PERTEMUAN 14 :
APLIKASI WEB

A.   TUJUAN PERKULIAHAN:

Pada pertemuan ini akan dijelaskan mengenai pembuatan aplikasi web dan pengolahannya dengan menggunakan model MVC (Model – View - Controller). Setelah mempelajari materi perkuliahan ini, mahasiswa mampu:

14.1 Membuat Form Master Aplikasi Web

B.   URAIAN MATERI

| Tujuan Pembelajaran 14.1: |
| --- |
| Membuat Form Master Aplikasi Web |

Model MVC digunakan untuk mengatasi masalah logika/proses aplikasi yang kompeks. Dalam model ini logika bisnis/proses dan presentasi/tampilan dipisahkan. Logika bisnis/proses dinyatakan oleh model, presentasi/tampilan dinyatakan oleh model. Sedangkan pengontrolan aliran request dan data dinyatakan oleh controller.
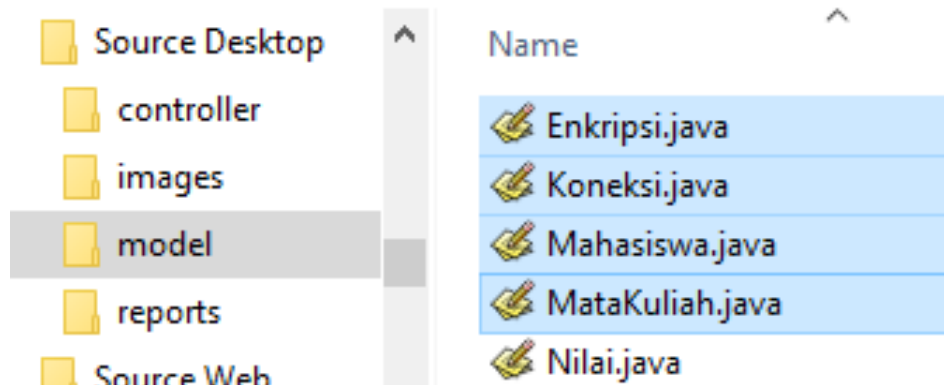
Langkah-langkah membuat Form Master aplikasi web:

- Buat projek baru
- Buat Package untuk memisahkan bagain logika bisnis, presentasi, pengontrolar.
    - Buatlah 3 package:
        - com.unpam.model
        - com.unpam.view
        - com.unpam.controller

    Klik kanan pada Source Packages, pilih New ▸ Java Package…
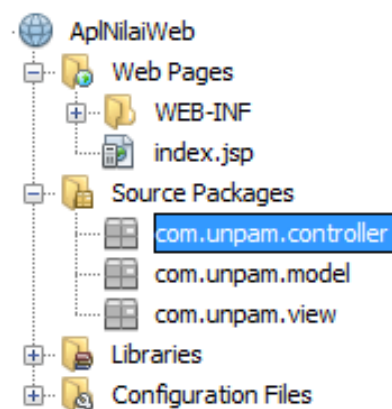
- Menuliskan Source Code Package Model
  Tambahkan 4 file class java pada package **model**

Source code enkripsi.java

```java
package model;

import java.security.MessageDigest;

public class Enkripsi {
    public String hashMD5(String value) throws Exception{
        MessageDigest md =
                        MessageDigest.getInstance("MD5");
        md.update(value.getBytes());

        byte byteData[] = md.digest();

        StringBuilder hexString = new StringBuilder();
    for (int i=0;i<byteData.length;i++) {
    String hex=Integer.toHexString(0xff & byteData[i]);
            if (hex.length()==1) {
                    hexString.append('0');
                }
            hexString.append(hex);
     }

        return hexString.toString();
    }
}
```

Source code Koneksi.java

```java
package model;

import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.SQLException;

public class Koneksi {
    private static final String driver =
"com.mysql.jdbc.Driver";
    private static final String database =
"jdbc:mysql://localhost:3306/dbaplikasipenilaianmahasiswa";
    private static final String user = "root";
    private static final String password = "";

    private Connection connection;
    private String pesanKesalahan;

    public String getPesanKesalahan() {
        return pesanKesalahan;
    }

    public Connection getConnection(){
        connection = null;
        pesanKesalahan = "";

        try{
            Class.forName(driver);
        } catch (ClassNotFoundException ex){
            pesanKesalahan = "JDBC Driver tidak ditemukan atau
rusak\n"+ex;
        }

        if (pesanKesalahan.equals("")){
            try {
                connection =
DriverManager.getConnection(database+"?user="+user+"&password="
+password+"");
            } catch (SQLException ex) {
                pesanKesalahan = "Koneksi ke "+database+"
gagal\n"+ex;
            }
        }

        return connection;
    }
}
```

