BAB VI

KESIMPULAN DAN SARAN

VI.1 Kesimpulan

Berdasarkan hasil analisis, perancangan, implementasi dan pengujian sistem dapat disimpulkan bahwa:

1. Sistem rancang bangun aplikasi pengenalan tulisan tangan aksara Hanacaraka berbasis multimedia berhasil dikembangkan dan dibangun dengan hasil dan akurasi yang cukup baik.
2. Hasil pengujian sistem yang meliputi pengujian fungsionalitas oleh pembuat sistem dan pengujian unjuk kerja sistem oleh pengguna menunjukkan bahwa sistem aplikasi ini berhasil diimplementasikan dengan baik,meskipun masih ada kekurangan yaitu belum bisa mengenali apabila masih terdapat noise yang terlalu besar.

VI.2 Saran

1. Aplikasi masih dapat dikembangkan dan dijadikan bahan penelitian selanjutnya. Pengembangan tersebut diantaranya diberikan aplikasi untuk belajar pembuatan huruf dengan suatu bantuan berupa titik-titik untuk jalur penulisan aksara Hanacaraka.
2. Selain itu sistem bisa dikembangkan lagi untuk deteksi tidak hanya aksara per aksara tetapi bisa juga untuk deteksi kalimat atau kata.
3. Aplikasi juga masih bisa untuk dikembangkan lagi supaya akurasinya lebih meningkat.

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PAPAN CERITA (STORY BOARD)

RANCANG BANGUN APLIKASI PENGENALAN TULISAN TANGAN AKSARA HANACARAKA BERBASIS MULTIMEDIA

Disusun Oleh :

SUGENG WINARDI

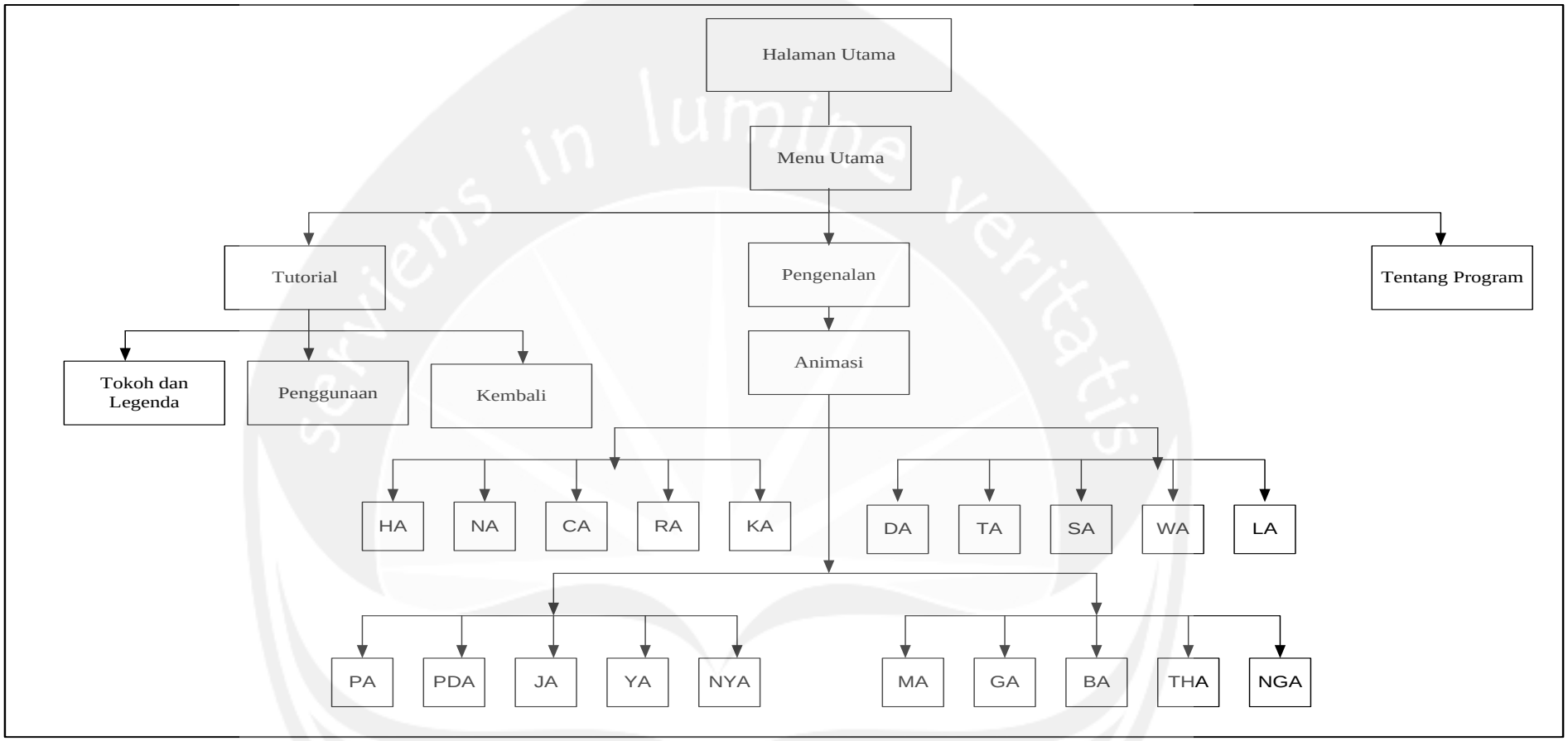
105301451/MTF

PROGRAM STUDI MAGISTER TEKNIK INFORMATIKA

PROGRAM PASCASARJANA

UNIVERSITAS ATMA JAYA YOGYAKARTA

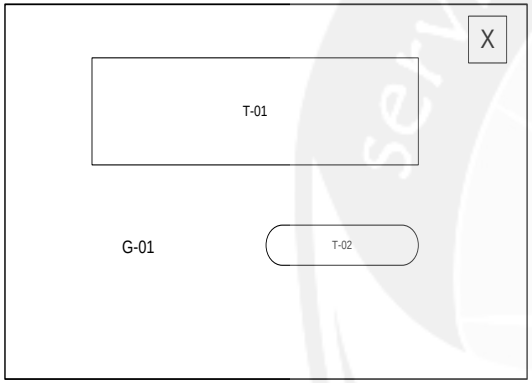
HIRARKI PAPAN CERITA



No. Papan Cerita : PC-01

TOPIK : Rancang Bangun Aplikasi Pengenalan Tulisan Tangan Aksara Hanacaraka Berbasis Multimedia.

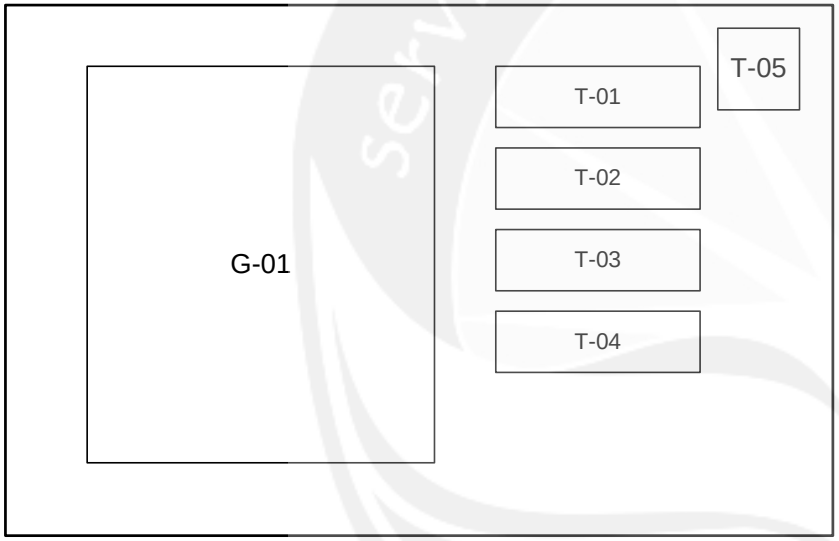
T(Teks) G(Grafik) S(Suara) A(Animasi)

Judul : Halaman Intro	Arahan Grafik	Keterangan
	T-01 : Teks Judul Aplikas Pengenalan Tulisan Tangan Aksara Hanacaraka Berbasis Multimedia T-02 : Teks "Mulai" G-01 : Gambar Background.	Jika Tombol T-02 diklik akan masuk ke menu utama

No. Papan Cerita : PC-02

TOPIK : Rancang Bangun Aplikasi Pengenalan Tulisan Tangan Aksara Hanacaraka Berbasis Multimedia.

