LISTING PROGRAM PADA MICROSOFT VISUAL BASIC 6.0

1. Program pada Form 1 (Program Utama)

```
Dim imageArray() As Byte
Dim oldX As Long, oldY As Long
Dim pNum As Long, pTot As Long

Private Declare Function capCreateCaptureWindow Lib
"avicap32.dll" Alias "capCreateCaptureWindowA"
(ByVal lpszWindowName As String, ByVal dwStyle As
Long, ByVal x As Long, ByVal y As Long, ByVal
nWidth As Long, ByVal nHeight As Long, ByVal
hwndParent As Long, ByVal nID As Long) As Long

Private Sub Command1_Click()
Picture2.Picture = Picture1.Picture
End Sub
Private Sub Command2_Click()
STARTCAM

Load Progress
Progress.Show
Progress.start
Unload Progress

Command2.Enabled = False
Command3.Enabled = True

Picture1.AutoRedraw = True
Picture2.AutoRedraw = True
```

```
Timer1.Enabled = True

End Sub

Private Sub Command3_Click()
STOPCAM
Command3.Enabled = False
Command2.Enabled = True

Picture1.Picture = LoadPicture("nosignal.bmp")
Picture2.Picture = LoadPicture("nosignal.bmp")

End Sub

Private Sub Command5_Click()
SavePicture Picture1.Picture, App.Path +
"\Detected\" + Format(Date, "ddmmyyyy") + "__" +
Format(Time, "hhmmss") + ".bmp"

Picture3.Picture = Picture1.Picture
       For o = 1 To Picture2.ScaleWidth
       For p = 1 To Picture2.ScaleHeight
      warna = Picture2.Point(o, p)
      r = warna And RGB(255, 0, 0)
      g = Int((warna And RGB(0, 255, 0)) / 256)
      B = Int(Int((warna And RGB(0, 0, 255)) / 256)
      / 256)
      xr = 1.6 * r
      xg = 1.6 * g
      xb = 1.6 * B

      Picture2.PSet (o, p), RGB(xr, xg, xb)
```

```
            Next p
            Next o
End Sub

    Private Sub Command6_Click()
    For i = 1 To Picture2.ScaleWidth - 1
        For j = 1 To Picture2.ScaleHeight - 1
            warna = Picture2.Point(i, j)
            r1 = warna And RGB(255, 0, 0)
            g1 = Int((warna And RGB(0, 255, 0)) / 256)
            b1 = Int(Int((warna And RGB(0, 0, 255)) /
    256) / 256)

            warna = Picture3.Point(i, j)
            r2 = warna And RGB(255, 0, 0)
            g2 = Int((warna And RGB(0, 255, 0)) / 256)
            b2 = Int(Int((warna And RGB(0, 0, 255)) /
    256) / 256)

            r = r1 - r2
            If r > 255 Then r = 255
            If r < 0 Then r = 0

            g = g1 - g2
            If g > 255 Then g = 255
            If g < 0 Then g = 0

            B = b1 - b2
            If B > 255 Then B = 255
            If B < 0 Then B = 0

            Picture5.PSet (i, j), RGB(r, g, B)
```

```
     Next j
Next i

For kl = 1 To Picture5.ScaleWidth - 1
For mn = 1 To Picture5.ScaleHeight - 1
warna = Picture5.Point(kl, mn)
r = warna And RGB(255, 0, 0)
g = Int((warna And RGB(0, 255, 0)) / 256)
B = Int(Int((warna And RGB(0, 0, 255)) / 256) /
256)
x = (r + g + B) / 3
If x < 102 Then x = 0 Else x = 255

Picture5.PSet (kl, mn), RGB(x, x, x)
Next mn
Next kl
End Sub

Private Sub Command7_Click()
For i = 1 To Picture3.ScaleWidth
For j = 1 To Picture3.ScaleHeight
warna = Picture3.Point(i, j)
r = warna And RGB(255, 0, 0)
g = Int((warna And RGB(0, 255, 0)) / 256)
B = Int(Int((warna And RGB(0, 0, 255)) / 256) /
256)
xr = 2 * r
xg = 2 * g
xb = 2 * B

Picture3.PSet (i, j), RGB(xr, xg, xb)
