

BAB IV

IMPLEMENTASI DAN PENGUJIAN SISTEM

4.1 Analisa Kebutuhan *Software*

4.1.1 Tahapan Analisis

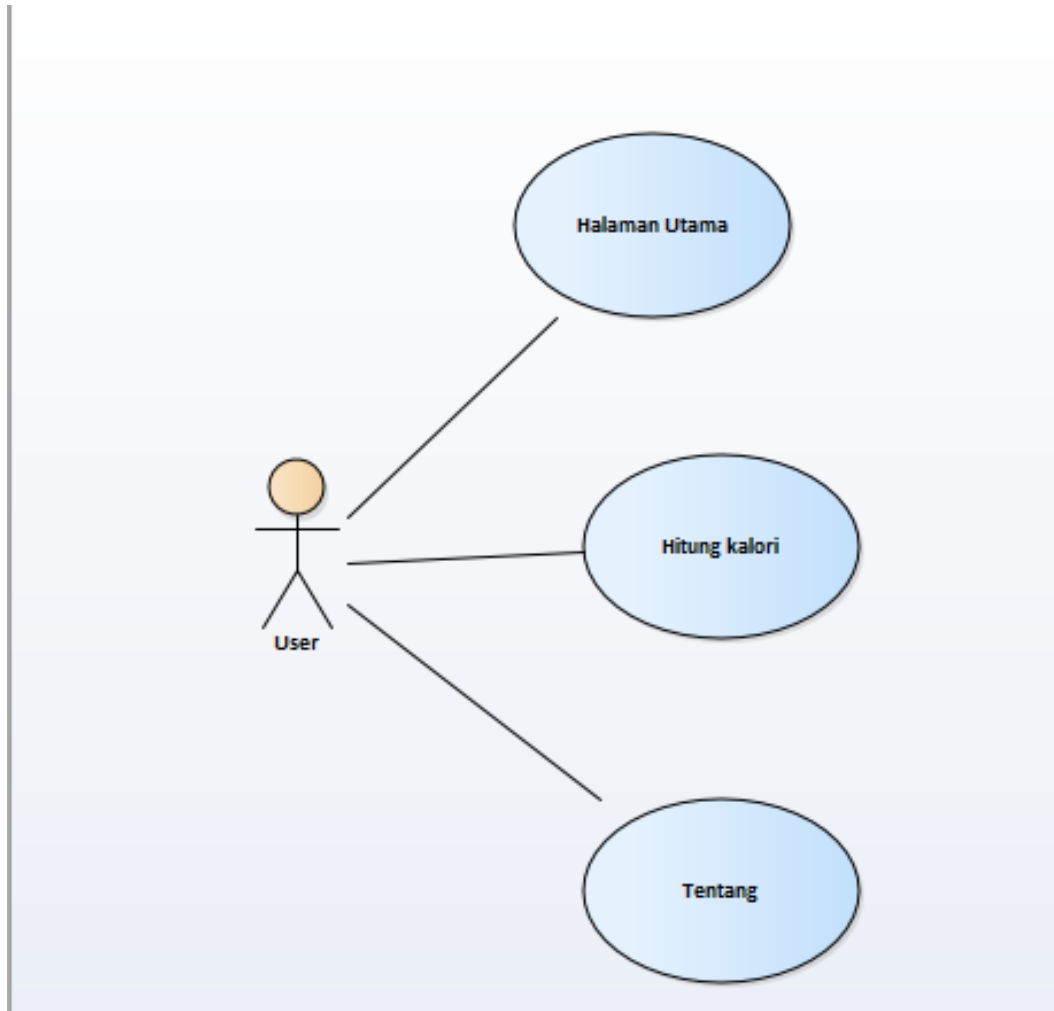
Penerapan algoritma *The Mifflin St Jeor* rumus untuk menghitung kalori BMR dan metode *Forward Chaining* menentukan jenis aktifitas dan diet untuk hasil yang diinginkan, sistem dibuat berbasis *web* yang dirancang agar pengguna dapat menghitung kebutuhan diet sesuai tujuan dan keinginan.

