

## **BAB IV**

### **IMPLEMENTASI DAN PENGUJIAN SISTEM**

#### **4.1. Analisa Kebutuhan Software**

##### **A. Tahapan Analisis**

Sistem pakar diagnosa kerusakan umum pada mobil adalah suatu aplikasi dimana user dan pakar tidak bertatap muka secara langsung. User bisa melakukan konsultasi melalui browser secara online. Berikut ini spesifikasi kebutuhan (*system requirement*) dari sistem pakar diagnosa kerusakan umum pada mobil.

Halaman User :

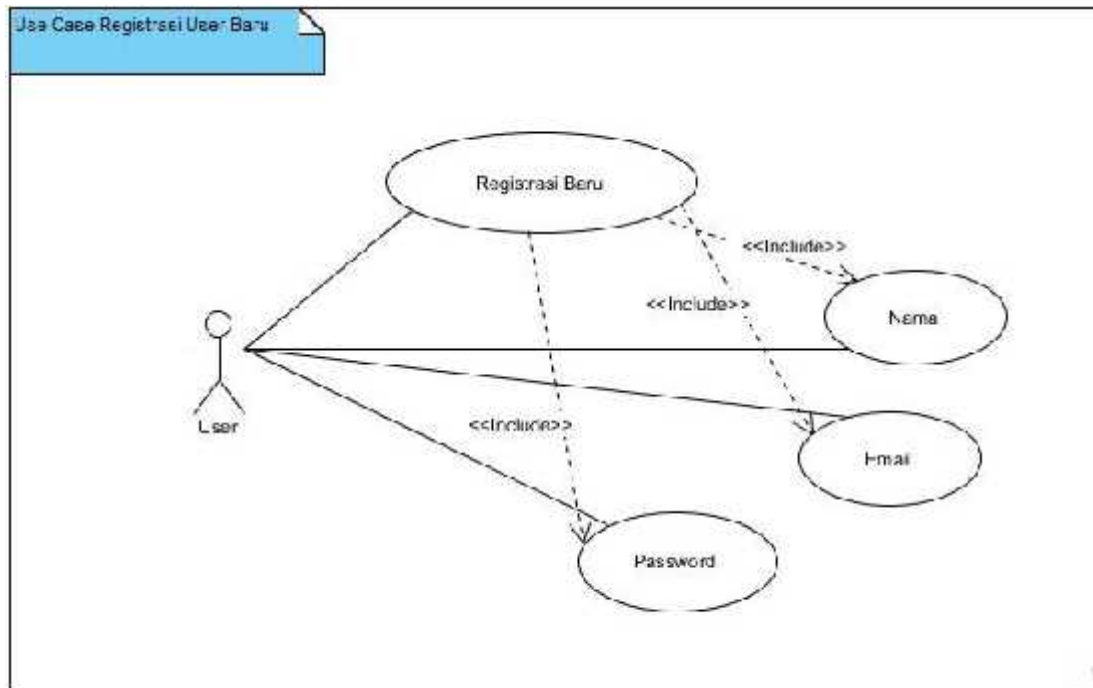
- A1. User harus registrasi bila belum mempunyai account
- A2. User dapat melakukan diagnosa sesuai sistem kerusakan
- A3. User mendapatkan info kerusakan dan solusinya
- A4. User dapat mengunduh informasi teknis seputar mobil

Halaman Pakar :

- B1. Pakar dapat mengelola data gejala
- B2. Pakar dapat mengelola data kerusakan
- B3. Pakar dapat mengelola data aturan pakar
- B4. Pakar dapat mengelola data user
- B5. Pakar dapat mengupload informasi teknis

## B. Use Case Diagram

### 1. Use Case Diagram Registrasi User Baru



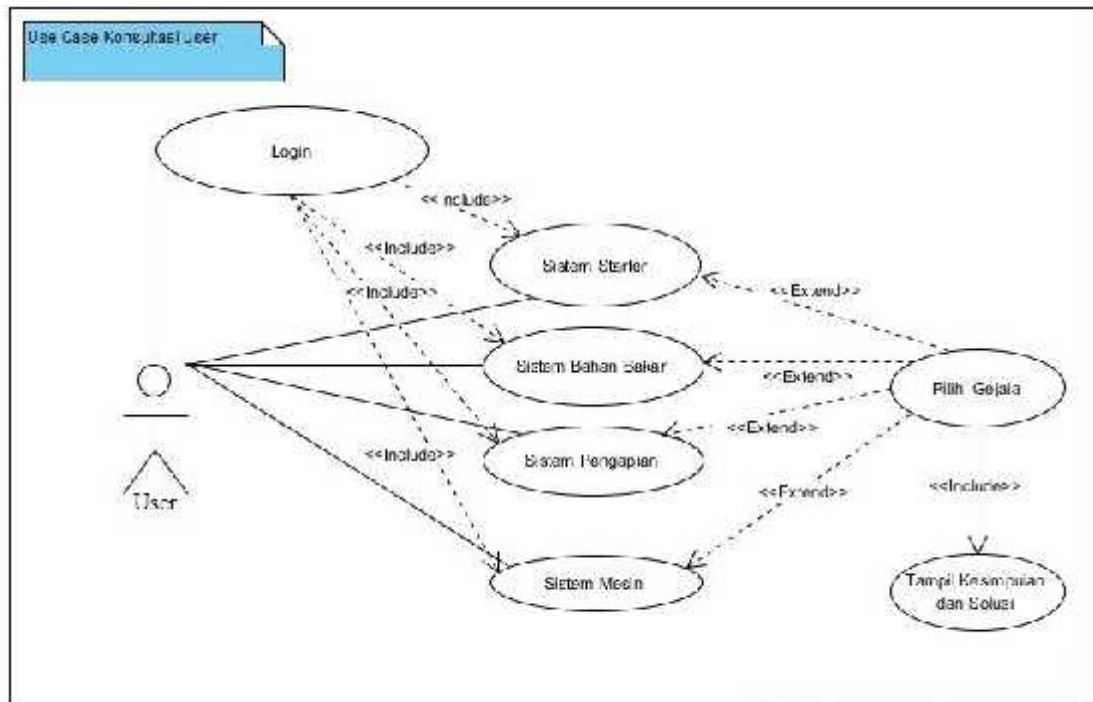
Gambar IV.1  
Use Case Diagram Registrasi Baru

Deskripsi Use case diagram registrasi baru

Tabel IV.1  
Deskripsi Use case diagram registrasi baru

|                               |                                                                                                                                                                                                                                                      |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Use Case Name</i>          | Registrasi User Baru                                                                                                                                                                                                                                 |
| <i>Requirements</i>           | A1                                                                                                                                                                                                                                                   |
| <i>Goal</i>                   | User memiliki akun untuk bisa login ke sistem                                                                                                                                                                                                        |
| <i>Pre-conditions</i>         | User membuka halaman registrasi baru                                                                                                                                                                                                                 |
| <i>Post-conditions</i>        | User dapat login ke sistem                                                                                                                                                                                                                           |
| <i>Failed end condition</i>   | Data yang dimasukkan tidak valid                                                                                                                                                                                                                     |
| <i>Primary Actors</i>         | User                                                                                                                                                                                                                                                 |
| <i>Main Flow / Basic Path</i> | <ol style="list-style-type: none"> <li>1. User memasukkan data registrasi.</li> <li>2. Sistem akan mengecek data yang dimasukkan valid atau tidak</li> <li>3. Data disimpan kedalam database</li> <li>4. User dapat login ke dalam sistem</li> </ol> |