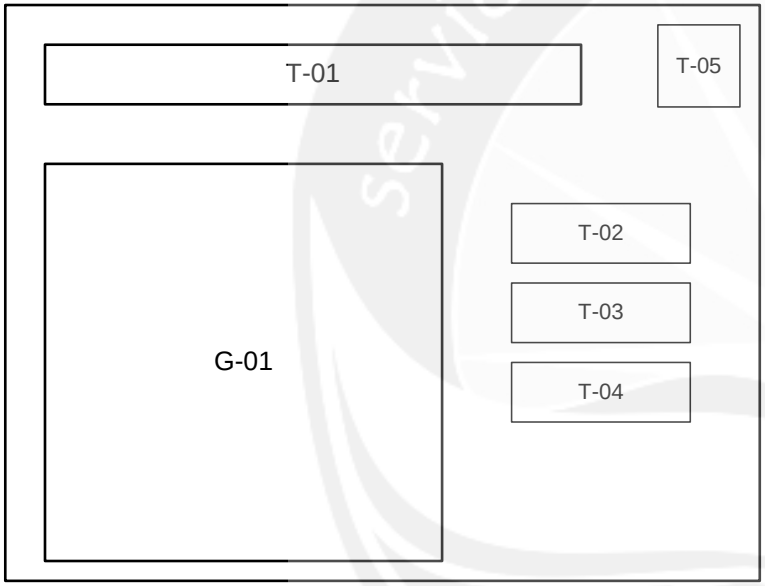
T(Teks) G(Grafik) S(Suara) A(Animasi)

Judul : Halaman Menu Utama	Arahan Grafik	Keterangan
	T-01 : Tombol "Tutorial" T-02 : Tombol "Pengenalan/ Pelatihan" T-03 : Tombol "Tentang Program" T-04 : Tombol "Kembali ke Menu" G-01 : Gambar "Hanacaraka"	• Jika Tombol T-1 diklik akan masuk ke menu Tutorial. • Jika Tombol T-02 diklik akan masuk ke menu Pelatihan/ Pengenalan • Jika Tombol T-03 diklik akan masuk ke halaman Tentang Program. • Jika Tombol T-04 diklik akan masuk menuju ke Halaman Menu Utama. • Jika Tombol T-05 diklik akan keluar dari program.

No. Papan Cerita : PC-03

TOPIK : Rancang Bangun Aplikasi Pengenalan Tulisan Tangan Aksara Hanacaraka Berbasis Multimedia.

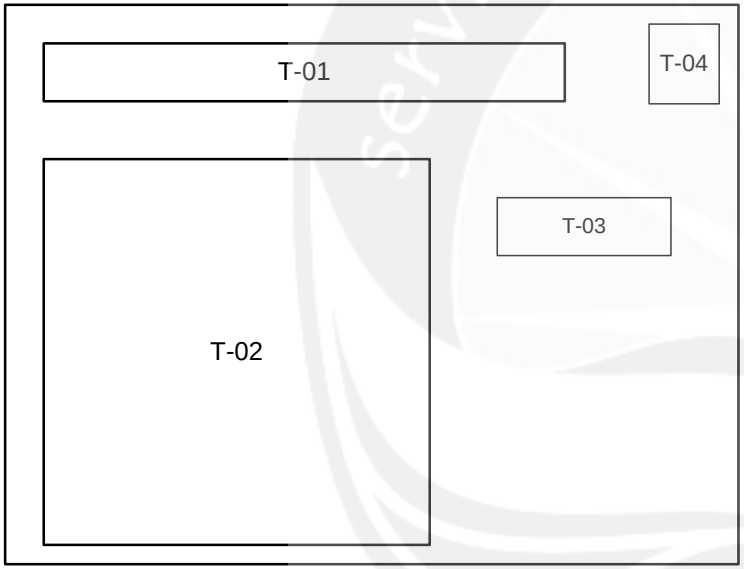
T(Teks) G(Grafik) S(Suara) A(Animasi)

Judul : Halaman Tutorial	Arahan Grafik	Keterangan
	T-01 : Teks Judul "Tutorial" T-02 : Tombol "Legenda dan Tokoh Hanacaraka" T-03 : Tombol "Pelatihan" T-04 : Tombol "Kembali ke Menu" T-05 : Tombol X "Exit" G-01 : Gambar "Hanacaraka" dan Teks "Legenda dan Tokoh" serta Teks tentang "Cara Penggunaan"	• Jika Tombol T-02 diklik akan masuk ke menu Asal usul Hanacaraka dan tokohnya • Jika Tombol T-03 diklik akan masuk ke halaman Penggunaan Program. • Jika Tombol T-04 diklik akan kembali menuju ke Halaman Menu Utama. • Jika Tombol T-05 diklik akan keluar dari program.

No. Papan Cerita : PC-05

TOPIK : Rancang Bangun Aplikasi Pengenalan Tulisan Tangan Aksara Hanacaraka Berbasis Multimedia.

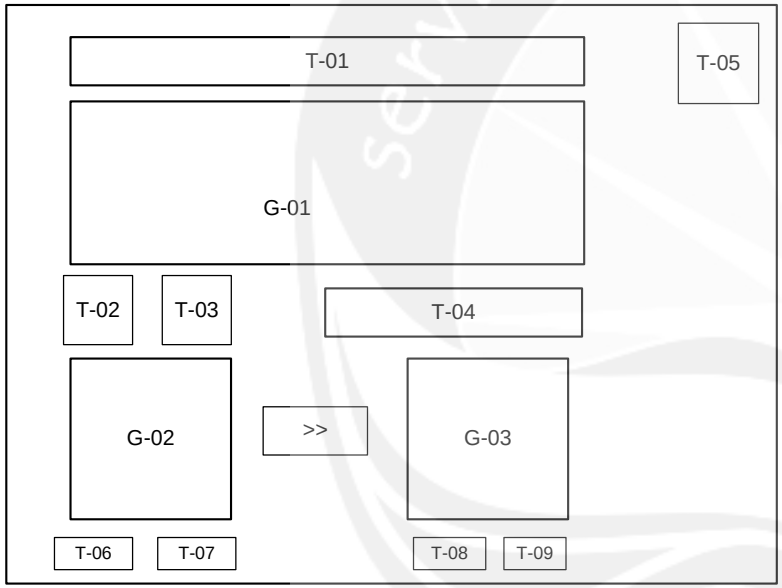
T(Teks) G(Grafik) S(Suara) A(Animasi)

Judul : Tutorial Penggunaan	Arahan Grafik	Keterangan
	T-01 : Teks Judul "Penggunaan Aplikasi" T-02 : Teks "Penggunaan Program" T-03 : Tombol "Kembali ke Tutorial" T-04 : Tombol X "Exit"	• Jika Tombol T-03 diklik akan kembali ke menu Tutorial. • Jika Tombol T-04 diklik akan keluar dari program.

No. Papan Cerita : PC-06

TOPIK : Rancang Bangun Aplikasi Pengenalan Tulisan Tangan Aksara Hanacaraka Berbasis Multimedia.

T(Teks) G(Grafik) S(Suara) A(Animasi)

Judul : Halaman Pelatihan	Arahan Grafik	Keterangan
	T-01 : Teks Judul "Pelatihan" T-02 : Tombol "Tulis" T-03 : Tombol "Ambil Gambar" T-04 : Tombol "Browse File" T-05 : Tombol X "Exit" G-01 : Gambar "Aksara Hanacaraka" G-02 : Layar Input G-03 : Layar Hasil Pengujian T-06 : Tombol Bersihkan T-07 : Tombol Ambil Network T-08 : Tombol Suara T-09 : Tombol Animasi	• Jika Tombol T-02 diklik akan masuk ke menu Penulisan Huruf. • Jika Tombol T-03 diklik akan ke Menu Ambil Gambar dan harus browse • Jika Tombol T-04 untuk mencari lokasi file. • Jika Tombol T-05 diklik akan keluar dari program. • Jika Tombol T-06 diklik akan masuk membersihkan kanvas. • Jika Tombol T-07 di klik akan masuk ke pengambilan Training Set. • Jika Tombol T-08 diklik

		akan menampilkan suara huruf. • Jika Tombol T-09 diklik akan masuk ke Jendela Animasi.