Source code Mahasiswa.java (menyimpan data mahasiswa)

```java
package model;

import java.sql.Connection;
import java.sql.PreparedStatement;
import java.sql.ResultSet;
import java.sql.SQLException;
import view.PesanDialog;

public class Mahasiswa {
    private String nim, nama, kelas, password;
    private int semester;
    private String pesan;
    private Object[][] list;
    private final Koneksi koneksi = new Koneksi();
    private final PesanDialog pesanDialog = new PesanDialog();

    public String getNim() {
        return nim;
    }

    public void setNim(String nim) {
        this.nim = nim;
    }

    public String getNama() {
        return nama;
    }

    public void setNama(String nama) {
        this.nama = nama;
    }

    public String getKelas() {
        return kelas;
    }

    public void setKelas(String kelas) {
        this.kelas = kelas;
    }

    public int getSemester() {
        return semester;
    }

    public void setSemester(int semester) {
        this.semester = semester;
    }

    public String getPesan() {
        return pesan;
    }

    public String getPassword() {
        return password;
    }
```

```
public void setPassword(String password) {
      this.password = password;
    }

    public Object[][] getList() {
        return list;
    }

    public void setList(Object[][] list) {
        this.list = list;
    }
```

```
public boolean simpan(){
      boolean adaKesalahan = false;
      Connection connection;

      if ((connection = koneksi.getConnection()) != null){
          int jumlahSimpan=0;
          boolean simpan = false;
          String SQLStatemen="";
          PreparedStatement preparedStatement;
          ResultSet rset;

          try {
           simpan = true;
           SQLStatemen = "insert into tbmahasiswa(nim,
           nama, semester, kelas, password) values
           (?,?,?,?,?)";

           preparedStatement =
           connection.prepareStatement(SQLStatemen);
                  preparedStatement.setString(1, nim);
                  preparedStatement.setString(2, nama);
                  preparedStatement.setInt(3, semester);
                  preparedStatement.setString(4, kelas);
                  preparedStatement.setString(5, password);

          jumlahSimpan =
          preparedStatement.executeUpdate();
              }

              if (simpan) {
                  if (jumlahSimpan < 1){
                      adaKesalahan = true;
                      pesan = "Gagal menyimpan data
                              mahasiswa";
                  }
              }

              preparedStatement.close();
```

```
preparedStatement.close();
rset.close();
connection.close()
} catch (SQLException ex){
  adaKesalahan = true;
    pesan = "Tidak dapat membuka tabel
            tbmahasiswa\n"+ex+"\n"+SQLStatemen;
    }
  } else {
    adaKesalahan = true;
    pesan = "Tidak dapat melakukan koneksi ke
            server\n"+koneksi.getPesanKesalahan();
   }


    return !adaKesalahan;
    }
```

