

## LAMPIRAN

### conn.php

```
<?php
function koneksi(){
    $dbhost      = "localhost";
    $dbuser       = "root";
    $dbpassword   = "";
    $database     = "fcm_travel";
    $con = @mysql_connect($dbhost, $dbuser, $dbpassword) or
die("Connection Error: " . @mysql_error());
    @mysql_select_db($database) or die("Error connecting to db.");
    return $con;
}
?>
```

### login.php

```
<!DOCTYPE html>
<html>
<head>
    <meta charset="utf-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <title>Kawan Wisata | Biro Perjalanan Wisata</title>
    <!-- Tell the browser to be responsive to screen width -->
    <meta content="width=device-width, initial-scale=1, maximum-scale=1,
user-scalable=no" name="viewport">
    <!-- Bootstrap 3.3.6 -->
    <link rel="stylesheet" href="bootstrap/css/bootstrap.min.css">
    <!-- Font Awesome -->
    <link rel="stylesheet"
href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/4.5.0/css/font-
awesome.min.css">
    <!-- Ionicons -->
    <link rel="stylesheet"
href="https://cdnjs.cloudflare.com/ajax/libs/ionicons/2.0.1/css/ionicons.
min.css">
    <!-- Theme style -->
    <link rel="stylesheet" href="dist/css/AdminLTE.min.css">
    <!-- iCheck -->
    <link rel="stylesheet" href="plugins/iCheck/square/blue.css">

    <!-- HTML5 Shim and Respond.js IE8 support of HTML5 elements and media
queries -->
    <!-- WARNING: Respond.js doesn't work if you view the page via file://
-->
    <!--[if lt IE 9]>
    <script
src="https://oss.maxcdn.com/html5shiv/3.7.3/html5shiv.min.js"></script>
    <script
src="https://oss.maxcdn.com/respond/1.4.2/respond.min.js"></script>
    <![endif]-->
</head>
<?php
require_once 'conn.php';

if(isset($_POST['login'])){
    $query = mysql_query('select * from user where
id_user="'.$_POST['idu'].'"');
    $d = mysql_fetch_array($query);
    if(md5($_POST['pw'])==$d['password']){
```

```

        $_SESSION['idu']=$d['id_user'];
        $_SESSION['un']=$d['username'];
        $_SESSION['st']=$d['status'];
        echo "<script
type='text/javascript'>document.location='index.php'</script>";
        )echo '<script language="javascript">alert("Maaf user atau password
anda salah!");history.go(-1)</script>';
    }
?>

<body class="hold-transition login-page">
<div class="login-box">
    <div class="login-logo">
        <a href="index.php"><b>Kawan</b><i>Wisata</i></a>
    </div>
    <div class="login-box-body">
        <p class="login-box-msg">Form Login</p>
        <form action="" method="post">
            <div class="form-group has-feedback">
                <input name="idu" type="text" class="form-control"
placeholder="User Id" autofocus>
                <span class="glyphicon glyphicon-envelope form-control-
feedback"></span>
            </div>
            <div class="form-group has-feedback">
                <input name="pw" type="password" class="form-control"
placeholder="Password">
                <span class="glyphicon glyphicon-lock form-control-
feedback"></span>
            </div>
            <div class="row">
                <div class="col-xs-4 col-xs-offset-8">
                    <button name="login" type="submit" class="btn btn-primary
btn-block btn-flat">Sign In</button>
                </div>
            </div>
        </form>
    </div>
</div>

<!-- jQuery 2.2.3 -->
<script src="plugins/jquery/jquery-2.2.3.min.js"></script>
<!-- Bootstrap 3.3.6 -->
<script src="bootstrap/js/bootstrap.min.js"></script>
<!-- iCheck -->
<script src="plugins/iCheck/ichack.min.js"></script>
<script>
    $(function () {
        $('input').iCheck({
            checkboxClass: 'icheckbox_square-blue',
            radioClass: 'iradio_square-blue',
            increaseArea: '20%' // optional
        });
    });
</script>
</body>
</html>

```

## index.php (dashboard)

```
<?php
require_once 'head_sidebar.php';
?>
<div class="content-wrapper">
  <section class="content-header">
    <h1>
      Dashboard
    </h1>
    <ol class="breadcrumb">
      <li><a href="#"><i class="fa fa-dashboard"></i> Home</a></li>
      <li class="active">Dashboard</li>
    </ol>
  </section>

  <section class="content">
    <div class="row">
      <section class="col-lg-12">
        <div class="box box-info">
          <div class="box-header">
          </div>
          <div class="box-body">
            <div class="col-sm-8 col-sm-offset-2">
              <center>
                
                <h1>APLIKASI DATA MINING PENGELOMPOKAN PELANGGAN
TRAVEL DENGAN MENGGUNAKAN METODE <i>FUZZY C_MEANS</i></h1>
              </center>
            </div>
          </div>
          <div class="box-footer clearfix">
          </div>
        </div>
      </section>
    </div>
  </section>
</div>
```