Para pengguna membuka *web browser*, kemudian membuka halaman *web* lalu klik hitung, selanjutnya pengguna langsung masuk *form* perhitungan kalori dan pengguna langsung bisa menghitung kebutuhan kalori untuk diet.

Berikut ini spesifikasi kebutuhan (*system requirement*) Dari sistem pakar.
Halaman *Front-page*:

- A1. *User* masuk Halaman utama sebelum menghitung kalori.
- A2. *User* mengisi data yang dibutuhkan untuk menghitung kalori yang dibutuhkan untuk diet.
- A3. *User* masuk untuk melihat tentang CBC dan kalori

4.1.2 Use Case Diagram



Gambar IV.1.

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Use Case Diagram Kalkulator Kalori

Deskripsi *Use Case Diagram* kalkulator kalori halaman perhitungan kalori :

Tabel IV.1.Deskripsi Use Case Diagram User

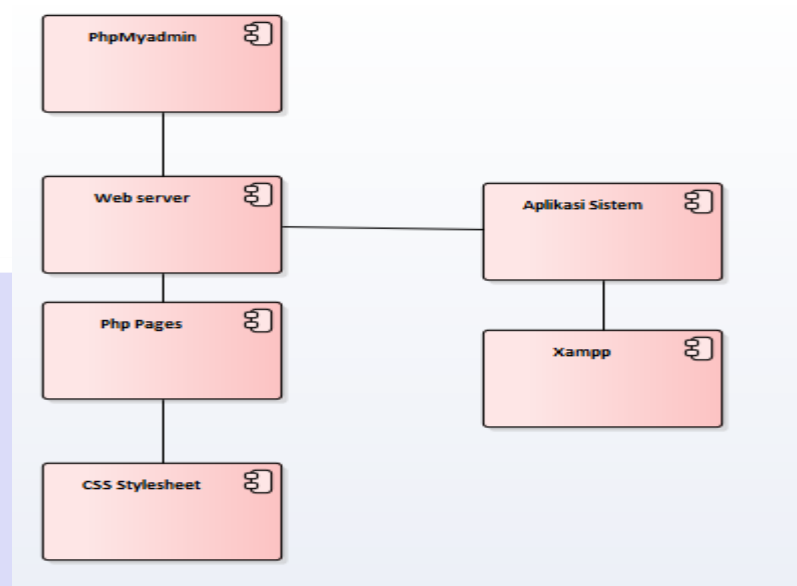
<i>Use Case Name</i>	Kalkulator Kalori
<i>Requirements</i>	A2
<i>Goal</i>	User dapat melakukan perhitungan kalori untuk kebutuhan diet
<i>Pre-conditions</i>	User meng-input data
<i>Post-conditions</i>	Sistem mengirim hasil jumlah kalori
<i>Failed end condition</i>	Pengguna membatalkan menghitung kalori
<i>Primary Actors</i>	User
<i>Main Flow / Basic Path</i>	1. Pengguna memilih klik hitung di halaman utama 2. Pengguna menghitung kalori

4.2 Desain

Program yang dibuat adalah program terskrutur tidak mempunyai *database* karena *user* cukup masuk *web* dan langsung menghitung tanpa memakai *id* dan *password*. maka pada tahapan ini menjelaskan desain *software architecture* dan *user interface*.