## 2. Use Case Diagram Konsultasi User



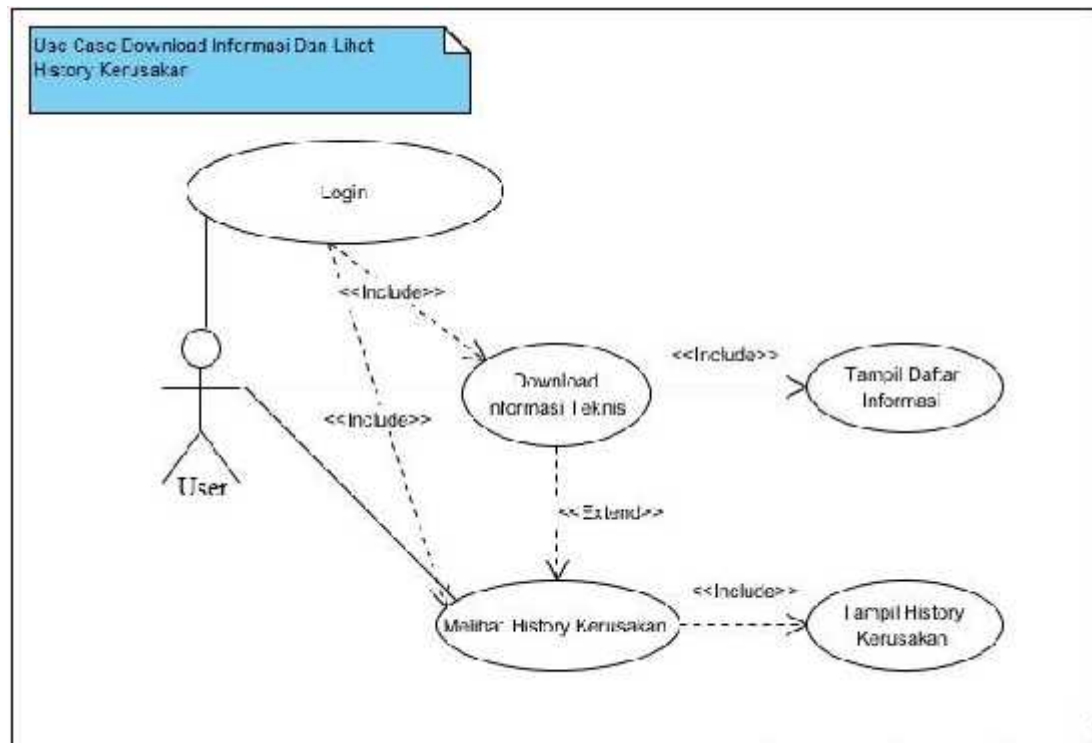
Gambar IV.2  
Use Case Konsultasi User

Deskripsi Use Case Diagram Konsultasi User

Tabel IV.2  
Deskripsi Use Case Diagram Konsultasi User

|                               |                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Use Case Name</i>          | Konsultasi                                                                                                                                                                                                                                                                                                                                                          |
| <i>Requirements</i>           | A2-A3                                                                                                                                                                                                                                                                                                                                                               |
| <i>Goal</i>                   | User dapat konsultasi langsung tanpa harus ke pakar                                                                                                                                                                                                                                                                                                                 |
| <i>Pre-conditions</i>         | User telah login ke dalam sistem pakar                                                                                                                                                                                                                                                                                                                              |
| <i>Post-conditions</i>        | User dapat melakukan konsultasi dan mendapatkan solusi                                                                                                                                                                                                                                                                                                              |
| <i>Failed end condition</i>   | User membatalkan konsultasi                                                                                                                                                                                                                                                                                                                                         |
| <i>Primary Actors</i>         | User                                                                                                                                                                                                                                                                                                                                                                |
| <i>Main Flow / Basic Path</i> | <ol style="list-style-type: none"> <li>1. User login terlebih dahulu</li> <li>2. Sistem akan mengecek user dan password yang dimasukkan valid atau tidak</li> <li>3. User dapat memilih sistem kerusakan yang terjadi</li> <li>4. User memilih gejala-gejala kerusakan yang dialami</li> <li>5. User dapat mengetahui kesimpulan kerusakan dan solusinya</li> </ol> |

### 3. Use Case Diagram Download Informasi dan Melihat History Kerusakan



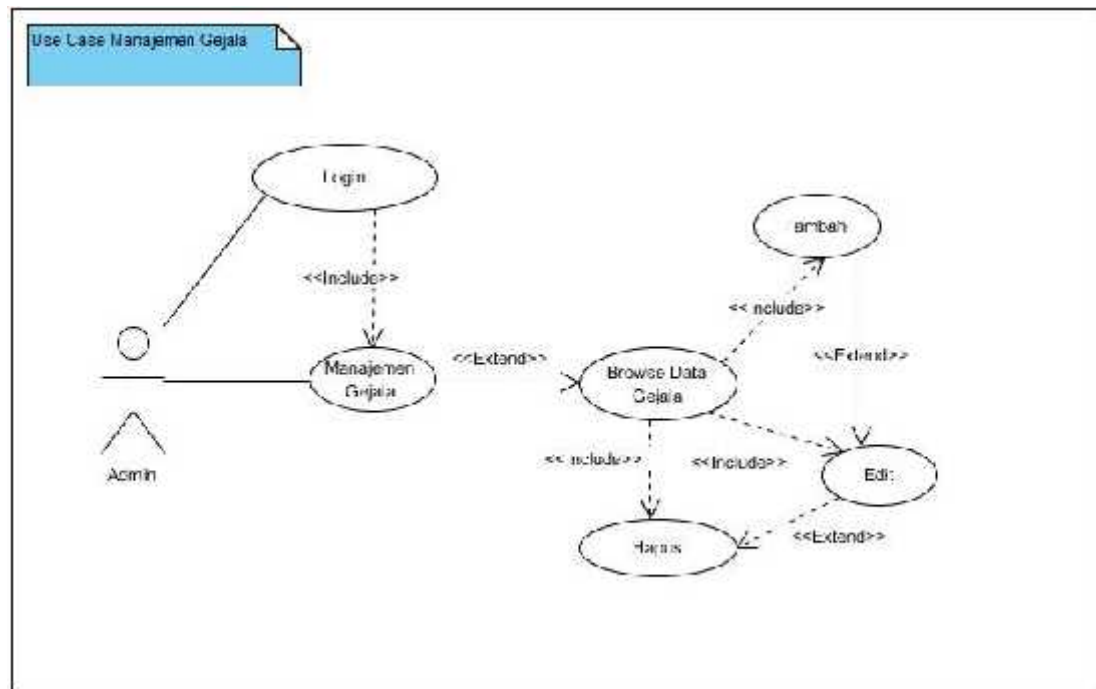
Gambar IV.3  
Use Case Download Informasi dan Melihat History

Deskripsi Use Case Diagram Download Informasi dan Melihat History

Tabel IV.3  
Deskripsi Use Case Diagram Download Informasi Dan Melihat History

|                               |                                                                                                                                                                                                                          |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Use Case Name</i>          | Download Informasi                                                                                                                                                                                                       |
| <i>Requirements</i>           | A4                                                                                                                                                                                                                       |
| <i>Goal</i>                   | User dapat mendownload seluruh informasi teknis yang dibutuhkan tentang kendaraannya dan melihat history konsultasi                                                                                                      |
| <i>Pre-conditions</i>         | User telah login ke dalam sistem pakar                                                                                                                                                                                   |
| <i>Post-conditions</i>        | User dapat melakukan download dan browse history konsultasi                                                                                                                                                              |
| <i>Failed end condition</i>   | Kuota habis, hasil konsultasi tidak disimpan                                                                                                                                                                             |
| <i>Primary Actors</i>         | User                                                                                                                                                                                                                     |
| <i>Main Flow / Basic Path</i> | <ol style="list-style-type: none"> <li>1. User login terlebih dahulu</li> <li>2. User dapat memilih informasi teknis dan dapat mengunduhnya</li> <li>3. User dapat melihat history kerusakan saat konsultasi.</li> </ol> |

#### 4. Use Case Diagram Mengelola Data Gejala



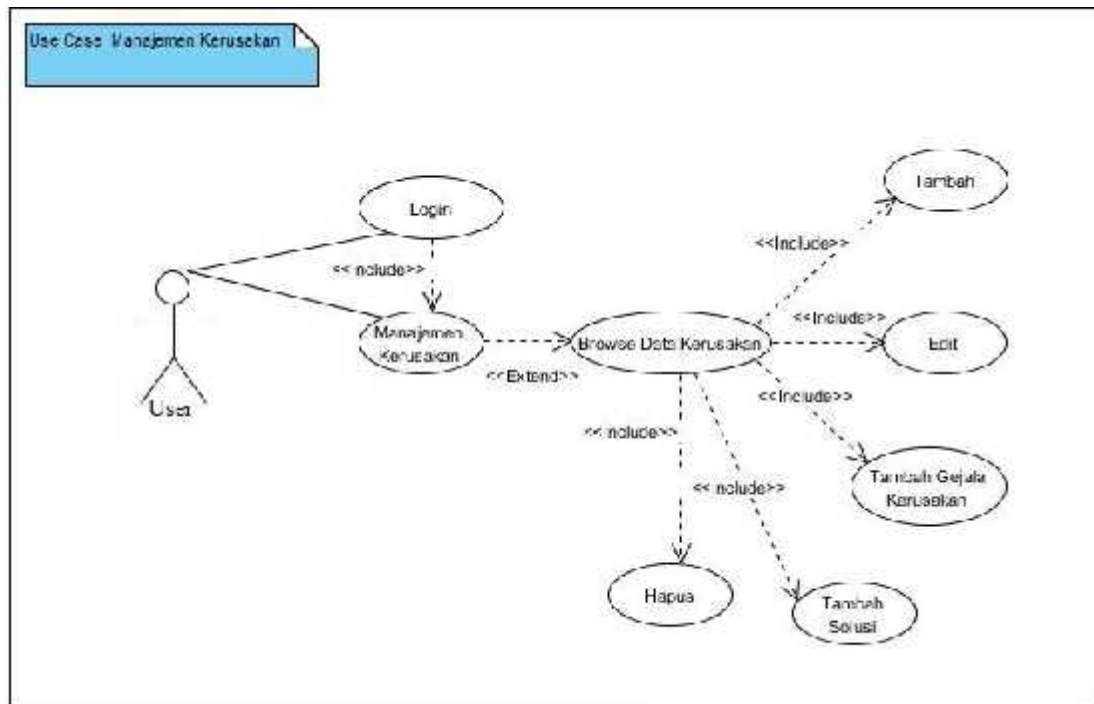
Gambar IV.4  
Use Case Mengelola Data Gejala