## cluster.php

```
<?php
require_once 'conn.php';
// Matriks dinamis
function count_decimals($x) {
    return strlen(substr(strchr($x + "", "."), 1));
}
function random($min, $max) {
    $decimals = max(count_decimals($min), count_decimals($max));
    $factor = pow(10, $decimals);
    return rand($min * $factor, $max * $factor) / $factor;
}
function random_dinamis($clus,$koma) {
    $rand = array();
    $ke = 0;
    for ($i = 0; $i < $clus; $i++) {
        $D = number_format((1 / $clus), $koma, '.', ',');
        $D = $D + 0.030000;
        $A = $D / 2;
        $C1 = random($A, $D);
        if ($ke < ($clus - 1)) {
            $rand[$i] = $C1;
        }
    }
}
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        $ske++;
    }
}
$rand[$ske] = 1 - array_sum($rand);
return $rand;
}
function rdinamis($clus,$f){
    $rand = array();
    $ske = 0;
    for ($i = 0; $i < $clus; $i++) {
        $min = 1/$clus/2*$f;
        $max = 1/$clus*$f;
        $R = rand($min,$max)/($f);
        if ($ske < ($clus - 1)) {
            $rand[$i] = $R;
            $ske++;
        }
    }
    $rand[$ske] = 1 - array_sum($rand);
    return $rand;
}
function fcm($a,$b,$c,$d,$e,$f,$g){ //parameter =
$K,$atr,$nilai,$W,$w,$T,$bk
    koneksi();
    //===== INISIALISASI =====
    $K = $a; // jml cluster
    $atr = $b; // jml atribut
    $nilai_awal = $c; // nilai fungsi objektif awal
    $W_awal = $d; // nilai perubahan fungsi objektif
    $w = $e; // nilai w
    $T = $f; // ambang batas
    $bk = $g; // batas angka dibelakang koma
    $nilai = $nilai_awal; // nilai fungsi objektif awal
    $W = $W_awal; // nilai perubahan fungsi objektif
    //===== MENAMPILKAN DATA DARI DATABASE =====
    $truncate = mysql_query('delete from laporan_cluster where
cluster="'.$K.'"'); //menghapus data laporan cluster
    $query = mysql_query("select * from normalisasi"); // query untuk
mengambil data
    $jml_data = mysql_num_rows($query); //jumlah data
    $i=0;
    $data=array();
    while($q1 = mysql_fetch_array($query)){
        for($a=0; $a<$atr;$a++) {
            $data[$i][$a] = $q1['x'.($a+1)]; // menyimpan data semua
atribut dalam array
        }
        $iddt[$i] = $q1['id_pelanggan']; //id data untuk proses
simpan laporan cluster
        $i++;
    }
    //===== FUZZY C-MEANS
    $xb_opt = 1000000;
    $matriks_opt=array();
    for($p=1;$p<=4;$p++){ //p = jumlah percobaan yg dilakukan
        //----- Membangkitkan Matriks -----
        for($i=0; $i<$jml_data; $i++) {
            $r=array();
            // $r=random_dinamis($K,$bk-1);
            $r= rdinamis($K, pow(10,$bk));
            for($a=0;$a<count($r);$a++){
                $matriks[$i][$a]=$r[$a];
                $m_awal[$i][$a]=$r[$a];
            }
        }
    }
}

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    }
}
$ulang = true;
$ulg = 0;
while($ulang) {
    if ($W > $T || $W < 0) {
        //----- Menghitung centroid awal -----
        $sigma_xi=array();
        for ($u=0; $u<$K; $u++) {
            for ($a=0; $a<$atr; $a++) {
                $xi=0;
                for($i=0; $i<$jml_data; $i++) {
                    $xi += pow($matriks[$i][$u], $w) * $data[$i][$a];
                }
                $sigma_xi[$u][$a]=$xi;
            }
        }
        $sigma_ui=array();
        for($u=0; $u<$K; $u++){
            $ui=0;
            for ($i=0; $i<$jml_data; $i++) {
                $ui+= pow($matriks[$i][$u], $w);
            }
            $sigma_ui[$u]=$ui;        // nilai sigma(matriks^w)
        }
        $centroid=array();
        for($u=0; $u<$K; $u++){
            for ($a=0; $a<$atr; $a++) {
                $centroid [$u][$a] = round($sigma_xi[$u][$a] /
$sigma_ui[$u], $bk);        //nilai sigma_xi/sigma_ui
            }
        }
        //----- Menghitung nilai derajat keanggotaan -----
        $jarak=array();
        for ($i=0; $i<$jml_data; $i++) {
            for($u=0; $u<$K; $u++){
                $di=0;
                for($a=0; $a<$atr; $a++) {
                    $di += abs($data[$i][$a]- $centroid[$u][$a]);
                }
                $jarak[$i][$u]=$di;        //manhattan