```

```
    Next j
    Next i

n = 0
x = Picture5.ScaleWidth
y = Picture5.ScaleHeight
   For brs = 1 To y
   For klm = 1 To x
   wrn = Picture5.Point(klm, brs)
   k = wrn And RGB(255, 0, 0)
   l = Int((wrn And RGB(0, 255, 0)) / 256)
   m = Int(Int((wrn And RGB(0, 0, 255)) / 256) / 256)
If (k > 200) And (l > 200) And (m > 200) Then

gwrn = Picture3.Point(klm, brs)
   gk = gwrn And RGB(255, 0, 0)
   gl = Int((gwrn And RGB(0, 255, 0)) / 256)
   gm = Int(Int((gwrn And RGB(0, 0, 255)) / 256) / 256)

    y = 0.257 * gk + 0.504 * gl + 0.098 * gm + 16
   cb = 0.148 * gk - 0.291 * gl + 0.439 * gm + 128
   cr = 0.439 * gk - 0.368 * gl - 0.071 * gm + 128
   If y > 53.697 And y < 234.261 And cb > 131.428 And
cb < 203.42 And cr > 126.095 And cr < 183.67 Then
        k = 255
        l = 255
        m = 255
        n = n + 1

Else
        k = 0
        l = 0
```

```
    m = 0
End If Picture4.PSet (klm, brs), RGB(k, l, m)
    Next klm
    Next brs
End Sub

Private Sub Command8_Click()
For i = 1 To Picture4.ScaleWidth
    For j = 1 To Picture4.ScaleHeight
        warna = Picture4.Point(i, j)
        r1 = warna And RGB(255, 0, 0)
        g1 = Int((warna And RGB(0, 255, 0)) / 256)
        b1 = Int(Int((warna And RGB(0, 0, 255)) /
256) / 256)
           warna = Picture5.Point(i, j)
        r2 = warna And RGB(255, 0, 0)
        g2 = Int((warna And RGB(0, 255, 0)) / 256)
        b2 = Int(Int((warna And RGB(0, 0, 255)) /
256) / 256)
            r = r1 Or r2
        If r > 255 Then r = 255
        If r < 0 Then r = 0

            g = g1 Or g2
        If g > 255 Then g = 255
        If g < 0 Then g = 0

            B = b1 Or b2
        If B > 255 Then B = 255
        If B < 0 Then B = 0

     Picture6.PSet (i, j), RGB(r, g, B)
```

```
            Picture6.Refresh
     Next j
     Picture6.Refresh
Next i

End Sub


Private Sub Command9_Click()
Dim dib As New cDIB
dib.GetImageData Picture6, imageArray
'--------------------------------------

Dim tmpheight As Long, tmpwidth As Long
tmpheight = Picture6.ScaleHeight
tmpwidth = Picture6.ScaleWidth
'--------------------------------------

Dim x As Long, y As Long
Dim xy() As Long
ReDim xy(0 To tmpwidth * 3)
For x = 0 To tmpwidth * 3
    xy(x) = x * 3
Next
'--------------------------------------

Dim temp As Long
ReDim imBW(tmpwidth - 1, tmpheight - 1)
'mendapatkan gambar hitam dan putih
For x = 0 To tmpwidth - 1
For y = 0 To tmpheight - 1
    temp = imageArray(xy(x), y)
```

```
    If temp = 255 Then temp = 1
    imBW(x, y) = temp
Next
Next

'==[Algoritma Pelabelan Pada Komponen
Terkoneksi]===
Dim n As Long, min As Long, i As Long, j As Long,
rep As Long
Dim label() As Long, mask(4) As Long, bscan As Long
ReDim label(tmpwidth - 1, tmpheight - 1)

If IsNumeric(Text1.Text) = False Then Exit Sub
rep = Text1.Text - 1

Dim amount As Long
amount = 1000

For j = 0 To rep
n = 1
fwdscan:
For x = 1 To tmpwidth - 2
For y = 1 To tmpheight - 2
    mask(0) = label(x - 1, y - 1)
    mask(1) = label(x, y - 1)
    mask(2) = label(x + 1, y - 1)
    mask(3) = label(x - 1, y)
    mask(4) = label(x, y)
    If imBW(x, y) = 1 Then
        temp = mask(0) Or mask(1) Or mask(2) Or