Deskripsi Use Case Diagram Mengelola Data Gejala

Tabel IV.4  
Deskripsi Use Case Diagram Mengelola Data Gejala

|                               |                                                                                                                                                                                                                         |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Use Case Name</i>          | Mengelola Data Gejala                                                                                                                                                                                                   |
| <i>Requirements</i>           | B1                                                                                                                                                                                                                      |
| <i>Goal</i>                   | Admin dapat menambah, mengubah dan menghapus data gejala                                                                                                                                                                |
| <i>Pre-conditions</i>         | Admin telah login ke dalam sistem pakar                                                                                                                                                                                 |
| <i>Post-conditions</i>        | Data Gejala bertambah, berubah maupun terhapus                                                                                                                                                                          |
| <i>Failed end condition</i>   | Admin membatalkan proses menambah, merubah maupun menghapus                                                                                                                                                             |
| <i>Primary Actors</i>         | Admin                                                                                                                                                                                                                   |
| <i>Main Flow / Basic Path</i> | <ol style="list-style-type: none"> <li>1. Admin login terlebih dahulu</li> <li>2. Admin dapat menambah data gejala</li> <li>3. Admin dapat merubah data gejala</li> <li>4. Admin dapat menghapus data gejala</li> </ol> |

## 5. Use Case Diagram Mengelola Data Kerusakan



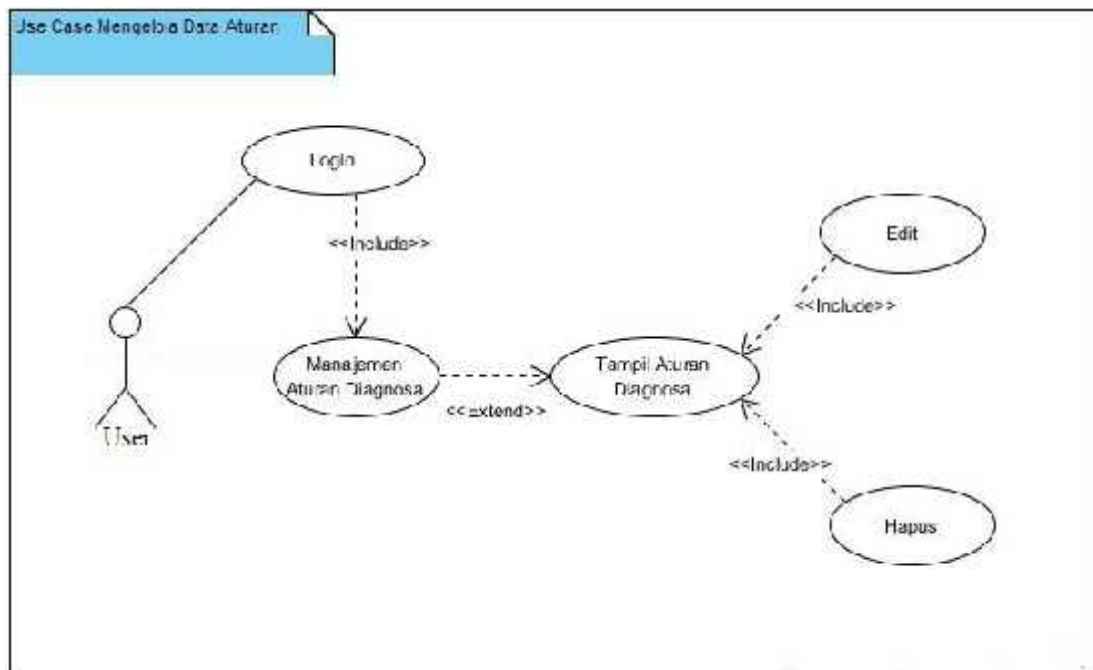
Gambar IV.5  
Use Case Mengelola Data Kerusakan

Deskripsi Use Case Diagram Mengelola Data Kerusakan

Tabel IV.5  
Deskripsi Use Case Diagram Mengelola Data Kerusakan

|                               |                                                                                                                                                                                                                                                                    |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Use Case Name</i>          | Mengelola Data Kerusakan                                                                                                                                                                                                                                           |
| <i>Requirements</i>           | B2                                                                                                                                                                                                                                                                 |
| <i>Goal</i>                   | Admin dapat menambah, mengubah dan menghapus data kerusakan dan solusinya                                                                                                                                                                                          |
| <i>Pre-conditions</i>         | Admin telah login ke dalam sistem pakar                                                                                                                                                                                                                            |
| <i>Post-conditions</i>        | Data kerusakan bertambah, berubah maupun terhapus beserta penambahan solusinya                                                                                                                                                                                     |
| <i>Failed end condition</i>   | Admin membatalkan proses menambah, merubah maupun menghapus                                                                                                                                                                                                        |
| <i>Primary Actors</i>         | Admin                                                                                                                                                                                                                                                              |
| <i>Main Flow / Basic Path</i> | <ol style="list-style-type: none"> <li>1. Admin login terlebih dahulu</li> <li>2. Admin dapat menambah data gejala</li> <li>3. Admin dapat merubah data gejala</li> <li>4. Admin dapat menghapus data gejala</li> <li>5. Admin dapat menambah solusinya</li> </ol> |

## 6. Use Case Diagram Mengelola Data Aturan



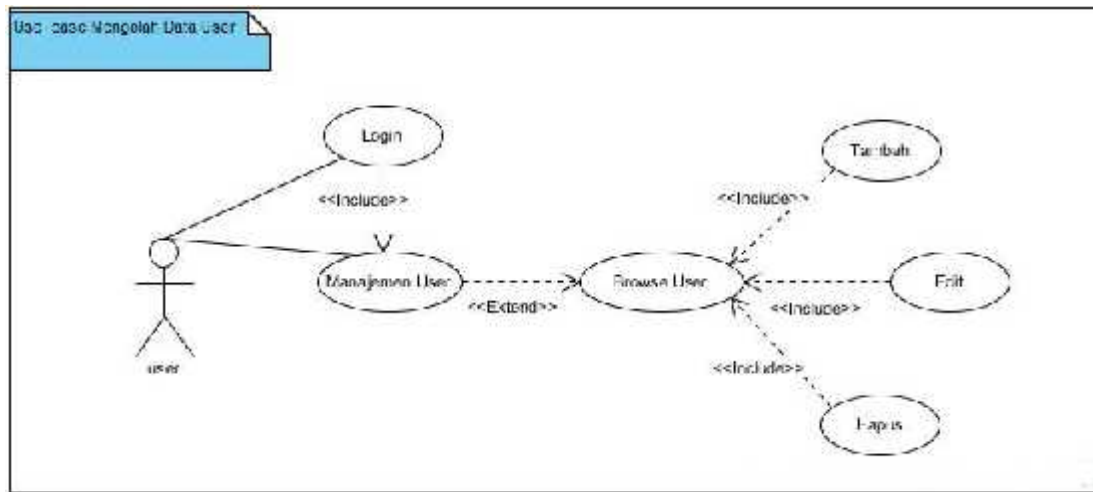
Gambar IV.6  
Use Case Mengelola Data Aturan

Deskripsi Use Case Diagram Mengelola Data Aturan

Tabel IV.6  
Deskripsi Use Case Diagram Mengelola Data Aturan

|                               |                                                                                                                                                                            |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Use Case Name</i>          | Mengelola Data Aturan                                                                                                                                                      |
| <i>Requirements</i>           | B3                                                                                                                                                                         |
| <i>Goal</i>                   | Admin dapat mengubah dan menghapus data aturan                                                                                                                             |
| <i>Pre-conditions</i>         | Admin telah login ke dalam sistem pakar                                                                                                                                    |
| <i>Post-conditions</i>        | Data aturan berubah maupun terhapus                                                                                                                                        |
| <i>Failed end condition</i>   | Admin membatalkan proses merubah maupun menghapus                                                                                                                          |
| <i>Primary Actors</i>         | Admin                                                                                                                                                                      |
| <i>Main Flow / Basic Path</i> | <ol style="list-style-type: none"> <li>1. Admin login terlebih dahulu</li> <li>2. Admin dapat merubah data aturan</li> <li>3. Admin dapat menghapus data aturan</li> </ol> |