            }
        }
        for ($i=0; $i<$jml_data; $i++) {
            $sum=0; $d=0;
            for($u=0; $u<$K; $u++){
                $sum += pow($jarak[$i][$u], (-2/($w-1)));
            }
            for($u=0; $u<$K; $u++){
                $anggota[$i][$u] = round((pow($jarak[$i][$u], (-
2/($w-1)))/$sum), $bk);        //nilai derajat keanggotaan matrik pseudo
            }
        }
        //----- Menghitung fungsi objektif -----
        $sum_fo=0;
        for ($i=0; $i<$jml_data; $i++) {
            for($u=0; $u<$K; $u++){
                $fo[$i][$u] = round(pow($anggota[$i][$u], $w) *
pow($jarak[$i][$u], 2), $bk); // nilai fungsi objektif
                $sum_fo += $fo[$i][$u];
                $matriks[$i][$u] = $anggota[$i][$u];
            }
        }
    }
}

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        $fpa = abs($nilai-$sum_fo); //perubahan fungsi
objektif (nilai awal - jumlah fungsi objektif)
        $nilai = $sum_fo; //menyimpan fungsi
objektif baru untuk iterasi berikutnya
        $W = round($fpa,$bk); //menyimpan nilai W baru
untuk cek perulangan iterasi
        $jfo[$sulg]=$sum_fo; //menyimpan nilai jumlah
fungsi objektif setiap iterasi
        $pfo[$sulg]=$fpa; //menyimpan perubahan
fungsi objektif setiap iterasi

    }else {
        //----- Menghitung voting cluster yang
potensial -----
        for ($a=0; $a<$atr; $a++) {
            if($a<($atr-1)){ //voting untuk atribut JT,BB,BK,TR,S
                $max_cent=0; $potensi=0;
                for($u=0; $u<$K; $u++){
                    if($max_cent<$centroid[$u][$a]){
                        $max_cent=$centroid[$u][$a];
                        $potensi=$u;
                    }
                }
                $voting[$a]=$potensi;
            }else{ //voting untuk atribut RC
                $min_cent=10000; $potensi=0;
                for($u=0; $u<$K; $u++){
                    if($centroid[$u][$a]<$min_cent){
                        $min_cent=$centroid[$u][$a];
                        $potensi=$u;
                    }
                }
                $voting[$a]=$potensi;
            }
        }
        $vot= array_count_values($voting);
        $vot2= array_search(max($vot), $vot); //cluster dengan
voting terbanyak

        //----- Menentukan kelas yang diikuti -----
        for($i=0; $i<$jml_data; $i++){
            $max_u=0; $cluster=0;
            for($u=0; $u<$K; $u++){
                if($max_u<$matriks[$i][$u]){
                    $max_u=$matriks[$i][$u];
                    $cluster=$u;
                }
            }
            $terbesar[$i]=$max_u; //derajat keanggotaan terbesar
            $clus[$i]=$cluster; // cluster yang diikuti
        }

        //----- Menghitung nilai xb -----
        $min_jrk=1000;
        for($u=0; $u<($K-1); $u++){
            for($u2=($u+1); $u2<$K; $u2++){
                $jrk=0;
                for($a=0; $a<$atr; $a++){
                    $jrk += round(pow(($centroid[$u][$a]-
$centroid[$u2][$a]),2),6);
                }
                $jarak_2c[$u][$u2] = $jrk; //nilai jarak antara
pasangan 2 cluster
                if($jarak_2c[$u][$u2]<$min_jrk){
                    $min_jrk=$jarak_2c[$u][$u2]; //nilai jarak 2

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pasangan cluster terendah (min)
        }
    }
    }
    $xb = round((($sum_fo/$jml_data)/$min_jrk),$bk); //
nilai XBI (J/N)/min(d)
    $nilai=$nilai_awal;
    $W=$W_awal;
    break;
}
    $ulg++;
}
//===== Mengambil hasil percobaan paling optimal=====
if($xb<$xb_opt){
    $xb_opt=$xb; // nilai indeks xb optimal
    for($i=0;$i<$jml_data;$i++){
        for($u=0;$u<$K;$u++){
            $matriks_opt[$i][$u]=$m_awal[$i][$u];
//menyimpan matriks yang dibangkitkan
        }
    }
}
return $matriks_opt;
}
/*
$query = mysql_query("select * from normalisasi"); // query untuk
mengambil data
    $jml_data = mysql_num_rows($query); //jumlah data
    $K=2;

$matrikss=fcm();

echo '<br><br>=====';
for($i=0;$i<$jml_data;$i++){
    for($u=0;$u<$K;$u++){
        echo $matrikss[$i][$u];
    }echo '<br>';
}
*/
?>