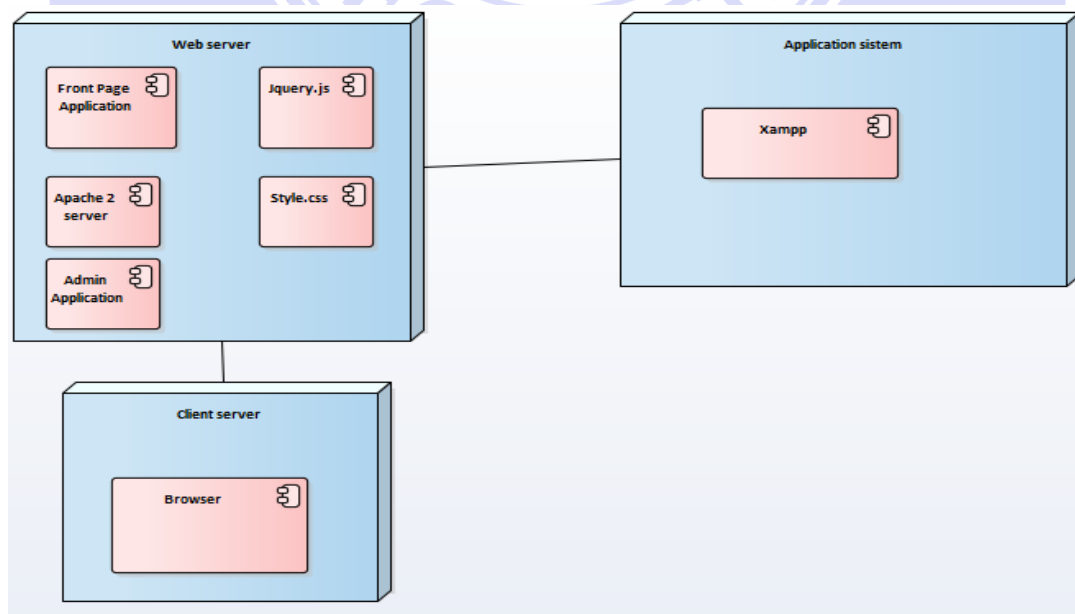
4.2.1 Software Architecture

A. Component Diagram



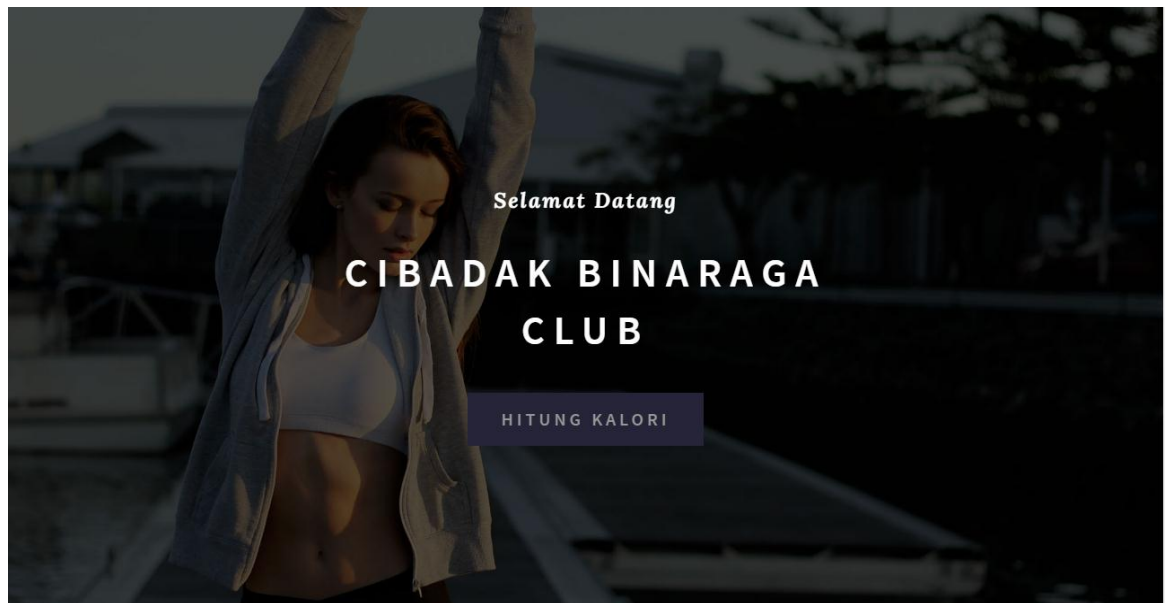
Gambar IV.2.Component Diagram

B. Deployment Diagram

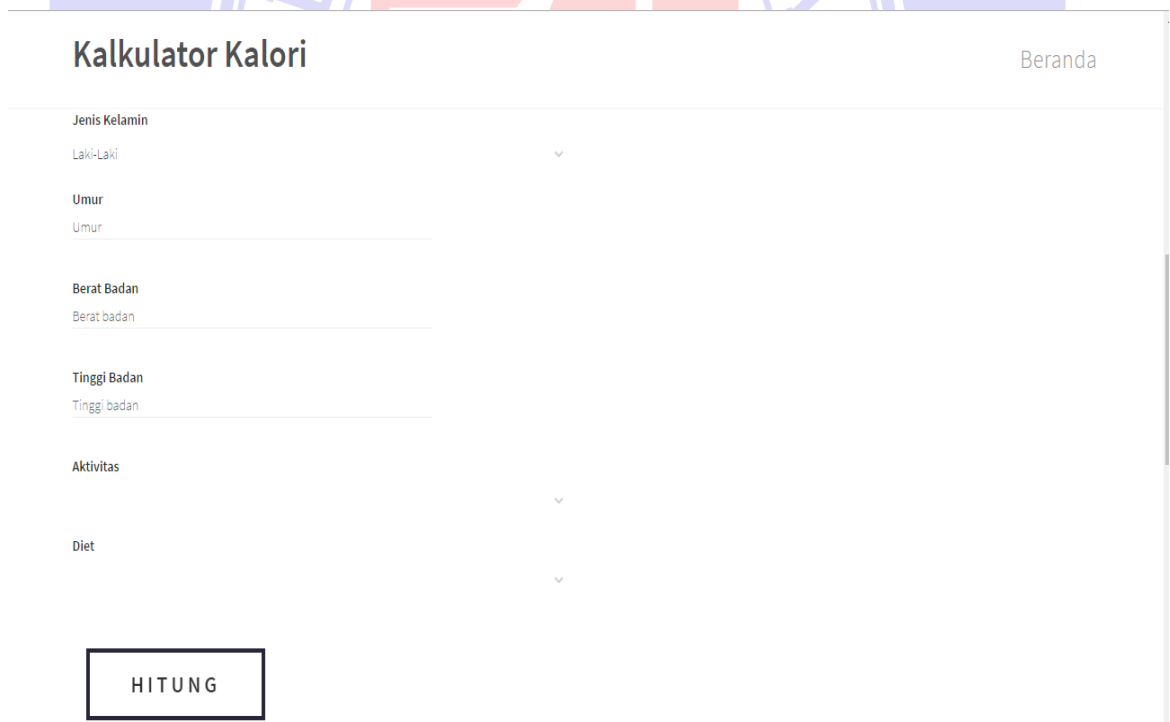


Gambar IV.3.Deployment Diagram

4.2.2 User Interface



Gambar IV.4. Tampilan *Form* Halaman Utama

The image is a screenshot of a web form titled "Kalkulator Kalori" (Calorie Calculator). The form is located on a page with a light blue header and a white body. In the top right corner of the header, the word "Beranda" (Home) is visible. The form itself is a vertical stack of input fields and dropdown menus. It starts with a "Jenis Kelamin" (Gender) dropdown menu, followed by a "Laki-Laki" (Male) option. Below this is an "Umur" (Age) input field. Next is a "Berat Badan" (Body Weight) input field. This is followed by a "Tinggi Badan" (Body Height) input field. Then comes an "Aktivitas" (Activity) dropdown menu. Below that is a "Diet" input field. At the bottom of the form is a large, dark blue rectangular button with the text "HITUNG" in white capital letters.

Gambar IV.5. Tampilan *Form* Hitung Kalori

Kalkulator Kalori

Beranda



Gambar IV.6. Tampilan Form Tentang

4.3 Code Generation

A. Form Hitung Kalori

```

<!-- =====
SCRIPTS
===== -->

<script src="admin/js/jquery.js"></script>
<script src="admin/js/bootstrap.min.js"></script>
<script src="admin/js/jquery.parallax.js"></script>
<script src="admin/js/jquery.nav.js"></script>
<script src="admin/js/jquery.backstretch.min.js"></script>
<script src="admin/js/owl.carousel.min.js"></script>
<script src="admin/js/smoothscroll.js"></script>
<script src="admin/js/wow.min.js"></script>
<script src="admin/js/custom.js"></script>

<!-- Vendor JS-->

<script src="admin/vendor/select2/select2.min.js"></script>