## 7. Use Case Diagram Mengelola Data User



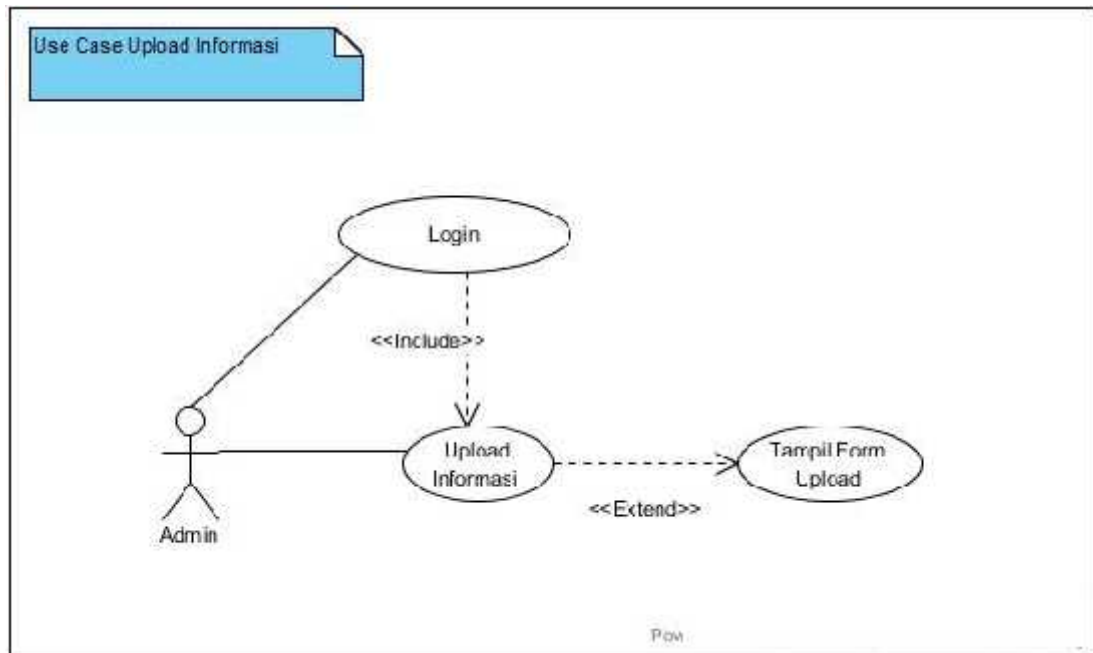
Gambar IV.7  
Use Case Mengelola Data User

Deskripsi Use Case Diagram Mengelola Data User

Tabel IV.7  
Deskripsi Use Case Diagram Mengelola Data User

|                               |                                                                                                                                                                                                                   |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Use Case Name</i>          | Mengelola Data User                                                                                                                                                                                               |
| <i>Requirements</i>           | B4                                                                                                                                                                                                                |
| <i>Goal</i>                   | Admin dapat mengubah dan menghapus data user                                                                                                                                                                      |
| <i>Pre-conditions</i>         | Admin telah login ke dalam sistem pakar                                                                                                                                                                           |
| <i>Post-conditions</i>        | Data user bertambah, berubah maupun terhapus                                                                                                                                                                      |
| <i>Failed end condition</i>   | Admin membatalkan proses menambah, merubah maupun menghapus                                                                                                                                                       |
| <i>Primary Actors</i>         | Admin                                                                                                                                                                                                             |
| <i>Main Flow / Basic Path</i> | <ol style="list-style-type: none"> <li>1. Admin login terlebih dahulu</li> <li>2. Admin dapat menambah data user</li> <li>3. Admin dapat merubah data user</li> <li>4. Admin dapat menghapus data user</li> </ol> |

## 8. Use Case Diagram Mengupload informasi



Gambar IV.8  
Use Case Mengupload Informasi

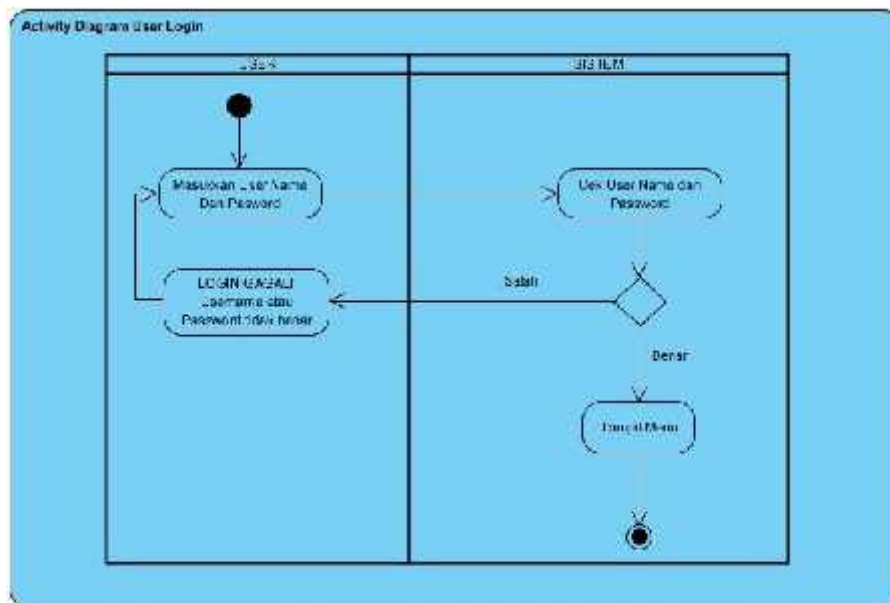
Deskripsi Use Case Diagram Mengupload informasi

Tabel IV.8  
Deskripsi Use Case Diagram Mengupload informasi

|                               |                                                                                                                                      |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| <i>Use Case Name</i>          | Mengupload informasi                                                                                                                 |
| <i>Requirements</i>           | B5                                                                                                                                   |
| <i>Goal</i>                   | Admin dapat mengupload informasi teknis                                                                                              |
| <i>Pre-conditions</i>         | Admin telah login ke dalam sistem pakar                                                                                              |
| <i>Post-conditions</i>        | Informasi diupload untuk dibagikan kepada user                                                                                       |
| <i>Failed end condition</i>   | Format data upload tidak sesuai                                                                                                      |
| <i>Primary Actors</i>         | Admin                                                                                                                                |
| <i>Main Flow / Basic Path</i> | <ol style="list-style-type: none"> <li>1. Admin login terlebih dahulu</li> <li>2. Admin dapat mengupload informasi teknis</li> </ol> |