Source code MataKuliah.java (menyimpan data matakuliah)

```java
package model;

import java.sql.Connection;
import java.sql.ResultSet;
import java.sql.SQLException;
import java.sql.Statement;
import view.PesanDialog;

public class MataKuliah {
    private String kodeMataKuliah, namaMataKuliah;
    private int jumlahSks;
    private String pesan;
    private Object[][] list;
    private final Koneksi koneksi = new Koneksi();
    private final PesanDialog pesanDialog = new
PesanDialog();

    public String getKodeMataKuliah() {
        return kodeMataKuliah;
    }

    public void setKodeMataKuliah(String kodeMataKuliah) {
        this.kodeMataKuliah = kodeMataKuliah;
    }

    public String getNamaMataKuliah() {
        return namaMataKuliah;
    }
```

```
public void setNamaMataKuliah(String namaMataKuliah) {
        this.namaMataKuliah = namaMataKuliah;
    }

    public int getJumlahSks() {
        return jumlahSks;
    }

    public void setJumlahSks(int jumlahSks) {
        this.jumlahSks = jumlahSks;
    }

    public String getPesan() {
        return pesan;
    }

    public Object[][] getList() {
        return list;
    }

    public void setList(Object[][] list) {
        this.list = list;
    }
```

```
public boolean simpan(){
        boolean adaKesalahan = false;
      Connection connection;

      if ((connection = koneksi.getConnection()) != null){
            int jumlahSimpan=0;
            boolean simpan = false;
            Statement sta;
            ResultSet rset;


      try {
        simpan = true;
        SQLStatemen = "insert into tbmatakuliah values
        ('"+ kodeMataKuliah +"','"+
        namaMataKuliah+"','"+ jumlahSks +"')";
        sta = connection.createStatement();
        jumlahSimpan = sta.executeUpdate(SQLStatemen);
        }

        if (simpan) {
           if (jumlahSimpan < 1){
           adaKesalahan = true;
           pesan = "Gagal menyimpan data mata kuliah";
           }
         }
```
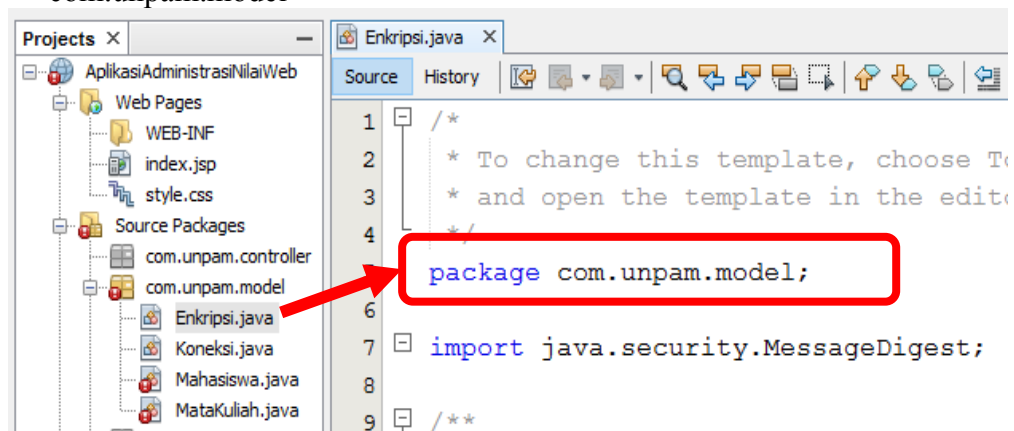
```
} else {
            adaKesalahan = true;
            pesan = "Tidak dapat melakukan koneksi ke
server\n"+koneksi.getPesanKesalahan();
        }

        return !adaKesalahan;
    }
```
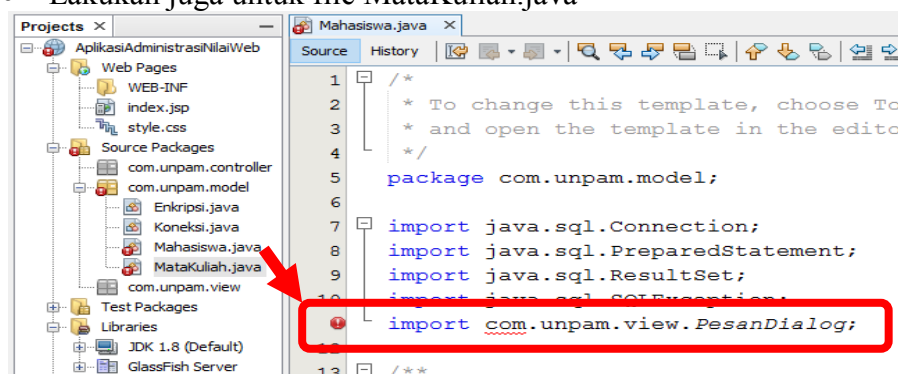
- Buka file Enkripsi.java
- Pastikan nama package-nya com.unpam.model
- Pastikan juga untuk file lainnya yang ada di package com.unpam.model

- Buka file Mahasiswa.java
- Ubah import dari view.PesanDialog menjadi com.unpam.view.PesanDialog
- Lakukan juga untuk file MataKuliah.java

- Karena mengimport class PesanDialog dari package com.unpam.view, maka harus dibuat class-nya
- Di aplikasi desktop digunakan untuk konfirmasi memperbaharui data yang sudah tersimpan
- Di aplikasi web ini tidak dibuat konfirmasi, tetapi langsung diperbaharui

- Agar tidak banyak perubahan source code, maka perlu dibuat penyesuaian
- Tambahkan class PesanDialog di package com.unpam.view
- Ubah nama class menjadi PesanDialog
- Tambahkan source code menjadi seperti di bawah ini

```
11  └ */
12    public class PesanDialog {
13
14  ⊟     public int tampilkanPilihan(String pesan, String judul, Object[] opsi){
15            return 0;
16        }
17    }
18
```

