LAMPIRAN A

LIST PROGRAM PADA MATLAB

1. Program Ekstraksi Local Derivative Pattern (LDP)

```
A = dir('C:\MATLAB\R2012a\bin\database\*.jpg'); % folder citra
referensi
T=[];
for i = 1 : length(A)
namafile = fullfile('C:\MATLAB\R2012a\bin\database',A(i).name);
    I = imread(namafile);
     vein=imresize(I,[100 100]);
         M=rgb2gray(vein); % ubah citra ke bentuk grayscale
      w=size(M,1); %lebar citra
  h=size(M,2);  %tinggi citra

  % ektraksi LDP
  for i=3:w-2
    for j=3:h-2
         if M(i+1,j+1)>M(i+1,j) && M(i,j)>M(i,j-1);
             I1= 0;
         elseif M(i+1,j+1)<M(i+1,j) && M(i,j)<M(i,j-1);
                 I1=0;
         elseif M(i+1,j+1)>M(i+1,j) && M(i,j)<M(i,j-1);
                 I1=1;
         else  M(i+1,j+1)<M(i+1,j) && M(i,j)>M(i,j-1);
             I1=1;
         end

          if M(i+1,j)>M(i+1,j-1) && M(i,j)>M(i,j-1);
             I2= 0;
         elseif M(i+1,j)<M(i+1,j-1) && M(i,j)<M(i,j-1);
                 I2=0;
         elseif M(i+1,j)>M(i+1,j-1) && M(i,j)<M(i,j-1);
                 I2=1;
         else  M(i+1,j)<M(i+1,j-1) && M(i,j)>M(i,j-1);
             I2=1;
          end

         if  M(i+1,j-1)>M(i+1,j-2) && M(i,j)>M(i,j-1);
             I3=0;
         elseif M(i+1,j-1)<M(i+1,j-2) && M(i,j)<M(i,j-1);
                 I3=0;
         elseif M(i+1,j-1)>M(i+1,j-2) && M(i,j)<M(i,j-1);
                 I3=1;
         else  M(i+1,j-1)<M(i+1,j-2) && M(i,j)>M(i,j-1);
             I3=1;
         end

         if M(i,j)>M(i,j-1) && M(i,j-1)>M(i,j-2);
             I4= 0;
         elseif M(i,j)<M(i,j-1) && M(i,j-1)<M(i,j-2);
                 I4=0;
         elseif M(i,j)>M(i,j-1) && M(i,j-1)<M(i,j-2);
                 I4=1;
         else  M(i,j)<M(i,j-1) && M(i,j-1)>M(i,j-2);
                 I4=1;
         End
```

```
if M(i,j)>M(i,j-1) && M(i-1,j-1)>M(i-1,j-2);
    I5= 0;
elseif M(i,j)<M(i,j-1) && M(i-1,j-1)<M(i-1,j-2);
        I5=0;
elseif M(i,j)>M(i,j-1) && M(i-1,j-1)<M(i-1,j-2);
        I5=1;
else  M(i,j)<M(i,j-1) && M(i-1,j-1)>M(i-1,j-2);
    I5=1;
end

if M(i,j)>M(i,j-1) && M(i-1,j)>M(i-1,j-1);
    I6= 0;
elseif M(i,j)<M(i,j-1) && M(i-1,j)<M(i-1,j-1);
        I6=0;
elseif M(i,j)>M(i,j-1) && M(i-1,j)<M(i-1,j-1);
        I6=1;
else  M(i,j)<M(i,j-1) && M(i-1,j)>M(i-1,j-1);
    I6=1;
end
if M(i,j)>M(i,j-1) && M(i-1,j+1)>M(i-1,j);
    I7= 0;
elseif M(i,j)<M(i,j-1) && M(i-1,j+1)<M(i-1,j);
        I7=0;
elseif M(i,j)>M(i,j-1) && M(i-1,j+1)<M(i-1,j);
        I7=1;
else  M(i,j)<M(i,j-1) && M(i-1,j+1)>M(i-1,j);
    I7=1;
End

if M(i,j+1)>M(i,j) && M(i,j)>M(i,j-1);
    I8=0;
elseif M(i,j+1)<M(i,j) && M(i,j)<M(i,j-1);
        I8=0;
elseif M(i,j+1)>M(i,j) && M(i,j)<M(i,j-1);
        I8=1;
else  M(i,j+1)<M(i,j) && M(i,j)>M(i,j-1);
    I8=1;
end
 if M(i,j)>M(i+1,j-1) && M(i+1,j+1)>M(i+2,j);
    I9= 0;
elseif M(i,j)<M(i+1,j-1) && M(i+1,j+1)<M(i+2,j);
        I9=0;
elseif M(i,j)>M(i+1,j-1) && M(i+1,j+1)<M(i+2,j);
        I9=1;
else  M(i,j)<M(i+1,j-1) && M(i+1,j+1)>M(i+2,j);
    I9=1;
end

 if M(i,j)>M(i+1,j-1) && M(i+1,j)>M(i+2,j-1);
    I10= 0;
elseif M(i,j)<M(i+1,j-1) && M(i+1,j)<M(i+2,j-1);
        I10=0;
elseif M(i,j)>M(i+1,j-1) && M(i+1,j)<M(i+2,j-1);
        I10=1;
else  M(i,j)<M(i+1,j-1) && M(i+1,j)>M(i+2,j-1);
    I10=1;
 end
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if  M(i,j)>M(i+1,j-1) && M(i+1,j-1)>M(i+2,j-2);
    I11=0;
elseif M(i,j)<M(i+1,j-1) && M(i+1,j-1)<M(i+2,j-2);
        I11=0;
elseif M(i,j)>M(i+1,j-1) && M(i+1,j-1)<M(i+2,j-2);
        I11=1;
else  M(i,j)<M(i+1,j-1) && M(i+1,j-1)>M(i+2,j-2);
    I11=1;
end

if M(i,j)>M(i+1,j-1) && M(i,j-1)>M(i+1,j-2);
    I12= 0;
elseif M(i,j)<M(i+1,j-1) && M(i,j-1)<M(i+1,j-2);
        I12=0;
elseif M(i,j)>M(i+1,j-1) && M(i,j-1)<M(i+1,j-2);
        I12=1;
else  M(i,j)<M(i+1,j-1) && M(i,j-1)>M(i+1,j-2);
        I12=1;
end

if M(i,j)>M(i+1,j-1) && M(i-1,j-1)>M(i,j-2);
    I13= 0;
elseif M(i,j)<M(i+1,j-1) && M(i-1,j-1)<M(i,j-2);
        I13=0;
elseif M(i,j)>M(i+1,j-1) && M(i-1,j-1)<M(i,j-2);
        I13=1;
else  M(i,j)<M(i+1,j-1) && M(i-1,j-1)>M(i,j-2);
    I13=1;
end

if M(i,j)>M(i+1,j-1) && M(i-1,j)>M(i,j-1);
    I14= 0;
elseif M(i,j)<M(i+1,j-1) && M(i-1,j)<M(i,j-1);
        I14=0;
elseif M(i,j)>M(i+1,j-1) && M(i-1,j)<M(i,j-1);
        I14=1;
else  M(i,j)<M(i+1,j-1) && M(i-1,j)>M(i,j-1);
    I14=1;
end

if M(i-1,j+1)>M(i,j) && M(i,j)>M(i+1,j-1);
    I15= 0;
elseif M(i-1,j+1)<M(i,j) && M(i,j)<M(i+1,j-1);
        I15=0;
elseif M(i-1,j+1)>M(i,j) && M(i,j)<M(i+1,j-1);
        I15=1;
else  M(i-1,j+1)<M(i,j) && M(i,j)>M(i+1,j-1);
    I15=1;
end

if M(i,j+1)>M(i+1,j) && M(i,j)>M(i+1,j-1);
    I16=0;
elseif M(i,j+1)<M(i+1,j) && M(i,j)<M(i+1,j-1);
        I16=0;
elseif M(i,j+1)>M(i+1,j) && M(i,j)<M(i+1,j-1);
        I16=1;
else  M(i,j+1)<M(i+1,j) && M(i,j)>M(i+1,j-1);
    I16=1;
End
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```
if M(i,j)>M(i+1,j) && M(i+1,j+1)>M(i+2,j+1);
    I17= 0;
elseif M(i,j)<M(i+1,j) && M(i+1,j+1)<M(i+2,j+1);
        I17=0;
elseif M(i,j)>M(i+1,j) && M(i+1,j+1)<M(i+2,j+1);
        I17=1;
else  M(i,j)<M(i+1,j) && M(i+1,j+1)>M(i+2,j+1);
    I17=1;
end

 if M(i,j)>M(i+1,j) && M(i+1,j)>M(i+2,j);
    I18= 0;
elseif M(i,j)<M(i+1,j) && M(i+1,j)<M(i+2,j);
        I18=0;
elseif M(i,j)>M(i+1,j) && M(i+1,j)<M(i+2,j);
        I18=1;
else  M(i,j)<M(i+1,j) && M(i+1,j)>M(i+2,j);
    I18=1;
 end

if  M(i,j)>M(i+1,j) && M(i+1,j-1)>M(i+2,j-1);
    I19=0;
elseif M(i,j)<M(i+1,j) && M(i+1,j-1)<M(i+2,j-1);
        I19=0;
elseif M(i,j)>M(i+1,j) && M(i+1,j-1)<M(i+2,j-1);
        I19=1;
else  M(i,j)<M(i+1,j) && M(i+1,j-1)>M(i+2,j-1);
    I19=1;
end

if M(i,j)>M(i+1,j) && M(i,j-1)>M(i+1,j-1);
    I20= 0;
elseif M(i,j)<M(i+1,j) && M(i,j-1)<M(i+1,j-1);
        I20=0;
elseif M(i,j)>M(i+1,j) && M(i,j-1)<M(i+1,j-1);
        I20=1;
else  M(i,j)<M(i+1,j) && M(i,j-1)>M(i+1,j-1);
        I20=1;
end

if M(i,j)>M(i+1,j) && M(i-1,j-1)>M(i,j-1);
    I21= 0;
elseif M(i,j)<M(i+1,j) && M(i-1,j-1)<M(i,j-1);
        I21=0;
elseif M(i,j)>M(i+1,j) && M(i-1,j-1)<M(i,j-1);
        I21=1;
else  M(i,j)<M(i+1,j) && M(i-1,j-1)>M(i,j-1);
    I21=1;
end

if M(i-1,j)>M(i,j) && M(i,j)>M(i+1,j);
    I22= 0;
elseif M(i-1,j)<M(i,j) && M(i,j)<M(i+1,j);
        I22=0;
elseif M(i-1,j)>M(i,j) && M(i,j)<M(i+1,j);
        I22=1;
else  M(i-1,j)<M(i,j) && M(i,j)>M(i+1,j);
```

```
    I22=1;
end

if M(i-1,j+1)>M(i,j+1) && M(i,j)>M(i+1,j);
    I23= 0;
elseif M(i-1,j+1)<M(i,j+1) && M(i,j)<M(i+1,j);
        I23=0;
elseif M(i-1,j+1)>M(i,j+1) && M(i,j)<M(i+1,j);
        I23=1;
else  M(i-1,j+1)<M(i,j+1) && M(i,j)>M(i+1,j);
    I23=1;
end

if M(i,j+1)>M(i+1,j+1) && M(i,j)>M(i+1,j);
    I24=0;
elseif M(i,j+1)<M(i+1,j+1) && M(i,j)<M(i+1,j);
        I24=0;
elseif M(i,j+1)>M(i+1,j+1) && M(i,j)<M(i+1,j);
        I24=1;
else  M(i,j+1)<M(i+1,j+1) && M(i,j)>M(i+1,j);
    I24=1;
end
if M(i,j)>M(i+1,j+1) && M(i+1,j+1)>M(i+2,j+2);
    I25= 0;
elseif M(i,j)<M(i+1,j+1) && M(i+1,j+1)<M(i+2,j+2);
        I25=0;
elseif M(i,j)>M(i+1,j+1) && M(i+1,j+1)<M(i+2,j+2);
        I25=1;
else  M(i,j)<M(i+1,j+1) && M(i+1,j+1)>M(i+2,j+2);
    I25=1;
end

 if M(i,j)>M(i+1,j+1) && M(i+1,j)>M(i+2,j+1);
    I26= 0;
elseif M(i,j)<M(i+1,j+1) && M(i+1,j)<M(i+2,j+1);
        I26=0;
elseif M(i,j)>M(i+1,j+1) && M(i+1,j)<M(i+2,j+1);
        I26=1;
else  M(i,j)<M(i+1,j+1) && M(i+1,j)>M(i+2,j+1);
    I26=1;
 end
if  M(i,j)>M(i+1,j+1) && M(i+1,j-1)>M(i+2,j);
    I27=0;
elseif M(i,j)<M(i+1,j+1) && M(i+1,j-1)<M(i+2,j);
        I27=0;
elseif M(i,j)>M(i+1,j+1) && M(i+1,j-1)<M(i+2,j);
        I27=1;
else  M(i,j)<M(i+1,j+1) && M(i+1,j-1)>M(i+2,j);
    I27=1;
end
if M(i,j)>M(i+1,j+1) && M(i,j-1)>M(i+1,j);
    I28= 0;
elseif M(i,j)<M(i+1,j+1) && M(i,j-1)<M(i+1,j);
        I28=0;
elseif M(i,j)>M(i+1,j+1) && M(i,j-1)<M(i+1,j);
        I28=1;
else  M(i,j)<M(i+1,j+1) && M(i,j-1)>M(i+1,j);
        I28=1;
end
```

```
            if M(i-1,j-1)>M(i,j) && M(i,j)>M(i-1,j-1);
                I29= 0;
            elseif M(i-1,j-1)<M(i,j) && M(i,j)<M(i-1,j-1);
                    I29=0;
            elseif M(i-1,j-1)>M(i,j) && M(i,j)<M(i-1,j-1);
                    I29=1;
            else  M(i-1,j-1)<M(i,j) && M(i,j)>M(i-1,j-1);
                I29=1;
            end

            if M(i-1,j)>M(i,j+1) && M(i,j)>M(i+1,j+1);
                I30= 0;
            elseif M(i-1,j)<M(i,j+1) && M(i,j)<M(i+1,j+1);
                    I30=0;
            elseif M(i-1,j)>M(i,j+1) && M(i,j)<M(i+1,j+1);
                    I30=1;
            else  M(i-1,j)<M(i,j+1) && M(i,j)>M(i+1,j+1);
                I30=1;
            end

            if M(i-1,j+1)>M(i,j+2) && M(i,j)>M(i+1,j+1);
                I31= 0;
            elseif M(i-1,j+1)<M(i,j+2) && M(i,j)<M(i+1,j+1);
                    I31=0;
            elseif M(i-1,j+1)>M(i,j+2) && M(i,j)<M(i+1,j+1);
                    I31=1;
            else  M(i-1,j+1)<M(i,j+2) && M(i,j)>M(i+1,j+1);
                I31=1;
            end

            if M(i,j+1)>M(i+1,j+2) && M(i,j)>M(i+1,j+1);
                I32=0;
            elseif M(i,j+1)<M(i+1,j+2) && M(i,j)<M(i+1,j+1);
                    I32=0;
            elseif M(i,j+1)>M(i+1,j+2) && M(i,j)<M(i+1,j+1);
                    I32=1;
            else  M(i,j+1)<M(i+1,j+2) && M(i,j)>M(i+1,j+1);
                I32=1;
            end

LDP(i,j)=I1*2^31+I2*2^30+I3*2^29+I4*2^28+I5*2^27+I6*2^26+I7*2^25+I
8*2^24+I9*2^23+I10*2^22+I11*2^21+I12*2^20+I13*2^19+I14*2^18+I15*2^
17+I16*2^16+I17*2^15+I18*2^14+I19*2^13+I20*2^12+I21*2^11+I22*2^10+
I23*2^9+I24*2^8+I25*2^7+I26*2^6+I27*2^5+I28*2^4+I29*2^3+I30*2^2+I3
1*2^1+I32*2^0;
    end
  end
  [baris kolom] = size(LDP);

    temp = reshape(LDP',baris*kolom,1);    % mengubah ukuran citra
2D menjadi 1D
    T = [T temp];
end
coba=T;

save 'C:\MATLAB\R2012a\bin\coba' coba;
```

2. Program Menentukan *Eigenfaces*

```
load coba.mat % memanggil citra hasil Ekstraksi LDP
T=coba; % citra berukuran NxP

m = mean(T,2); % menghitung nilai rata - rata dari citra pembuluh
darah
jumlah_percobaan = size(T,2);
A = [];
for i = 1 : jumlah_percobaan
    selisih = double(T(:,i)) - m; % menghitung selisih antara
citra rata - rata dengan citra hasil ekstraksi LDP