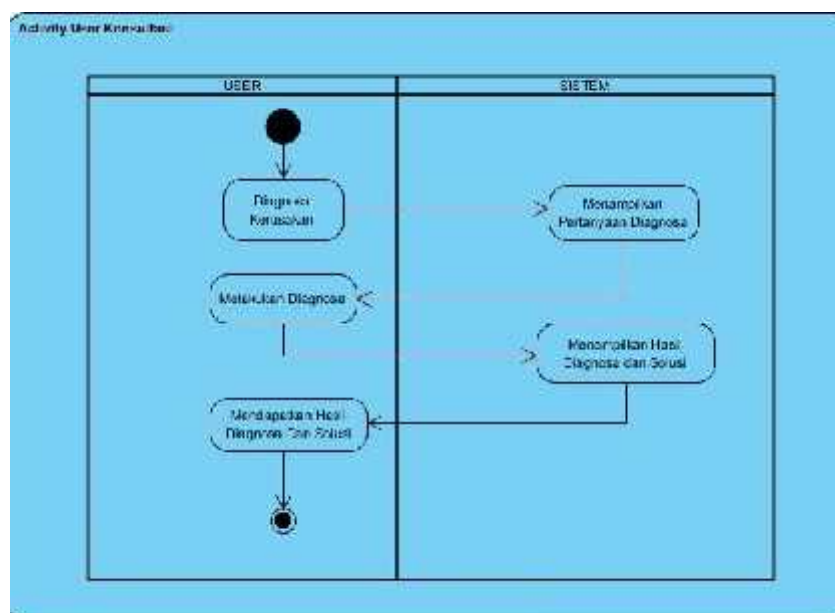
### C. Activity Diagram

#### 1. Activity Diagram User Login



Gambar IV.9  
Activity Diagram User Login

#### 2. Activity Diagram User Konsultasi

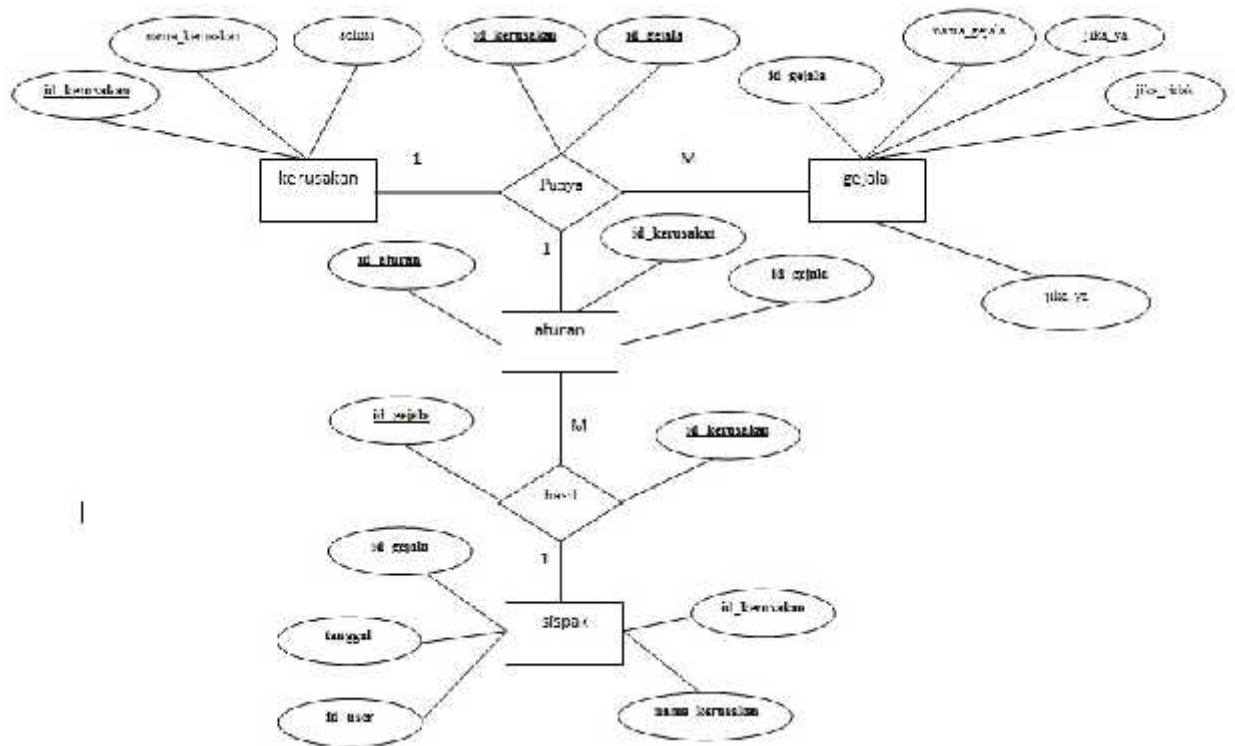


Gambar IV.10  
Activity Diagram User Konsultasi

## 4.2. Desain

### 4.2.1. Database

#### 1. ERD(Entropy Relationship Diagram)



Gambar IV.11  
ERD(Entropy Relationship Diagram) Sistem Pakar

## 2. Spesifikasi File

Dalam perancangan sistem pakar ini penulis menggunakan database sistem\_pakar.sql yang terdiri atas beberapa tabel. Berikut penjelasan dari beberapa tabel tersebut.

### a. Spesifikasi File Gejala

Nama File : Tabel Gejala

Akronim : tb\_gejala.sql

Fungsi : Untuk menyimpan data gejala

Type : File Master

Organisasi File : Index Sequential

Akses File : Random Access File

*Primary Key* : id\_gejala

Panjang *Record* : 26 Digit

Tabel IV.9 File Gejala

| No | Elemen data | Akronim     | Type    | Width | Ket         |
|----|-------------|-------------|---------|-------|-------------|
| 1  | Id_gejala   | id_gejala   | char    | 7     | Primary Key |
| 2  | Nama_gejala | nama_gejala | Text    |       |             |
| 3  | Jika_ya     | jika_ya     | char    | 7     |             |
| 4  | Jika_tidak  | jika_tidak  | char    | 7     |             |
| 5  | Mulai       | mulai       | Enum    |       |             |
| 6  | Ket         | ket         | varchar | 5     |             |

### b. Spesifikasi File Kerusakan

Nama File : Tabel Kerusakan

Akronim : tb\_kerusakan.sql

Fungsi : Untuk menyimpan data kerusakan

Type : File Master

Organisasi File : Index Sequential

Akses File : Random Access File

*Primary Key* :id\_kerusakan

Panjang *Record* : 107 Digit

Tabel IV.10  
File Kerusakan

| No | Elemen data    | Akronim        | Type    | Width | Ket         |
|----|----------------|----------------|---------|-------|-------------|
| 1  | Id_kerusakan   | id_kerusakan   | char    | 7     | Primary Key |
| 2  | Nama_kerusakan | nama_kerusakan | Varchar | 100   |             |
| 3  | Solusi         | solusi         | text    |       |             |

c. Spesifikasi File Aturan

Nama File : Tabel Aturan

Akronim : tb\_aturan.sql

Fungsi : Untuk menyimpan data aturan

Type : File Transaksi

Organisasi File : Index Sequential

Akses File : Random Access File

*Primary Key* :id\_aturan

Panjang *Record* : 34 Digit

Tabel IV.11  
File Aturan

| No | Elemen data  | Akronim      | Type   | Width | Ket         |
|----|--------------|--------------|--------|-------|-------------|
| 1  | Id_aturan    | id_kerusakan | bigint | 20    | Primary Key |
| 2  | Id_gejala    | id_gejala    | char   | 7     | Foreign Key |
| 3  | Id_kerusakan | id_kerusakan | char   | 7     | Foreign Key |

## d. Spesifikasi File Gejala

Nama File : Tabel Sispak

Akronim : tb\_sispak.sql

Fungsi : Untuk menyimpan hasil konsultasi

Type : File Master

Organisasi File : Index Sequential

Akses File : Random Access File

*Primary Key* :id\_sispak

*Panjang Record* : 128 Digit

Tabel IV.12  
File Sispak

| No | Elemen data    | Akronim        | Type    | Width | Ket         |
|----|----------------|----------------|---------|-------|-------------|
| 1  | Id_sispak      | id_gejala      | char    | 7     | Primary Key |
| 2  | Tanggal        | tanggal        | date    | 7     |             |
| 3  | Id_user        | id_user        | char    | 7     | Foreign Key |
| 4  | Id_kerusakan   | id_kerusakan   | char    | 7     | Foreign Key |
| 5  | Nama_kerusakan | Nama_kerusakan | varchar | 100   |             |

## e. Spesifikasi File Informasi

Nama File : Tabel Informasi

Akronim : informasi.sql

Fungsi : Untuk menyimpan informasi teknis

Type : File Master

Organisasi File : Index Sequential

Akses File : Random Access File

*Primary Key* :id

*Panjang Record* : 396 Digit

Tabel IV.13  
File Informasi

| No | Elemen data    | Akronim        | Type    | Width | Ket         |
|----|----------------|----------------|---------|-------|-------------|
| 1  | Id             | id_gejala      | int     | 11    | Primary Key |
| 2  | Tanggal_upload | tanggal_upload | date    |       |             |
| 3  | Nama_file      | nama_file      | varchar | 100   |             |
| 4  | Tipe_file      | tipe_file      | varchar | 10    |             |
| 5  | Ukuran file    | ukuran_file    | varchar | 20    |             |
| 6  | File           | file           | varchar | 255   |             |