- Tambahkan servlet MainForm di package com.unpam.view dengan nama MainForm
- Hapus source code dalam kotak merah

```
30  │    * @throws IOException if an I/O error occurs
31  └    */
32    protected void processRequest(HttpServletRequest request, HttpServletResponse response)
33  ⊟         throws ServletException, IOException {
34        response.setContentType("text/html;charset=UTF-8");
35        try (PrintWriter out = response.getWriter()) {
36            /* TODO output your page here. You may use following sample code. */
37            out.println("<!DOCTYPE html>");
38            out.println("<html>");
39            out.println("<head>");
40            out.println("<title>Servlet MainForm</title>");
41            out.println("</head>");
42            out.println("<body>");
43            out.println("<h1>Servlet MainForm at " + request.getContextPath() + "</h1>");
44            out.println("</body>");
45            out.println("</html>");
46        }
47    }
48
49  ⊞    HttpServlet methods. Click on the + sign on the left to edit the code.
87
88    }
89
```

- Ubah metode processRequest menjadi tampilkan
- Ubah akses modifier dari protected menjadi public
- Tambahkan parameter konten bertipe String

```
31  └    */
    ⚠ public void tampilkan(String konten, HttpServletRequest request,
33  ⊟         HttpServletResponse response)throws ServletException, IOException {
34        response.setContentType("text/html;charset=UTF-8");
35
36
37    }
38
39    }
```

- Tambahkan source code di bawah pernyataan response.setContentType)

```
HttpSession session = request.getSession(true);
        String menu="<br><b>Master Data</b><br>"
                + "<a href=.>Mahasiswa</a><br>"
                + "<a href=.>Mata Kuliah</a><br><br>"
                + "<b>Transaksi</b><br>"
                + "<a href=.>Nilai</a><br><br>"
                + "<b>Laporan</b><br>"
                + "<a href=.>Nilai</a><br><br>"
                + "<a href=LoginController>Login</a><br><br>";

        String topMenu="<nav><ul>"
                +"<li><a href=.>Home</a></li>"
                +"<li><a href=#>Master Data</a>"
                +"<ul>"
                +"<li><a href=.>Mahasiswa</a></li>"
                +"<li><a href=.>Mata Kuliah</a></li>"
                +"</ul>"
                +"</li>"
                +"<li><a href=#>Transaksi</a>"
                +"<ul>"
                +"<li><a href=.>Nilai</a></li>"
                +"</ul>"
                +"</li>"
                +"<li><a href=#>Laporan</a>"
                +"<ul>"
                +"<li><a href=.>Nilai</a></li>"
                +"</ul>"
                +"</li>"
                +"<li><a href=LoginController> Login
                        </a></li>"
                +"</ul>"
                +"</nav>";

        String userName="";
        if (!session.isNew()){
            try {
                userName =
                    session.getAttribute("userName").toString();
            } catch (Exception ex){}

            if (!((userName == null) || userName.equals(""))){
                if (konten.equals("")){
                    konten = "<br><h1>Selamat
                            Datang</h1><h2>"+userName+"</h2>";
                }

                try {
                    menu =
                        session.getAttribute("menu").toString();
                } catch (Exception ex){}

                try {
                    topMenu =
                        session.getAttribute("topMenu").toString();
                } catch (Exception ex){}
            }
        }
```

```
try (PrintWriter out = response.getWriter()) {
           /* TODO output your page here. You may use following
sample code. */
   out.println("<!DOCTYPE html>");
   out.println("<html>");
   out.println("<head>");
   out.println("<link href='style.css' rel='stylesheet'
                          type='text/css' />");
   out.println("<title>Informasi Nilai Mahasiswa</title>");
   out.println("</head>");
   out.println("<body bgcolor=\"#808080\">");
   out.println("<center>");
   out.println("<table width=\"80%\" bgcolor=\"#eeeeee\">   ");
   out.println("<tr>");
   out.println("<td colspan=\"2\" align=\"center\">");
   out.println("<br>");
   out.println("<h2 Style=\"margin-bottom:0px; margin-top:0px;\">");
   out.println("Informasi Nilai Mahasiswa");
   out.println("</h2>");
   out.println("<h1 Style=\"margin-bottom:0px; margin-top:0px;\">");
   out.println("UNIVERSITAS PAMULANG");
   out.println("</h1>");
   out.println("<h4 Style=\"margin-bottom:0px; margin-top:0px;\">");
   out.println("Jl. Surya Kencana No. 1 Pamulang, Tangerang Selatan,
Banten");
   out.println("</h4>");
   out.println("<br>");
   out.println("</td>");
   out.println("</tr>");
   out.println("<tr height=\"400\">");
   out.println("<td width=\"200\" align=\"center\" valign=\"top\"
bgcolor=\"#eeffee\">");
   out.println("<div id='menu'>");
   out.println(menu);
   out.println("</div>");
   out.println("</td>");
   out.println("<td align=\"center\" valign=\"top\"
bgcolor=\"#ffffff\">");
   out.println(topMenu);
   out.println("<br>");
   out.println(konten);
   out.println("</td>");
   out.println("</tr>");
   out.println("<tr>");
   out.println("<td colspan=\"2\" align=\"center\"
bgcolor=\"#eeeeff\">");
   out.println("<small>");
   out.println("Copyright &copy; 2014 Universitas Pamulang<br>");
   out.println("Jl. Surya Kencana No. 1 Pamulang, Tangerang Selatan,
Banten<br>");
   out.println("</small>");
   out.println("</td>");
   out.println("</tr>");
   out.println("</table>");
   out.println("</center>");
  out.println("</body>");
  out.println("</html>");
   }
```

```
31        */
32    public void tampilkan(String konten, HttpServletRequest request,
33            HttpServletResponse response) throws ServletException, IOException {
34        response.setContentType("text/html;charset=UTF-8");
35
36        HttpSession session = request.getSession(true);
37        String menu="<br><b>Master Data</b><br>"
38                + "<a href=.>Mahasiswa</a><br>"
39                + "<a href=.>Mata Kuliah</a><br><br>"
40                + "<b>Transaksi</b><br>"
41                + "<a href=.>Nilai</a><br><br>"
42                + "<b>Laporan</b><br>"
43                + "<a href=.>Nilai</a><br><br>"
44                + "<a href=LoginController>Login</a><br><br>";
45
46        String topMenu="<nav><ul>"
47                +"<li><a href=.>Home</a></li>"
48                +"<li><a href=#>Master Data</a>"
49                +"<ul>"
50                +"<li><a href=.>Mahasiswa</a></li>"
51                +"<li><a href=.>Mata Kuliah</a></li>"
52                +"</ul>"
```