    A = [A selisih]; % menggabungkan setiap citra selisih
end
C = A'*A; %  menentukan nilai covariance matrik
[V D] = eig(C); % menentukan nilai eigen dan vektor eigen
C_eigen_vektor = V; % mengambil nilai vektor eigen
Eigenfaces = A * C_eigen_vektor; % menentukan nilai eigenfaces

save 'C:\MATLAB\R2012a\bin\Eigenfaces' Eigenfaces;
```

3. Program pengujian

```
load Eigenfaces.mat % memanggil nilai eigenfaces
load coba.mat % memanggil citra hasil Ekstraksi LDP

T=coba;
m = mean(T,2); % menghitung nilai rata - rata dari citra pembuluh
darah
jumlah_percobaan = size(T,2);
A = [];
for i = 1 : jumlah_percobaan
    selisih = double(T(:,i)) - m; % menghitung selisih antara
citra rata - rata dengan citra hasil ekstraksi LDP
    A = [A selisih]; % menggabungkan setiap citra selisih
end

proyeksicitra = [];
jumlah_percobaan = size(A,2);
for i = 1 : jumlah_percobaan
    temp = Eigenfaces'*A(:,i); % menggabungkan setiap citra
proyeksi
    proyeksicitra = [proyeksicitra temp];
end

% ektraksi LDP dan mencari nilai eigenfaces dari citra uji
I=imread('C:\MATLAB\R2012a\bin\database\04-IMG-02.jpg');
        vein=imresize(I,[100 100]);
         M=rgb2gray(vein);
      w=size(M,1);
  h=size(M,2);
  for i=3:w-2
    for j=3:h-2
        if M(i+1,j+1)>M(i+1,j) && M(i,j)>M(i,j-1);
             I1= 0;
         elseif M(i+1,j+1)<M(i+1,j) && M(i,j)<M(i,j-1);
                 I1=0;
```

```
elseif M(i+1,j+1)>M(i+1,j) && M(i,j)<M(i,j-1);
        I1=1;
else  M(i+1,j+1)<M(i+1,j) && M(i,j)>M(i,j-1);
    I1=1;
end

 if M(i+1,j)>M(i+1,j-1) && M(i,j)>M(i,j-1);
    I2= 0;
elseif M(i+1,j)<M(i+1,j-1) && M(i,j)<M(i,j-1);
        I2=0;
elseif M(i+1,j)>M(i+1,j-1) && M(i,j)<M(i,j-1);
        I2=1;
else  M(i+1,j)<M(i+1,j-1) && M(i,j)>M(i,j-1);
    I2=1;
 end

if  M(i+1,j-1)>M(i+1,j-2) && M(i,j)>M(i,j-1);
    I3=0;
elseif M(i+1,j-1)<M(i+1,j-2) && M(i,j)<M(i,j-1);
        I3=0;
elseif M(i+1,j-1)>M(i+1,j-2) && M(i,j)<M(i,j-1);
        I3=1;
else  M(i+1,j-1)<M(i+1,j-2) && M(i,j)>M(i,j-1);
    I3=1;
end

if M(i,j)>M(i,j-1) && M(i,j-1)>M(i,j-2);
    I4= 0;
elseif M(i,j)<M(i,j-1) && M(i,j-1)<M(i,j-2);
        I4=0;
elseif M(i,j)>M(i,j-1) && M(i,j-1)<M(i,j-2);
        I4=1;
else  M(i,j)<M(i,j-1) && M(i,j-1)>M(i,j-2);
        I4=1;
end

if M(i,j)>M(i,j-1) && M(i-1,j-1)>M(i-1,j-2);
    I5= 0;
elseif M(i,j)<M(i,j-1) && M(i-1,j-1)<M(i-1,j-2);
        I5=0;
elseif M(i,j)>M(i,j-1) && M(i-1,j-1)<M(i-1,j-2);
        I5=1;
else  M(i,j)<M(i,j-1) && M(i-1,j-1)>M(i-1,j-2);
    I5=1;
end

if M(i,j)>M(i,j-1) && M(i-1,j)>M(i-1,j-1);
    I6= 0;
elseif M(i,j)<M(i,j-1) && M(i-1,j)<M(i-1,j-1);
        I6=0;
elseif M(i,j)>M(i,j-1) && M(i-1,j)<M(i-1,j-1);
        I6=1;
else  M(i,j)<M(i,j-1) && M(i-1,j)>M(i-1,j-1);
    I6=1;
end
if M(i,j)>M(i,j-1) && M(i-1,j+1)>M(i-1,j);
    I7= 0;
elseif M(i,j)<M(i,j-1) && M(i-1,j+1)<M(i-1,j);
```

```
        I7=0;
elseif M(i,j)>M(i,j-1) && M(i-1,j+1)<M(i-1,j);
        I7=1;
else  M(i,j)<M(i,j-1) && M(i-1,j+1)>M(i-1,j);
    I7=1;
end
if M(i,j+1)>M(i,j) && M(i,j)>M(i,j-1);
    I8=0;
elseif M(i,j+1)<M(i,j) && M(i,j)<M(i,j-1);
        I8=0;
elseif M(i,j+1)>M(i,j) && M(i,j)<M(i,j-1);
        I8=1;
else  M(i,j+1)<M(i,j) && M(i,j)>M(i,j-1);
    I8=1;
end
 if M(i,j)>M(i+1,j-1) && M(i+1,j+1)>M(i+2,j);
    I9= 0;
elseif M(i,j)<M(i+1,j-1) && M(i+1,j+1)<M(i+2,j);
        I9=0;
elseif M(i,j)>M(i+1,j-1) && M(i+1,j+1)<M(i+2,j);
        I9=1;
else  M(i,j)<M(i+1,j-1) && M(i+1,j+1)>M(i+2,j);
    I9=1;
end

 if M(i,j)>M(i+1,j-1) && M(i+1,j)>M(i+2,j-1);
    I10= 0;
elseif M(i,j)<M(i+1,j-1) && M(i+1,j)<M(i+2,j-1);
        I10=0;
elseif M(i,j)>M(i+1,j-1) && M(i+1,j)<M(i+2,j-1);
        I10=1;
else  M(i,j)<M(i+1,j-1) && M(i+1,j)>M(i+2,j-1);
    I10=1;
 end

if  M(i,j)>M(i+1,j-1) && M(i+1,j-1)>M(i+2,j-2);
    I11=0;
elseif M(i,j)<M(i+1,j-1) && M(i+1,j-1)<M(i+2,j-2);
        I11=0;
elseif M(i,j)>M(i+1,j-1) && M(i+1,j-1)<M(i+2,j-2);
        I11=1;
else  M(i,j)<M(i+1,j-1) && M(i+1,j-1)>M(i+2,j-2);
    I11=1;
end

if M(i,j)>M(i+1,j-1) && M(i,j-1)>M(i+1,j-2);
    I12= 0;
elseif M(i,j)<M(i+1,j-1) && M(i,j-1)<M(i+1,j-2);
        I12=0;
elseif M(i,j)>M(i+1,j-1) && M(i,j-1)<M(i+1,j-2);
        I12=1;
else  M(i,j)<M(i+1,j-1) && M(i,j-1)>M(i+1,j-2);
        I12=1;
end

if M(i,j)>M(i+1,j-1) && M(i-1,j-1)>M(i,j-2);
    I13= 0;
elseif M(i,j)<M(i+1,j-1) && M(i-1,j-1)<M(i,j-2);
```

```
        I13=0;
elseif M(i,j)>M(i+1,j-1) && M(i-1,j-1)<M(i,j-2);
        I13=1;
else  M(i,j)<M(i+1,j-1) && M(i-1,j-1)>M(i,j-2);
    I13=1;
end

if M(i,j)>M(i+1,j-1) && M(i-1,j)>M(i,j-1);
    I14= 0;
elseif M(i,j)<M(i+1,j-1) && M(i-1,j)<M(i,j-1);
        I14=0;
elseif M(i,j)>M(i+1,j-1) && M(i-1,j)<M(i,j-1);
        I14=1;
else  M(i,j)<M(i+1,j-1) && M(i-1,j)>M(i,j-1);
    I14=1;
end

if M(i-1,j+1)>M(i,j) && M(i,j)>M(i+1,j-1);
    I15= 0;
elseif M(i-1,j+1)<M(i,j) && M(i,j)<M(i+1,j-1);
        I15=0;
elseif M(i-1,j+1)>M(i,j) && M(i,j)<M(i+1,j-1);
        I15=1;
else  M(i-1,j+1)<M(i,j) && M(i,j)>M(i+1,j-1);
    I15=1;
end

if M(i,j+1)>M(i+1,j) && M(i,j)>M(i+1,j-1);
    I16=0;
elseif M(i,j+1)<M(i+1,j) && M(i,j)<M(i+1,j-1);
        I16=0;
elseif M(i,j+1)>M(i+1,j) && M(i,j)<M(i+1,j-1);
        I16=1;
else  M(i,j+1)<M(i+1,j) && M(i,j)>M(i+1,j-1);
    I16=1;
end
if M(i,j)>M(i+1,j) && M(i+1,j+1)>M(i+2,j+1);
    I17= 0;
elseif M(i,j)<M(i+1,j) && M(i+1,j+1)<M(i+2,j+1);
        I17=0;
elseif M(i,j)>M(i+1,j) && M(i+1,j+1)<M(i+2,j+1);
        I17=1;
else  M(i,j)<M(i+1,j) && M(i+1,j+1)>M(i+2,j+1);
    I17=1;
end

 if M(i,j)>M(i+1,j) && M(i+1,j)>M(i+2,j);
    I18= 0;
elseif M(i,j)<M(i+1,j) && M(i+1,j)<M(i+2,j);
        I18=0;
elseif M(i,j)>M(i+1,j) && M(i+1,j)<M(i+2,j);
        I18=1;
else  M(i,j)<M(i+1,j) && M(i+1,j)>M(i+2,j);
    I18=1;
 end

if  M(i,j)>M(i+1,j) && M(i+1,j-1)>M(i+2,j-1);
    I19=0;
```

```
elseif M(i,j)<M(i+1,j) && M(i+1,j-1)<M(i+2,j-1);
        I19=0;
elseif M(i,j)>M(i+1,j) && M(i+1,j-1)<M(i+2,j-1);
        I19=1;
else  M(i,j)<M(i+1,j) && M(i+1,j-1)>M(i+2,j-1);
    I19=1;
end

if M(i,j)>M(i+1,j) && M(i,j-1)>M(i+1,j-1);
    I20= 0;
elseif M(i,j)<M(i+1,j) && M(i,j-1)<M(i+1,j-1);
        I20=0;
elseif M(i,j)>M(i+1,j) && M(i,j-1)<M(i+1,j-1);
        I20=1;
else  M(i,j)<M(i+1,j) && M(i,j-1)>M(i+1,j-1);
        I20=1;
end

if M(i,j)>M(i+1,j) && M(i-1,j-1)>M(i,j-1);
    I21= 0;
elseif M(i,j)<M(i+1,j) && M(i-1,j-1)<M(i,j-1);
        I21=0;
elseif M(i,j)>M(i+1,j) && M(i-1,j-1)<M(i,j-1);
        I21=1;
else  M(i,j)<M(i+1,j) && M(i-1,j-1)>M(i,j-1);
    I21=1;
end

if M(i-1,j)>M(i,j) && M(i,j)>M(i+1,j);
    I22= 0;
elseif M(i-1,j)<M(i,j) && M(i,j)<M(i+1,j);
        I22=0;
elseif M(i-1,j)>M(i,j) && M(i,j)<M(i+1,j);
        I22=1;
else  M(i-1,j)<M(i,j) && M(i,j)>M(i+1,j);
    I22=1;
end

if M(i-1,j+1)>M(i,j+1) && M(i,j)>M(i+1,j);
    I23= 0;
elseif M(i-1,j+1)<M(i,j+1) && M(i,j)<M(i+1,j);
        I23=0;
elseif M(i-1,j+1)>M(i,j+1) && M(i,j)<M(i+1,j);
        I23=1;
else  M(i-1,j+1)<M(i,j+1) && M(i,j)>M(i+1,j);
    I23=1;
end

if M(i,j+1)>M(i+1,j+1) && M(i,j)>M(i+1,j);
    I24=0;
elseif M(i,j+1)<M(i+1,j+1) && M(i,j)<M(i+1,j);
        I24=0;
elseif M(i,j+1)>M(i+1,j+1) && M(i,j)<M(i+1,j);
        I24=1;
else  M(i,j+1)<M(i+1,j+1) && M(i,j)>M(i+1,j);
    I24=1;
end
if M(i,j)>M(i+1,j+1) && M(i+1,j+1)>M(i+2,j+2);
```

```
    I25= 0;
elseif M(i,j)<M(i+1,j+1) && M(i+1,j+1)<M(i+2,j+2);
        I25=0;
elseif M(i,j)>M(i+1,j+1) && M(i+1,j+1)<M(i+2,j+2);
        I25=1;
else  M(i,j)<M(i+1,j+1) && M(i+1,j+1)>M(i+2,j+2);
    I25=1;
end

 if M(i,j)>M(i+1,j+1) && M(i+1,j)>M(i+2,j+1);
    I26= 0;
elseif M(i,j)<M(i+1,j+1) && M(i+1,j)<M(i+2,j+1);
        I26=0;
elseif M(i,j)>M(i+1,j+1) && M(i+1,j)<M(i+2,j+1);
        I26=1;
else  M(i,j)<M(i+1,j+1) && M(i+1,j)>M(i+2,j+1);
    I26=1;
 end

if  M(i,j)>M(i+1,j+1) && M(i+1,j-1)>M(i+2,j);
    I27=0;
elseif M(i,j)<M(i+1,j+1) && M(i+1,j-1)<M(i+2,j);
        I27=0;
elseif M(i,j)>M(i+1,j+1) && M(i+1,j-1)<M(i+2,j);
        I27=1;
else  M(i,j)<M(i+1,j+1) && M(i+1,j-1)>M(i+2,j);
    I27=1;
end

if M(i,j)>M(i+1,j+1) && M(i,j-1)>M(i+1,j);
    I28= 0;
elseif M(i,j)<M(i+1,j+1) && M(i,j-1)<M(i+1,j);
        I28=0;
elseif M(i,j)>M(i+1,j+1) && M(i,j-1)<M(i+1,j);
        I28=1;
else  M(i,j)<M(i+1,j+1) && M(i,j-1)>M(i+1,j);
        I28=1;
end

if M(i-1,j-1)>M(i,j) && M(i,j)>M(i-1,j-1);
    I29= 0;
elseif M(i-1,j-1)<M(i,j) && M(i,j)<M(i-1,j-1);
        I29=0;
elseif M(i-1,j-1)>M(i,j) && M(i,j)<M(i-1,j-1);
        I29=1;
else  M(i-1,j-1)<M(i,j) && M(i,j)>M(i-1,j-1);
    I29=1;
end

if M(i-1,j)>M(i,j+1) && M(i,j)>M(i+1,j+1);
    I30= 0;
elseif M(i-1,j)<M(i,j+1) && M(i,j)<M(i+1,j+1);
        I30=0;
elseif M(i-1,j)>M(i,j+1) && M(i,j)<M(i+1,j+1);
        I30=1;
else  M(i-1,j)<M(i,j+1) && M(i,j)>M(i+1,j+1);
    I30=1;
end
```

```
            if M(i-1,j+1)>M(i,j+2) && M(i,j)>M(i+1,j+1);
                I31= 0;
            elseif M(i-1,j+1)<M(i,j+2) && M(i,j)<M(i+1,j+1);
                    I31=0;
            elseif M(i-1,j+1)>M(i,j+2) && M(i,j)<M(i+1,j+1);
                    I31=1;
            else  M(i-1,j+1)<M(i,j+2) && M(i,j)>M(i+1,j+1);
                I31=1;
            end

            if M(i,j+1)>M(i+1,j+2) && M(i,j)>M(i+1,j+1);
                I32=0;
            elseif M(i,j+1)<M(i+1,j+2) && M(i,j)<M(i+1,j+1);
                    I32=0;
            elseif M(i,j+1)>M(i+1,j+2) && M(i,j)<M(i+1,j+1);
                    I32=1;
            else  M(i,j+1)<M(i+1,j+2) && M(i,j)>M(i+1,j+1);
                I32=1;
            end

LDP(i,j)=I1*2^31+I2*2^30+I3*2^29+I4*2^28+I5*2^27+I6*2^26+I7*2^25+I
8*2^24+I9*2^23+I10*2^22+I11*2^21+I12*2^20+I13*2^19+I14*2^18+I15*2^
17+I16*2^16+I17*2^15+I18*2^14+I19*2^13+I20*2^12+I21*2^11+I22*2^10+
I23*2^9+I24*2^8+I25*2^7+I26*2^6+I27*2^5+I28*2^4+I29*2^3+I30*2^2+I3
1*2^1+I32*2^0;
    end
  end

[irow icol] = size(LDP);
citra_1D = reshape(LDP',irow*icol,1);
selisih_uji = double(citra_1D) - m; % selisih hasil ektraksi LDP
dengan citra rata - rata
proyeksi_citra_uji = Eigenfaces' * selisih_uji; % vektor fitur
citra uji

% menghitung euclidean distance minimum

Euc_dist = [];
for i = 1 : jumlah_percobaan
    q = proyeksicitra(:,i);