f. Spesifikasi File User

Nama File : Tabel User

Akronim : user.sql

Fungsi : Untuk menyimpan user

Type : File Master

Organisasi File : Index Sequential

Akses File : Random Access File

*Primary Key* :id\_user

*Panjang Record* : 120 Digit

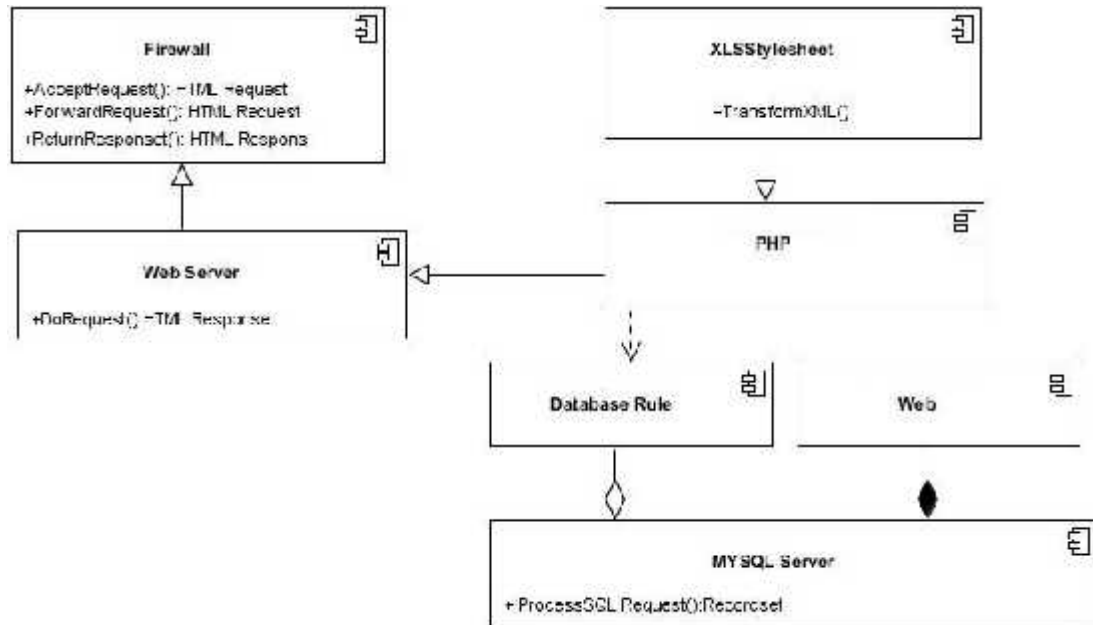
Tabel IV.14  
File User

| No | Elemen data  | Akronim      | Type    | Width | Ket         |
|----|--------------|--------------|---------|-------|-------------|
| 1  | Id_user      | id_gejala    | int     | 9     | Primary Key |
| 2  | Email        | email        | varchar | 30    |             |
| 3  | Password     | password     | varchar | 50    |             |
| 4  | Nama_lengkap | nama_lengkap | varchar | 30    |             |
| 5  | Level        | level        | int     | 1     |             |
| 6  | Blokir       | blokir       | enum    |       |             |

## 4.2.2. Software Architecture

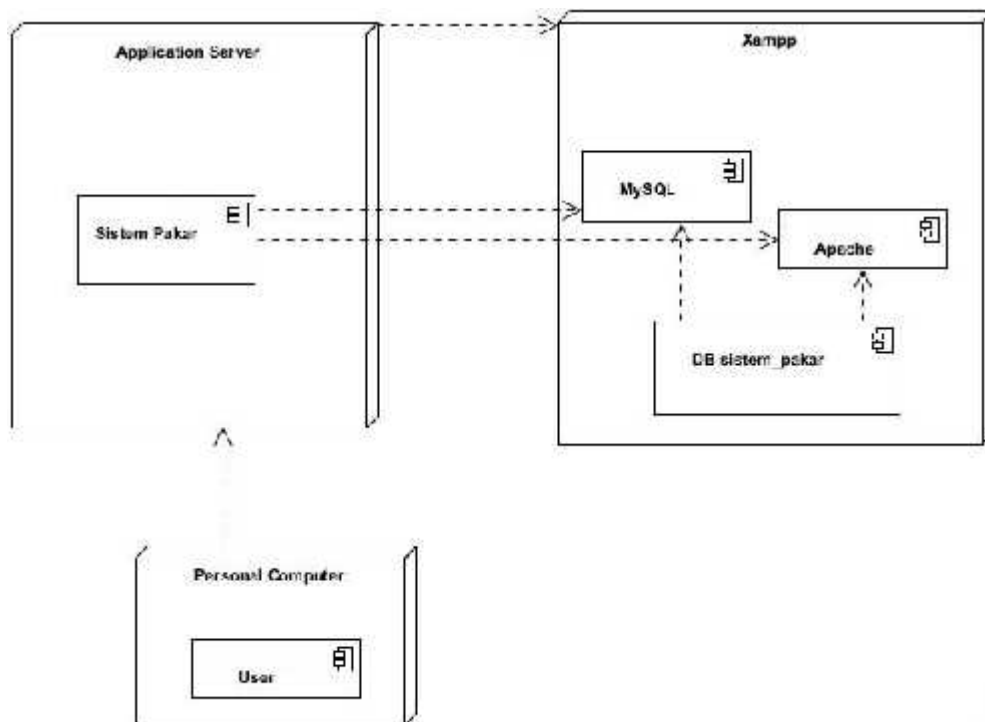
### 1. Component Diagram

Component diagram



**Gambar IV.12**  
**Component Diagram**

## 2. Deployment Diagram

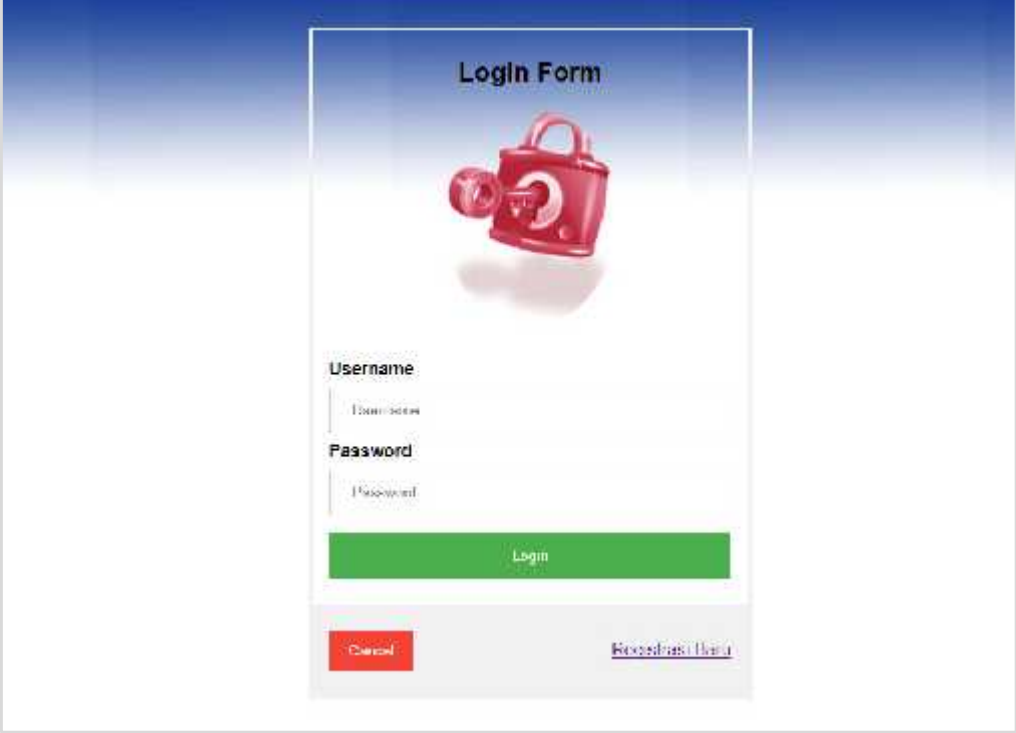


**Gambar IV.13**  
**Deployment Diagram**

#### 4.2.3. User Interface

Dalam bagian *user interface* ini menggambarkan tampilan program dari sistem usulan sistem pakar diagnosa kerusakan umum pada mobil berbasis web.

##### 1. Halaman Login



The screenshot displays a web-based login interface. At the top, the title "Login Form" is centered above a red padlock icon. Below the icon, there are two input fields: "Username" and "Password". A green "Login" button is positioned below the password field. At the bottom left, there is a red "Cancel" button, and at the bottom right, there is a link labeled "Resetting Data".

Gambar IV.14  
Halaman Login User



#### 4. Halaman Download Informasi Teknis



Gambar IV.17  
Halaman Download Informasi

#### 5. Halaman History Konsultasi



Gambar IV.18  
Halaman History Konsultasi

## 6. Halaman Administrator



Gambar IV.19  
Halaman Administrator

## 7. Halaman Manajemen Gejala



Gambar IV.20  
Halaman Manajemen Gejala

## 8. Halaman Manajemen Kerusakan

**System Pakar Diagnosa Kerusakan Mobil**  
Sistem Pakar Online

Home | Login

**Menu Utama**

- Manajemen
- Update Informasi
- Keluar

22:20:05

**Manajemen Data Kerusakan**

[+ Tambah](#)