mask(3)
        If temp = 0 Then
```

```
            label(x, y) = n: bscan = 1
            n = n + 1
        Else
            min = mask(0)
            For i = 1 To 4
                If min = 0 Then min = mask(i): GoTo
cont
                If mask(i) < min And mask(i) <> 0
Then min = mask(i)
cont:
            Next
            label(x, y) = min: bscan = 1
        End If
    End If
Next
Next

backscan:
For x = 1 To tmpwidth - 2
For y = 1 To tmpheight - 2
    If label((tmpwidth - 1) - x, (tmpheight - 1) -
y) <> 0 Then
    mask(0) = label((tmpwidth - 1) - (x - 1),
(tmpheight - 1) - (y - 1))
    mask(1) = label((tmpwidth - 1) - x, (tmpheight
- 1) - (y - 1))
    mask(2) = label((tmpwidth - 1) - (x + 1),
(tmpheight - 1) - (y - 1))
    mask(3) = label((tmpwidth - 1) - (x - 1),
(tmpheight - 1) - y)
    mask(4) = label((tmpwidth - 1) - x, (tmpheight
- 1) - y)
```

```
    min = mask(0)
    For i = 1 To 4
        If min = 0 Then min = mask(i): GoTo cont2
        If mask(i) < min And mask(i) <> 0 Then min
= mask(i)
cont2:
    Next

    label((tmpwidth - 1) - x, (tmpheight - 1) - y)
= min
    End If
Next
Next

Next

finish:

Dim count() As Long
ReDim count(amount, 4)
Dim m As Long
For y = 0 To tmpheight - 1
For x = 0 To tmpwidth - 1
    count(label(x, y), 0) = count(label(x, y), 0) +
1 'mengatur berapa banyak dari jumlah label 'no'
yang telah didapat
    If count(label(x, y), 1) = 0 Then
count(label(x, y), 1) = x: count(label(x, y), 2) =
x: _
    count(label(x, y), 3) = y: count(label(x, y),
4) = y 'mengatur semua min & max koordinat x dan y
untuk min 1 ..
```

```
    'update setiap koordinat
    If x < count(label(x, y), 1) And count(label(x,
y), 1) <> 0 Then count(label(x, y), 1) = x 'update
coordinate x min (if x < than the prev value)
    If x > count(label(x, y), 2) And count(label(x,
y), 2) <> 0 Then count(label(x, y), 2) = x '
    If y < count(label(x, y), 3) And count(label(x,
y), 3) <> 0 Then count(label(x, y), 3) = y '
    If y > count(label(x, y), 4) And count(label(x,
y), 4) <> 0 Then count(label(x, y), 4) = y '

Next
Next


'===[ BOUNDING BOX ]===
'MEMBEDAKAN KOTAK yang terdeteksi dan yang berlabel
OBJEK

For i = 0 To amount
    If count(i, 0) <> 0 And count(i, 0) > 15 And i
<> 0 Then 'jika label menemukan tidak nol,> 5 dan
label tidak '0 '
        m = m + 1

        Picture6.Line (count(i, 1), (tmpheight - 1)
- count(i, 3))-(count(i, 2), (tmpheight - 1) -
count(i, 4)), vbRed, B

    End If
   Next
```

```
Label1.Caption = "Human found : " & m
pTot = m

End Sub

Private Sub Form_Load()
Picture1.Picture = LoadPicture("nosignal.bmp")
Picture2.Picture = LoadPicture("nosignal.bmp")
End Sub

Private Sub Timer1_Timer()
'mendapatkan gambar dari kamera
SendMessage mCapHwnd, GET_FRAME, 0, 0
SendMessage mCapHwnd, COPY, 0, 0

Picture1.Picture = Clipboard.GetData:
Clipboard.Clear
End Sub

Sub STOPCAM()
DoEvents: SendMessage mCapHwnd, DISCONNECT, 0, 0
End Sub

Sub STARTCAM()
'Memulai kamera untuk mengambil gambar
mCapHwnd = capCreateCaptureWindow("WebcamCapture",
0, 0, 0, 320, 240, Me.hwnd, 0)
DoEvents
SendMessage mCapHwnd, CONNECT, 0, 0 'menghubungkan
kamera
End Sub
```