    jarak = sqrt(sum((proyeksi_citra_uji - q).^2));
    Euc_dist = [Euc_dist jarak];
end

[Euc_dist_min , indeks_pengenalan] = min(Euc_dist);
keluaran_citra = strcat(int2str(indeks_pengenalan),'.jpg')
H=Euc_dist_min;
threshold=2.184158e+22;
if H>threshold
    B=imread('C:\MATLAB\R2012a\bin\salah.jpg')
     figure;imshow(B);
     title('Gambar hasil pengenalan dari gambar uji')

end
if  indeks_pengenalan==1 && H<=threshold
   B=imread('C:\MATLAB\R2012a\bin\database\01-IMG-01.jpg');
```

```
  figure;imshow(B);
     title('Gambar hasil pengenalan dari gambar uji')

end
if indeks_pengenalan==2 && H<=threshold
     B=imread('C:\MATLAB\R2012a\bin\database\01-IMG-02.jpg');
   figure;imshow(B);
     title('Gambar hasil pengenalan dari gambar uji')
end
  if indeks_pengenalan==3 && H<=threshold
        B=imread('C:\MATLAB\R2012a\bin\database\01-IMG-03.jpg');
  figure;imshow(B);
     title('Gambar hasil pengenalan dari gambar uji')
  end
   if indeks_pengenalan==4 && H<=threshold
        B=imread('C:\MATLAB\R2012a\bin\database\01-IMG-04.jpg');
   figure;imshow(B);
     title('Gambar hasil pengenalan dari gambar uji')
   end
   if indeks_pengenalan==5 && H<=threshold
        B=imread('C:\MATLAB\R2012a\bin\database\01-IMG-05.jpg');
  figure;imshow(B);
     title('Gambar hasil pengenalan dari gambar uji')
   end
   if indeks_pengenalan==6 && H<=threshold
        B=imread('C:\MATLAB\R2012a\bin\database\02-IMG-01.jpg');
   figure;imshow(B);
     title('Gambar hasil pengenalan dari gambar uji')
   end
   if indeks_pengenalan==7 && H<=threshold
        B=imread('C:\MATLAB\R2012a\bin\database\02-IMG-02.jpg');
   figure;imshow(B);
     title('Gambar hasil pengenalan dari gambar uji')
   end
    if indeks_pengenalan==8 && H<=threshold
        B=imread('C:\MATLAB\R2012a\bin\database\02-IMG-03.jpg');
  figure;imshow(B);
     title('Gambar hasil pengenalan dari gambar uji')
    end
    if indeks_pengenalan==9 && H<=threshold
        B=imread('C:\MATLAB\R2012a\bin\database\02-IMG-04.jpg');
  figure;imshow(B);
     title('Gambar hasil pengenalan dari gambar uji')
    end
    if indeks_pengenalan==10 && H<=threshold
        B=imread('C:\MATLAB\R2012a\bin\database\02-IMG-05.jpg');
   figure;imshow(B);
     title('Gambar hasil pengenalan dari gambar uji')
    end
    if indeks_pengenalan==11 && H<=threshold
        B=imread('C:\MATLAB\R2012a\bin\database\03-IMG-01.jpg');
  figure;imshow(B);
     title('Gambar hasil pengenalan dari gambar uji')
    end
    if indeks_pengenalan==12 && H<=threshold
        B=imread('C:\MATLAB\R2012a\bin\database\03-IMG-02.jpg');
   figure;imshow(B);
     title('Gambar hasil pengenalan dari gambar uji')
    end
```

```
  if indeks_pengenalan==13 && H<=threshold
  B=imread('C:\MATLAB\R2012a\bin\database\03-IMG-03.jpg');
figure;imshow(B);
   title('Gambar hasil pengenalan dari gambar uji')
  end
  if indeks_pengenalan==14 && H<=threshold
       B=imread('C:\MATLAB\R2012a\bin\database\03-IMG-04.jpg');
figure;imshow(B);
   title('Gambar hasil pengenalan dari gambar uji')
  end
  if indeks_pengenalan==15 && H<=threshold
       B=imread('C:\MATLAB\R2012a\bin\database\03-IMG-05.jpg');
 figure;imshow(B);
   title('Gambar hasil pengenalan dari gambar uji')
  end
  if indeks_pengenalan==16 && H<=threshold
       B=imread('C:\MATLAB\R2012a\bin\database\04-IMG-01.jpg');
figure;imshow(B);
   title('Gambar hasil pengenalan dari gambar uji')
  end
  if indeks_pengenalan==17 && H<=threshold
       B=imread('C:\MATLAB\R2012a\bin\database\04-IMG-02.jpg');
 figure;imshow(B);
   title('Gambar hasil pengenalan dari gambar uji')
  end
  if indeks_pengenalan==18 && H<=threshold
       B=imread('C:\MATLAB\R2012a\bin\database\04-IMG-03.jpg');
 figure;imshow(B);
   title('Gambar hasil pengenalan dari gambar uji')
  end
  if indeks_pengenalan==19 && H<=threshold
       B=imread('C:\MATLAB\R2012a\bin\database\04-IMG-04.jpg');
 figure;imshow(B);
   title('Gambar hasil pengenalan dari gambar uji')
  end
  if indeks_pengenalan==20 && H<=threshold
       B=imread('C:\MATLAB\R2012a\bin\database\04-IMG-05.jpg');
figure;imshow(B);
   title('Gambar hasil pengenalan dari gambar uji')
  end
  if indeks_pengenalan==21 && H<=threshold
       B=imread('C:\MATLAB\R2012a\bin\database\05-IMG-01.jpg');
 figure;imshow(B);
   title('Gambar hasil pengenalan dari gambar uji')
  end
  if indeks_pengenalan==22 && H<threshold
       B=imread('C:\MATLAB\R2012a\bin\database\05-IMG-02.jpg');
figure;imshow(B);
   title('Gambar hasil pengenalan dari gambar uji')
  end
  if indeks_pengenalan==23 && H<=threshold
       B=imread('C:\MATLAB\R2012a\bin\database\05-IMG-03.jpg');
 figure;imshow(B);
   title('Gambar hasil pengenalan dari gambar uji')
  end
  if indeks_pengenalan==24 && H<=threshold
       B=imread('C:\MATLAB\R2012a\bin\database\05-IMG-04.jpg');
 figure;imshow(B);
   title('Gambar hasil pengenalan dari gambar uji')
```

```
 end
 if indeks_pengenalan==25 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\05-IMG-05.jpg');
figure;imshow(B);
  title('Gambar hasil pengenalan dari gambar uji')
 end
 if indeks_pengenalan==26 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\06-IMG-01.jpg');
figure;imshow(B);
  title('Gambar hasil pengenalan dari gambar uji')
 end
 if indeks_pengenalan==27 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\06-IMG-02.jpg');
figure;imshow(B);
  title('Gambar hasil pengenalan dari gambar uji')
 end

 if indeks_pengenalan==28 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\06-IMG-03.jpg');
figure;imshow(B);
  title('Gambar hasil pengenalan dari gambar uji')
 end


 if indeks_pengenalan==29 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\06-IMG-04.jpg');
figure;imshow(B);
  title('Gambar hasil pengenalan dari gambar uji')
 end


 if indeks_pengenalan==30 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\06-IMG-05.jpg');
figure;imshow(B);
  title('Gambar hasil pengenalan dari gambar uji')
 end


 if indeks_pengenalan==31 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\07-IMG-01.jpg');
figure;imshow(B);
  title('Gambar hasil pengenalan dari gambar uji')
 end


 if indeks_pengenalan==32 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\07-IMG-02.jpg');
figure;imshow(B);
  title('Gambar hasil pengenalan dari gambar uji')
 end
 if indeks_pengenalan==33 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\07-IMG-03.jpg');
figure;imshow(B);
  title('Gambar hasil pengenalan dari gambar uji')
 end

 if indeks_pengenalan==34  && H<=threshold
```

```
      B=imread('C:\MATLAB\R2012a\bin\database\07-IMG-04.jpg');
figure;imshow(B);
  title('Gambar hasil pengenalan dari gambar uji')
 end


 if indeks_pengenalan==35 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\07-IMG-05.jpg');
figure;imshow(B);
  title('Gambar hasil pengenalan dari gambar uji')
 end


 if indeks_pengenalan==36 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\08-IMG-01.jpg');
figure;imshow(B);
  title('Gambar hasil pengenalan dari gambar uji')
 end


 if indeks_pengenalan==37 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\08-IMG-02.jpg');
figure;imshow(B);
  title('Gambar hasil pengenalan dari gambar uji')
 end


 if indeks_pengenalan==38 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\08-IMG-03.jpg');
figure;imshow(B);
  title('Gambar hasil pengenalan dari gambar uji')
 end


 if indeks_pengenalan==39 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\08-IMG-04.jpg');
figure;imshow(B);
  title('Gambar hasil pengenalan dari gambar uji')
 end


 if indeks_pengenalan==40 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\08-IMG-05.jpg');
figure;imshow(B);
  title('Gambar hasil pengenalan dari gambar uji')
 end


 if indeks_pengenalan==41 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\09-IMG-01.jpg');
figure;imshow(B);
  title('Gambar hasil pengenalan dari gambar uji')
 end


 if indeks_pengenalan==42 && H<=threshold
```

```
      B=imread('C:\MATLAB\R2012a\bin\database\09-IMG-02.jpg');
 figure;imshow(B);
   title('Gambar hasil pengenalan dari gambar uji')
  end


  if indeks_pengenalan==43 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\09-IMG-03.jpg');
 figure;imshow(B);
   title('Gambar hasil pengenalan dari gambar uji')
  end


  if indeks_pengenalan==44 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\09-IMG-04.jpg');
 figure;imshow(B);
   title('Gambar hasil pengenalan dari gambar uji')
  end


  if indeks_pengenalan==45 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\09-IMG-05.jpg');
 figure;imshow(B);
   title('Gambar hasil pengenalan dari gambar uji')
  end


  if indeks_pengenalan==46 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\10-IMG-01.jpg');
figure;imshow(B);
   title('Gambar hasil pengenalan dari gambar uji')
  end


  if indeks_pengenalan==47 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\10-IMG-02.jpg');
figure;imshow(B);
   title('Gambar hasil pengenalan dari gambar uji')
  end


  if indeks_pengenalan==48 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\10-IMG-03.jpg');
 figure;imshow(B);
   title('Gambar hasil pengenalan dari gambar uji')
  end


  if indeks_pengenalan==49 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\10-IMG-04.jpg');
 figure;imshow(B);
   title('Gambar hasil pengenalan dari gambar uji')
  end


  if indeks_pengenalan==50 && H<=threshold
```

```
        B=imread('C:\MATLAB\R2012a\bin\database\10-IMG-05.jpg');
  figure;imshow(B);
     title('Gambar hasil pengenalan dari gambar uji')
    end
```

4. Program Pengujian Pada GUI

```
function pushbutton1_Callback(hObject, eventdata, handles)
% hObject    handle to pushbutton1 (see GCBO)
% eventdata  reserved - to be defined in a future version of
MATLAB
% handles    structure with handles and user data (see GUIDATA)
[filename,pathname]=uigetfile({'*.jpg';'*.png*';'.jpeg;*';'.tif'},
'Choose image:');
I= imread([pathname,filename]);
handles.I=I;
guidata(hObject,handles);
axes(handles.axes1);
set(handles.edit1,'string',filename);
imshow(I);

% --- Executes on button press in pushbutton2.