```

## clustering.php

```

<?php
require_once 'head_sidebar.php';
require_once 'cluster.php';
if(isset($_POST['submit'])){
    echo "<script
type='text/javascript'>window.location.assign('clustering.php?c=".$_POST[
'cls']."'");</script>";
}
?>
<div class="content-wrapper">
    <!-- Content Header (Page header) -->
    <section class="content-header">
        <h1>
            Pengelompokan Pelanggan
            <small>Clustering</small>
        </h1>
        <ol class="breadcrumb">
            <li><a href="#"><i class="fa fa-dashboard"></i> Home</a></li>
            <li class="active">Clustering</li>

```

```

        </ol>
    </section>

    <!-- Main content -->
    <section class="content">
        <div class="row">
            <div class="col-md-12">
                <div class="box box-info">
                    <div class="box-header with-border">
                        <h3 class="box-title">Form Clustering</h3>
                    </div>
                    <form class="form-horizontal" method="post" action=""
id="fu">
                        <div class="box-body">
                            <div class="form-group">
                                <label class="col-sm-2 control-label">Cluster</label>
                                <div class="col-sm-2">
                                    <select id="cls" name="cls" class="form-control
select2" style="width: 100%;" required>
                                        <option value="">--- Pilih Cluster ---</option>
                                        <?php
                                        for($i=2;$i<=5;$i++){
                                            echo'<option value="'.$.i.'"';
                                            if(isset($_GET['c'])){
                                                if($i==$_GET['c']){echo'selected';}
                                            }
                                            echo'> '.$.i.' </option>';
                                        }?>
                                        </select>
                                    </div>
                                </div>
                                <div class="box-footer">
                                    <div class="col-sm-3"></div>
                                    <button name="submit" type="submit" class="btn btn-
info">Submit</button>
                                </div>
                            </form>
                        </div>
                    </div>
                </div>
            </div>
        </div>
        <?php
        if(isset($_GET['c'])) {?>
            <script>var ah=screen.availHeight-150;
            document.write('<div style="width:100%;height:'+ah+'px;
border:1px solid #afafaf;padding:5px;overflow:auto;background-
color:white;">');
            </script>
        <?php
        koneksi();
        // Inialisasi
        $K = $_GET['c']; // jml cluster
        $atr = 6; // jml atribut
        $nilai = 10000; // nilai fungsi objektif awal
        $W = 1000; // nilai perubahan fungsi objektif
        $w = 2; // nilai w
        $T = 0.1; // ambang batas
        $bk = 4; // batas angka dibelakang koma

        //Menampilkan data dari database
        $truncate1 = mysql_query('delete from laporan_cluster where
cluster="'.$.K.'"'); //menghapus data laporan_cluster
        $truncate2 = mysql_query('delete from centroid where

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clustering="'.$K.'"); //menghapus data laporan cluster
$rekap = mysql_query("SELECT rt.*,p.nama FROM rekap_transaksi rt LEFT
JOIN pelanggan p ON rt.id_pelanggan=p.id_pelanggan ORDER BY
rt.id_pelanggan"); // Data rekap transaksi pelanggan
$dt=array();$i=0;
while($d = mysql_fetch_array($rekap)){
for($a=0; $a<$atr;$a++) {
    $dt[$i][$a] = $d['x'.($a+1)]; // menyimpan data semua atribut
dalam array
    }$nm[$i] = $d['nama'];
    $i++;
}
$query = mysql_query("select * from normalisasi"); // Data
normalisasi
$jml_data = mysql_num_rows($query); //jumlah data
$i=0;
$data=array();
echo"<div class='row'>
    <div class='col-md-6'>
        <div class='box-header'><center><h3>DATA
NORMALISASI</h3></center></div>';
        echo"<table class='table table-striped table-bordered'><tr>
            <th'.$th.'>No</th>
            <th'.$th.'>Jumlah Transaksi</th>
            <th'.$th.'>Bus Besar</th>
            <th'.$th.'>Bus Kecil</th>
            <th'.$th.'>Tour Leader</th>
            <th'.$th.'>Status</th>
            <th'.$th.'>Recency</th></tr>';
        while($q1 = mysql_fetch_array($query)){
            echo"<td>'.$(i+1)'.</td>";
            for($a=0; $a<$atr;$a++) {
                $data[$i][$a] = $q1['x'.($a+1)]; // menyimpan data semua
atribut dalam array
                echo "<td>".$data [$i][$a].</td>";
            }
            $idp[$i] = $q1['id_pelanggan']; //id data untuk proses simpan
laporan cluster
            $i++;
            echo"</tr>";
        }echo"</table></div>";

//membangkitkan matriks pseudo-partition
$r = fcm($K,$atr,$nilai,$W,$w,$T,$bk);
echo"<div class='col-md-6'>
    <div class='box-header'><center><h3>MATRIKS PSEUDO-
PARTITION</h3></center></div>";
    echo"<table class='table table-bordered table-
striped'><tr><th'.$th.'>No</th>";
    for($u=0; $u<$K; $u++){
        echo"<th'.$th.'>U<sub>'.$(u+1)'.</sub></th>";
    }echo"</tr><tr>";
    for($i=0; $i<$jml_data; $i++) {
        echo"<td>'.$(i+1)'.</td>";
        for($u=0;$u<$K;$u++){
            $matriks[$i][$u]=$r[$i][$u];
            echo "<td>". str_replace(".", ",",
$matriks[$i][$u]).</td>";
        }echo"</tr>";
    }echo"</table></div></div>";

$ulang = true;
$ulg = 0;

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```

while($ulang) {
    if ($W > $T || $W < 0) {
        echo '<div class="row"><div class="col-md-12">
            <center><h1>ITERASI KE-
'.($ulga+1).'

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}echo'</tr>';
$centroid=array();
for($u=0; $u<$K; $u++){
    echo'<tr><th>' . ($u+1) . '</th>';
    for ($a=0; $a<$atr; $a++) {
        $centroid [$u][$a] = round($sigma_xi[$u][$a] /
$sigma_ui[$u], $bk); //nilai sigma_xi/sigma_ui
        echo'<td>' . $centroid[$u][$a] . '</td>';
    } echo'</tr>';
}echo'</table></div></div>';

// Menghitung nilai derajat
echo'<div class="row"><div class="col-md-12">
    <h4>Menghitung Nilai Derajat Keanggotaan
<sub>dan</sub> Nilai Fungsi Objektif</h4><br>';
$jarak=array();
for ($i=0; $i<$jml_data; $i++) {
    for($u=0; $u<$K; $u++){
        $di=0;
        for($a=0; $a<$atr; $a++) {
            $di += abs($data[$i][$a]- $centroid[$u][$a]);
//dibuat utk menghitung nilai jarak centroid (manhattan)
        }
        $jarak[$i][$u]=$di; //manhattan
    }
}
// matriks psudeo akhir
for ($i=0; $i<$jml_data; $i++) {
    $sum=0; $d=0;
    for($u=0; $u<$K; $u++){
        $sum += pow($jarak[$i][$u], (-2/($w-1)));
//nilai sigma[jarak^(-2/(w-1))]
    }
    for($u=0; $u<$K; $u++){
        $anggota[$i][$u] = round((pow($jarak[$i][$u], (-
2/($w-1)))/$sum), $bk); //nilai derajat keanggotaan matrik pseudo
    }
}
//fungsi objektif
$sum_fo=0;
for ($i=0; $i<$jml_data; $i++) {
    for($u=0; $u<$K; $u++){
        $fo[$i][$u] = round(pow($anggota[$i][$u], $w) *
pow($jarak[$i][$u], 2), $bk); // nilai fungsi objektif
        $sum_fo += $fo[$i][$u]; //nilai J (jumlah nilai
fungsi objektif
        $matriks[$i][$u] = $anggota[$i][$u];
    }
}
//Menampilkan jarak, derajat keanggotaan, dan fungsi objektif
echo'<table class="table table-bordered table-
striped"><tr><th rowspan="2">' . $th . '>No</th>
    <th colspan="' . $K . '>' . $th . '>Jarak ke
Centroid</th><th colspan="' . $K . '>' . $th . '>Nilai Derajat Keanggotaan</th>
    <th colspan="' . $K . '>' . $th . '>Fungsi
Objektif</th></tr><tr>';
    for($u=0; $u<$K; $u++){echo'<th>' . $th . '>' . ($u+1) . '</th>';}
    for($u=0; $u<$K;
$u++){echo'<th>' . $th . '>u<sub>i' . ($u+1) . '</sub></th>';}
    for($u=0; $u<$K;
$u++){echo'<th>' . $th . '>' . ($u+1) . '</th>';}echo'<tr>';
    for ($i=0; $i<$jml_data; $i++) {echo'<tr>';
        echo'<td>' . ($i+1) . '</td>';