No. Papan Cerita : PC-06

TOPIK : Rancang Bangun Aplikasi Pengenalan Tulisan Tangan Aksara Hanacaraka Berbasis Multimedia.

T(Teks) G(Grafik) S(Suara) A(Animasi)

Judul : Halaman Animasi	Arahan Grafik	Keterangan
	T-01 : Close dan kembali ke Halaman Pelatihan G-01 : Gambar Animasi Aksara Hanacaraka	• Jika Tombol T-01 diklik akan masuk kembali ke Halaman Pelatihan.

LISTING PROGRAM

```
using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Text;
using System.Windows.Forms;

namespace BPSimplified
{
    public partial class FrmMenuUtama : Form
    {
        public Form RefToForm1 { get; set; }

        public FrmMenuUtama()
        {
            InitializeComponent();
        }

        private void button4_Click(object sender, EventArgs e)
        {

        }

        private void button5_Click(object sender, EventArgs e)
        {
            Close();
        }

        private void button1_Click(object sender, EventArgs e)
        {
            FrmTutorial f = new FrmTutorial();
            f.RefToForm1 = this;
            this.Hide();
            f.Show();
        }

        private void button2_Click(object sender, EventArgs e)
        {
            NeuralDemo f = new NeuralDemo();
            f.RefToForm1 = this;
            this.Hide();
            f.Show();

        }

        private void FrmMenuUtama_FormClosing(object sender,
FormClosingEventArgs e)
        {
            this.RefToForm1.Show();
        }

        private void FrmMenuUtama_Load(object sender, EventArgs e)
        {

        }
    }
}
```

```
using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Text;
using System.Windows.Forms;

namespace BPSimplified
{
    public partial class FrmIntro : Form
    {
        public Form RefToForm1 { get; set; }

        public FrmIntro()
        {
            InitializeComponent();
        }

        private void button1_Click(object sender, EventArgs e)
        {
            FrmMenuUtama f = new FrmMenuUtama();
            f.RefToForm1 = this;
            this.Hide();
            f.Show();
        }
    }
}



namespace BPSimplified
{
    partial class FrmIntro
    {
        /// <summary>
        /// Required designer variable.
        /// </summary>
        private System.ComponentModel.IContainer components = null;

        /// <summary>
        /// Clean up any resources being used.
        /// </summary>
        /// <param name="disposing">true if managed resources should be
disposed; otherwise, false.</param>
        protected override void Dispose(bool disposing)
        {
            if (disposing && (components != null))
            {
                components.Dispose();
            }
            base.Dispose(disposing);
        }
```

```
        #region Windows Form Designer generated code

        /// <summary>
        /// Required method for Designer support - do not modify
        /// the contents of this method with the code editor.
        /// </summary>
        private void InitializeComponent()
        {
            this.label1 = new System.Windows.Forms.Label();
            this.button1 = new System.Windows.Forms.Button();
            this.SuspendLayout();
            //
            // label1
            //
            this.label1.Dock = System.Windows.Forms.DockStyle.Top;
            this.label1.Font = new System.Drawing.Font("Georgia", 20.25F,
System.Drawing.FontStyle.Bold, System.Drawing.GraphicsUnit.Point,
((byte)(0)));
            this.label1.Location = new System.Drawing.Point(0, 0);
            this.label1.Name = "label1";
            this.label1.Size = new System.Drawing.Size(652, 184);
            this.label1.TabIndex = 0;
            this.label1.Text = "Rancang Bangun \r\nAplikasi Pengenalan
Tulisan Tangan \r\nAksara HANACARAKA \r\nBerbasi" +
                "s Multimedia";
            this.label1.TextAlign =
System.Drawing.ContentAlignment.MiddleCenter;
            //
            // button1
            //
            this.button1.Location = new System.Drawing.Point(475, 233);
            this.button1.Name = "button1";
            this.button1.Size = new System.Drawing.Size(123, 48);
            this.button1.TabIndex = 1;
            this.button1.Text = "Mulai";
            this.button1.UseVisualStyleBackColor = true;
            this.button1.Click += new
System.EventHandler(this.button1_Click);
            //
            // FrmIntro
            //
            this.AutoScaleDimensions = new System.Drawing.SizeF(6F, 13F);
            this.AutoScaleMode = System.Windows.Forms.AutoScaleMode.Font;
            this.ClientSize = new System.Drawing.Size(652, 326);
            this.Controls.Add(this.button1);
            this.Controls.Add(this.label1);
            this.FormBorderStyle =
System.Windows.Forms.FormBorderStyle.Fixed3D;
            this.MaximizeBox = false;
            this.MinimizeBox = false;
            this.Name = "FrmIntro";
            this.StartPosition =
System.Windows.Forms.FormStartPosition.CenterScreen;
            this.Text = "Intro";
            this.ResumeLayout(false);

        }

        #endregion

        private System.Windows.Forms.Label label1;
```

```
        private System.Windows.Forms.Button button1;
    }
}



using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Text;
using System.Windows.Forms;

namespace Hanacaraka
{
    public partial class FrmPelatihan : Form
    {
        public FrmPelatihan()
        {
            InitializeComponent();
        }
    }
}


namespace Hanacaraka
{
    partial class FrmPelatihan
    {
        /// <summary>
        /// Required designer variable.
        /// </summary>
        private System.ComponentModel.IContainer components = null;

        /// <summary>
        /// Clean up any resources being used.
        /// </summary>
        /// <param name="disposing">true if managed resources should be
disposed; otherwise, false.</param>
        protected override void Dispose(bool disposing)
        {
            if (disposing && (components != null))
            {
                components.Dispose();
            }
            base.Dispose(disposing);
        }

        #region Windows Form Designer generated code

        /// <summary>
        /// Required method for Designer support - do not modify
        /// the contents of this method with the code editor.
        /// </summary>
        private void InitializeComponent()
        {
            this.label1 = new System.Windows.Forms.Label();
            this.panel1 = new System.Windows.Forms.Panel();
            this.panel2 = new System.Windows.Forms.Panel();
            this.pictureBox16 = new System.Windows.Forms.PictureBox();
```

```
            this.pictureBox17 = new System.Windows.Forms.PictureBox();
            this.pictureBox18 = new System.Windows.Forms.PictureBox();
            this.pictureBox19 = new System.Windows.Forms.PictureBox();
            this.pictureBox20 = new System.Windows.Forms.PictureBox();
            this.pictureBox11 = new System.Windows.Forms.PictureBox();
            this.pictureBox12 = new System.Windows.Forms.PictureBox();
            this.pictureBox13 = new System.Windows.Forms.PictureBox();
            this.pictureBox14 = new System.Windows.Forms.PictureBox();
            this.pictureBox15 = new System.Windows.Forms.PictureBox();
            this.pictureBox6 = new System.Windows.Forms.PictureBox();
            this.pictureBox7 = new System.Windows.Forms.PictureBox();
            this.pictureBox8 = new System.Windows.Forms.PictureBox();
            this.pictureBox9 = new System.Windows.Forms.PictureBox();
            this.pictureBox10 = new System.Windows.Forms.PictureBox();
            this.pictureBox5 = new System.Windows.Forms.PictureBox();
            this.pictureBox4 = new System.Windows.Forms.PictureBox();
            this.pictureBox3 = new System.Windows.Forms.PictureBox();
            this.pictureBox2 = new System.Windows.Forms.PictureBox();
            this.pictureBox1 = new System.Windows.Forms.PictureBox();
            this.panel2.SuspendLayout();

((System.ComponentModel.ISupportInitialize)(this.pictureBox16)).BeginInit()
;

((System.ComponentModel.ISupportInitialize)(this.pictureBox17)).BeginInit()
;

((System.ComponentModel.ISupportInitialize)(this.pictureBox18)).BeginInit()
;

((System.ComponentModel.ISupportInitialize)(this.pictureBox19)).BeginInit()
;

((System.ComponentModel.ISupportInitialize)(this.pictureBox20)).BeginInit()
;

((System.ComponentModel.ISupportInitialize)(this.pictureBox11)).BeginInit()
;