function pushbutton2_Callback(hObject, eventdata, handles)
% hObject    handle to pushbutton2 (see GCBO)
% eventdata  reserved - to be defined in a future version of
MATLAB
% handles    structure with handles and user data (see GUIDATA)

C= imresize(handles.I, [100 100]);
M= rgb2gray(C);
guidata(hObject,handles)
%R= imadjust(G,[],[],0.8);
%M=histeq(R);
w=size(M,1);
  h=size(M,2);
  for i=3:w-2
    for j=3:h-2
         % untuk 0 derajat

         if M(i+1,j+1)>M(i+1,j) && M(i,j)>M(i,j-1);
             I1= 0;
         elseif M(i+1,j+1)<M(i+1,j) && M(i,j)<M(i,j-1);
                 I1=0;
         elseif M(i+1,j+1)>M(i+1,j) && M(i,j)<M(i,j-1);
                 I1=1;
         else  M(i+1,j+1)<M(i+1,j) && M(i,j)>M(i,j-1);
             I1=1;
         end

          if M(i+1,j)>M(i+1,j-1) && M(i,j)>M(i,j-1);
             I2= 0;
         elseif M(i+1,j)<M(i+1,j-1) && M(i,j)<M(i,j-1);
                 I2=0;
         elseif M(i+1,j)>M(i+1,j-1) && M(i,j)<M(i,j-1);
                 I2=1;
         else  M(i+1,j)<M(i+1,j-1) && M(i,j)>M(i,j-1);
             I2=1;
          end
```

```
if  M(i+1,j-1)>M(i+1,j-2) && M(i,j)>M(i,j-1);
    I3=0;
elseif M(i+1,j-1)<M(i+1,j-2) && M(i,j)<M(i,j-1);
        I3=0;
elseif M(i+1,j-1)>M(i+1,j-2) && M(i,j)<M(i,j-1);
        I3=1;
else  M(i+1,j-1)<M(i+1,j-2) && M(i,j)>M(i,j-1);
    I3=1;
end

if M(i,j)>M(i,j-1) && M(i,j-1)>M(i,j-2);
    I4= 0;
elseif M(i,j)<M(i,j-1) && M(i,j-1)<M(i,j-2);
        I4=0;
elseif M(i,j)>M(i,j-1) && M(i,j-1)<M(i,j-2);
        I4=1;
else  M(i,j)<M(i,j-1) && M(i,j-1)>M(i,j-2);
        I4=1;
end

if M(i,j)>M(i,j-1) && M(i-1,j-1)>M(i-1,j-2);
    I5= 0;
elseif M(i,j)<M(i,j-1) && M(i-1,j-1)<M(i-1,j-2);
        I5=0;
elseif M(i,j)>M(i,j-1) && M(i-1,j-1)<M(i-1,j-2);
        I5=1;
else  M(i,j)<M(i,j-1) && M(i-1,j-1)>M(i-1,j-2);
    I5=1;
end

if M(i,j)>M(i,j-1) && M(i-1,j)>M(i-1,j-1);
    I6= 0;
elseif M(i,j)<M(i,j-1) && M(i-1,j)<M(i-1,j-1);
        I6=0;
elseif M(i,j)>M(i,j-1) && M(i-1,j)<M(i-1,j-1);
        I6=1;
else  M(i,j)<M(i,j-1) && M(i-1,j)>M(i-1,j-1);
    I6=1;
end
if M(i,j)>M(i,j-1) && M(i-1,j+1)>M(i-1,j);
    I7= 0;
elseif M(i,j)<M(i,j-1) && M(i-1,j+1)<M(i-1,j);
        I7=0;
elseif M(i,j)>M(i,j-1) && M(i-1,j+1)<M(i-1,j);
        I7=1;
else  M(i,j)<M(i,j-1) && M(i-1,j+1)>M(i-1,j);
    I7=1;
end
if M(i,j+1)>M(i,j) && M(i,j)>M(i,j-1);
    I8=0;
elseif M(i,j+1)<M(i,j) && M(i,j)<M(i,j-1);
        I8=0;
elseif M(i,j+1)>M(i,j) && M(i,j)<M(i,j-1);
        I8=1;
else  M(i,j+1)<M(i,j) && M(i,j)>M(i,j-1);
    I8=1;
end
```

```
LDP1(i,j)=I1*2^31+I2*2^30+I3*2^29+I4*2^28+I5*2^27+I6*2^26+I7*2^25+
I8*2^24;
end
  end
  axes(handles.axes7);
imshow(LDP1,[]);

         % untuk 45 derajat
C= imresize(handles.I, [100 100]);
M= rgb2gray(C);
%R= imadjust(G,[],[],0.8);
%M=histeq(R);
w=size(M,1);
  h=size(M,2);
  for i=3:w-2
    for j=3:h-2
         if M(i,j)>M(i+1,j-1) && M(i+1,j+1)>M(i+2,j);
             I9= 0;
         elseif M(i,j)<M(i+1,j-1) && M(i+1,j+1)<M(i+2,j);
                 I9=0;
         elseif M(i,j)>M(i+1,j-1) && M(i+1,j+1)<M(i+2,j);
                 I9=1;
         else  M(i,j)<M(i+1,j-1) && M(i+1,j+1)>M(i+2,j);
             I9=1;
         end

          if M(i,j)>M(i+1,j-1) && M(i+1,j)>M(i+2,j-1);
             I10= 0;
         elseif M(i,j)<M(i+1,j-1) && M(i+1,j)<M(i+2,j-1);
                 I10=0;
         elseif M(i,j)>M(i+1,j-1) && M(i+1,j)<M(i+2,j-1);
                 I10=1;
         else  M(i,j)<M(i+1,j-1) && M(i+1,j)>M(i+2,j-1);
             I10=1;
          end

         if  M(i,j)>M(i+1,j-1) && M(i+1,j-1)>M(i+2,j-2);
             I11=0;
         elseif M(i,j)<M(i+1,j-1) && M(i+1,j-1)<M(i+2,j-2);
                 I11=0;
         elseif M(i,j)>M(i+1,j-1) && M(i+1,j-1)<M(i+2,j-2);
                 I11=1;
         else  M(i,j)<M(i+1,j-1) && M(i+1,j-1)>M(i+2,j-2);
             I11=1;
         end

         if M(i,j)>M(i+1,j-1) && M(i,j-1)>M(i+1,j-2);
             I12= 0;
         elseif M(i,j)<M(i+1,j-1) && M(i,j-1)<M(i+1,j-2);
                 I12=0;
         elseif M(i,j)>M(i+1,j-1) && M(i,j-1)<M(i+1,j-2);
                 I12=1;
         else  M(i,j)<M(i+1,j-1) && M(i,j-1)>M(i+1,j-2);
                 I12=1;
         end

         if M(i,j)>M(i+1,j-1) && M(i-1,j-1)>M(i,j-2);
```

```
            I13= 0;
        elseif M(i,j)<M(i+1,j-1) && M(i-1,j-1)<M(i,j-2);
                I13=0;
        elseif M(i,j)>M(i+1,j-1) && M(i-1,j-1)<M(i,j-2);
                I13=1;
        else  M(i,j)<M(i+1,j-1) && M(i-1,j-1)>M(i,j-2);
            I13=1;
        end

        if M(i,j)>M(i+1,j-1) && M(i-1,j)>M(i,j-1);
            I14= 0;
        elseif M(i,j)<M(i+1,j-1) && M(i-1,j)<M(i,j-1);
                I14=0;
        elseif M(i,j)>M(i+1,j-1) && M(i-1,j)<M(i,j-1);
                I14=1;
        else  M(i,j)<M(i+1,j-1) && M(i-1,j)>M(i,j-1);
            I14=1;
        end

        if M(i-1,j+1)>M(i,j) && M(i,j)>M(i+1,j-1);
            I15= 0;
        elseif M(i-1,j+1)<M(i,j) && M(i,j)<M(i+1,j-1);
                I15=0;
        elseif M(i-1,j+1)>M(i,j) && M(i,j)<M(i+1,j-1);
                I15=1;
        else  M(i-1,j+1)<M(i,j) && M(i,j)>M(i+1,j-1);
            I15=1;
        end

        if M(i,j+1)>M(i+1,j) && M(i,j)>M(i+1,j-1);
            I16=0;
        elseif M(i,j+1)<M(i+1,j) && M(i,j)<M(i+1,j-1);
                I16=0;
        elseif M(i,j+1)>M(i+1,j) && M(i,j)<M(i+1,j-1);
                I16=1;
        else  M(i,j+1)<M(i+1,j) && M(i,j)>M(i+1,j-1);
            I16=1;
        end

LDP2(i,j)=I9*2^23+I10*2^22+I11*2^21+I12*2^20+I13*2^19+I14*2^18+I15
*2^17+I16*2^16;
    end
  end
 axes(handles.axes3);
imshow(LDP2,[]);

%untuk 90 derajat
C= imresize(handles.I, [100 100]);
M= rgb2gray(C);
guidata(hObject,handles);
%R=imadjust(G,[],[],0.8);
%M=histeq(R);
w=size(M,1);
  h=size(M,2);
  for i=3:w-2
    for j=3:h-2
        if M(i,j)>M(i+1,j) && M(i+1,j+1)>M(i+2,j+1);
            I17= 0;
```

```
elseif M(i,j)<M(i+1,j) && M(i+1,j+1)<M(i+2,j+1);
        I17=0;
elseif M(i,j)>M(i+1,j) && M(i+1,j+1)<M(i+2,j+1);
        I17=1;
else  M(i,j)<M(i+1,j) && M(i+1,j+1)>M(i+2,j+1);
    I17=1;
end

 if M(i,j)>M(i+1,j) && M(i+1,j)>M(i+2,j);
    I18= 0;
elseif M(i,j)<M(i+1,j) && M(i+1,j)<M(i+2,j);
        I18=0;
elseif M(i,j)>M(i+1,j) && M(i+1,j)<M(i+2,j);
        I18=1;
else  M(i,j)<M(i+1,j) && M(i+1,j)>M(i+2,j);
    I18=1;
 end

if  M(i,j)>M(i+1,j) && M(i+1,j-1)>M(i+2,j-1);
    I19=0;
elseif M(i,j)<M(i+1,j) && M(i+1,j-1)<M(i+2,j-1);
        I19=0;
elseif M(i,j)>M(i+1,j) && M(i+1,j-1)<M(i+2,j-1);
        I19=1;
else  M(i,j)<M(i+1,j) && M(i+1,j-1)>M(i+2,j-1);
    I19=1;
end

if M(i,j)>M(i+1,j) && M(i,j-1)>M(i+1,j-1);
    I20= 0;
elseif M(i,j)<M(i+1,j) && M(i,j-1)<M(i+1,j-1);
        I20=0;
elseif M(i,j)>M(i+1,j) && M(i,j-1)<M(i+1,j-1);
        I20=1;
else  M(i,j)<M(i+1,j) && M(i,j-1)>M(i+1,j-1);
        I20=1;
end

if M(i,j)>M(i+1,j) && M(i-1,j-1)>M(i,j-1);
    I21= 0;
elseif M(i,j)<M(i+1,j) && M(i-1,j-1)<M(i,j-1);
        I21=0;
elseif M(i,j)>M(i+1,j) && M(i-1,j-1)<M(i,j-1);
        I21=1;
else  M(i,j)<M(i+1,j) && M(i-1,j-1)>M(i,j-1);
    I21=1;
end

if M(i-1,j)>M(i,j) && M(i,j)>M(i+1,j);
    I22= 0;
elseif M(i-1,j)<M(i,j) && M(i,j)<M(i+1,j);
        I22=0;
elseif M(i-1,j)>M(i,j) && M(i,j)<M(i+1,j);
        I22=1;
else  M(i-1,j)<M(i,j) && M(i,j)>M(i+1,j);
    I22=1;
end
```

```
          if M(i-1,j+1)>M(i,j+1) && M(i,j)>M(i+1,j);
              I23= 0;
          elseif M(i-1,j+1)<M(i,j+1) && M(i,j)<M(i+1,j);
                  I23=0;
          elseif M(i-1,j+1)>M(i,j+1) && M(i,j)<M(i+1,j);
                  I23=1;
          else  M(i-1,j+1)<M(i,j+1) && M(i,j)>M(i+1,j);
              I23=1;
          end

          if M(i,j+1)>M(i+1,j+1) && M(i,j)>M(i+1,j);
              I24=0;
          elseif M(i,j+1)<M(i+1,j+1) && M(i,j)<M(i+1,j);
                  I24=0;
          elseif M(i,j+1)>M(i+1,j+1) && M(i,j)<M(i+1,j);
                  I24=1;
          else  M(i,j+1)<M(i+1,j+1) && M(i,j)>M(i+1,j);
              I24=1;
          end

LDP3(i,j)=I17*2^15+I18*2^14+I19*2^13+I20*2^12+I21*2^11+I22*2^10+I2
3*2^9+I24*2^8;
    end
  end
 axes(handles.axes4);
imshow(LDP3,[]);

%untuk 135 derajat
C= imresize(handles.I, [100 100]);
M= rgb2gray(C);
guidata(hObject,handles);
%R= imadjust(G,[],[],0.8);
%M=histeq(R);
w=size(M,1);
  h=size(M,2);
  for i=3:w-2
    for j=3:h-2
          if M(i,j)>M(i+1,j+1) && M(i+1,j+1)>M(i+2,j+2);
              I25= 0;
          elseif M(i,j)<M(i+1,j+1) && M(i+1,j+1)<M(i+2,j+2);
                  I25=0;
          elseif M(i,j)>M(i+1,j+1) && M(i+1,j+1)<M(i+2,j+2);
                  I25=1;
          else  M(i,j)<M(i+1,j+1) && M(i+1,j+1)>M(i+2,j+2);
              I25=1;
          end

           if M(i,j)>M(i+1,j+1) && M(i+1,j)>M(i+2,j+1);
              I26= 0;
          elseif M(i,j)<M(i+1,j+1) && M(i+1,j)<M(i+2,j+1);
                  I26=0;
          elseif M(i,j)>M(i+1,j+1) && M(i+1,j)<M(i+2,j+1);
                  I26=1;
          else  M(i,j)<M(i+1,j+1) && M(i+1,j)>M(i+2,j+1);
              I26=1;
           end

          if  M(i,j)>M(i+1,j+1) && M(i+1,j-1)>M(i+2,j);
```

```
    I27=0;
elseif M(i,j)<M(i+1,j+1) && M(i+1,j-1)<M(i+2,j);
        I27=0;