```

```

        for($u=0; $u<$K;
$u++){echo'<td>' . $jarak[$i][$u]. '</td>';}
        for($u=0; $u<$K;
$u++){echo'<td>' . $anggota[$i][$u]. '</td>';}
        for($u=0; $u<$K;
$u++){echo'<td>' . $td.'>' . $fo[$i][$u]. '</td>';}echo'</tr>';
    }
    $fpa = abs($nilai-$sum_fo); //perubahan fungsi
objektif (nilai awal - jumlah fungsi objektif)
    echo'<tr><td colspan="' . (2*$K+1) . '" style="text-
align:right">Nilai Fungsi Objektif</td>
        <td colspan="' . $K . '" style="text-
align:center">' . $sum_fo . '</td></tr><tr>
        <td colspan="' . (2*$K+1) . '" style="text-
align:right">Perubahan Fungsi Objektif</td>
        <td colspan="' . $K . '" style="text-
align:center">' . $nilai . ' - ' . $sum_fo . '<br> =
' . $fpa . '</td></tr></table></div></div>';

    $nilai = $sum_fo; //menyimpan fungsi
objektif baru untuk iterasi berikutnya
    $W = round($fpa,$bk); //menyimpan nilai W baru
    untuk cek perulangan iterasi
    $jfo[$ulg]=$sum_fo; //menyimpan nilai jumlah
    fungsi objektif setiap iterasi
    $pfo[$ulg]=$fpa; //menyimpan perubahan
    fungsi objektif setiap iterasi

    }else {
        //menampilkan perubahan fungsi objektif
        echo'<div class="row"><br><center><h1>Hasil Perhitungan Fuzzy
C-Means</h1></center><br>
        <div class="col-md-6"><h4>Perubahan Fungsi
Objektif</h4><br>
        <table class="table table-bordered table-striped">
        <tr><th' . $th.'>Iterasi</h><th' . $th.'>Nilai Fungsi
Objektif</th><th' . $th.'>Perubahan Fungsi Objektif</th><tr>';
        for($it=0; $it<$ulg; $it++){
echo'<td>' . ($it+1) . '</td><td>' . $jfo[$it]. '</td><td>' . $pfo[$it]. '</td></tr
>';
        }echo'</table></div>';
        //voting cluster
        for ($a=0; $a<$atr; $a++) {
            if($a<($atr-1)){
                $max_cent=0; $potensi=0;
                for($u=0; $u<$K; $u++){
                    if($max_cent<$centroid[$u][$a]){
                        $max_cent=$centroid[$u][$a];
                        $potensi=$u;
                    }
                }$voting[$a]=$potensi;
            }else{
                $min_cent=10000; $potensi=0;
                for($u=0; $u<$K; $u++){
                    if($centroid[$u][$a]<$min_cent){
                        $min_cent=$centroid[$u][$a];
                        $potensi=$u; }
                }$voting[$a]=$potensi; }}
        //menampilkan centroid akhir
        echo'<div class="col-md-6"><h4>Centroid Akhir</h4><br>
        <table class="table table-bordered table-
striped"><tr><th' . $th.'>Cluster</th>';