((System.ComponentModel.ISupportInitialize)(this.pictureBox12)).BeginInit()
;

((System.ComponentModel.ISupportInitialize)(this.pictureBox13)).BeginInit()
;

((System.ComponentModel.ISupportInitialize)(this.pictureBox14)).BeginInit()
;

((System.ComponentModel.ISupportInitialize)(this.pictureBox15)).BeginInit()
;

((System.ComponentModel.ISupportInitialize)(this.pictureBox6)).BeginInit();

((System.ComponentModel.ISupportInitialize)(this.pictureBox7)).BeginInit();

((System.ComponentModel.ISupportInitialize)(this.pictureBox8)).BeginInit();

((System.ComponentModel.ISupportInitialize)(this.pictureBox9)).BeginInit();

((System.ComponentModel.ISupportInitialize)(this.pictureBox10)).BeginInit()
;
```

```
((System.ComponentModel.ISupportInitialize)(this.pictureBox5)).BeginInit();

((System.ComponentModel.ISupportInitialize)(this.pictureBox4)).BeginInit();

((System.ComponentModel.ISupportInitialize)(this.pictureBox3)).BeginInit();

((System.ComponentModel.ISupportInitialize)(this.pictureBox2)).BeginInit();

((System.ComponentModel.ISupportInitialize)(this.pictureBox1)).BeginInit();
            this.SuspendLayout();
            //
            // label1
            //
            this.label1.Dock = System.Windows.Forms.DockStyle.Top;
            this.label1.Font = new System.Drawing.Font("Ravie", 24.75F,
System.Drawing.FontStyle.Regular, System.Drawing.GraphicsUnit.Point,
((byte)(0)));
            this.label1.Location = new System.Drawing.Point(0, 0);
            this.label1.Name = "label1";
            this.label1.Size = new System.Drawing.Size(765, 47);
            this.label1.TabIndex = 2;
            this.label1.Text = "AKSARA HANACARAKA";
            this.label1.TextAlign =
System.Drawing.ContentAlignment.MiddleCenter;
            //
            // panel1
            //
            this.panel1.Dock = System.Windows.Forms.DockStyle.Bottom;
            this.panel1.Location = new System.Drawing.Point(0, 338);
            this.panel1.Name = "panel1";
            this.panel1.Size = new System.Drawing.Size(765, 130);
            this.panel1.TabIndex = 3;
            //
            // panel2
            //
            this.panel2.Controls.Add(this.pictureBox16);
            this.panel2.Controls.Add(this.pictureBox17);
            this.panel2.Controls.Add(this.pictureBox18);
            this.panel2.Controls.Add(this.pictureBox19);
            this.panel2.Controls.Add(this.pictureBox20);
            this.panel2.Controls.Add(this.pictureBox11);
            this.panel2.Controls.Add(this.pictureBox12);
            this.panel2.Controls.Add(this.pictureBox13);
            this.panel2.Controls.Add(this.pictureBox14);
            this.panel2.Controls.Add(this.pictureBox15);
            this.panel2.Controls.Add(this.pictureBox6);
            this.panel2.Controls.Add(this.pictureBox7);
            this.panel2.Controls.Add(this.pictureBox8);
            this.panel2.Controls.Add(this.pictureBox9);
            this.panel2.Controls.Add(this.pictureBox10);
            this.panel2.Controls.Add(this.pictureBox5);
            this.panel2.Controls.Add(this.pictureBox4);
            this.panel2.Controls.Add(this.pictureBox3);
            this.panel2.Controls.Add(this.pictureBox2);
            this.panel2.Controls.Add(this.pictureBox1);
            this.panel2.Dock = System.Windows.Forms.DockStyle.Fill;
            this.panel2.Location = new System.Drawing.Point(0, 47);
            this.panel2.Name = "panel2";
            this.panel2.Size = new System.Drawing.Size(765, 291);
            this.panel2.TabIndex = 4;
```

```
            //
            // pictureBox16
            //
            this.pictureBox16.Anchor =
System.Windows.Forms.AnchorStyles.Top;
            this.pictureBox16.Image =
global::Hanacaraka.Properties.Resources.NGA;
            this.pictureBox16.Location = new System.Drawing.Point(540,
213);
            this.pictureBox16.Name = "pictureBox16";
            this.pictureBox16.Size = new System.Drawing.Size(73, 47);
            this.pictureBox16.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.StretchImage;
            this.pictureBox16.TabIndex = 19;
            this.pictureBox16.TabStop = false;
            //
            // pictureBox17
            //
            this.pictureBox17.Anchor =
System.Windows.Forms.AnchorStyles.Top;
            this.pictureBox17.Image =
global::Hanacaraka.Properties.Resources.THA;
            this.pictureBox17.Location = new System.Drawing.Point(444,
213);
            this.pictureBox17.Name = "pictureBox17";
            this.pictureBox17.Size = new System.Drawing.Size(73, 47);
            this.pictureBox17.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.StretchImage;
            this.pictureBox17.TabIndex = 18;
            this.pictureBox17.TabStop = false;
            //
            // pictureBox18
            //
            this.pictureBox18.Anchor =
System.Windows.Forms.AnchorStyles.Top;
            this.pictureBox18.Image =
global::Hanacaraka.Properties.Resources.BA;
            this.pictureBox18.Location = new System.Drawing.Point(348,
213);
            this.pictureBox18.Name = "pictureBox18";
            this.pictureBox18.Size = new System.Drawing.Size(73, 47);
            this.pictureBox18.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.StretchImage;
            this.pictureBox18.TabIndex = 17;
            this.pictureBox18.TabStop = false;
            //
            // pictureBox19
            //
            this.pictureBox19.Anchor =
System.Windows.Forms.AnchorStyles.Top;
            this.pictureBox19.Image =
global::Hanacaraka.Properties.Resources.NGA;
            this.pictureBox19.Location = new System.Drawing.Point(252,
213);
            this.pictureBox19.Name = "pictureBox19";
            this.pictureBox19.Size = new System.Drawing.Size(73, 47);
            this.pictureBox19.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.StretchImage;
            this.pictureBox19.TabIndex = 16;
            this.pictureBox19.TabStop = false;
            //
```

```
            // pictureBox20
            //
            this.pictureBox20.Anchor =
System.Windows.Forms.AnchorStyles.Top;
            this.pictureBox20.Image =
global::Hanacaraka.Properties.Resources.MA;
            this.pictureBox20.Location = new System.Drawing.Point(156,
213);
            this.pictureBox20.Name = "pictureBox20";
            this.pictureBox20.Size = new System.Drawing.Size(73, 47);
            this.pictureBox20.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.StretchImage;
            this.pictureBox20.TabIndex = 15;
            this.pictureBox20.TabStop = false;
            //
            // pictureBox11
            //
            this.pictureBox11.Anchor =
System.Windows.Forms.AnchorStyles.Top;
            this.pictureBox11.Image =
global::Hanacaraka.Properties.Resources.NYA;
            this.pictureBox11.Location = new System.Drawing.Point(540,
149);
            this.pictureBox11.Name = "pictureBox11";
            this.pictureBox11.Size = new System.Drawing.Size(73, 47);
            this.pictureBox11.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.StretchImage;
            this.pictureBox11.TabIndex = 14;
            this.pictureBox11.TabStop = false;
            //
            // pictureBox12
            //
            this.pictureBox12.Anchor =
System.Windows.Forms.AnchorStyles.Top;
            this.pictureBox12.Image =
global::Hanacaraka.Properties.Resources.YA;
            this.pictureBox12.Location = new System.Drawing.Point(444,
149);
            this.pictureBox12.Name = "pictureBox12";
            this.pictureBox12.Size = new System.Drawing.Size(73, 47);
            this.pictureBox12.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.StretchImage;
            this.pictureBox12.TabIndex = 13;
            this.pictureBox12.TabStop = false;
            //
            // pictureBox13
            //
            this.pictureBox13.Anchor =
System.Windows.Forms.AnchorStyles.Top;
            this.pictureBox13.Image =
global::Hanacaraka.Properties.Resources.JA;
            this.pictureBox13.Location = new System.Drawing.Point(348,
149);
            this.pictureBox13.Name = "pictureBox13";
            this.pictureBox13.Size = new System.Drawing.Size(73, 47);
            this.pictureBox13.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.StretchImage;
            this.pictureBox13.TabIndex = 12;
            this.pictureBox13.TabStop = false;
            //
            // pictureBox14
```

```
            //