Memperbaiki Source Code:

```
53                +"</li>"
54                +"<li><a href=#>Transaksi</a>"
55                +"<ul>"
56                +"<li><a href=.>Nilai</a></li>"
57                +"</ul>"
58                +"</li>"
59                +"<li><a href=#>Laporan</a>"
60                +"<ul>"
61                +"<li><a href=.>Nilai</a></li>"
62                +"</ul>"
63                +"</li>"
64                +"<li><a href=LoginController>Login</a></li>"
65                +"</ul>"
66                +"</nav>";
67
68        String userName="";
69
70        if (!session.isNew()){
71            try {
72                userName = session.getAttribute("userName").toString();
73            } catch (Exception ex){}
74
```

```java
75              if (!((userName == null) || userName.equals(""))){
76                  if (konten.equals("")){
77                      konten = "<br><h1>Selamat Datang</h1><h2>"+userName+"</h2>";
78                  }
79
80                  try {
81                      menu = session.getAttribute("menu").toString();
82                  } catch (Exception ex){}
83
84                  try {
85                      topMenu = session.getAttribute("topMenu").toString();
86                  } catch (Exception ex){}
87              }
88          }
89
90          try (PrintWriter out = response.getWriter()) {
91              /* TODO output your page here. You may use following sample code. */
92              out.println("<!DOCTYPE html>");
93              out.println("<html>");
94              out.println("<head>");
95              out.println("<link href='style.css' rel='stylesheet' type='text/css' />");
96              out.println("<title>Informasi Nilai Mahasiswa</title>");
97              out.println("</head>");
98              out.println("<body bgcolor=\"#808080\">");
```

```java
99           out.println("<center>");
100          out.println("<table width=\"80%\" bgcolor=\"#eeeeee\">   ");
101          out.println("<tr>");
102          out.println("<td colspan=\"2\" align=\"center\">");
103          out.println("<br>");
104          out.println("<h2 Style=\"margin-bottom:0px; margin-top:0px;\">");
105          out.println("Informasi Nilai Mahasiswa");
106          out.println("</h2>");
107          out.println("<h1 Style=\"margin-bottom:0px; margin-top:0px;\">");
108          out.println("UNIVERSITAS PAMULANG");
109          out.println("</h1>");
110          out.println("<h4 Style=\"margin-bottom:0px; margin-top:0px;\">");
111          out.println("Jl. Surya Kencana No. 1 Pamulang, Tangerang Selatan, Banten");
112          out.println("</h4>");
113          out.println("<br>");
114          out.println("</td>");
115          out.println("</tr>");
116          out.println("<tr height=\"400\">");
117          out.println("<td width=\"200\" align=\"center\" valign=\"top\" bgcolor=\"#eeffee\">");
118          out.println("<div id='menu'>");
119          out.println(menu);
120          out.println("</div>");
121          out.println("</td>");
122          out.println("<td align=\"center\" valign=\"top\" bgcolor=\"#ffffff\">");
123          out.println(topMenu);
```

```
124          out.println("<br>");
125          out.println(konten);
126          out.println("</td>");
127          out.println("</tr>");
128          out.println("<tr>");
129          out.println("<td colspan=\"2\" align=\"center\" bgcolor=\"#eeeeff\">");
130          out.println("<small>");
131          out.println("Copyright &copy; 2014 Universitas Pamulang<br>");
132          out.println("Jl. Surya Kencana No. 1 Pamulang, Tangerang Selatan, Banten<br>");
133          out.println("</small>");
134          out.println("</td>");
135          out.println("</tr>");
136          out.println("</table>");
137          out.println("</center>");
138          out.println("</body>");
139          out.println("</html>");
140       }
141    }
```