elseif M(i,j)>M(i+1,j+1) && M(i+1,j-1)<M(i+2,j);
        I27=1;
else  M(i,j)<M(i+1,j+1) && M(i+1,j-1)>M(i+2,j);
    I27=1;
end

if M(i,j)>M(i+1,j+1) && M(i,j-1)>M(i+1,j);
    I28= 0;
elseif M(i,j)<M(i+1,j+1) && M(i,j-1)<M(i+1,j);
        I28=0;
elseif M(i,j)>M(i+1,j+1) && M(i,j-1)<M(i+1,j);
        I28=1;
else  M(i,j)<M(i+1,j+1) && M(i,j-1)>M(i+1,j);
        I28=1;
end

if M(i-1,j-1)>M(i,j) && M(i,j)>M(i-1,j-1);
    I29= 0;
elseif M(i-1,j-1)<M(i,j) && M(i,j)<M(i-1,j-1);
        I29=0;
elseif M(i-1,j-1)>M(i,j) && M(i,j)<M(i-1,j-1);
        I29=1;
else  M(i-1,j-1)<M(i,j) && M(i,j)>M(i-1,j-1);
    I29=1;
end

if M(i-1,j)>M(i,j+1) && M(i,j)>M(i+1,j+1);
    I30= 0;
elseif M(i-1,j)<M(i,j+1) && M(i,j)<M(i+1,j+1);
        I30=0;
elseif M(i-1,j)>M(i,j+1) && M(i,j)<M(i+1,j+1);
        I30=1;
else  M(i-1,j)<M(i,j+1) && M(i,j)>M(i+1,j+1);
    I30=1;
end

if M(i-1,j+1)>M(i,j+2) && M(i,j)>M(i+1,j+1);
    I31= 0;
elseif M(i-1,j+1)<M(i,j+2) && M(i,j)<M(i+1,j+1);
        I31=0;
elseif M(i-1,j+1)>M(i,j+2) && M(i,j)<M(i+1,j+1);
        I31=1;
else  M(i-1,j+1)<M(i,j+2) && M(i,j)>M(i+1,j+1);
    I31=1;
end

if M(i,j+1)>M(i+1,j+2) && M(i,j)>M(i+1,j+1);
    I32=0;
elseif M(i,j+1)<M(i+1,j+2) && M(i,j)<M(i+1,j+1);
        I32=0;
elseif M(i,j+1)>M(i+1,j+2) && M(i,j)<M(i+1,j+1);
        I32=1;
else  M(i,j+1)<M(i+1,j+2) && M(i,j)>M(i+1,j+1);
    I32=1;
end
```

```
LDP4(i,j)=I25*2^7+I26*2^6+I27*2^5+I28*2^4+I29*2^3+I30*2^2+I31*2^1+
I32*2^0;
    end
  end
 axes(handles.axes5);
imshow(LDP4,[]);

%total
C= imresize(handles.I, [100 100]);
M= rgb2gray(C);
guidata(hObject,handles);
%R= imadjust(G,[],[],0.8);
%M=histeq(R);
w=size(M,1);
  h=size(M,2);
  for i=3:w-2
    for j=3:h-2
         if M(i+1,j+1)>M(i+1,j) && M(i,j)>M(i,j-1);
             I1= 0;
         elseif M(i+1,j+1)<M(i+1,j) && M(i,j)<M(i,j-1);
                 I1=0;
         elseif M(i+1,j+1)>M(i+1,j) && M(i,j)<M(i,j-1);
                 I1=1;
         else  M(i+1,j+1)<M(i+1,j) && M(i,j)>M(i,j-1);
             I1=1;
         end

          if M(i+1,j)>M(i+1,j-1) && M(i,j)>M(i,j-1);
             I2= 0;
         elseif M(i+1,j)<M(i+1,j-1) && M(i,j)<M(i,j-1);
                 I2=0;
         elseif M(i+1,j)>M(i+1,j-1) && M(i,j)<M(i,j-1);
                 I2=1;
         else  M(i+1,j)<M(i+1,j-1) && M(i,j)>M(i,j-1);
             I2=1;
          end

         if  M(i+1,j-1)>M(i+1,j-2) && M(i,j)>M(i,j-1);
             I3=0;
         elseif M(i+1,j-1)<M(i+1,j-2) && M(i,j)<M(i,j-1);
                 I3=0;
         elseif M(i+1,j-1)>M(i+1,j-2) && M(i,j)<M(i,j-1);
                 I3=1;
         else  M(i+1,j-1)<M(i+1,j-2) && M(i,j)>M(i,j-1);
             I3=1;
         end

         if M(i,j)>M(i,j-1) && M(i,j-1)>M(i,j-2);
             I4= 0;
         elseif M(i,j)<M(i,j-1) && M(i,j-1)<M(i,j-2);
                 I4=0;
         elseif M(i,j)>M(i,j-1) && M(i,j-1)<M(i,j-2);
                 I4=1;
         else  M(i,j)<M(i,j-1) && M(i,j-1)>M(i,j-2);
                 I4=1;
         end
```

```
if M(i,j)>M(i,j-1) && M(i-1,j-1)>M(i-1,j-2);
    I5= 0;
elseif M(i,j)<M(i,j-1) && M(i-1,j-1)<M(i-1,j-2);
        I5=0;
elseif M(i,j)>M(i,j-1) && M(i-1,j-1)<M(i-1,j-2);
        I5=1;
else  M(i,j)<M(i,j-1) && M(i-1,j-1)>M(i-1,j-2);
    I5=1;
end

if M(i,j)>M(i,j-1) && M(i-1,j)>M(i-1,j-1);
    I6= 0;
elseif M(i,j)<M(i,j-1) && M(i-1,j)<M(i-1,j-1);
        I6=0;
elseif M(i,j)>M(i,j-1) && M(i-1,j)<M(i-1,j-1);
        I6=1;
else  M(i,j)<M(i,j-1) && M(i-1,j)>M(i-1,j-1);
    I6=1;
end
if M(i,j)>M(i,j-1) && M(i-1,j+1)>M(i-1,j);
    I7= 0;
elseif M(i,j)<M(i,j-1) && M(i-1,j+1)<M(i-1,j);
        I7=0;
elseif M(i,j)>M(i,j-1) && M(i-1,j+1)<M(i-1,j);
        I7=1;
else  M(i,j)<M(i,j-1) && M(i-1,j+1)>M(i-1,j);
    I7=1;
end
if M(i,j+1)>M(i,j) && M(i,j)>M(i,j-1);
    I8=0;
elseif M(i,j+1)<M(i,j) && M(i,j)<M(i,j-1);
        I8=0;
elseif M(i,j+1)>M(i,j) && M(i,j)<M(i,j-1);
        I8=1;
else  M(i,j+1)<M(i,j) && M(i,j)>M(i,j-1);
    I8=1;
end
 if M(i,j)>M(i+1,j-1) && M(i+1,j+1)>M(i+2,j);
    I9= 0;
elseif M(i,j)<M(i+1,j-1) && M(i+1,j+1)<M(i+2,j);
        I9=0;
elseif M(i,j)>M(i+1,j-1) && M(i+1,j+1)<M(i+2,j);
        I9=1;
else  M(i,j)<M(i+1,j-1) && M(i+1,j+1)>M(i+2,j);
    I9=1;
end

 if M(i,j)>M(i+1,j-1) && M(i+1,j)>M(i+2,j-1);
    I10= 0;
elseif M(i,j)<M(i+1,j-1) && M(i+1,j)<M(i+2,j-1);
        I10=0;
elseif M(i,j)>M(i+1,j-1) && M(i+1,j)<M(i+2,j-1);
        I10=1;
else  M(i,j)<M(i+1,j-1) && M(i+1,j)>M(i+2,j-1);
    I10=1;
 end

if  M(i,j)>M(i+1,j-1) && M(i+1,j-1)>M(i+2,j-2);
```

```
    I11=0;
elseif M(i,j)<M(i+1,j-1) && M(i+1,j-1)<M(i+2,j-2);
        I11=0;
elseif M(i,j)>M(i+1,j-1) && M(i+1,j-1)<M(i+2,j-2);
        I11=1;
else  M(i,j)<M(i+1,j-1) && M(i+1,j-1)>M(i+2,j-2);
    I11=1;
end

if M(i,j)>M(i+1,j-1) && M(i,j-1)>M(i+1,j-2);
    I12= 0;
elseif M(i,j)<M(i+1,j-1) && M(i,j-1)<M(i+1,j-2);
        I12=0;
elseif M(i,j)>M(i+1,j-1) && M(i,j-1)<M(i+1,j-2);
        I12=1;
else  M(i,j)<M(i+1,j-1) && M(i,j-1)>M(i+1,j-2);
        I12=1;
end

if M(i,j)>M(i+1,j-1) && M(i-1,j-1)>M(i,j-2);
    I13= 0;
elseif M(i,j)<M(i+1,j-1) && M(i-1,j-1)<M(i,j-2);
        I13=0;
elseif M(i,j)>M(i+1,j-1) && M(i-1,j-1)<M(i,j-2);
        I13=1;
else  M(i,j)<M(i+1,j-1) && M(i-1,j-1)>M(i,j-2);
    I13=1;
end

if M(i,j)>M(i+1,j-1) && M(i-1,j)>M(i,j-1);
    I14= 0;
elseif M(i,j)<M(i+1,j-1) && M(i-1,j)<M(i,j-1);
        I14=0;
elseif M(i,j)>M(i+1,j-1) && M(i-1,j)<M(i,j-1);
        I14=1;
else  M(i,j)<M(i+1,j-1) && M(i-1,j)>M(i,j-1);
    I14=1;
end

if M(i-1,j+1)>M(i,j) && M(i,j)>M(i+1,j-1);
    I15= 0;
elseif M(i-1,j+1)<M(i,j) && M(i,j)<M(i+1,j-1);
        I15=0;
elseif M(i-1,j+1)>M(i,j) && M(i,j)<M(i+1,j-1);
        I15=1;
else  M(i-1,j+1)<M(i,j) && M(i,j)>M(i+1,j-1);
    I15=1;
end

if M(i,j+1)>M(i+1,j) && M(i,j)>M(i+1,j-1);
    I16=0;
elseif M(i,j+1)<M(i+1,j) && M(i,j)<M(i+1,j-1);
        I16=0;
elseif M(i,j+1)>M(i+1,j) && M(i,j)<M(i+1,j-1);
        I16=1;
else  M(i,j+1)<M(i+1,j) && M(i,j)>M(i+1,j-1);
    I16=1;
end
```

```
if M(i,j)>M(i+1,j) && M(i+1,j+1)>M(i+2,j+1);
    I17= 0;
elseif M(i,j)<M(i+1,j) && M(i+1,j+1)<M(i+2,j+1);
        I17=0;
elseif M(i,j)>M(i+1,j) && M(i+1,j+1)<M(i+2,j+1);
        I17=1;
else  M(i,j)<M(i+1,j) && M(i+1,j+1)>M(i+2,j+1);
    I17=1;
end

 if M(i,j)>M(i+1,j) && M(i+1,j)>M(i+2,j);
    I18= 0;
elseif M(i,j)<M(i+1,j) && M(i+1,j)<M(i+2,j);
        I18=0;
elseif M(i,j)>M(i+1,j) && M(i+1,j)<M(i+2,j);
        I18=1;
else  M(i,j)<M(i+1,j) && M(i+1,j)>M(i+2,j);
    I18=1;
 end

if  M(i,j)>M(i+1,j) && M(i+1,j-1)>M(i+2,j-1);
    I19=0;
elseif M(i,j)<M(i+1,j) && M(i+1,j-1)<M(i+2,j-1);
        I19=0;
elseif M(i,j)>M(i+1,j) && M(i+1,j-1)<M(i+2,j-1);
        I19=1;
else  M(i,j)<M(i+1,j) && M(i+1,j-1)>M(i+2,j-1);
    I19=1;
end

if M(i,j)>M(i+1,j) && M(i,j-1)>M(i+1,j-1);
    I20= 0;
elseif M(i,j)<M(i+1,j) && M(i,j-1)<M(i+1,j-1);
        I20=0;
elseif M(i,j)>M(i+1,j) && M(i,j-1)<M(i+1,j-1);
        I20=1;
else  M(i,j)<M(i+1,j) && M(i,j-1)>M(i+1,j-1);
        I20=1;
end

if M(i,j)>M(i+1,j) && M(i-1,j-1)>M(i,j-1);
    I21= 0;
elseif M(i,j)<M(i+1,j) && M(i-1,j-1)<M(i,j-1);
        I21=0;
elseif M(i,j)>M(i+1,j) && M(i-1,j-1)<M(i,j-1);
        I21=1;
else  M(i,j)<M(i+1,j) && M(i-1,j-1)>M(i,j-1);
    I21=1;
end

if M(i-1,j)>M(i,j) && M(i,j)>M(i+1,j);
    I22= 0;
elseif M(i-1,j)<M(i,j) && M(i,j)<M(i+1,j);
        I22=0;
elseif M(i-1,j)>M(i,j) && M(i,j)<M(i+1,j);
        I22=1;
else  M(i-1,j)<M(i,j) && M(i,j)>M(i+1,j);
    I22=1;
```

```
end

if M(i-1,j+1)>M(i,j+1) && M(i,j)>M(i+1,j);
    I23= 0;
elseif M(i-1,j+1)<M(i,j+1) && M(i,j)<M(i+1,j);
        I23=0;
elseif M(i-1,j+1)>M(i,j+1) && M(i,j)<M(i+1,j);
        I23=1;
else  M(i-1,j+1)<M(i,j+1) && M(i,j)>M(i+1,j);
    I23=1;
end

if M(i,j+1)>M(i+1,j+1) && M(i,j)>M(i+1,j);
    I24=0;
elseif M(i,j+1)<M(i+1,j+1) && M(i,j)<M(i+1,j);
        I24=0;
elseif M(i,j+1)>M(i+1,j+1) && M(i,j)<M(i+1,j);
        I24=1;
else  M(i,j+1)<M(i+1,j+1) && M(i,j)>M(i+1,j);
    I24=1;
end
if M(i,j)>M(i+1,j+1) && M(i+1,j+1)>M(i+2,j+2);
    I25= 0;
elseif M(i,j)<M(i+1,j+1) && M(i+1,j+1)<M(i+2,j+2);
        I25=0;
elseif M(i,j)>M(i+1,j+1) && M(i+1,j+1)<M(i+2,j+2);
        I25=1;
else  M(i,j)<M(i+1,j+1) && M(i+1,j+1)>M(i+2,j+2);
    I25=1;
end

 if M(i,j)>M(i+1,j+1) && M(i+1,j)>M(i+2,j+1);
    I26= 0;
elseif M(i,j)<M(i+1,j+1) && M(i+1,j)<M(i+2,j+1);
        I26=0;
elseif M(i,j)>M(i+1,j+1) && M(i+1,j)<M(i+2,j+1);
        I26=1;
else  M(i,j)<M(i+1,j+1) && M(i+1,j)>M(i+2,j+1);
    I26=1;
 end

if  M(i,j)>M(i+1,j+1) && M(i+1,j-1)>M(i+2,j);
    I27=0;
elseif M(i,j)<M(i+1,j+1) && M(i+1,j-1)<M(i+2,j);
        I27=0;
elseif M(i,j)>M(i+1,j+1) && M(i+1,j-1)<M(i+2,j);
        I27=1;
else  M(i,j)<M(i+1,j+1) && M(i+1,j-1)>M(i+2,j);
    I27=1;
end

if M(i,j)>M(i+1,j+1) && M(i,j-1)>M(i+1,j);
    I28= 0;
elseif M(i,j)<M(i+1,j+1) && M(i,j-1)<M(i+1,j);
        I28=0;
elseif M(i,j)>M(i+1,j+1) && M(i,j-1)<M(i+1,j);
        I28=1;
else  M(i,j)<M(i+1,j+1) && M(i,j-1)>M(i+1,j);
```

```
            I28=1;
        end

        if M(i-1,j-1)>M(i,j) && M(i,j)>M(i-1,j-1);
            I29= 0;
        elseif M(i-1,j-1)<M(i,j) && M(i,j)<M(i-1,j-1);
            I29=0;
        elseif M(i-1,j-1)>M(i,j) && M(i,j)<M(i-1,j-1);
            I29=1;