```

```

for($a=0; $a<$atr; $a++){
    echo'<th colspan="2"'. $th.'>'. $atribut[$a]. '</th>';
}echo'</tr>';
for($u=0; $u<$K; $u++){
    echo'<tr><th>'. ($u+1). '</th>';
    for ($a=0; $a<$atr; $a++) {
        echo'<td>'. $centroid[$u][$a]. '</td>';
        if($voting[$a]==$u){
            echo'<td><i class="fa fa-check"style="text-align:right"></i></td>';
        }else{echo'<td><i class="fa fa-close"style="text-align:right"></i></td>';}
        } echo'</tr>';
    }echo'</table>';
//Cluster dgn voting terbanyak
$vot= array_count_values($voting);
$vot2= array_search(max($vot), $vot);
echo'<h5>Cluster yang direkomendasikan untuk mendapat promosi adalah </h5><h4>cluster '. ($vot2+1). '</h4><br></div></div>';
//menentukan kelas yang diikuti
echo'<div class="col-md-6"><h4>Cluster Yang Diikuti</h4><br>
<table class="table table-bordered table-striped">
<tr><th rowspan="2"'. $th.'>No</th><th colspan="'. $K.''. $th.'>Nilai Derajat Keanggotaan</th>
<th rowspan="2"'. $th.'>Terbesar</th><th rowspan="2"'. $th.'>Cluster yang diikuti</th></tr><tr>';
for($u=0; $u<$K; $u++){
    echo'<th'. $th.'>u<sub>i'. ($u+1). '</sub></th>';
}echo'</tr>';
for($i=0; $i<$jml_data; $i++){echo'<tr><td>'. ($i+1). '</td>';
    $max_u=0;
    $cluster=0;
    for($u=0; $u<$K; $u++){
        if($max_u<$matriks[$i][$u]){
            $max_u=$matriks[$i][$u];
            $cluster=$u;
        }echo'<td>'. $matriks[$i][$u]. '</td>';
    }
    $sterbesar[$i]=$max_u; //derajat keanggotaan terbesar
    $clus[$i]=$cluster; // cluster yang diikuti
    //Menyimpan hasil pengelompokan ke database
    $query = mysql_query('insert into laporan_cluster values ("'. $idp[$i]. '", "'. $K.'', '. $sterbesar[$i]. ', "'. ($clus[$i]+1). '"');
echo'<td>'. $sterbesar[$i]. '</td><td>'. ($clus[$i]+1). '</td></tr>';
}echo'</table></div>';
//Menampilkan cluster yang direkomendasikan
echo'<div class="col-md-6"><h4>Pelanggan Yang Direkomendasikan</h4><br>
<table class="table table-bordered table-striped"><tr><th'. $th.'>No</th><th'. $th.'>Nama Pelanggan</th>';
for($a=0; $a<$atr; $a++){
    echo'<th'. $th.'>'. $atribut[$a]. '</th>';
}echo'</tr>';
for($i=0; $i<$jml_data; $i++){
    if($clus[$i]==$vot2){
        echo'<td>'. ($i+1). '</td><td>'. $nm[$i]. '</td>';
        for($a=0; $a<$atr; $a++){
            echo'<td>'. $dt[$i][$a]. '</td>';
        }
    }echo'</tr>';
}echo'</table>';
// Menghitung nilai xbi
$min_jrk=1000;

```

```

        echo'<h4>Validitas Indeks XB</h4><br><table class="table
table-bordered table-striped">
        <tr'. $th.'><th>Pasangan
cluster</th><th'. $th.'>Jarak</th></tr>';
        for($u=0; $u<($K-1); $u++){echo'<tr>';
            for($u2=($u+1); $u2<$K; $u2++){
                $jrk=0;
                for($a=0; $a<$atr; $a++){
                    $jrk += round(pow(($centroid[$u][$a]-
$centroid[$u2][$a]),2),6);
                }
                $jarak_2c[$u][$u2] = $jrk;          //nilai jarak antara
pasangan 2 cluster
                echo'<td>' . ($u+1) . ' -
' . ($u2+1) . '</td><td>' . $jarak_2c[$u][$u2] . '</td>';
                if($jarak_2c[$u][$u2]<$min_jrk){
                    $min_jrk=$jarak_2c[$u][$u2];    //nilai jarak 2
pasangan cluster terendah (min)
                }echo'</tr>';
            }
        }echo'<tr><td>Jarak
Terpendek</td><td>' . $min_jrk . '</td></tr>';
        $xb = round((($sum_fo/$jml_data)/$min_jrk), $bk);          //
nilai XBI (J/N)/min(d)
        echo'<tr><td>Indeks XB</td><td>
(' . $sum_fo . '/' . $jml_data . '/' . $min_jrk . '<br> =
' . $xb . '</td></tr></table>';

        //Menyimpan hasil centroid dan xb ke database
        for($u=0; $u<$K; $u++) {
            for ($a=0; $a<$atr; $a++) {
                $query = mysql_query('insert into centroid values
("'. $K ."', "' . ($u+1) . "', "' . ($a+1) . "', '$centroid[$u][$a] .', '$xb .', "' . ($vot2
+1) . "')'); }
            }
            $nilai=10000;
            $W=1000;
            break;
        }    $ulg++;}

?> </div>
<?php }?>
</section>
</div>
<script>
$(function () {
    //Datatable
    $("#tbl_user").DataTable();
    //Date picker
    $('#datepicker').datepicker({
        autoclose: true
    });
    //Initialize Select2 Elements
    $(".select2").select2();
    //Flat red color scheme for iCheck
    $('input[type="checkbox"].flat-red, input[type="radio"].flat-
red').iCheck({
        checkboxClass: 'icheckbox_flat-green',
        radioClass: 'iradio_flat-green'
    });
});
</script>

