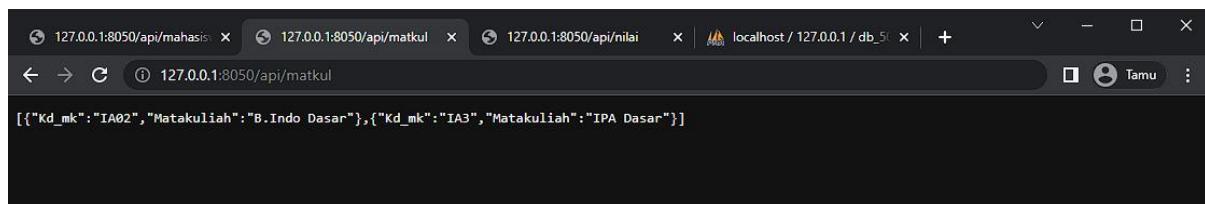
http://localhost/phpmyadmin/index.php?route=/sql&pos=0&db=db_50420900_pert4&table=matkul



The screenshot shows the phpMyAdmin interface connected to the database db_50420900_pert4. The left sidebar lists databases like belajar_golang_database, db_50420900_pert4, and pertemuan1. The main area shows the matkul table with the following data:

kd_mk	matakuliah
IA02	B. Indo Dasar
IA03	IPA Dasar

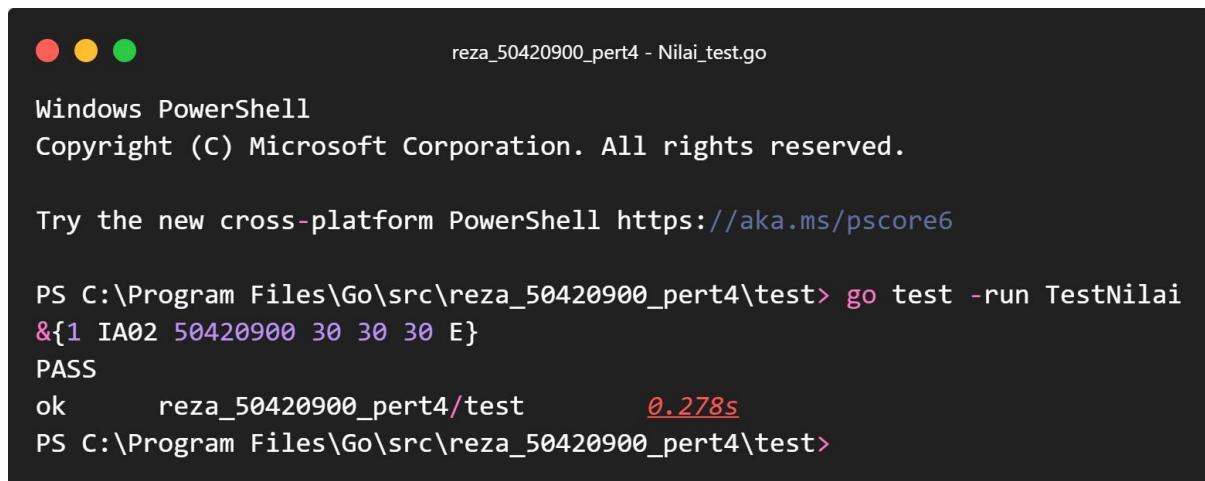
<http://127.0.0.1:8050/api/matkul>



```
[{"Kd_mk": "IA02", "Matakuliah": "B. Indo Dasar"}, {"Kd_mk": "IA03", "Matakuliah": "IPA Dasar"}]
```