- o Klik lampu indikator kesalahan pada HttpSession
- o Pilih Add import for java.servlet.HttpSession

```
35
36         HttpSession session = request.getSession(true);
   Add import for javax.servlet.http.HttpSession
37   Create class "HttpSession" in package com.unpam.view (Source Packages)
38   Create class "HttpSession" in com.unpam.view.MainForm
39
40        + "<b>Transaksi</b><br>"
```

- Menambahkan Servlet untuk Controller
  - o Tambahkan servlet MahasiswaController di package com.unpam.controller
  - o Hapus source code dalam kotak merah

```
30    * @throws IOException if an I/O error occurs
31    */
32   protected void processRequest(HttpServletRequest request, HttpServletResponse response)
33          throws ServletException, IOException {
34       response.setContentType("text/html;charset=UTF-8");
35       try (PrintWriter out = response.getWriter()) {
36          /* TODO output your page here. You may use following sample code. */
37          out.println("<!DOCTYPE html>");
38          out.println("<html>");
39          out.println("<head>");
40          out.println("<title>Servlet MainForm</title>");
41          out.println("</head>");
42          out.println("<body>");
43          out.println("<h1>Servlet MainForm at " + request.getContextPath() + "</h1>");
44          out.println("</body>");
45          out.println("</html>");
46       }
47    }
48
49   HttpServlet methods. Click on the + sign on the left to edit the code.
87
88    }
89
```

- o Buka file MahasiswaController di dalam folder Source Web (file materi akan diberikan)
- o Seleksi semua source code, copy, dan paste di dalam metode processRequest (di bawah pernyataan response.setContentType)

```
32        protected void processRequest(HttpServletRequest request, HttpServletResponse response)
33              throws ServletException, IOException {
34          response.setContentType("text/html;charset=UTF-8");
35
36
37        }
38
39  ⊞     HttpServlet methods. Click on the + sign on the left to edit the code.
77
```

o   Klik lampu indikator kesalahan, pilih Add import …


```
35            HttpSession session = request.getSession(true);
         💡 Add import for javax.servlet.http.HttpSession
         💡 Create class "HttpSession" in package com.unpam.controller (Source Packages)
39       💡 Create class "HttpSession" in com.unpam.controller.MahasiswaController

37            HttpSession session = request.getSession(true);
              Mahasiswa mahasiswa = new Mahasiswa();
         💡 Add import for com.unpam.model.Mahasiswa
40       💡 Create class "Mahasiswa" in package com.unpam.controller (Source Packages)
41       💡 Create class "Mahasiswa" in com.unpam.controller.MahasiswaController

39            Mahasiswa mahasiswa = new Mahasiswa();
              Enkripsi enkripsi = new Enkripsi();
41       💡 Add import for com.unpam.model.Enkripsi
42       💡 Create class "Enkripsi" in package com.unpam.controller (Source Packages)
43       💡 Create class "Enkripsi" in com.unpam.controller.MahasiswaController

299           new MainForm().tampilkan(konten, request, response);
301      💡 Add import for com.unpam.view.MainForm
302      💡 Create class "MainForm" in package com.unpam.controller (Source Packages)
303      💡 Create class "MainForm" in com.unpam.controller.MahasiswaController
```