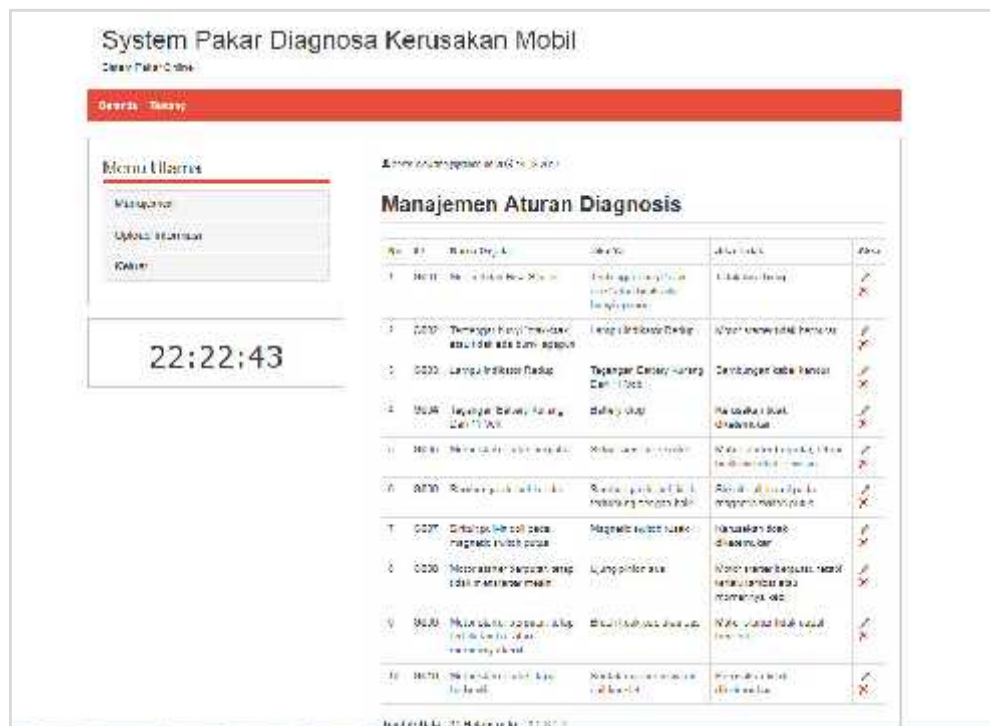
| No | Kerusakan                              | Aksi                                                         |
|----|----------------------------------------|--------------------------------------------------------------|
| 1  | Bulan y drop                           | <a href="#">Edit</a> <a href="#">Salah</a> <a href="#">X</a> |
| 2  | Bulan y rusak                          | <a href="#">Edit</a> <a href="#">Salah</a> <a href="#">X</a> |
| 3  | Bulan y rusak                          | <a href="#">Edit</a> <a href="#">Salah</a> <a href="#">X</a> |
| 4  | Magnetic switch rusak                  | <a href="#">Edit</a> <a href="#">Salah</a> <a href="#">X</a> |
| 5  | Ulang piner bus                        | <a href="#">Edit</a> <a href="#">Salah</a> <a href="#">X</a> |
| 6  | Bulan y rusak                          | <a href="#">Edit</a> <a href="#">Salah</a> <a href="#">X</a> |
| 7  | Kontrol magnetic switch call kontrol   | <a href="#">Edit</a> <a href="#">Salah</a> <a href="#">X</a> |
| 8  | Waktu pengisian daya rusak             | <a href="#">Edit</a> <a href="#">Salah</a> <a href="#">X</a> |
| 9  | Bahan bakar terlalu banyak             | <a href="#">Edit</a> <a href="#">Salah</a> <a href="#">X</a> |
| 10 | Pemrosesan bahan bakar rusak atau mati | <a href="#">Edit</a> <a href="#">Salah</a> <a href="#">X</a> |

Jumlah Data : 10 Halaman No : 1 2 3

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Gambar IV.21  
Halaman Manajemen Kerusakan

## 9. Halaman Manajemen Aturan



Gambar IV.22  
Halaman Manajemen Aturan

## 10. Halaman Manajemen Informasi



Gambar IV.23  
Halaman Manajemen Informasi

## 11. Halaman Upload Informasi

The screenshot displays a web application interface for a car diagnostic expert system. The title bar at the top reads "System Pakar Diagnosa Kerusakan Mobil" with a subtitle "Ekstensi PakarOnline". Below this is a red navigation bar with the text "Beranda -> Testing".

On the left side, there is a "Menu Utama" section with three buttons: "Manajemen", "Upload Informasi", and "Output". The "Upload Informasi" button is highlighted. Below the menu, a digital clock shows the time "22:29:40".

The main content area is titled "Upload Informasi Teknis". It includes a sub-header "Beranda -> Testing" and a description: "Formulir ini digunakan untuk mengupload data kerusakan mobil yang sudah terdiagnosa oleh pakar. Setelah selesai, klik tombol 'Upload'." Below the description, there is a "Main File" label, a "With File" button, a "Choose File" button, and a "No file chosen" text. At the bottom of the form, there is an "Upload" button.

Gambar IV.24  
Halaman Upload Informasi



```

</head>
<body>
<div id="art-main">

<?php
    //include("main2.php");
?>

<header class="art-header">

    <div class="art-shapes">
        <div class="art-object0"></div>

    </div>

<h2 class="art-headline">
    <a href="main.php?data=hone">Diagnosa Kerusakan </a>
</h2>
</header>

<div class="art-content-layout-one">
    <div class="art-layout-cell art-main">

        <?php
        if(!isset($_GET['id_gejala'])){
            $sql="select * from tb_gejala where mula='v' and ket='501'";
            $result=mysql_query($sql);
            $data=mysql_fetch_array($result);

            echo "<form>";

            echo "<center>";
            echo "<br><div class='well'>";

            echo "<h2> ".$data['nama_gejala']."/></h2></center>";
            echo "</div></div>";

            echo "<div class='form-group' >";
            echo "<div class='side1' >";

            echo "<input type='radio' name='id_gejala' value='".$data['jika_ya']."'>";
            echo "Denar";
            echo "</div>";

            echo "<div class='left' class='alert alert-warning' >";
            echo "<input type='radio' name='id_gejala' value='".$data['jika_tidak']."'>";
            echo "Tidak";
            echo "</div>";

            echo "<br>";
            echo "<br>";
            echo "<br>";
            echo "</div>";

            echo "<div class='form-group' >";

```

```

        echo "<input type='submit' class='btn btn-primary btn-block btn-large'
            value='Lanjut' />";
        echo "</div>";
    echo "</div>";
} else {
    $idobat = $_GET['id_gejala'];
    $sqlp = "select * from tb_gejala where id_gejala='".$idobat."'";

    $krsmysql = mysql_query($sqlp);

    $datamysql = mysql_fetch_array($krs);

    echo "<form>";

    echo "<center>";
    echo "<br><div class='well'>";
    echo "<div>.<data['nama_gejala'].</div></div></div>";
    echo "</div>";

    if($ong["K"] < 6 || $id_gejala[0] != 0)
        echo "<script> window.location.href='Lamp11_hasil.php?id=".$id_gejala."'";

    </script>";
    echo "<div href='konsultasi.php' class='btn btn-block btn-large' /> <div>Kembali";
    "</div>";

} else {

    echo "<div class='form-group'>";
        echo "<div class='text'>";

        echo "<input type='radio' name='id_gejala' value='".$data['id_gejala']."'>";
        echo "<div>";
        echo "</div>";

        echo "<input type='radio' name='id_gejala' value='".$data['id_gejala']."'>";
        echo "<div>";
        echo "</div>";

        if($ong["L"] < 6 || $id_gejala[0] != 0)
            echo "<script> window.location.href='Lamp11_hasil.php?id=".$id_gejala."'";

        </script>";
        echo "<div href='konsultasi.php' class='btn btn-block btn-large' /> <div>Kembali";
        "</div>";
        echo "<br>";
        echo "<br>";
        echo "<br>";
        echo "<br>";

        echo "<div class='form-group'>";

        echo "<input type='submit' class='btn btn-primary btn-block btn-large'
            value='Lanjut' />";

```

## B. Listing Program Hasil Konsultasi

```

<?php
session_start();
nh_start();

if(empty($_SESSION['username']) or empty($_SESSION['password']))
{
    session_destroy();
    header("location:index.php");
}

<?

<!--[if !IE]-->
<html dir="ltr" lang="en-US"><head>
    <meta charset="utf-8">
    <title>Sistem Pakar Konsultasi Medis</title>
    <meta name="viewport" content="initial-scale = 1.0, maximum-scale = 1.0, user-scalable = no, width = device-width">

    <!--[[if !IE]]<script src="https://html5shiv.googlecode.com/svn/trunk/html5.js"></script>[[endif]]-->
    <link rel="stylesheet" href="style.css" media="screen">
    <!--[[if !IE]]<link rel="stylesheet" href="style-ie7.css" media="screen" />[[endif]]-->
    <link rel="stylesheet" href="style.responsive.css" media="all">

    <link rel="stylesheet" href="assets/style.css" type="text/css">
    <link rel="stylesheet" href="assets/bootstrap/css/bootstrap.min.css">

</head>
<body>
<div id="art-main">
<nav class="art-nav">
<?php
    <include "koneksi.php">
    <include "function.php">
    <include "ampil_hasil.php">
<?>
<header class="art-header">

    <div class="art-shapes">
        <div class="art-object0"></div>

    </div>

    <h1 class="art-headline">
        <h1 href="#">Sistem Pakar Konsultasi Medis</h1>
    </h1>
    <h2 class="art-slogan"></h2>

</header>
<div class="art-content-layout-row">
    <div class="art-layout-cell art-content">

        <div class="art-layout-wrapper">
            <div class="art-content-layout">
                <div class="art-content-layout-row">
                    <div class="art-layout-cell art-content">
                        <h2 class="art-postheader">Hasil Diagnosa</h2>