            this.pictureBox14.Anchor =
System.Windows.Forms.AnchorStyles.Top;
            this.pictureBox14.Image =
global::Hanacaraka.Properties.Resources.DHA;
            this.pictureBox14.Location = new System.Drawing.Point(252,
149);
            this.pictureBox14.Name = "pictureBox14";
            this.pictureBox14.Size = new System.Drawing.Size(73, 47);
            this.pictureBox14.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.StretchImage;
            this.pictureBox14.TabIndex = 11;
            this.pictureBox14.TabStop = false;
            //
            // pictureBox15
            //
            this.pictureBox15.Anchor =
System.Windows.Forms.AnchorStyles.Top;
            this.pictureBox15.Image =
global::Hanacaraka.Properties.Resources.PA;
            this.pictureBox15.Location = new System.Drawing.Point(156,
149);
            this.pictureBox15.Name = "pictureBox15";
            this.pictureBox15.Size = new System.Drawing.Size(73, 47);
            this.pictureBox15.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.StretchImage;
            this.pictureBox15.TabIndex = 10;
            this.pictureBox15.TabStop = false;
            //
            // pictureBox6
            //
            this.pictureBox6.Anchor =
System.Windows.Forms.AnchorStyles.Top;
            this.pictureBox6.Image =
global::Hanacaraka.Properties.Resources.LA;
            this.pictureBox6.Location = new System.Drawing.Point(540, 83);
            this.pictureBox6.Name = "pictureBox6";
            this.pictureBox6.Size = new System.Drawing.Size(73, 47);
            this.pictureBox6.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.StretchImage;
            this.pictureBox6.TabIndex = 9;
            this.pictureBox6.TabStop = false;
            //
            // pictureBox7
            //
            this.pictureBox7.Anchor =
System.Windows.Forms.AnchorStyles.Top;
            this.pictureBox7.Image =
global::Hanacaraka.Properties.Resources.WA;
            this.pictureBox7.Location = new System.Drawing.Point(444, 83);
            this.pictureBox7.Name = "pictureBox7";
            this.pictureBox7.Size = new System.Drawing.Size(73, 47);
            this.pictureBox7.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.StretchImage;
            this.pictureBox7.TabIndex = 8;
            this.pictureBox7.TabStop = false;
            //
            // pictureBox8
            //
            this.pictureBox8.Anchor =
System.Windows.Forms.AnchorStyles.Top;
```

```
            this.pictureBox8.Image =
global::Hanacaraka.Properties.Resources.SA;
            this.pictureBox8.Location = new System.Drawing.Point(348, 83);
            this.pictureBox8.Name = "pictureBox8";
            this.pictureBox8.Size = new System.Drawing.Size(73, 47);
            this.pictureBox8.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.StretchImage;
            this.pictureBox8.TabIndex = 7;
            this.pictureBox8.TabStop = false;
            //
            // pictureBox9
            //
            this.pictureBox9.Anchor =
System.Windows.Forms.AnchorStyles.Top;
            this.pictureBox9.Image =
global::Hanacaraka.Properties.Resources.TA;
            this.pictureBox9.Location = new System.Drawing.Point(252, 83);
            this.pictureBox9.Name = "pictureBox9";
            this.pictureBox9.Size = new System.Drawing.Size(73, 47);
            this.pictureBox9.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.StretchImage;
            this.pictureBox9.TabIndex = 6;
            this.pictureBox9.TabStop = false;
            //
            // pictureBox10
            //
            this.pictureBox10.Anchor =
System.Windows.Forms.AnchorStyles.Top;
            this.pictureBox10.Image =
global::Hanacaraka.Properties.Resources.DA;
            this.pictureBox10.Location = new System.Drawing.Point(156, 83);
            this.pictureBox10.Name = "pictureBox10";
            this.pictureBox10.Size = new System.Drawing.Size(73, 47);
            this.pictureBox10.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.StretchImage;
            this.pictureBox10.TabIndex = 5;
            this.pictureBox10.TabStop = false;
            //
            // pictureBox5
            //
            this.pictureBox5.Anchor =
System.Windows.Forms.AnchorStyles.Top;
            this.pictureBox5.Image =
global::Hanacaraka.Properties.Resources.KA;
            this.pictureBox5.Location = new System.Drawing.Point(540, 21);
            this.pictureBox5.Name = "pictureBox5";
            this.pictureBox5.Size = new System.Drawing.Size(73, 47);
            this.pictureBox5.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.StretchImage;
            this.pictureBox5.TabIndex = 4;
            this.pictureBox5.TabStop = false;
            //
            // pictureBox4
            //
            this.pictureBox4.Anchor =
System.Windows.Forms.AnchorStyles.Top;
            this.pictureBox4.Image =
global::Hanacaraka.Properties.Resources.RA;
            this.pictureBox4.Location = new System.Drawing.Point(444, 21);
            this.pictureBox4.Name = "pictureBox4";
            this.pictureBox4.Size = new System.Drawing.Size(73, 47);
```

```
            this.pictureBox4.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.StretchImage;
            this.pictureBox4.TabIndex = 3;
            this.pictureBox4.TabStop = false;
            //
            // pictureBox3
            //
            this.pictureBox3.Anchor =
System.Windows.Forms.AnchorStyles.Top;
            this.pictureBox3.Image =
global::Hanacaraka.Properties.Resources.CA;
            this.pictureBox3.Location = new System.Drawing.Point(348, 21);
            this.pictureBox3.Name = "pictureBox3";
            this.pictureBox3.Size = new System.Drawing.Size(73, 47);
            this.pictureBox3.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.StretchImage;
            this.pictureBox3.TabIndex = 2;
            this.pictureBox3.TabStop = false;
            //
            // pictureBox2
            //
            this.pictureBox2.Anchor =
System.Windows.Forms.AnchorStyles.Top;
            this.pictureBox2.Image =
global::Hanacaraka.Properties.Resources.NA;
            this.pictureBox2.Location = new System.Drawing.Point(252, 21);
            this.pictureBox2.Name = "pictureBox2";
            this.pictureBox2.Size = new System.Drawing.Size(73, 47);
            this.pictureBox2.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.StretchImage;
            this.pictureBox2.TabIndex = 1;
            this.pictureBox2.TabStop = false;
            //
            // pictureBox1
            //
            this.pictureBox1.Anchor =
System.Windows.Forms.AnchorStyles.Top;
            this.pictureBox1.Image =
global::Hanacaraka.Properties.Resources.HA;
            this.pictureBox1.Location = new System.Drawing.Point(156, 21);
            this.pictureBox1.Name = "pictureBox1";
            this.pictureBox1.Size = new System.Drawing.Size(73, 47);
            this.pictureBox1.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.StretchImage;
            this.pictureBox1.TabIndex = 0;
            this.pictureBox1.TabStop = false;
            //
            // FrmPelatihan
            //
            this.AutoScaleDimensions = new System.Drawing.SizeF(6F, 13F);
            this.AutoScaleMode = System.Windows.Forms.AutoScaleMode.Font;
            this.ClientSize = new System.Drawing.Size(765, 468);
            this.Controls.Add(this.panel2);
            this.Controls.Add(this.panel1);
            this.Controls.Add(this.label1);
            this.Name = "FrmPelatihan";
            this.panel2.ResumeLayout(false);

((System.ComponentModel.ISupportInitialize)(this.pictureBox16)).EndInit();

((System.ComponentModel.ISupportInitialize)(this.pictureBox17)).EndInit();
```

```
((System.ComponentModel.ISupportInitialize)(this.pictureBox18)).EndInit();
((System.ComponentModel.ISupportInitialize)(this.pictureBox19)).EndInit();
((System.ComponentModel.ISupportInitialize)(this.pictureBox20)).EndInit();
((System.ComponentModel.ISupportInitialize)(this.pictureBox11)).EndInit();
((System.ComponentModel.ISupportInitialize)(this.pictureBox12)).EndInit();
((System.ComponentModel.ISupportInitialize)(this.pictureBox13)).EndInit();
((System.ComponentModel.ISupportInitialize)(this.pictureBox14)).EndInit();
((System.ComponentModel.ISupportInitialize)(this.pictureBox15)).EndInit();
((System.ComponentModel.ISupportInitialize)(this.pictureBox6)).EndInit();
((System.ComponentModel.ISupportInitialize)(this.pictureBox7)).EndInit();