o   Tambahkan servlet MataKuliahController di package
    com.unpam.controller
o   Hapus source code dalam kotak merah

o Buka file LoginController di dalam folder Source Web (file akan diberikan)
o Seleksi semua source code, copy, dan paste di dalam metode processRequest (di bawah pernyataan response.setContentType

o Tambahkan servlet LogoutController di package com.unpam.controller
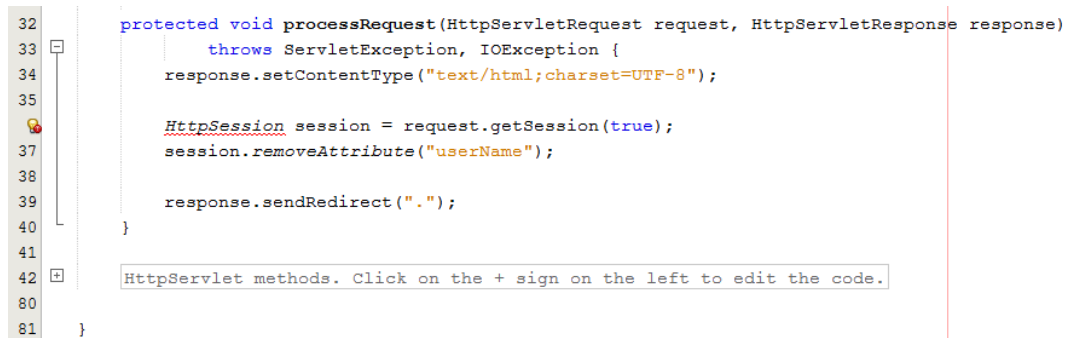o Hapus source code dalam kotak merah

```
30          * @throws IOException if an I/O error occurs
31          */
32     protected void processRequest(HttpServletRequest request, HttpServletResponse response)
33             throws ServletException, IOException {
34         response.setContentType("text/html;charset=UTF-8");
35         try (PrintWriter out = response.getWriter()) {
36             /* TODO output your page here. You may use following sample code. */
37             out.println("<!DOCTYPE html>");
38             out.println("<html>");
39             out.println("<head>");
40             out.println("<title>Servlet MainForm</title>");
41             out.println("</head>");
42             out.println("<body>");
43             out.println("<h1>Servlet MainForm at " + request.getContextPath() + "</h1>");
44             out.println("</body>");
45             out.println("</html>");
46         }
47     }
48
49  ⊞  HttpServlet methods. Click on the + sign on the left to edit the code.
87
88     }
89
```

o Tambahkan source code di dalam metode processRequest (di bawah pernyataan response.setContentType) seperti pada gambar
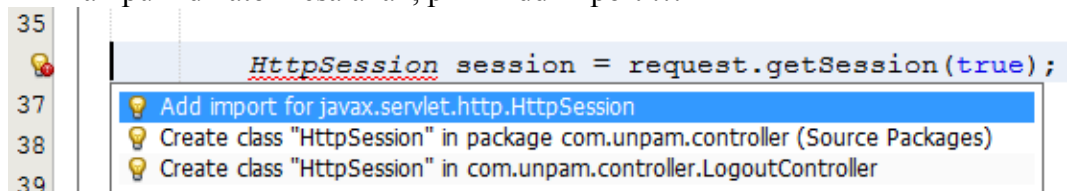
```
32     protected void processRequest(HttpServletRequest request, HttpServletResponse response)
33             throws ServletException, IOException {
34         response.setContentType("text/html;charset=UTF-8");
35
          HttpSession session = request.getSession(true);
37         session.removeAttribute("userName");
38
39         response.sendRedirect(".");
40     }
41
42  ⊞  HttpServlet methods. Click on the + sign on the left to edit the code.
80
81     }
```

o Klik lampu indikator kesalahan, pilih Add import …

```
35
           HttpSession session = request.getSession(true);
37      💡 Add import for javax.servlet.http.HttpSession
38      💡 Create class "HttpSession" in package com.unpam.controller (Source Packages)
39      💡 Create class "HttpSession" in com.unpam.controller.LogoutController
```