```

```

<script src="admin/vendor/datepicker/moment.min.js"></script>

<script src="admin/vendor/datepicker/daterangepicker.js"></script>

<!-- Main JS-->

<script src="admin/js/global.js"></script>

<script type="text/javascript">

```

```

    $.ajaxSetup({
        headers: {
            'X-CSRF-TOKEN': $('meta[name="csrf-token"]').attr('content')
        }
    });
    $(".hitung").click(function(e){
        e.preventDefault();
        var jk = $("select[name=jk]").val();
        var umur = $("input[name=umur]").val();
        var tgb = $("input[name=tgb]").val();
        var bb = $("input[name=bb]").val();
        var akt = $("select[name=akt]").val();
        var diet = $("select[name=diet]").val();
        $.ajax({
            type: 'POST',
            url: '/hitung',
            data: {jk:jk, umur:umur, tgb:tgb, bb:bb, akt:akt,
diet:diet},
            dataType: 'json',
            success: function(data){

```

```
if (data.kesalahan == '1') {
```

```
document.getElementById('kesalahan').style.display = 'block';
```

```
}else if(data.kakt != '0'){
```

```
if (data.hmenurun != '0') {
```

```
document.getElementById('hasil').style.display = 'block';
```

```
document.getElementById('tkbmr').style.display = 'block';
```

```
document.getElementById('kbmr').innerHTML = data.bmr;
```

```
document.getElementById('tkakt').style.display = 'block';
```

```
document.getElementById('kakt').innerHTML = data.kakt;
```

```
document.getElementById('tkmenurun').style.display = 'block'
```

```
document.getElementById('kmenurun').innerHTML
```

```
=
```

```
data.hmenurun;
```

```
document.getElementById('tkmenaikan').style.display = 'none';
```

```
document.getElementById('kmenaikan').innerHTML = null;
```

```
document.getElementById('tkmenjaga').style.display = 'none';
```

```
document.getElementById('kmenjaga').innerHTML = null;
```

```
if (data.hmenurun < data.bmr) {
```

```
document.getElementById('alert').style.display = 'block';
```

```
}else{
```

```
document.getElementById('alert').style.display = 'none';
```

```
}
```

```
}else if (data.hmenaikan != '0') {
```

```
document.getElementById('hasil').style.display = 'block';
```

```
document.getElementById('tkbmr').style.display = 'block';
```

```
document.getElementById('kbmr').innerHTML = data.bmr;
```

```
document.getElementById('tkakt').style.display = 'block';
```

```
document.getElementById('kakt').innerHTML = data.kakt;
```

```
document.getElementById('tkmenaikan').style.display = 'block';
```

```
document.getElementById('kmenaikan').innerHTML =  
data.hmenaikan;
```

```
document.getElementById('tkmenurun').style.display = 'none';
```

```
document.getElementById('kmenurun').innerHTML = null;
```

```
document.getElementById('tkmenjaga').style.display = 'none';
```

```
document.getElementById('kmenjaga').innerHTML = null;
```

```
if (data.hmenaikan < data.bmr) {
```

```
document.getElementById('alert').style.display = 'block';
```

```
}else{
```

```
document.getElementById('alert').style.display = 'none';
```

```
}
```

```
}else if (data.menjaga == '1') {
```

```
document.getElementById('hasil').style.display = 'block';
```

```
document.getElementById('tkbmr').style.display = 'block';
```

```
document.getElementById('kbmr').innerHTML = data.bmr;
```

```
document.getElementById('tkakt').style.display = 'none';
```

```
document.getElementById('kakt').innerHTML = null;
```

```
document.getElementById('tkmenaikan').style.display = 'none';
```

```
document.getElementById('kmenaikan').innerHTML = null;
```

```
document.getElementById('tkmenurun').style.display = 'none';
```

```
document.getElementById('kmenurun').innerHTML = null;
```

```
document.getElementById('tkmenjaga').style.display = 'block';
```

```
document.getElementById('kmenjaga').innerHTML = data.kakt;
```

```
if (data.kakt < data.bmr) {
```

```
document.getElementById('alert').style.display = 'block';
```

```
}else{
```

```
document.getElementById('alert').style.display = 'none';
```

```
}
```

```
}else{
```

```
document.getElementById('hasil').style.display = 'block';
```

```
document.getElementById('tkbmr').style.display = 'block';
```

```
document.getElementById('kbmr').innerHTML = data.bmr;
```

```
document.getElementById('tkakt').style.display = 'block';
```

```
document.getElementById('kakt').innerHTML = data.kakt;
```

```
document.getElementById('tkmenaikan').style.display = 'none';
```

```
document.getElementById('kmenaikan').innerHTML = null;
```

```
document.getElementById('tkmenurun').style.display = 'none';
```

```
document.getElementById('kmenurun').innerHTML = null;
```

```
document.getElementById('tkmenjaga').style.display = 'none';
```

```
document.getElementById('kmenjaga').innerHTML = null;
```

```
if (data.kakt < data.bmr) {
```

```
document.getElementById('alert').style.display = 'block';
```

```
    }else{
```

```
document.getElementById('alert').style.display = 'none';
```

```
    }
```

```
}
```

```
document.getElementById('kesalahan').style.display = 'none';
```

```
    }else{
```

```
document.getElementById('hasil').style.display = 'block';
```

```
document.getElementById('tkbmr').style.display = 'block';
```

```
document.getElementById('kbmr').innerHTML = data.bmr;
```

```
document.getElementById('tkakt').style.display = 'none';
```

```
document.getElementById('kakt').innerHTML = null;
```

```
document.getElementById('tkmenaikan').style.display = 'none';
```

```
document.getElementById('kmenaikan').innerHTML = null;
```

```
document.getElementById('tkmenurun').style.display = 'none';
```

```
document.getElementById('kmenurun').innerHTML = null;
```

```
document.getElementById('tkmenjaga').style.display = 'none';
```

```
document.getElementById('kmenjaga').innerHTML = null;
```

```
if (data.kakt != '0') {
```

```
document.getElementById('alert').style.display = 'block';
```

```
}else{
```

```
document.getElementById('alert').style.display = 'none';
```

```
}
```

```
document.getElementById('kesalahan').style.display = 'none';
```

```
}
```

```
}
```

```
});
```

```

    });

</script>

</body>

</html>