((System.ComponentModel.ISupportInitialize)(this.pictureBox8)).EndInit();
((System.ComponentModel.ISupportInitialize)(this.pictureBox9)).EndInit();
((System.ComponentModel.ISupportInitialize)(this.pictureBox10)).EndInit();
((System.ComponentModel.ISupportInitialize)(this.pictureBox5)).EndInit();
((System.ComponentModel.ISupportInitialize)(this.pictureBox4)).EndInit();
((System.ComponentModel.ISupportInitialize)(this.pictureBox3)).EndInit();
((System.ComponentModel.ISupportInitialize)(this.pictureBox2)).EndInit();
((System.ComponentModel.ISupportInitialize)(this.pictureBox1)).EndInit();
            this.ResumeLayout(false);

        }

        #endregion

        private System.Windows.Forms.Label label1;
        private System.Windows.Forms.Panel panel1;
        private System.Windows.Forms.Panel panel2;
        private System.Windows.Forms.PictureBox pictureBox5;
        private System.Windows.Forms.PictureBox pictureBox4;
        private System.Windows.Forms.PictureBox pictureBox3;
        private System.Windows.Forms.PictureBox pictureBox2;
        private System.Windows.Forms.PictureBox pictureBox1;
        private System.Windows.Forms.PictureBox pictureBox16;
        private System.Windows.Forms.PictureBox pictureBox17;
        private System.Windows.Forms.PictureBox pictureBox18;
        private System.Windows.Forms.PictureBox pictureBox19;
        private System.Windows.Forms.PictureBox pictureBox20;
        private System.Windows.Forms.PictureBox pictureBox11;
        private System.Windows.Forms.PictureBox pictureBox12;
        private System.Windows.Forms.PictureBox pictureBox13;
        private System.Windows.Forms.PictureBox pictureBox14;
        private System.Windows.Forms.PictureBox pictureBox15;
        private System.Windows.Forms.PictureBox pictureBox6;
```

```
        private System.Windows.Forms.PictureBox pictureBox7;
        private System.Windows.Forms.PictureBox pictureBox8;
        private System.Windows.Forms.PictureBox pictureBox9;
        private System.Windows.Forms.PictureBox pictureBox10;
    }
}



namespace BPSimplified
{
    partial class FrmTutorial
    {
        /// <summary>
        /// Required designer variable.
        /// </summary>
        private System.ComponentModel.IContainer components = null;

        /// <summary>
        /// Clean up any resources being used.
        /// </summary>
        /// <param name="disposing">true if managed resources should be
disposed; otherwise, false.</param>
        protected override void Dispose(bool disposing)
        {
            if (disposing && (components != null))
            {
                components.Dispose();
            }
            base.Dispose(disposing);
        }

        #region Windows Form Designer generated code

        /// <summary>
        /// Required method for Designer support - do not modify
        /// the contents of this method with the code editor.
        /// </summary>
        private void InitializeComponent()
        {
            this.label1 = new System.Windows.Forms.Label();
            this.panel1 = new System.Windows.Forms.Panel();
            this.button3 = new System.Windows.Forms.Button();
            this.button2 = new System.Windows.Forms.Button();
            this.button1 = new System.Windows.Forms.Button();
            this.webBrowser1 = new System.Windows.Forms.WebBrowser();
            this.panel1.SuspendLayout();
            this.SuspendLayout();
            //
            // label1
            //
            this.label1.Dock = System.Windows.Forms.DockStyle.Top;
            this.label1.Font = new System.Drawing.Font("Ravie", 24.75F,
System.Drawing.FontStyle.Regular, System.Drawing.GraphicsUnit.Point,
((byte)(0)));
            this.label1.Location = new System.Drawing.Point(0, 0);
            this.label1.Name = "label1";
            this.label1.Size = new System.Drawing.Size(753, 47);
            this.label1.TabIndex = 1;
            this.label1.Text = "TUTORIAL";
```

```
            this.label1.TextAlign =
System.Drawing.ContentAlignment.MiddleCenter;
            //
            // panel1
            //
            this.panel1.Controls.Add(this.button3);
            this.panel1.Controls.Add(this.button2);
            this.panel1.Controls.Add(this.button1);
            this.panel1.Dock = System.Windows.Forms.DockStyle.Right;
            this.panel1.Location = new System.Drawing.Point(529, 47);
            this.panel1.Name = "panel1";
            this.panel1.Size = new System.Drawing.Size(224, 415);
            this.panel1.TabIndex = 2;
            //
            // button3
            //
            this.button3.Location = new System.Drawing.Point(30, 226);
            this.button3.Name = "button3";
            this.button3.Size = new System.Drawing.Size(161, 55);
            this.button3.TabIndex = 2;
            this.button3.Text = "Kembali";
            this.button3.UseVisualStyleBackColor = true;
            this.button3.Click += new
System.EventHandler(this.button3_Click);
            //
            // button2
            //
            this.button2.Location = new System.Drawing.Point(30, 126);
            this.button2.Name = "button2";
            this.button2.Size = new System.Drawing.Size(161, 55);
            this.button2.TabIndex = 1;
            this.button2.Text = "Penggunaan";
            this.button2.UseVisualStyleBackColor = true;
            this.button2.Click += new
System.EventHandler(this.button2_Click);
            //
            // button1
            //
            this.button1.Location = new System.Drawing.Point(30, 26);
            this.button1.Name = "button1";
            this.button1.Size = new System.Drawing.Size(161, 55);
            this.button1.TabIndex = 0;
            this.button1.Text = "Legenda dan Tokoh";
            this.button1.UseVisualStyleBackColor = true;
            this.button1.Click += new
System.EventHandler(this.button1_Click);
            //
            // webBrowser1
            //
            this.webBrowser1.Dock = System.Windows.Forms.DockStyle.Fill;
            this.webBrowser1.Location = new System.Drawing.Point(0, 47);
            this.webBrowser1.MinimumSize = new System.Drawing.Size(20, 20);
            this.webBrowser1.Name = "webBrowser1";
            this.webBrowser1.Size = new System.Drawing.Size(529, 415);
            this.webBrowser1.TabIndex = 3;
            //
            // FrmTutorial
            //
            this.AutoScaleDimensions = new System.Drawing.SizeF(6F, 13F);
            this.AutoScaleMode = System.Windows.Forms.AutoScaleMode.Font;
            this.ClientSize = new System.Drawing.Size(753, 462);
```

```
            this.Controls.Add(this.webBrowser1);
            this.Controls.Add(this.panel1);
            this.Controls.Add(this.label1);
            this.FormBorderStyle =
System.Windows.Forms.FormBorderStyle.Fixed3D;
            this.MaximizeBox = false;
            this.MinimizeBox = false;
            this.Name = "FrmTutorial";
            this.StartPosition =
System.Windows.Forms.FormStartPosition.CenterScreen;
            this.Text = "Tutorial";
            this.Load += new System.EventHandler(this.FrmTutorial_Load);
            this.FormClosing += new
System.Windows.Forms.FormClosingEventHandler(this.FrmTutorial_FormClosing);
            this.panel1.ResumeLayout(false);
            this.ResumeLayout(false);

        }

        #endregion

        private System.Windows.Forms.Label label1;
        private System.Windows.Forms.Panel panel1;
        private System.Windows.Forms.Button button3;
        private System.Windows.Forms.Button button2;
        private System.Windows.Forms.Button button1;
        private System.Windows.Forms.WebBrowser webBrowser1;
    }
}



using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Text;
using System.Windows.Forms;
using System.IO;

namespace BPSimplified
{
    public partial class FrmTutorial : Form
    {
        public Form RefToForm1 { get; set; }

        public string LokasiStory() {
            String line;
            string appPath =
Path.GetDirectoryName(Application.ExecutablePath);
            line = "";
            try
            {
                //Pass the file path and file name to the StreamReader
constructor
                StreamReader sr = new StreamReader(appPath +
@"\..\Source\Konfigurasi.txt");

                //Read the first line of text
                line = sr.ReadLine();
```

```
                //Continue to read until you reach end of file