        else  M(i-1,j-1)<M(i,j) && M(i,j)>M(i-1,j-1);
            I29=1;
        end

        if M(i-1,j)>M(i,j+1) && M(i,j)>M(i+1,j+1);
            I30= 0;
        elseif M(i-1,j)<M(i,j+1) && M(i,j)<M(i+1,j+1);
            I30=0;
        elseif M(i-1,j)>M(i,j+1) && M(i,j)<M(i+1,j+1);
            I30=1;
        else  M(i-1,j)<M(i,j+1) && M(i,j)>M(i+1,j+1);
            I30=1;
        end

        if M(i-1,j+1)>M(i,j+2) && M(i,j)>M(i+1,j+1);
            I31= 0;
        elseif M(i-1,j+1)<M(i,j+2) && M(i,j)<M(i+1,j+1);
            I31=0;
        elseif M(i-1,j+1)>M(i,j+2) && M(i,j)<M(i+1,j+1);
            I31=1;
        else  M(i-1,j+1)<M(i,j+2) && M(i,j)>M(i+1,j+1);
            I31=1;
        end

        if M(i,j+1)>M(i+1,j+2) && M(i,j)>M(i+1,j+1);
            I32=0;
        elseif M(i,j+1)<M(i+1,j+2) && M(i,j)<M(i+1,j+1);
            I32=0;
        elseif M(i,j+1)>M(i+1,j+2) && M(i,j)<M(i+1,j+1);
            I32=1;
        else  M(i,j+1)<M(i+1,j+2) && M(i,j)>M(i+1,j+1);
            I32=1;
        end

LDP(i,j)=I1*2^31+I2*2^30+I3*2^29+I4*2^28+I5*2^27+I6*2^26+I7*2^25+I
8*2^24+I9*2^23+I10*2^22+I11*2^21+I12*2^20+I13*2^19+I14*2^18+I15*2^
17+I16*2^16+I17*2^15+I18*2^14+I19*2^13+I20*2^12+I21*2^11+I22*2^10+
I23*2^9+I24*2^8+I25*2^7+I26*2^6+I27*2^5+I28*2^4+I29*2^3+I30*2^2+I3
1*2^1+I32*2^0;
    end
  end

axes(handles.axes6);
imshow(LDP,[]);
% --- Executes on button press in pushbutton3.
function pushbutton3_Callback(hObject, eventdata, handles)
% hObject    handle to pushbutton3 (see GCBO)
% eventdata  reserved - to be defined in a future version of
MATLAB
```

```
% handles    structure with handles and user data (see GUIDATA)

load Eigenfaces.mat
load coba.mat

T=coba;
m = mean(T,2); % menghitung nilai rata - rata dari citra pembuluh
darah
jumlah_percobaan = size(T,2);
A = [];
for i = 1 : jumlah_percobaan
    selisih = double(T(:,i)) - m; % menghitung selisih antara
citra rata - rata dengan citra hasil ekstraksi LDP
    A = [A selisih]; % menggabungkan setiap citra selisih
end

proyeksicitra = [];
jumlah_percobaan = size(A,2);
for i = 1 : jumlah_percobaan
    temp = Eigenfaces'*A(:,i); % menggabungkan setiap citra
proyeksi
    proyeksicitra = [proyeksicitra temp];
end

% ektraksi LDP dan mencari nilai eigenfaces dari citra uji
        vein=imresize(handles.I, [100 100])
         M=rgb2gray(vein);
      w=size(M,1);
  h=size(M,2);
  for i=3:w-2
    for j=3:h-2
        if M(i+1,j+1)>M(i+1,j) && M(i,j)>M(i,j-1);
             I1= 0;
         elseif M(i+1,j+1)<M(i+1,j) && M(i,j)<M(i,j-1);
                 I1=0;
         elseif M(i+1,j+1)>M(i+1,j) && M(i,j)<M(i,j-1);
                 I1=1;
         else  M(i+1,j+1)<M(i+1,j) && M(i,j)>M(i,j-1);
             I1=1;
         end

          if M(i+1,j)>M(i+1,j-1) && M(i,j)>M(i,j-1);
             I2= 0;
         elseif M(i+1,j)<M(i+1,j-1) && M(i,j)<M(i,j-1);
                 I2=0;
         elseif M(i+1,j)>M(i+1,j-1) && M(i,j)<M(i,j-1);
                 I2=1;
         else  M(i+1,j)<M(i+1,j-1) && M(i,j)>M(i,j-1);
             I2=1;
          end

         if  M(i+1,j-1)>M(i+1,j-2) && M(i,j)>M(i,j-1);
             I3=0;
         elseif M(i+1,j-1)<M(i+1,j-2) && M(i,j)<M(i,j-1);
                 I3=0;
         elseif M(i+1,j-1)>M(i+1,j-2) && M(i,j)<M(i,j-1);
                 I3=1;
         else  M(i+1,j-1)<M(i+1,j-2) && M(i,j)>M(i,j-1);
```

```
    I3=1;
end

if M(i,j)>M(i,j-1) && M(i,j-1)>M(i,j-2);
    I4= 0;
elseif M(i,j)<M(i,j-1) && M(i,j-1)<M(i,j-2);
        I4=0;
elseif M(i,j)>M(i,j-1) && M(i,j-1)<M(i,j-2);
        I4=1;
else  M(i,j)<M(i,j-1) && M(i,j-1)>M(i,j-2);
        I4=1;
end

if M(i,j)>M(i,j-1) && M(i-1,j-1)>M(i-1,j-2);
    I5= 0;
elseif M(i,j)<M(i,j-1) && M(i-1,j-1)<M(i-1,j-2);
        I5=0;
elseif M(i,j)>M(i,j-1) && M(i-1,j-1)<M(i-1,j-2);
        I5=1;
else  M(i,j)<M(i,j-1) && M(i-1,j-1)>M(i-1,j-2);
    I5=1;
end

if M(i,j)>M(i,j-1) && M(i-1,j)>M(i-1,j-1);
    I6= 0;
elseif M(i,j)<M(i,j-1) && M(i-1,j)<M(i-1,j-1);
        I6=0;
elseif M(i,j)>M(i,j-1) && M(i-1,j)<M(i-1,j-1);
        I6=1;
else  M(i,j)<M(i,j-1) && M(i-1,j)>M(i-1,j-1);
    I6=1;
end
if M(i,j)>M(i,j-1) && M(i-1,j+1)>M(i-1,j);
    I7= 0;
elseif M(i,j)<M(i,j-1) && M(i-1,j+1)<M(i-1,j);
        I7=0;
elseif M(i,j)>M(i,j-1) && M(i-1,j+1)<M(i-1,j);
        I7=1;
else  M(i,j)<M(i,j-1) && M(i-1,j+1)>M(i-1,j);
    I7=1;
end
if M(i,j+1)>M(i,j) && M(i,j)>M(i,j-1);
    I8=0;
elseif M(i,j+1)<M(i,j) && M(i,j)<M(i,j-1);
        I8=0;
elseif M(i,j+1)>M(i,j) && M(i,j)<M(i,j-1);
        I8=1;
else  M(i,j+1)<M(i,j) && M(i,j)>M(i,j-1);
    I8=1;
end
 if M(i,j)>M(i+1,j-1) && M(i+1,j+1)>M(i+2,j);
    I9= 0;
elseif M(i,j)<M(i+1,j-1) && M(i+1,j+1)<M(i+2,j);
        I9=0;
elseif M(i,j)>M(i+1,j-1) && M(i+1,j+1)<M(i+2,j);
        I9=1;
else  M(i,j)<M(i+1,j-1) && M(i+1,j+1)>M(i+2,j);
    I9=1;
```

```
end

 if M(i,j)>M(i+1,j-1) && M(i+1,j)>M(i+2,j-1);
    I10= 0;
elseif M(i,j)<M(i+1,j-1) && M(i+1,j)<M(i+2,j-1);
        I10=0;
elseif M(i,j)>M(i+1,j-1) && M(i+1,j)<M(i+2,j-1);
        I10=1;
else  M(i,j)<M(i+1,j-1) && M(i+1,j)>M(i+2,j-1);
    I10=1;
 end

if  M(i,j)>M(i+1,j-1) && M(i+1,j-1)>M(i+2,j-2);
    I11=0;
elseif M(i,j)<M(i+1,j-1) && M(i+1,j-1)<M(i+2,j-2);
        I11=0;
elseif M(i,j)>M(i+1,j-1) && M(i+1,j-1)<M(i+2,j-2);
        I11=1;
else  M(i,j)<M(i+1,j-1) && M(i+1,j-1)>M(i+2,j-2);
    I11=1;
end

if M(i,j)>M(i+1,j-1) && M(i,j-1)>M(i+1,j-2);
    I12= 0;
elseif M(i,j)<M(i+1,j-1) && M(i,j-1)<M(i+1,j-2);
        I12=0;
elseif M(i,j)>M(i+1,j-1) && M(i,j-1)<M(i+1,j-2);
        I12=1;
else  M(i,j)<M(i+1,j-1) && M(i,j-1)>M(i+1,j-2);
        I12=1;
end

if M(i,j)>M(i+1,j-1) && M(i-1,j-1)>M(i,j-2);
    I13= 0;
elseif M(i,j)<M(i+1,j-1) && M(i-1,j-1)<M(i,j-2);
        I13=0;
elseif M(i,j)>M(i+1,j-1) && M(i-1,j-1)<M(i,j-2);
        I13=1;
else  M(i,j)<M(i+1,j-1) && M(i-1,j-1)>M(i,j-2);
    I13=1;
end

if M(i,j)>M(i+1,j-1) && M(i-1,j)>M(i,j-1);
    I14= 0;
elseif M(i,j)<M(i+1,j-1) && M(i-1,j)<M(i,j-1);
        I14=0;
elseif M(i,j)>M(i+1,j-1) && M(i-1,j)<M(i,j-1);
        I14=1;
else  M(i,j)<M(i+1,j-1) && M(i-1,j)>M(i,j-1);
    I14=1;
end

if M(i-1,j+1)>M(i,j) && M(i,j)>M(i+1,j-1);
    I15= 0;
elseif M(i-1,j+1)<M(i,j) && M(i,j)<M(i+1,j-1);
        I15=0;
elseif M(i-1,j+1)>M(i,j) && M(i,j)<M(i+1,j-1);
        I15=1;
```

```
else  M(i-1,j+1)<M(i,j) && M(i,j)>M(i+1,j-1);
    I15=1;
end

if M(i,j+1)>M(i+1,j) && M(i,j)>M(i+1,j-1);
    I16=0;
elseif M(i,j+1)<M(i+1,j) && M(i,j)<M(i+1,j-1);
        I16=0;
elseif M(i,j+1)>M(i+1,j) && M(i,j)<M(i+1,j-1);
        I16=1;
else  M(i,j+1)<M(i+1,j) && M(i,j)>M(i+1,j-1);
    I16=1;
end
if M(i,j)>M(i+1,j) && M(i+1,j+1)>M(i+2,j+1);
    I17= 0;
elseif M(i,j)<M(i+1,j) && M(i+1,j+1)<M(i+2,j+1);
        I17=0;
elseif M(i,j)>M(i+1,j) && M(i+1,j+1)<M(i+2,j+1);
        I17=1;
else  M(i,j)<M(i+1,j) && M(i+1,j+1)>M(i+2,j+1);
    I17=1;
end

 if M(i,j)>M(i+1,j) && M(i+1,j)>M(i+2,j);
    I18= 0;
elseif M(i,j)<M(i+1,j) && M(i+1,j)<M(i+2,j);
        I18=0;
elseif M(i,j)>M(i+1,j) && M(i+1,j)<M(i+2,j);
        I18=1;
else  M(i,j)<M(i+1,j) && M(i+1,j)>M(i+2,j);
    I18=1;
 end

if  M(i,j)>M(i+1,j) && M(i+1,j-1)>M(i+2,j-1);
    I19=0;
elseif M(i,j)<M(i+1,j) && M(i+1,j-1)<M(i+2,j-1);
        I19=0;
elseif M(i,j)>M(i+1,j) && M(i+1,j-1)<M(i+2,j-1);
        I19=1;
else  M(i,j)<M(i+1,j) && M(i+1,j-1)>M(i+2,j-1);
    I19=1;
end

if M(i,j)>M(i+1,j) && M(i,j-1)>M(i+1,j-1);
    I20= 0;
elseif M(i,j)<M(i+1,j) && M(i,j-1)<M(i+1,j-1);
        I20=0;
elseif M(i,j)>M(i+1,j) && M(i,j-1)<M(i+1,j-1);
        I20=1;
else  M(i,j)<M(i+1,j) && M(i,j-1)>M(i+1,j-1);
        I20=1;
end

if M(i,j)>M(i+1,j) && M(i-1,j-1)>M(i,j-1);
    I21= 0;
elseif M(i,j)<M(i+1,j) && M(i-1,j-1)<M(i,j-1);
        I21=0;
elseif M(i,j)>M(i+1,j) && M(i-1,j-1)<M(i,j-1);
```

```
        I21=1;
else  M(i,j)<M(i+1,j) && M(i-1,j-1)>M(i,j-1);
    I21=1;
end

if M(i-1,j)>M(i,j) && M(i,j)>M(i+1,j);
    I22= 0;
elseif M(i-1,j)<M(i,j) && M(i,j)<M(i+1,j);
        I22=0;
elseif M(i-1,j)>M(i,j) && M(i,j)<M(i+1,j);
        I22=1;
else  M(i-1,j)<M(i,j) && M(i,j)>M(i+1,j);
    I22=1;
end

if M(i-1,j+1)>M(i,j+1) && M(i,j)>M(i+1,j);
    I23= 0;
elseif M(i-1,j+1)<M(i,j+1) && M(i,j)<M(i+1,j);
        I23=0;
elseif M(i-1,j+1)>M(i,j+1) && M(i,j)<M(i+1,j);
        I23=1;
else  M(i-1,j+1)<M(i,j+1) && M(i,j)>M(i+1,j);
    I23=1;
end

if M(i,j+1)>M(i+1,j+1) && M(i,j)>M(i+1,j);
    I24=0;
elseif M(i,j+1)<M(i+1,j+1) && M(i,j)<M(i+1,j);
        I24=0;
elseif M(i,j+1)>M(i+1,j+1) && M(i,j)<M(i+1,j);
        I24=1;
else  M(i,j+1)<M(i+1,j+1) && M(i,j)>M(i+1,j);
    I24=1;
end
if M(i,j)>M(i+1,j+1) && M(i+1,j+1)>M(i+2,j+2);
    I25= 0;
elseif M(i,j)<M(i+1,j+1) && M(i+1,j+1)<M(i+2,j+2);
        I25=0;
elseif M(i,j)>M(i+1,j+1) && M(i+1,j+1)<M(i+2,j+2);
        I25=1;
else  M(i,j)<M(i+1,j+1) && M(i+1,j+1)>M(i+2,j+2);
    I25=1;
end

 if M(i,j)>M(i+1,j+1) && M(i+1,j)>M(i+2,j+1);
    I26= 0;
elseif M(i,j)<M(i+1,j+1) && M(i+1,j)<M(i+2,j+1);
        I26=0;
elseif M(i,j)>M(i+1,j+1) && M(i+1,j)<M(i+2,j+1);
        I26=1;
else  M(i,j)<M(i+1,j+1) && M(i+1,j)>M(i+2,j+1);
    I26=1;
 end

if  M(i,j)>M(i+1,j+1) && M(i+1,j-1)>M(i+2,j);
    I27=0;
elseif M(i,j)<M(i+1,j+1) && M(i+1,j-1)<M(i+2,j);