```

4.4 Testing

Pengujian yang dilakukan dalam program ini adalah menggunakan *Whitebox Testing*. Kemudian algoritma yang diuji diambil dari bagian *Code Generation* pada bagian *HitungKalori.php*.

```

<script src="admin/js/jquery.js"></script>
<script src="admin/js/bootstrap.min.js"></script>
<script src="admin/js/jquery.parallax.js"></script>
<script src="admin/js/jquery.nav.js"></script>
<script src="admin/js/jquery.backstretch.min.js"></script>
<script src="admin/js/owl.carousel.min.js"></script>
<script src="admin/js/smoothscroll.js"></script>
<script src="admin/js/wow.min.js"></script>
<script src="admin/js/custom.js"></script>
<!-- Vendor JS-->
<script src="admin/vendor/select2/select2.min.js"></script>
<script src="admin/vendor/datepicker/moment.min.js"></script>
<script src="admin/vendor/datepicker/daterangepicker.js"></script>

<!-- Main JS-->
<script src="admin/js/global.js"></script>

```

```
<script type="text/javascript">
```

```
$.ajaxSetup({
```

```
  headers: {
```

```
    'X-CSRF-TOKEN': $('meta[name="csrf-token"]').attr('content')
```

```
  }
```

```
});
```

```
$(".hitung").click(function(e){
```

```
  e.preventDefault();
```

```
  var jk = $("select[name=jk]").val();
```

```
  var umur = $("input[name=umur]").val();
```

```
  var tgb = $("input[name=tgb]").val();
```

```
  var bb = $("input[name=bb]").val();
```

```
  var akt = $("select[name=akt]").val();
```

```
  var diet = $("select[name=diet]").val();
```

```
  $.ajax({
```

```
    type: 'POST',
```

```
    url: '/hitung',
```

```
    data: {jk:jk, umur:umur, tgb:tgb, bb:bb, akt:akt,
```

```
    diet:diet},
```

```
    dataType: 'json',
```

```
    success: function(data){
```

```
      if (data.kesalahan == '1') {
```

```
document.getElementById('kesalahan').style.display = 'block';
```

```
    } else if(data.kakt != '0'){
```

```
        if (data.hmenurun != '0') {
```

```
document.getElementById('hasil').style.display = 'block';
```

```
document.getElementById('tkbmr').style.display = 'block';
```

```
document.getElementById('kbmr').innerHTML = data.bmr;
```

```
document.getElementById('tkakt').style.display = 'block';
```

```
document.getElementById('kakt').innerHTML = data.kakt;
```

```
document.getElementById('tkmenurun').style.display = 'block';
```

```
document.getElementById('kmenurun').innerHTML =
```

```
data.hmenurun;
```

```
document.getElementById('tkmenaikan').style.display = 'none';
```

```
document.getElementById('kmenaikan').innerHTML = null;
```

```
document.getElementById('tkmenjaga').style.display = 'none';
```

```
document.getElementById('kmenjaga').innerHTML = null;

if (data.hmenurun < data.bmr) {

document.getElementById('alert').style.display = 'block';

} else {

document.getElementById('alert').style.display = 'none';

}

} else if (data.hmenaikan != '0') {

document.getElementById('hasil').style.display = 'block';

document.getElementById('tkbmr').style.display = 'block';
```

```
document.getElementById('kbmr').innerHTML = data.bmr;
```

```
document.getElementById('tkakt').style.display = 'block';
```

```
document.getElementById('kakt').innerHTML = data.kakt;
```

```
document.getElementById('tkmenaikan').style.display = 'block';
```

```
document.getElementById('kmenaikan').innerHTML =  
data.hmenaikan;
```

```
document.getElementById('tkmenurun').style.display = 'none';
```