```

## hasil\_clustering.php

```
<?php
require_once 'head_sidebar.php';
$clustering= mysql_query('SELECT clustering FROM
CENTROID GROUP BY clustering');
$jml_cl= mysql_num_rows($clustering);
$i=0;
while ($a=
mysql_fetch_array($clustering)){ $dt_clus[$i]=$a[0]; $i++;}
$xb_op=mysql_query('SELECT clustering FROM CENTROID WHERE
xb=(SELECT MIN(xb) FROM CENTROID) GROUP BY clustering');
$xb_opt=mysql_fetch_array($xb_op);
?>
<div class="content-wrapper">
  <section class="content-header">
    <h1>Laporan Hasil Clustering
    <small>Clustering Report</small></h1>
    <ol class="breadcrumb">
      <li><a href="#"><i class="fa fa-dashboard"></i> Home</a></li>
      <li class="active">Laporan Clustering</li>
    </ol>
  </section>
  <section class="content">
    <div class="box"><br>
    <?php
      echo'<div class="box-body">
        <h4>Pengelompokan pelanggan travel yang telah dilakukan
menggunakan jumlah cluster ' ;
        for($i=0;$i<$jml_cl;$i++){
          if($i==($jml_cl-1)){echo' dan
' . $dt_clus[$i];}else{echo$dt_clus[$i].', ' ;}
        }
        echo'
          Berdasarkan nilai validitas index XB yang diperoleh,
maka jumlah cluster yang direkomendasikan adalah ' . $xb_opt[0]. '<br>
          Berikut adalah hasil perhitungan clustering dengan
metode Fuzzy C-Means:<br></h4>
        </div>';?>
        <div class="box-footer"></div>
      <div class="row">
      <div class="col-md-12">
        <div class="nav-tabs-custom">
          <ul class="nav nav-tabs">
            <?php
              for($c=2; $c<=5; $c++){
                if($c==$xb_opt[0]){ $act=' active';}else{ $act='';}
                echo'<li class="'. $act. '"><a href="#tab_'. $c. '" data-
toggle="tab">' . $c. ' Cluster </a></li>';
              }
            ?>
          </ul>
          <div class="tab-content">
            <?php
              for($c=2; $c<=5; $c++){ if($c==$xb_opt[0]){ $act='
active';}else{ $act='';}
                if($jml_dt($c)==0){echo'<div class="tab-pane ' . $act. '"
id="tab_'. $c. '"><h4>Data Kosong</h4></div>';
                }else{
                  $dt_centroid= lap_centroid($c);
                  $cen= centroid($c);
                  //Menampilkan centroid
```

```

        echo '<div class="tab-pane '.$act.'" id="tab_'. $c.'">
            <div class="row"><div class="col-md-
6"><center><h4>Centroid</h4></center>
            <table class="table table-striped table-
bordered"><tr><th'. $th.'>Cluster</th>;
            for($a=0; $a<6; $a++){
                echo '<th'. $th.'>'. $atribut[$a].'</th>;
            }echo '</tr>';
            for($u=0; $u<$c;
$u++){echo '<tr><td>'. ($u+1).'</td>';
                for($a=0; $a<6; $a++){
                    echo '<td>'. $cen[$u][$a].'</td>';
                }echo '</tr>';
            }echo '<tr><th'. $th.' colspan="4">Cluster yang
direkomendasikan</th><td colspan="3">'. $dt_centroid[0][5].'</td></tr>
            <tr><th'. $th.' colspan="4">Nilai Indeks
XB</th><td colspan="3">'. $dt_centroid[0][4].'</td></tr>
            </table></div>';

            //Menampilkan cluster yang direkomendasikan
            echo '<div class="col-md-6"><center><h4>Pelanggan
yang direkomendasikan</h4></center>
            <table class="table table-striped table-
bordered"><tr><th'. $th.'>No</th><th'. $th.'>Nama</th>;
            $at=lap__cluster($c);
            for($a=0; $a<6; $a++){
                echo '<th'. $th.'>'. $atribut[$a].'</th>;
            }echo '</tr>';
            $kol=array(1,5,6,7,8,9,10);
            for($i=0; $i<jml_plg($c); $i++){
                if($at[$i][4]==$dt_centroid[0][5]){echo '<tr><td>'. ($i+1).'</td>';
                    for($a=0; $a<7; $a++){
                        echo '<td>'. $at[$i][$kol[$a]].'</td>';
                    }
                    }echo '</tr>';
            }echo '</table></div>';
            echo '</div><br><br>';

            //Menampilkan hasil pengelompokan semua pelanggan
            echo '<div class="row"><div class="col-md-
12"><center><h4>Hasil Pengelompokan</h4></center>
            <table id="cluster'. $c.'" class="table table-
bordered table-striped">
            <thead><tr><th'. $th.'>No</th><th'. $th.'>Nama</th>;
            $at=lap__cluster($c);
            $kol2=array(1,5,6,7,8,9,10,4);
            for($a=0; $a<6; $a++){
                echo '<th'. $th.'>'. $atribut[$a].'</th>;
            }echo '<th'. $th.'>Kelas yang
diikuti</th></tr></thead>
            <tbody>';
            for($i=0; $i<jml_plg($c);
$i++){echo '<tr><td>'. ($i+1).'</td>';
                for($a=0; $a<8; $a++){
                    echo '<td>'. $at[$i][$kol2[$a]].'</td>';
                }
            }echo '</tr>
            </tbody>
            </table></div><br><br>';
            echo '</div>';
            echo '</div>';

```



```

        }}?>
    </div>
</div>
</div>
</div>
</div>
</section>
</div>
<script>
$(function () {
    $("#cluster2").DataTable();    $("#cluster3").DataTable();
    $("#cluster4").DataTable();    $("#cluster5").DataTable();
});
</script>