                while (line != null)
                {
                    if (line.Substring(0,5) == "story") {
                        return line.Substring(6,line.Length - 6);
                    }
                    //Read the next line
                    line = sr.ReadLine();
                }

                //close the file
                sr.Close();
                return line;
            }
            catch (Exception e)
            {
                MessageBox.Show("Exception: " + e.Message);
                 return line;
            }

        }

        public FrmTutorial()
        {
            InitializeComponent();
        }

        private void button1_Click(object sender, EventArgs e)
        {
            string lokasiFile;
            lokasiFile = LokasiStory() + @"\asalusul.htm";
            webBrowser1.Navigate(lokasiFile);
        }

        private void button2_Click(object sender, EventArgs e)
        {
            string lokasiFile;
            lokasiFile = LokasiStory() + @"\operasi.htm";
            webBrowser1.Navigate(lokasiFile);
        }

        private void FrmTutorial_Load(object sender, EventArgs e)
        {
            string lokasiFile;
            lokasiFile = LokasiStory() + @"\Cerita.htm";
            webBrowser1.Navigate(lokasiFile);
        }

        private void button3_Click(object sender, EventArgs e)
        {
            Close();
        }

        private void FrmTutorial_FormClosing(object sender,
FormClosingEventArgs e)
        {
            this.RefToForm1.Show();
        }
    }
}
```

```
/*############################################################################
#
 *
 * ImageProcessing.cs
 * ------------------------------------------------------------------------
############################################################################
*/
#endregion

using System;
using System.Drawing;

namespace BPSimplified
{
    class ImageProcessing
    {
        //Convert RGB To Matrix [Of Double]
        public static double[] ToMatrix(Bitmap BM, int MatrixRowNumber, int
MatrixColumnNumber)
        {
            double HRate = ((Double)MatrixRowNumber / BM.Height);
            double WRate = ((Double)MatrixColumnNumber / BM.Width);
            double[] Result = new double[MatrixColumnNumber *
MatrixRowNumber];

            for (int r = 0; r < MatrixRowNumber; r++)
            {
                for (int c = 0; c < MatrixColumnNumber; c++)
                {
                    Color color = BM.GetPixel((int)(c / WRate), (int)(r /
HRate));
                    Result[r * MatrixColumnNumber + c] = 1 - (color.R * .3
+ color.G * .59 + color.B * .11) / 255;
                }
            }
            return Result;
        }

        //Convert Double To Grey Level
        public static Bitmap ToImage(double[] Matrix, int MatrixRowNumber,
int MatrixColumnNumber,
                                                    int ImageHeight, int
ImageWidth)
        {
            double HRate = ((double)ImageHeight / MatrixRowNumber);
            double WRate = ((double)ImageWidth / MatrixColumnNumber);
            Bitmap Result = new Bitmap(ImageWidth, ImageHeight);

            for (int i = 0; i < ImageHeight; i++)
            {
                for (int j = 0; j < ImageWidth; j++)
                {
                    int x = (int)((double)j / WRate);
                    int y = (int)((double)i / HRate);

                    double temp = Matrix[y * MatrixColumnNumber + x];
                    Result.SetPixel(j, i, Color.FromArgb((int)((1 - temp) *
255), (int)((1 - temp) * 255), (int)((1 - temp) * 255)));
```

```
            }
        }
        return Result;
    }

    public static Bitmap tresholding(Image gambar, float treshold)
    {
        Bitmap image = new Bitmap(gambar);
        for (int i = 0; i < image.Height; i++)
            for (int j = 0; j < image.Width; j++)
            {
                Color c = image.GetPixel(i, j);
                double magnitude = 1 / 3d * (c.R + c.G + c.B);

                if (magnitude < treshold)
                {
                    image.SetPixel(i, j, Color.FromArgb(0, 0, 0));
                }
                else
                {
                    image.SetPixel(i, j, Color.FromArgb(255, 255,
255));
                }
            }
        return image;
    }


    //public static Bitmap Scale(Bitmap Input, int newHeight, int
newWidth)
    //{
    //    double HRate = (double)Input.Height / newHeight;
    //    double WRate = (double)Input.Width / newWidth;
    //    Bitmap Result = new Bitmap(newWidth, newHeight);
    //    for (int i = 0; i < newHeight; i++)
    //    {
    //        for (int j = 0; j < newWidth; j++)
    //        {
    //            int x = (int)((double)j * WRate);
    //            int y = (int)((double)i * HRate);
    //            Result.SetPixel(j, i, Input.GetPixel(x, y));
    //        }
    //    }

    //    return Result;
    //}
}
}
```

```
using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Text;
using System.Windows.Forms;
using System.IO;
using Hanacaraka.Lib;

namespace BPSimplified
{
    public partial class FrmTutorial : Form
    {
        public Form RefToForm1 { get; set; }

        public string LokasiStory() {
            String line;
            string appPath =
Path.GetDirectoryName(Application.ExecutablePath);
            line = "";
            try
            {
                //Pass the file path and file name to the StreamReader
constructor
                StreamReader sr = new StreamReader(appPath +
@"\..\Source\Konfigurasi.txt");

                //Read the first line of text
                line = sr.ReadLine();

                //Continue to read until you reach end of file
```

```
        while (line != null)
        {
            if (line.Substring(0,5) == "story") {
                return line.Substring(6,line.Length - 6);
            }
            //Read the next line
            line = sr.ReadLine();
        }

        //close the file
        sr.Close();
        return line;
    }
    catch (Exception e)
    {
        MessageBox.Show("Exception: " + e.Message);
         return line;
    }

}

public FrmTutorial()
{
    InitializeComponent();
}

private void button1_Click(object sender, EventArgs e)
{
    string lokasiFile;
    lokasiFile = LokasiStory() + @"\asalusul.htm";
```

```
    webBrowser1.Navigate(lokasiFile);
}

private void button2_Click(object sender, EventArgs e)
{
    string lokasiFile;
    lokasiFile = LokasiStory() + @"\operasi.htm";
    webBrowser1.Navigate(lokasiFile);
}

FormState formState = new FormState();

private void FrmTutorial_Load(object sender, EventArgs e)
{
    //formState.Maximize(this);
    EnableDoubleBuffering();
    string lokasiFile;
    lokasiFile = LokasiStory() + @"\Cerita.htm";
    webBrowser1.Navigate(lokasiFile);
}
public void EnableDoubleBuffering()
{
    // Set the value of the double-buffering style bits to true.
    this.SetStyle(ControlStyles.DoubleBuffer |
       ControlStyles.UserPaint |
       ControlStyles.AllPaintingInWmPaint,
       true);
    this.UpdateStyles();
}
```

```
        private void button3_Click(object sender, EventArgs e)
        {
            Close();
        }

        private void FrmTutorial_FormClosing(object sender,
FormClosingEventArgs e)
        {
            this.RefToForm1.Show();
        }
    }
}

namespace BPSimplified
{
    partial class FrmTutorial
    {
        /// <summary>
        /// Required designer variable.
        /// </summary>
        private System.ComponentModel.IContainer components = null;

        /// <summary>
        /// Clean up any resources being used.
        /// </summary>
        /// <param name="disposing">true if managed resources should be
disposed; otherwise, false.</param>
        protected override void Dispose(bool disposing)
        {
            if (disposing && (components != null))
```

```
            {
                components.Dispose();
            }
            base.Dispose(disposing);
        }

        #region Windows Form Designer generated code

        /// <summary>
        /// Required method for Designer support - do not modify
        /// the contents of this method with the code editor.
        /// </summary>
        private void InitializeComponent()
        {
            System.ComponentModel.ComponentResourceManager resources = new
System.ComponentModel.ComponentResourceManager(typeof(FrmTutorial));