```
document.getElementById('kmenurun').innerHTML = null;
```

```
document.getElementById('tkmenjaga').style.display = 'none';
```

```
document.getElementById('kmenjaga').innerHTML = null;
```

```
if (data.hmenaikan < data.bmr) {
```

```
document.getElementById('alert').style.display = 'block';
```

```
    }else{
```

```
document.getElementById('alert').style.display = 'none';
```

```
}  
  
}else if (data.menjaga == '1') {  
  
document.getElementById('hasil').style.display = 'block';  
  
document.getElementById('tkbmr').style.display = 'block';  
  
document.getElementById('kbmr').innerHTML = data.bmr;  
  
document.getElementById('tkakt').style.display = 'none';  
document.getElementById('kakt').innerHTML = null;  
  
document.getElementById('tkmenaikan').style.display = 'none';  
document.getElementById('kmenaikan').innerHTML = null;  
  
document.getElementById('tkmenurun').style.display = 'none';  
  
document.getElementById('kmenurun').innerHTML = null;
```

```
document.getElementById('tkmenjaga').style.display = 'block';
```

```
document.getElementById('kmenjaga').innerHTML = data.kakt;
```

```
if (data.kakt < data.bmr) {
```

```
document.getElementById('alert').style.display = 'block';
```

```
}else{
```

```
document.getElementById('alert').style.display = 'none';
```

```
}
```

```
}else{
```

```
document.getElementById('hasil').style.display = 'block';
```

```
document.getElementById('tkbmr').style.display = 'block';
```

```
document.getElementById('kbmr').innerHTML = data.bmr;
```

```
document.getElementById('tkakt').style.display = 'block';
```

```
document.getElementById('kakt').innerHTML = data.kakt;
```

```
document.getElementById('tkmenaikan').style.display = 'none';
```

```
document.getElementById('kmenaikan').innerHTML = null;
```

```
document.getElementById('tkmenurun').style.display = 'none';
```

```
document.getElementById('kmenurun').innerHTML = null;
```

```
document.getElementById('tkmenjaga').style.display = 'none';
```

```
document.getElementById('kmenjaga').innerHTML = null;
```

```
if (data.kakt < data.bmr) {
```

```
document.getElementById('alert').style.display = 'block';
```

```
    }else{
```

```
document.getElementById('alert').style.display = 'none';
```

```
    }
```

```
}
```

```
document.getElementById('kesalahan').style.display = 'none';
```

```
}else{
```

```
document.getElementById('hasil').style.display = 'block';
```

```
document.getElementById('tkbmr').style.display = 'block';
```

```
document.getElementById('kbmr').innerHTML = data.bmr;
```

```
document.getElementById('tkakt').style.display = 'none';
```

```
document.getElementById('kakt').innerHTML = null;
```

```
document.getElementById('tkmenaikan').style.display = 'none';
```

```
document.getElementById('kmenaikan').innerHTML = null;
```

```
document.getElementById('tkmenurun').style.display = 'none';
```

```
document.getElementById('kmenurun').innerHTML = null;
```

```
document.getElementById('tkmenjaga').style.display = 'none';
```

```
document.getElementById('kmenjaga').innerHTML = null;
```

```
if (data.kakt != '0') {
```

```
document.getElementById('alert').style.display = 'block';
```

```
    }else{
```

```
document.getElementById('alert').style.display = 'none';
```

```
    }
```

```
document.getElementById('kesalahan').style.display = 'none';
```

```
}
```

```
}
```