2. Program pada ClassModule

```
Option Explicit

Private Type BITMAPINFOHEADER '40 bytes
   biSize As Long
   biWidth As Long
   biHeight As Long
   biPlanes As Integer
   biBitCount As Integer
   biCompression As Long
End Type

Private Type RGBQUAD
    Red As Byte
    Green As Byte
    Blue As Byte
  End Type


Private Type BITMAP
    bmType As Long
    bmWidth As Long
    bmHeight As Long
    bmWidthBytes As Long
    bmPlanes As Integer
    bmBitsPixel As Integer
    bmBits As Long
End Type
```

```
'----------------------------------------
' Tambahan (Deklarasi)
'----------------------------------------
Private Type BITMAPINFO
    bmHeader As BITMAPINFOHEADER
    bmColors(0 To 255) As RGBQUAD
End Type

Private Declare Function GetObject Lib "gdi32"
Alias "GetObjectA" (ByVal hObject As Long, ByVal
nCount As Long, ByRef lpObject As Any) As Long
'pemanggilan fungsi API
Private Declare Function GetDIBits Lib "gdi32"
(ByVal hdc As Long, ByVal hBitmap As Long, ByVal
nStartScan As Long, ByVal nNumScans As Long, lpBits
As Any, lpBI As BITMAPINFO, ByVal wUsage As Long)
As Long


'----------------------------------------
'              Fungsi Tambahan
'----------------------------------------
Public Function GetImageData(ByRef SrcPictureBox As
PictureBox, ByRef ImageData() As Byte)
    'Deklarasi beberapa variabel yang diperlukan
tipe bitmap
    Dim bm As BITMAP
    Dim bmi As BITMAPINFO
    Dim arraywidth As Long

    'Mengisi BMI (Bitmap informasi variabel) dengan
semua data yang sesuai
```

```
    bmi.bmHeader.biSize = 40 'Ukuran, dalam satuan
byte, dari header (selalu 40)
    bmi.bmHeader.biPlanes = 1 'Jumlah plane (selalu
satu untuk contoh ini)
    bmi.bmHeader.biBitCount = 24 'Bit per pixel
(selalu 24 untuk contoh ini)
    bmi.bmHeader.biCompression = 0 'Kompresi:
standar / tidak ada
    'Hitung ukuran tipe bitmap (dalam bytes)
    Dim bmLen As Long
    bmLen = Len(bm)
    'Mendapatkan informasi picturebox  dari
SrcPictureBox dan memasukkannya ke dalam variabel
'bm'
    GetObject SrcPictureBox.Image, bmLen, bm
    arraywidth = (bm.bmWidth * 3) - 1
    arraywidth = arraywidth + (bm.bmWidth Mod 4)
    'Membangun ukuran array dengan benar
    ReDim ImageData(0 To arraywidth, 0 To
bm.bmHeight - 1)
    'Selesai membangun 'BMI' variabel kita ingin
melakukan panggilan langsung ke GetDIBits  (yang
sama kami gunakan di atas)
    bmi.bmHeader.biWidth = bm.bmWidth
    bmi.bmHeader.biHeight = bm.bmHeight
    ‘mengisi variabel 'BMI', dengan menggunakan
GetDIBits untuk mengambil data
    'SrcPictureBox dan memasukkannya ke dalam
ImageData () array menggunakan pengaturan dalam
'BMI'
```

```
    GetDIBits SrcPictureBox.hdc,
SrcPictureBox.Image, 0, bm.bmHeight, ImageData(0,
0), bmi, 0
End Function
```

3. Program pada Modul Camera

```
Public Declare Function SendMessage Lib "USER32"
Alias "SendMessageA" (ByVal hwnd As Long, ByVal wMsg
As Long, ByVal wParam As Long, lParam As Any) As Long

Public mCapHwnd As Long

Public Const CONNECT As Long = 1034
Public Const DISCONNECT As Long = 1035
Public Const GET_FRAME As Long = 1084
Public Const COPY As Long = 1054
Public Const WM_CAP_SET_VIDEOFORMAT = &H400 + 45
```