```

## lap\_hasil.php

```

<?php
require_once 'head_sidebar.php';
if(isset($_GET['d'])){
    $query = mysql_query('delete from user where
id_user="'.$_GET['id'].'"');
    if($query){echo "<script type='text/javascript'>alert('User berhasil
dihapus!!!');window.location.assign('user.php');</script>";}
    else{echo "<script type='text/javascript'>alert('Tidak berhasil
menghapus data user!!!');window.location.assign('user.php');</script>";}
}elseif(isset($_GET['r'])){
    $query = mysql_query('update user set password="'.$md5("12345").'"
where id_user="'.$_GET['id'].'"');
    if($query){echo "<script type='text/javascript'>alert('Password user
berhasil direset!!!');window.location.assign('user.php');</script>";}
    else{echo "<script type='text/javascript'>alert('Tidak berhasil
mereset password
user!!!');window.location.assign('user.php');</script>";}
}elseif(isset($_GET['u'])){
    $query = mysql_query('update user set status="'.$abs($_GET['st']-1).'"
where id_user="'.$_GET['id'].'"');
    if($query){echo "<script type='text/javascript'>alert('Status user
berhasil diubah!!!');window.location.assign('user.php');</script>";}
    else{echo "<script type='text/javascript'>alert('Tidak berhasil
mengubah status user!!!');window.location.assign('user.php');</script>";}
}
?>
<div class="content-wrapper">
<!-- Content Header (Page header) -->
<section class="content-header">
<h1>
    Hasil Rekomendasi Pelanggan
    <small>Recommended Customer</small>
</h1>
<ol class="breadcrumb">
<li><a href="#"><i class="fa fa-dashboard"></i> Home</a></li>
<li class="active">Hasil Rekomendasi</li>
</ol>
</section>
<!-- Main content -->
<section class="content">
<div class="box">
<div class="box-header">
<a href="export.php?tbl=lap_hasil"><button type="submit"
class="btn btn-primary">Simpan Laporan Hasil</button> </a>
</div>
<div class="box-header">

```

```

        <h3 class="box-title"></h3>
    </div>
    <div class="box-body">
        <table id="tbl_user" class="table table-bordered table-
striped">
            <thead>
                <tr>
                    <th>No</th>
                    <th>Id Pelanggan</th>
                    <th>Nama</th>
                    <th>Status</th>
                    <th>JT</th>
                    <th>BB</th>
                    <th>BK</th>
                    <th>TL</th>
                    <th>RC</th>
                </tr>
            </thead>
            <tbody>
                <?php
                $query= mysql_query("SELECT * FROM laporan_cluster lc LEFT JOIN
pelanggan p ON lc.id_pelanggan=p.id_pelanggan
LEFT JOIN rekap_transaksi rt ON rt.id_pelanggan=lc.id_pelanggan
WHERE cluster=(SELECT clustering FROM CENTROID WHERE xb=(SELECT
MIN(xb)FROM CENTROID)GROUP BY clustering)
AND kelas=(SELECT voting FROM CENTROID WHERE xb=(SELECT
MIN(xb)FROM CENTROID)GROUP BY voting)");
                $i=0;
                while($d = mysql_fetch_array($query)){
                    if($d['status']==1){$st='Instansi';}else{$st='Pribadi';}
                    echo '<tr>
                        <td>'.($i+1).'</td>
                        <td>'. $d['id_pelanggan'].'</td>
                        <td>'. $d['nama'].'</td>
                        <td>'. $st.'</td>
                        <td>'. $d['x1'].'</td>
                        <td>'. $d['x2'].'</td>
                        <td>'. $d['x3'].'</td>
                        <td>'. $d['x4'].'</td>
                        <td>'. $d['x6'].'</td>
                    </tr>'; $i++;}
                ?>
            </tbody>
        </table>
    </div>
</div>
</section>
</div>
<script>
    $(function () {
        $("#tbl_user").DataTable();
    });
</script>

```

### lap\_transaksi.php

```

<?php
require_once 'head_sidebar.php';
?>
<div class="content-wrapper">
    <!-- Content Header (Page header) -->
    <section class="content-header">
        <h1>

```

```

        Laporan Transaksi Pelanggan
        <small>Transaction Report</small>
    </h1>
    <ol class="breadcrumb">
        <li><a href="#"><i class="fa fa-dashboard"></i> Home</a></li>
        <li class="active">Laporan Transaksi</li>
    </ol>
</section>
<!-- Main content -->
<section class="content">
    <div class="box">
        <div class="box-header">
            <a href="export.php?tbl=lap_transaksi"><button
type="submit" class="btn btn-primary">Simpan Laporan Transaksi</button>
</a>
        </div>
        <div class="box-header">
            <h3 class="box-title"></h3>
        </div>
        <div class="box-body">
            <table id="tbl_user" class="table table-bordered table-
striped">
                <thead>
                    <tr>
                        <th>No</th>
                        <th>Nama Pelanggan</th>
                        <th>Status Pelanggan</th>
                        <th>Total Transaksi</th>
                        <th>Total Bus Besar</th>
                        <th>Total Bus Kecil</th>
                        <th>Total Tour Leader</th>
                        <th>Recency</th>
                    </tr>
                </thead>
                <tbody>
                    <?php
                    $query= mysql_query("select rk.*, p.* from rekap_transaksi rk
left join pelanggan p on rk.id_pelanggan=p.id_pelanggan order by
rk.id_pelanggan");
                    $i=1;
                    while($d = mysql_fetch_array($query)){
                        if($d['status']==1){$st='Instansi';}else{$st='Pribadi';}
                    $att=array(1,2,3,4,6);
                    echo '<tr>
                        <td>'.$i.</td>
                        <td>'.$d['nama'].'</td>
                        <td>'.$st.</td>';
                        for($a=0; $a<count($att); $a++){
                            if($d['x'.$att[$a]]==""){$n='0';}else{$n=$d['x'.$att[$a]];}
                            echo '<td>'.$n.</td>';
                            echo '</tr>'; $i++;}
                    ?>
                </tbody>
            </table>
        </div>
    </div>
</section>
</div>
<script>
    $(function () {
        $("#tbl_user").DataTable();
    });
</script>

```