Nilai_test.go

```
go test -run TestNilai
```



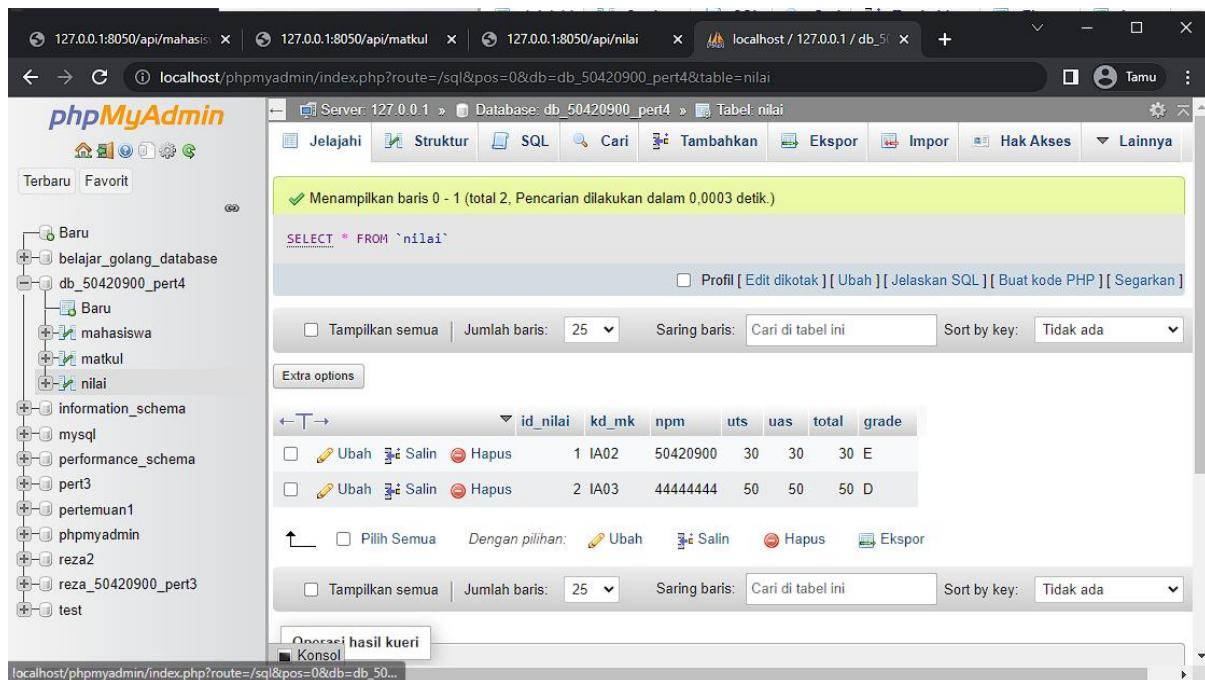
```
reza_50420900_pert4 - Nilai_test.go

Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Program Files\Go\src\reza_50420900_pert4\test> go test -run TestNilai
&{1 IA02 50420900 30 30 30 E}
PASS
ok      reza_50420900_pert4/test      0.278s
PS C:\Program Files\Go\src\reza_50420900_pert4\test>
```

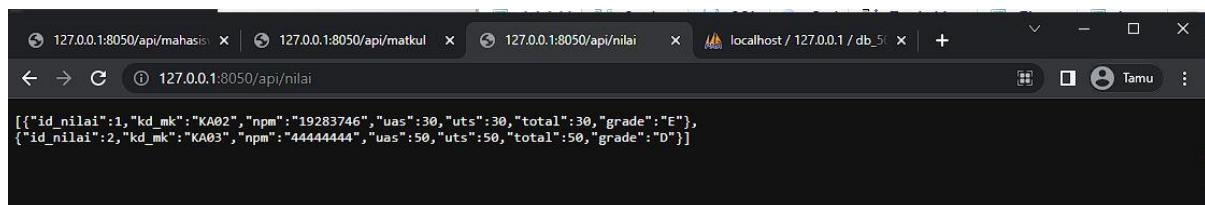
http://localhost/phpmyadmin/index.php?route=/sql&pos=0&db=db_50420900_pert4&table=nilai



The screenshot shows the phpMyAdmin interface connected to the database 'db_50420900_pert4'. The 'nilai' table is selected. The results of the query 'SELECT * FROM `nilai`' are displayed in a grid:

	id.nilai	kd.mk	npm	uts	uas	total	grade
<input type="checkbox"/> Ubah Salin Hapus	1	IA02	50420900	30	30	30	E
<input type="checkbox"/> Ubah Salin Hapus	2	IA03	44444444	50	50	50	D

<http://127.0.0.1:8050/api/nilai>



```
[{"id.nilai":1,"kd.mk":"KA02","npm":"19283746","uas":30,"uts":30,"total":30,"grade":"E"}, {"id.nilai":2,"kd.mk":"KA03","npm":"44444444","uas":50,"uts":50,"total":50,"grade":"D"}]
```

Main.go

```
reza_50420900_pert4 - Main.go

Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Program Files\Go\src\reza_50420900_pert4> go run main.go
2022/11/04 03:56:47 localhost : 8050
```

<http://127.0.0.1:8050/api/mahasiswa>

```
[{"NPM": "12345678", "Nama": "Abdi Teh reza", "Kelas": "3IA20"}, {"NPM": "44444444", "Nama": "DoBud", "Kelas": "4IA21"}, {"NPM": "50420900", "Nama": "REZA", "Kelas": "4IA20"}]
```

<http://127.0.0.1:8050/api/matkul>

```
[{"Kd_mk": "IA02", "Matakuliah": "B. Indo Dasar"}, {"Kd_mk": "IA03", "Matakuliah": "IPA Dasar"}]
```

<http://127.0.0.1:8050/api/nilai>

```
[{"id_nilai": 1, "kd_mk": "KA02", "npm": "19283746", "uas": 30, "uts": 30, "total": 30, "grade": "E"}, {"id_nilai": 2, "kd_mk": "KA03", "npm": "44444444", "uas": 50, "uts": 50, "total": 50, "grade": "D"}]
```