```

```

<?php
include "koneksi.php";

$id=$_GET['id'];

$sqlp = "SELECT * FROM tb_kerusakan WHERE id_kerusakan='".$id."'";

$rs=mysql_query($sqlp);

$data=mysql_fetch_array($rs);

?>
<div class="">
<center>
</div><div class="table">
    <table style="border:none;">
        <tr>
            <td class="table-responsive"><font size="3" face="MS Serif, New York, serif">
                Dari gejala yang anda pilih sebelumnya dapat disimpulkan bahwa mobil anda mengalami kerusakan :</font>
            </td>
            </tr>
            </tr>
        </table>

        <td colspan="2" height="55px" style="border:none; height:10px;"><div style="border:1px solid #ccc; padding:5px; text-align:center;">
            </div>
        </td>
        </tr>
        <tr>
            <td colspan="2" height="10px" style="border:none;"></td>
        </tr>
        <tr>
            <td class="table-responsive"><font size="3" face="MS Serif, New York, serif">
                Dengan gejala-gejala sebagai berikut :</font>
            </td>
            </tr>
        </tr>
    </table>

<?php
$id=$_GET['id'];

$sqlp = "SELECT * FROM tb_gejala WHERE id_kerusakan='".$id."'";

$rs=mysql_query($sqlp);

while ($data=mysql_fetch_array($rs))
{
    $respon["data"]["gejala"];
}

```

```

$sqlb = "SELECT * FROM tb_kerusakan WHERE id_kerusakan='".$jid.'"";

        $rs=mysql_query($sqlb);
        $da=mysql_fetch_array($rs);

        $jml=COUNT($rspon);
        for($i=0;$i<$jml;$i++){?>

<?php    $sqla = "select nama_gejala from tb_gejala where id_gejala='".$rspon[$i]."'";

        $r=mysql_query($sqla);
        $da=mysql_fetch_array($r);

        ?>

        <td class="table-responsive" align="left">font-size:10" face="MS Serif, New York, serif"><td><td colspan="2" height="38px" style="border:none;"></td>
        </td>
        <td colspan="2" height="38px" style="border:none;">font-size:10" face="MS Serif, New York, serif">Solusi :</td>
        </td>
        <td colspan="2" height="38px" style="border:none;">font-size:10" face="MS Serif, New York, serif"><td colspan="2" height="38px" style="border:none;"></td>
        </td>
        <td colspan="2" height="38px" style="border:none;">font-size:10" face="MS Serif, New York, serif"><td colspan="2" height="38px" style="border:none;"></td>
        </td>
        <td colspan="2" height="38px" style="border:none;">font-size:10" face="MS Serif, New York, serif">

```

```

</td>
<td>
    <td colspan="2" height="30px" style="border:none"><test size="3" face="MS Serif, New York, serif">
</td>
</td>
</td>
<td class="table-responsive" align="center"><a href="action_hasil.php?id=<?php echo $_GET['id'];?>" class="btn
btn-block btn-info" /><?Simpun Hasil Diagnosa</?></td>
</td>
</td>
<td class="table-responsive"><a href="konsultasi.php" class="btn btn-block btn-info" /><?Kembali
Melakukan Diagnosa</?></a></td>
</td>
</table>
</div>
</div>
</article></div>
<div class="art layout cell art sidebar"><div class="art block clear fix">
<div class="art-blockheader">

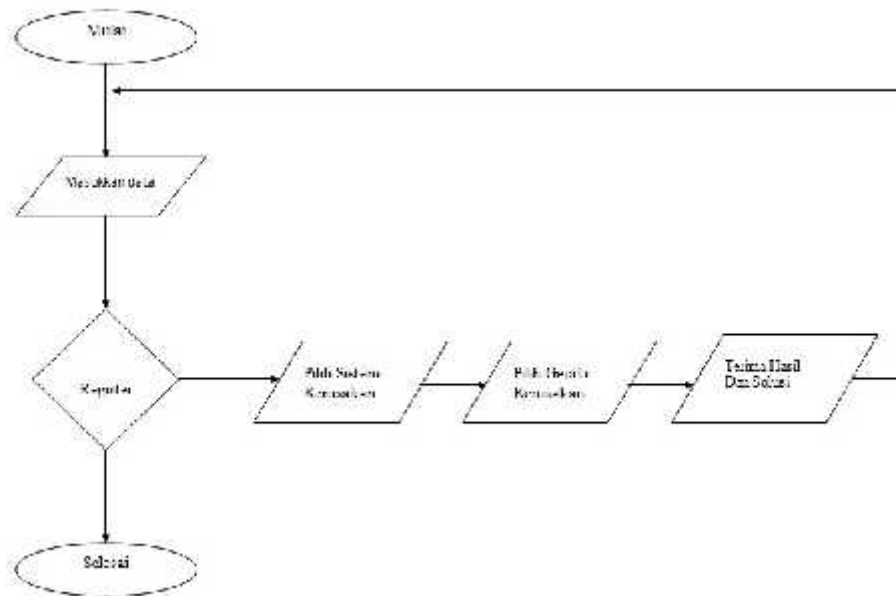
</div>

</div></html>

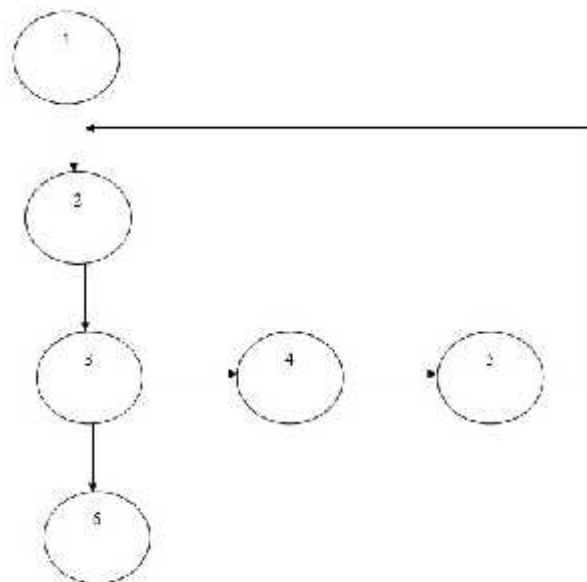
```

#### 4.4. Testing

##### Whitebox Testing



Gambar IV.23  
Flowchart Form Konsultasi



Gambar IV.24  
Grafik Alir Kerusakan Mobil

Kompleksitas siklomatis: pengukuran kuantitatif kompleksitas program

- a) Jumlah Edge = 6
- b) Jumlah Node = 6
- c)  $V(G) = (E-N) + 2$   
 $= (6-6) + 2 = 2$

Basis set yang dihasilkan dari jalur *independent* secara linear adalah jalur sebagai berikut:

1-2-3-4-5-2-3-6

1-2-3-6

Ketika aplikasi dijalankan maka terlihat 1 basis set yang dihasilkan adalah 1-2-3-4-5 dan terlihat bahwa simpul telah tereksekusi 1 kali. Berdasarkan ketentuan tersebut dari segi kelayakan software, sistem ini telah memenuhi persyaratan.

#### **4.5. Support**

##### **4.5.1. Publikasi Web**

Web sistem pakar ini menggunakan domain .com dan server berbayar yakni dengan MWN MASTER WEB dengan alamat sub domain <http://www.sistempakarmobil.com> Berikut data penyewaan domain:

|                   |                                            |
|-------------------|--------------------------------------------|
| Nama Domain       | : .com                                     |
| Harga Domain      | : Rp.89.000,-                              |
| Hosting           | : Paket SMILE CPANEL Rp.118.800,-/12 Bulan |
| Total Keseluruhan | : Rp.207.800,- /Tahun                      |
| Space             | : 1GB                                      |

#### 4.5.2. Spesifikasi Hardware dan Software

| <b>Kebutuhan</b>      | <b>Keterangan</b>                                     |
|-----------------------|-------------------------------------------------------|
| <b>Sistem Operasi</b> | <i>Windows 7</i>                                      |
| <b>Processor</b>      | <i>Core i3</i>                                        |
| <i>Harddisk</i>       | <i>500GB</i>                                          |
| <i>CD-ROM</i>         | <i>52x</i>                                            |
| <b>Monitor</b>        | <i>SVGA Colour</i>                                    |
| <b>Keyboard</b>       | <i>108 key</i>                                        |
| <b>Printer</b>        | <i>L210</i>                                           |
| <b>Mouse</b>          | <i>Standart</i>                                       |
| <b>Browser</b>        | <i>Chrome</i>                                         |
| <b>Sofware</b>        | <i>Dreamweaver CC</i><br><i>2015,PhpMyAdmin,Xampp</i> |

Tabel IV.15  
Spesifikasi *Hardware* dan *Software*