• Menambahkan MySQL JDBC Driver

o Klik kanan pada Libraries, pilih Add Library
o Pilih MySQL JDBC Driver, dan klik tombol Add Library
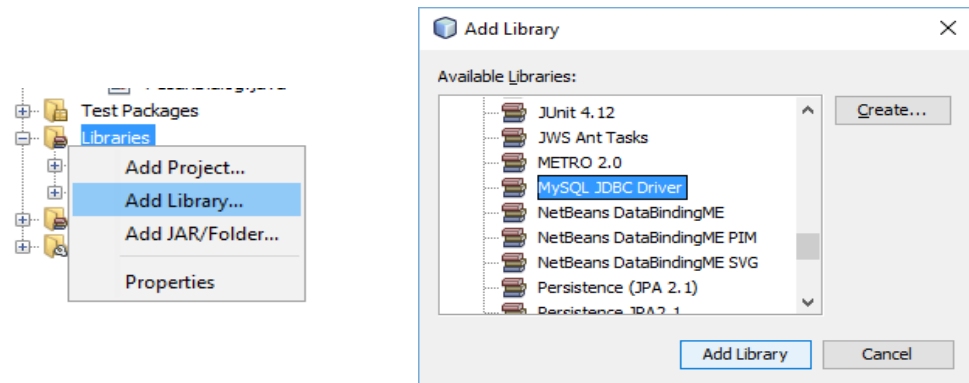
o   Jika di eksekusi (run), maka akan tampil seperti pada gambar, tetapi menunya belum ada yang bisa dioperasikan

o   Jika diklik menu Login, maka akan tampil form login
o   Isi user ID dan password sesuai data yang tersimpan (sama dengan aplikasi desktop)

- o Jika lupa user ID dan password, buka http://localhost/phpmyadmin di browser
- o Buka tabel tbmahasiswa
- o Klik menu Insert, isi nim, nama, semester, kelas, dan password, pilih function MD5 untuk password
- o Simpan dengan mengklik tombol Go
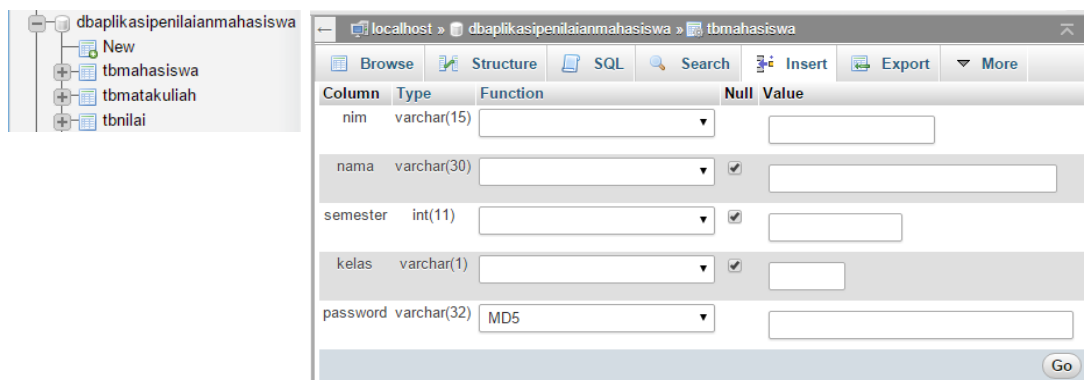
- o Jika berhasil login, maka akan tampil seperti gambar

o   Klik menu Mahasiswa, maka akan tampil form mahasiswa, coba semua menu

    o   Klik menu Mata Kuliah, maka akan tampil form mata kuliah, coba semua menu

C.   LATIHAN SOAL:

- Tambahkan pada aplikasi web penilaian mahasiswa untuk tampil (lihat data) dan update data untuk masing-masing form input dan simpan data.

Buat file-file yang dibutuhkan untuk form data barang, customer, transaksi penjualan! (gunakan database)

D.   DAFTAR PUSTAKA

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JENI, T. P. (2007). JENI 1-6.

Wijono, S. H., Suharto, B. H., & Wijono, M. S. (2006). *Pemrograman Java Servlet dan JSP dengan Netbeans*. Yogyakarta: C.V ANDI OFFSET.