        I27=0;
```

```
elseif M(i,j)>M(i+1,j+1) && M(i+1,j-1)<M(i+2,j);
        I27=1;
else  M(i,j)<M(i+1,j+1) && M(i+1,j-1)>M(i+2,j);
    I27=1;
end

if M(i,j)>M(i+1,j+1) && M(i,j-1)>M(i+1,j);
    I28= 0;
elseif M(i,j)<M(i+1,j+1) && M(i,j-1)<M(i+1,j);
        I28=0;
elseif M(i,j)>M(i+1,j+1) && M(i,j-1)<M(i+1,j);
        I28=1;
else  M(i,j)<M(i+1,j+1) && M(i,j-1)>M(i+1,j);
        I28=1;
end

if M(i-1,j-1)>M(i,j) && M(i,j)>M(i-1,j-1);
    I29= 0;
elseif M(i-1,j-1)<M(i,j) && M(i,j)<M(i-1,j-1);
        I29=0;
elseif M(i-1,j-1)>M(i,j) && M(i,j)<M(i-1,j-1);
        I29=1;
else  M(i-1,j-1)<M(i,j) && M(i,j)>M(i-1,j-1);
    I29=1;
end

if M(i-1,j)>M(i,j+1) && M(i,j)>M(i+1,j+1);
    I30= 0;
elseif M(i-1,j)<M(i,j+1) && M(i,j)<M(i+1,j+1);
        I30=0;
elseif M(i-1,j)>M(i,j+1) && M(i,j)<M(i+1,j+1);
        I30=1;
else  M(i-1,j)<M(i,j+1) && M(i,j)>M(i+1,j+1);
    I30=1;
end

if M(i-1,j+1)>M(i,j+2) && M(i,j)>M(i+1,j+1);
    I31= 0;
elseif M(i-1,j+1)<M(i,j+2) && M(i,j)<M(i+1,j+1);
        I31=0;
elseif M(i-1,j+1)>M(i,j+2) && M(i,j)<M(i+1,j+1);
        I31=1;
else  M(i-1,j+1)<M(i,j+2) && M(i,j)>M(i+1,j+1);
    I31=1;
end

if M(i,j+1)>M(i+1,j+2) && M(i,j)>M(i+1,j+1);
    I32=0;
elseif M(i,j+1)<M(i+1,j+2) && M(i,j)<M(i+1,j+1);
        I32=0;
elseif M(i,j+1)>M(i+1,j+2) && M(i,j)<M(i+1,j+1);
        I32=1;
else  M(i,j+1)<M(i+1,j+2) && M(i,j)>M(i+1,j+1);
    I32=1;
end
```

```
LDP(i,j)=I1*2^31+I2*2^30+I3*2^29+I4*2^28+I5*2^27+I6*2^26+I7*2^25+I
8*2^24+I9*2^23+I10*2^22+I11*2^21+I12*2^20+I13*2^19+I14*2^18+I15*2^
17+I16*2^16+I17*2^15+I18*2^14+I19*2^13+I20*2^12+I21*2^11+I22*2^10+
I23*2^9+I24*2^8+I25*2^7+I26*2^6+I27*2^5+I28*2^4+I29*2^3+I30*2^2+I3
1*2^1+I32*2^0;
    end
  end

[irow icol] = size(LDP);
citra_1D = reshape(LDP',irow*icol,1);
selisih_uji = double(citra_1D) - m; % selisih hasil ektraksi LDP
dengan citra rata - rata
proyeksi_citra_uji = Eigenfaces' * selisih_uji; % vektor fitur
citra uji

% menghitung euclidean distance minimum

Euc_dist = [];
for i = 1 : jumlah_percobaan
    q = proyeksicitra(:,i);
    jarak = sqrt(sum((proyeksi_citra_uji - q).^2));
    Euc_dist = [Euc_dist jarak];
end

[Euc_dist_min , indeks_pengenalan] = min(Euc_dist);
H=Euc_dist_min;
set(handles.edit2,'string',H)

threshold=2.184158e+22;
if H>threshold
    B=imread('C:\MATLAB\R2012a\bin\salah.jpg')
    axes(handles.axes2);
imshow(B,[]);
  set(handles.edit3,'string','-');
  set(handles.edit4,'string','-');
end
if  indeks_pengenalan==1 && H<=threshold
   B=imread('C:\MATLAB\R2012a\bin\database\01-IMG-01.jpg');
   axes(handles.axes2);
imshow(B,[]);
  set(handles.edit3,'string','1');
  set(handles.edit4,'string','1');
end
if indeks_pengenalan==2 && H<=threshold
     B=imread('C:\MATLAB\R2012a\bin\database\01-IMG-02.jpg');
   axes(handles.axes2);
imshow(B,[]);
  set(handles.edit3,'string','1');
  set(handles.edit4,'string','2');
end
  if indeks_pengenalan==3 && H<=threshold
         B=imread('C:\MATLAB\R2012a\bin\database\01-IMG-03.jpg');
   axes(handles.axes2);
   imshow(B,[]);
     set(handles.edit3,'string','1');
     set(handles.edit4,'string','3');

  end
```

```
if indeks_pengenalan==4 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\01-IMG-04.jpg');
axes(handles.axes2);
imshow(B,[]);
  set(handles.edit3,'string','1');
  set(handles.edit4,'string','4');
end
if indeks_pengenalan==5 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\01-IMG-05.jpg');
axes(handles.axes2);
imshow(B,[]);
  set(handles.edit3,'string','1');
  set(handles.edit4,'string','5');
end
if indeks_pengenalan==6 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\02-IMG-01.jpg');
axes(handles.axes2);
imshow(B,[]);
  set(handles.edit3,'string','2');
  set(handles.edit4,'string','1');
end
if indeks_pengenalan==7 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\02-IMG-02.jpg');
axes(handles.axes2);
imshow(B,[]);
  set(handles.edit3,'string','2');
  set(handles.edit4,'string','2');
end
 if indeks_pengenalan==8 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\02-IMG-03.jpg');
axes(handles.axes2);
imshow(B,[]);
  set(handles.edit3,'string','2');
  set(handles.edit4,'string','3');
 end
 if indeks_pengenalan==9 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\02-IMG-04.jpg');
axes(handles.axes2);
imshow(B,[]);
  set(handles.edit3,'string','2');
  set(handles.edit4,'string','4');
 end
 if indeks_pengenalan==10 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\02-IMG-05.jpg');
axes(handles.axes2);
imshow(B,[]);
  set(handles.edit3,'string','2');
  set(handles.edit4,'string','5');
 end
 if indeks_pengenalan==11 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\03-IMG-01.jpg');
axes(handles.axes2);
imshow(B,[]);
  set(handles.edit3,'string','3');
  set(handles.edit4,'string','1');
 end
 if indeks_pengenalan==12 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\03-IMG-02.jpg');
axes(handles.axes2);
```

```
imshow(B,[]);
  set(handles.edit3,'string','3');
  set(handles.edit4,'string','2');
 end
 if indeks_pengenalan==13 && H<=threshold
 B=imread('C:\MATLAB\R2012a\bin\database\03-IMG-03.jpg');
axes(handles.axes2);
imshow(B,[]);
  set(handles.edit3,'string','3');
  set(handles.edit4,'string','3');
 end
 if indeks_pengenalan==14 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\03-IMG-04.jpg');
axes(handles.axes2);
imshow(B,[]);
  set(handles.edit3,'string','3');
  set(handles.edit4,'string','4');
 end
 if indeks_pengenalan==15 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\03-IMG-05.jpg');
axes(handles.axes2);
imshow(B,[]);
  set(handles.edit3,'string','3');
  set(handles.edit4,'string','5');
 end
 if indeks_pengenalan==16 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\04-IMG-01.jpg');
axes(handles.axes2);
imshow(B,[]);
  set(handles.edit3,'string','4');
  set(handles.edit4,'string','1');
 end
 if indeks_pengenalan==17 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\04-IMG-02.jpg');
axes(handles.axes2);
imshow(B,[]);
  set(handles.edit3,'string','4');
  set(handles.edit4,'string','2');
 end
 if indeks_pengenalan==18 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\04-IMG-03.jpg');
axes(handles.axes2);
imshow(B,[]);
  set(handles.edit3,'string','4');
  set(handles.edit4,'string','3');
 end
 if indeks_pengenalan==19 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\04-IMG-04.jpg');
axes(handles.axes2);
imshow(B,[]);
  set(handles.edit3,'string','4');
  set(handles.edit4,'string','4');
 end
 if indeks_pengenalan==20 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\04-IMG-05.jpg');
axes(handles.axes2);
imshow(B,[]);
  set(handles.edit3,'string','4');
  set(handles.edit4,'string','5');
```

```
 end
 if indeks_pengenalan==21 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\05-IMG-01.jpg');
axes(handles.axes2);
imshow(B,[]);
  set(handles.edit3,'string','5');
  set(handles.edit4,'string','1');
 end
 if indeks_pengenalan==22 && H<threshold
      B=imread('C:\MATLAB\R2012a\bin\database\05-IMG-02.jpg');
axes(handles.axes2);
imshow(B,[]);
  set(handles.edit3,'string','5');
  set(handles.edit4,'string','2');
 end
 if indeks_pengenalan==23 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\05-IMG-03.jpg');
axes(handles.axes2);
imshow(B,[]);
  set(handles.edit3,'string','5');
  set(handles.edit4,'string','3');
 end
 if indeks_pengenalan==24 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\05-IMG-04.jpg');
axes(handles.axes2);
imshow(B,[]);
  set(handles.edit3,'string','5');
  set(handles.edit4,'string','4');
 end
 if indeks_pengenalan==25 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\05-IMG-05.jpg');
axes(handles.axes2);
imshow(B,[]);
  set(handles.edit3,'string','5');
  set(handles.edit4,'string','5');
 end
 if indeks_pengenalan==26 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\06-IMG-01.jpg');
axes(handles.axes2);
imshow(B,[]);
  set(handles.edit3,'string','6');
  set(handles.edit4,'string','1');
 end
 if indeks_pengenalan==27 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\06-IMG-02.jpg');
axes(handles.axes2);
imshow(B,[]);
  set(handles.edit3,'string','6');
  set(handles.edit4,'string','2');
 end

 if indeks_pengenalan==28 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\06-IMG-03.jpg');
axes(handles.axes2);
imshow(B,[]);
  set(handles.edit3,'string','6');
  set(handles.edit4,'string','3');
 end
```

```
 if indeks_pengenalan==29 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\06-IMG-04.jpg');
axes(handles.axes2);
imshow(B,[]);
  set(handles.edit3,'string','6');
  set(handles.edit4,'string','4');
 end

 if indeks_pengenalan==30 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\06-IMG-05.jpg');
axes(handles.axes2);
imshow(B,[]);
 set(handles.edit3,'string','6');
 set(handles.edit4,'string','5');
 end

 if indeks_pengenalan==31 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\07-IMG-01.jpg');
axes(handles.axes2);
imshow(B,[]);
 set(handles.edit3,'string','7');
 set(handles.edit4,'string','1');
 end

 if indeks_pengenalan==32 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\07-IMG-02.jpg');
axes(handles.axes2);
imshow(B,[]);