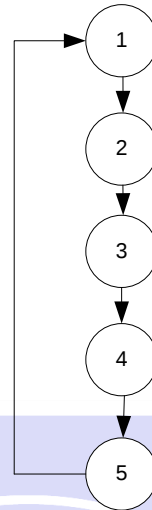
```
});
```

```
});
```

```
</script>
```

```
</body>
```

```
</html>
```



Gambar IV.7. Grafik alir kesesuaian hitung kalori

Kompleksitas Siklomatis (Pengukuran kuantitatif terhadap Kompleksitas logis suatu program) dari grafik alir dapat diperoleh dengan perhitungan :

$$V(G) = E - N + 2$$

Dimana :

E = Jumlah *edge* grafik alir yang ditandai dengan gambar panah

N = Jumlah simpul grafik alir yang ditandai dengan gambar lingkaran

Sehingga kompleksitas siklomatisnya

$$V(G) = 5 - 5 + 2 = 2$$

Basis Set yang dihasilkan dari jalur *independent* secara linier adalah jalur sebagai berikut :

1 – 2 – 3 – 4 – 5

1 – 2 – 3 – 4 – 5 – 1

Ketika aplikasi dijalankan maka terlihat bahwa salah satu *basis set* yang dihasilkan 1 – 2 – 3 – 4 – 5 dan terlihat bahwa simpul telah dieksekusi satu kali. Berdasarkan ketentuan tersebut dari segi kelayakan *software*, sistem ini telah memenuhi syarat.

4.5 Support

Menjelaskan tentang publikasi *web* (jika program berbasis *web*) dan spesifikasi *software* dan *hardware* yang nanti digunakan dalam menjalankan sistem.

4.5.1 Publikasi Web

Untuk menggunakan *website* tentunya perlu di publikasi dengan cara mengupload ke salah satu *webhosting*. *Webhosting* yang digunakan adalah berbayar.

4.5.2 Spesifikasi Hardware dan Software

Untuk mendapatkan hasil yang optimal dari *Web Sistem* pakar ini diperlukan beberapa spesifikasi *software* dan *hardware* untuk pendukung.

Berikut spesifikasi-spesifikasinya:

Tabel IV. 2. Spesifikasi Hardware dan Software

Kebutuhan	Keterangan
Sistem Operasi	: Windows 8.1
Processor	: Intel ® Pentium ® CPU N3450 @ 2.16GHz
RAM	: 4 GB
Harddisk	: 465 GB
CD-ROM	: 52x
Monitor	: LCD LED 14.0
Keyboard	: 180 Key
Mouse	: Standar
Printer	: inkjet/ laserjet
Browser	: Mozilla Firefox, Google Chrome, Internet Explorer
Software	: Dreamweaver, Photoshop, FTP Client, Xampp