 set(handles.edit3,'string','7');
 set(handles.edit4,'string','2');
 end
 if indeks_pengenalan==33 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\07-IMG-03.jpg');
axes(handles.axes2);
imshow(B,[]);
 set(handles.edit3,'string','7');
 set(handles.edit4,'string','3');
 end

 if indeks_pengenalan==34  && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\07-IMG-04.jpg');
axes(handles.axes2);
imshow(B,[]);
 set(handles.edit3,'string','7');
 set(handles.edit4,'string','4');
 end

 if indeks_pengenalan==35 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\07-IMG-05.jpg');
axes(handles.axes2);
imshow(B,[]);
 set(handles.edit3,'string','7');
 set(handles.edit4,'string','5');
 end
```

```
 if indeks_pengenalan==36 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\08-IMG-01.jpg');
axes(handles.axes2);
imshow(B,[]);
 set(handles.edit3,'string','8');
 set(handles.edit4,'string','1');
 end

 if indeks_pengenalan==37 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\08-IMG-02.jpg');
axes(handles.axes2);
imshow(B,[]);
 set(handles.edit3,'string','8');
 set(handles.edit4,'string','2');
 end

 if indeks_pengenalan==38 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\08-IMG-03.jpg');
axes(handles.axes2);
imshow(B,[]);
 set(handles.edit3,'string','8');
 set(handles.edit4,'string','3');
 end

 if indeks_pengenalan==39 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\08-IMG-04.jpg');
axes(handles.axes2);
imshow(B,[]);
 set(handles.edit3,'string','8');
 set(handles.edit4,'string','4');
 end

 if indeks_pengenalan==40 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\08-IMG-05.jpg');
axes(handles.axes2);
imshow(B,[]);
 set(handles.edit3,'string','8');
 set(handles.edit4,'string','5');
 end

 if indeks_pengenalan==41 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\09-IMG-01.jpg');
axes(handles.axes2);
imshow(B,[]);
 set(handles.edit3,'string','9');
 set(handles.edit4,'string','1');
 end

 if indeks_pengenalan==42 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\09-IMG-02.jpg');
axes(handles.axes2);
imshow(B,[]);
 set(handles.edit3,'string','9');
 set(handles.edit4,'string','2');
 end
```

```
 if indeks_pengenalan==43 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\09-IMG-03.jpg');
axes(handles.axes2);
imshow(B,[]);
 set(handles.edit3,'string','9');
 set(handles.edit4,'string','3');
 end

 if indeks_pengenalan==44 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\09-IMG-04.jpg');
axes(handles.axes2);
imshow(B,[]);
 set(handles.edit3,'string','9');
 set(handles.edit4,'string','4');
 end

 if indeks_pengenalan==45 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\09-IMG-05.jpg');
axes(handles.axes2);
imshow(B,[]);
 set(handles.edit3,'string','9');
 set(handles.edit4,'string','5');
 end

 if indeks_pengenalan==46 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\10-IMG-01.jpg');
axes(handles.axes2);
imshow(B,[]);
 set(handles.edit3,'string','10');
 set(handles.edit4,'string','1');
 end

 if indeks_pengenalan==47 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\10-IMG-02.jpg');
axes(handles.axes2);
imshow(B,[]);
 set(handles.edit3,'string','10');
 set(handles.edit4,'string','2');
 end

 if indeks_pengenalan==48 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\10-IMG-03.jpg');
axes(handles.axes2);
imshow(B,[]);
 set(handles.edit3,'string','10');
 set(handles.edit4,'string','3');
 end

 if indeks_pengenalan==49 && H<=threshold
      B=imread('C:\MATLAB\R2012a\bin\database\10-IMG-04.jpg');
axes(handles.axes2);
imshow(B,[]);
 set(handles.edit3,'string','10');
 set(handles.edit4,'string','4');
 end
```

```
if indeks_pengenalan==50 && H<=threshold
        B=imread('C:\MATLAB\R2012a\bin\database\10-IMG-05.jpg');
   axes(handles.axes2);
   imshow(B,[]);
   set(handles.edit3,'string','10');
   set(handles.edit4,'string','5');
    end

function edit1_Callback(hObject, eventdata, handles)
% hObject    handle to edit1 (see GCBO)
% eventdata  reserved - to be defined in a future version of
MATLAB
% handles    structure with handles and user data (see GUIDATA)

% Hints: get(hObject,'String') returns contents of edit1 as text
%        str2double(get(hObject,'String')) returns contents of
edit1 as a double


% --- Executes during object creation, after setting all
properties.
function edit1_CreateFcn(hObject, eventdata, handles)
% hObject    handle to edit1 (see GCBO)
% eventdata  reserved - to be defined in a future version of
MATLAB
% handles    empty - handles not created until after all
CreateFcns called

% Hint: edit controls usually have a white background on Windows.
%       See ISPC and COMPUTER.
if ispc && isequal(get(hObject,'BackgroundColor'),
get(0,'defaultUicontrolBackgroundColor'))
    set(hObject,'BackgroundColor','white');
end



function edit2_Callback(hObject, eventdata, handles)
% hObject    handle to edit2 (see GCBO)
% eventdata  reserved - to be defined in a future version of
MATLAB
% handles    structure with handles and user data (see GUIDATA)

% Hints: get(hObject,'String') returns contents of edit2 as text
%        str2double(get(hObject,'String')) returns contents of
edit2 as a double


% --- Executes during object creation, after setting all
properties.
function edit2_CreateFcn(hObject, eventdata, handles)
% hObject    handle to edit2 (see GCBO)
% eventdata  reserved - to be defined in a future version of
MATLAB
% handles    empty - handles not created until after all
CreateFcns called
```

```
% Hint: edit controls usually have a white background on Windows.
%       See ISPC and COMPUTER.
if ispc && isequal(get(hObject,'BackgroundColor'),
get(0,'defaultUicontrolBackgroundColor'))
    set(hObject,'BackgroundColor','white');
end



function edit3_Callback(hObject, eventdata, handles)
% hObject    handle to edit3 (see GCBO)
% eventdata  reserved - to be defined in a future version of
MATLAB
% handles    structure with handles and user data (see GUIDATA)

% Hints: get(hObject,'String') returns contents of edit3 as text
%        str2double(get(hObject,'String')) returns contents of
edit3 as a double


% --- Executes during object creation, after setting all
properties.
function edit3_CreateFcn(hObject, eventdata, handles)
% hObject    handle to edit3 (see GCBO)
% eventdata  reserved - to be defined in a future version of
MATLAB
% handles    empty - handles not created until after all
CreateFcns called

% Hint: edit controls usually have a white background on Windows.
%       See ISPC and COMPUTER.
if ispc && isequal(get(hObject,'BackgroundColor'),
get(0,'defaultUicontrolBackgroundColor'))
    set(hObject,'BackgroundColor','white');
end



function edit4_Callback(hObject, eventdata, handles)
% hObject    handle to edit4 (see GCBO)
% eventdata  reserved - to be defined in a future version of
MATLAB
% handles    structure with handles and user data (see GUIDATA)

% Hints: get(hObject,'String') returns contents of edit4 as text
%        str2double(get(hObject,'String')) returns contents of
edit4 as a double


% --- Executes during object creation, after setting all
properties.
function edit4_CreateFcn(hObject, eventdata, handles)
% hObject    handle to edit4 (see GCBO)
% eventdata  reserved - to be defined in a future version of
MATLAB
```

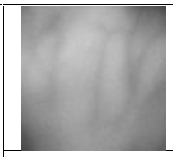
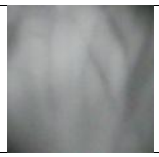
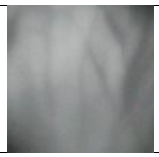
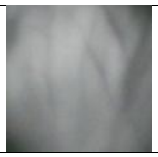
```
% handles    empty - handles not created until after all
CreateFcns called

% Hint: edit controls usually have a white background on Windows.
%       See ISPC and COMPUTER.
if ispc && isequal(get(hObject,'BackgroundColor'),
get(0,'defaultUicontrolBackgroundColor'))
    set(hObject,'BackgroundColor','white');
end
```

LAMPIRAN B

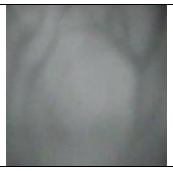
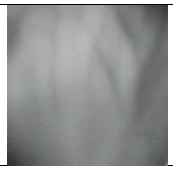
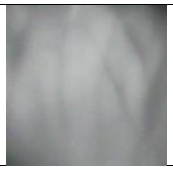
KUMPULAN CITRA

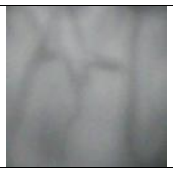
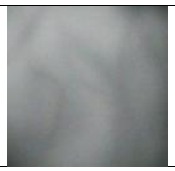
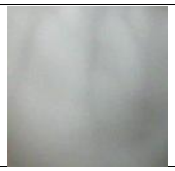
1. Citra Pada Database

Citra Orang Ke-1					
	IMG-01	IMG-02	IMG-03	IMG-04	IMG-05
Citra Orang Ke-2					
	IMG-01	IMG-02	IMG-03	IMG-04	IMG-05
Citra Orang Ke-3					
	IMG-01	IMG-02	IMG-03	IMG-04	IMG-05
Citra Orang Ke-4					
	IMG-01	IMG-02	IMG-03	IMG-04	IMG-05
Citra Orang Ke-5					
	IMG-01	IMG-02	IMG-03	IMG-04	IMG-05
Citra Orang Ke-6					
	IMG-01	IMG-02	IMG-03	IMG-04	IMG-05
Citra Orang Ke-7					
	IMG-01	IMG-02	IMG-03	IMG-04	IMG-05
Citra Orang Ke-8					
	IMG-01	IMG-02	IMG-03	IMG-04	IMG-05
Citra Orang Ke-9					
	IMG-01	IMG-02	IMG-03	IMG-04	IMG-05

Citra Orang Ke-10					
	IMG-01	IMG-02	IMG-03	IMG-04	IMG-05

2. Citra uji dari individu yang ada dalam database

Citra Orang Ke-1			
	IMG-06	IMG-07	IMG-08
Citra Orang Ke-2			
	IMG-06	IMG-07	IMG-08
Citra Orang Ke-3			
	IMG-06	IMG-07	IMG-08
Citra Orang Ke-4			
	IMG-06	IMG-07	IMG-08
Citra Orang Ke-5			
	IMG-06	IMG-07	IMG-08
Citra Orang Ke-6			
	IMG-06	IMG-07	IMG-08
Citra Orang Ke-7			
	IMG-06	IMG-07	IMG-08

Citra Orang Ke-8			
	IMG-06	IMG-07	IMG-08
Citra Orang Ke-9			
	IMG-06	IMG-07	IMG-08
Citra Orang Ke-10			
	IMG-06	IMG-07	IMG-08