            this.label1 = new System.Windows.Forms.Label();
            this.button3 = new System.Windows.Forms.Button();
            this.button2 = new System.Windows.Forms.Button();
            this.button1 = new System.Windows.Forms.Button();
            this.webBrowser1 = new System.Windows.Forms.WebBrowser();
            this.SuspendLayout();
            //
            // label1
            //
            this.label1.Anchor =
((System.Windows.Forms.AnchorStyles)(((System.Windows.Forms.AnchorStyles.To
p | System.Windows.Forms.AnchorStyles.Left)
                        | System.Windows.Forms.AnchorStyles.Right)));
            this.label1.BackColor = System.Drawing.Color.Transparent;
```

```
            this.label1.Font = new System.Drawing.Font("Ravie", 24.75F,
System.Drawing.FontStyle.Regular, System.Drawing.GraphicsUnit.Point,
((byte)(0)));

            this.label1.ForeColor = System.Drawing.Color.Gold;

            this.label1.Location = new System.Drawing.Point(40, 12);

            this.label1.Name = "label1";

            this.label1.Size = new System.Drawing.Size(770, 47);

            this.label1.TabIndex = 1;

            this.label1.Text = "TUTORIAL";

            this.label1.TextAlign =
System.Drawing.ContentAlignment.MiddleCenter;

            //

            // button3

            //

            this.button3.Anchor =
((System.Windows.Forms.AnchorStyles)((System.Windows.Forms.AnchorStyles.Bot
tom | System.Windows.Forms.AnchorStyles.Right)));

            this.button3.Location = new System.Drawing.Point(649, 438);

            this.button3.Name = "button3";

            this.button3.Size = new System.Drawing.Size(161, 55);

            this.button3.TabIndex = 2;

            this.button3.Text = "Kembali";

            this.button3.UseVisualStyleBackColor = true;

            this.button3.Click += new
System.EventHandler(this.button3_Click);

            //

            // button2

            //

            this.button2.Anchor =
((System.Windows.Forms.AnchorStyles)((System.Windows.Forms.AnchorStyles.Top
| System.Windows.Forms.AnchorStyles.Right)));

            this.button2.Location = new System.Drawing.Point(649, 147);

            this.button2.Name = "button2";

            this.button2.Size = new System.Drawing.Size(161, 55);
```

```
            this.button2.TabIndex = 1;

            this.button2.Text = "Penggunaan";

            this.button2.UseVisualStyleBackColor = true;

            this.button2.Click += new
System.EventHandler(this.button2_Click);

            //

            // button1

            //

            this.button1.Anchor =
((System.Windows.Forms.AnchorStyles)((System.Windows.Forms.AnchorStyles.Top
| System.Windows.Forms.AnchorStyles.Right)));

            this.button1.Location = new System.Drawing.Point(649, 72);

            this.button1.Name = "button1";

            this.button1.Size = new System.Drawing.Size(161, 55);

            this.button1.TabIndex = 0;

            this.button1.Text = "Legenda dan Tokoh";

            this.button1.UseVisualStyleBackColor = true;

            this.button1.Click += new
System.EventHandler(this.button1_Click);

            //

            // webBrowser1

            //

            this.webBrowser1.Anchor =
((System.Windows.Forms.AnchorStyles)((((System.Windows.Forms.AnchorStyles.T
op | System.Windows.Forms.AnchorStyles.Bottom)

                        | System.Windows.Forms.AnchorStyles.Left)

                        | System.Windows.Forms.AnchorStyles.Right)));

            this.webBrowser1.Location = new System.Drawing.Point(40, 72);

            this.webBrowser1.MinimumSize = new System.Drawing.Size(20, 20);

            this.webBrowser1.Name = "webBrowser1";

            this.webBrowser1.Size = new System.Drawing.Size(544, 421);

            this.webBrowser1.TabIndex = 3;

            //
```

```
            // FrmTutorial
            //
            this.AutoScaleDimensions = new System.Drawing.SizeF(6F, 13F);
            this.AutoScaleMode = System.Windows.Forms.AutoScaleMode.Font;
            this.BackgroundImage =
((System.Drawing.Image)(resources.GetObject("$this.BackgroundImage")));
            this.ClientSize = new System.Drawing.Size(822, 505);
            this.Controls.Add(this.button3);
            this.Controls.Add(this.label1);
            this.Controls.Add(this.webBrowser1);
            this.Controls.Add(this.button2);
            this.Controls.Add(this.button1);
            this.FormBorderStyle =
System.Windows.Forms.FormBorderStyle.None;
            this.MaximizeBox = false;
            this.MinimizeBox = false;
            this.Name = "FrmTutorial";
            this.StartPosition =
System.Windows.Forms.FormStartPosition.CenterScreen;
            this.Text = "Tutorial";
            this.TopMost = true;
            this.WindowState =
System.Windows.Forms.FormWindowState.Maximized;
            this.Load += new System.EventHandler(this.FrmTutorial_Load);
            this.FormClosing += new
System.Windows.Forms.FormClosingEventHandler(this.FrmTutorial_FormClosing);
            this.ResumeLayout(false);

        }
```

```
        #endregion

        private System.Windows.Forms.Label label1;
        private System.Windows.Forms.Button button3;
        private System.Windows.Forms.Button button2;
        private System.Windows.Forms.Button button1;
        private System.Windows.Forms.WebBrowser webBrowser1;
    }
}

namespace BPSimplified
{
    partial class NeuralDemo
    {
        /// <summary>
        /// Required designer variable.
        /// </summary>
        private System.ComponentModel.IContainer components = null;

        /// <summary>
        /// Clean up any resources being used.
        /// </summary>
        /// <param name="disposing">true if managed resources should be
disposed; otherwise, false.</param>
        protected override void Dispose(bool disposing)
        {
            if (disposing && (components != null))
            {
                components.Dispose();
            }
```

```
            base.Dispose(disposing);
        }

        #region Windows Form Designer generated code

        /// <summary>
        /// Required method for Designer support - do not modify
        /// the contents of this method with the code editor.
        /// </summary>
        private void InitializeComponent()
        {
            this.components = new System.ComponentModel.Container();
            System.ComponentModel.ComponentResourceManager resources = new
System.ComponentModel.ComponentResourceManager(typeof(NeuralDemo));
            this.tabPage2 = new System.Windows.Forms.TabPage();
            this.groupBox2 = new System.Windows.Forms.GroupBox();
            this.textBoxState = new System.Windows.Forms.TextBox();
            this.label1 = new System.Windows.Forms.Label();
            this.buttonStop = new System.Windows.Forms.Button();
            this.labelIteration = new System.Windows.Forms.Label();
            this.labelError = new System.Windows.Forms.Label();
            this.buttonSave = new System.Windows.Forms.Button();
            this.buttonTrain = new System.Windows.Forms.Button();
            this.labelTimer = new System.Windows.Forms.Label();
            this.label18 = new System.Windows.Forms.Label();
            this.groupBox3 = new System.Windows.Forms.GroupBox();
            this.textBoxTrainingBrowse = new
System.Windows.Forms.TextBox();
            this.buttonTrainingBrowse = new System.Windows.Forms.Button();
            this.label4 = new System.Windows.Forms.Label();
            this.groupBox1 = new System.Windows.Forms.GroupBox();
```

```
this.label8 = new System.Windows.Forms.Label();
this.textBoxMaxError = new System.Windows.Forms.TextBox();
this.comboBoxLayers = new System.Windows.Forms.ComboBox();
this.label9 = new System.Windows.Forms.Label();
this.label19 = new System.Windows.Forms.Label();
this.textBoxInputUnit = new System.Windows.Forms.TextBox();
this.textBoxOutputUnit = new System.Windows.Forms.TextBox();
this.label3 = new System.Windows.Forms.Label();
this.textBoxHiddenUnit = new System.Windows.Forms.TextBox();
this.label17 = new System.Windows.Forms.Label();
this.buttonSaveSettings = new System.Windows.Forms.Button();
this.buttonProcess = new System.Windows.Forms.Button();
this.tabPage1 = new System.Windows.Forms.TabPage();
this.btnProses = new System.Windows.Forms.Button();
this.button1 = new System.Windows.Forms.Button();
this.panel2 = new System.Windows.Forms.Panel();
this.pictureBox16 = new System.Windows.Forms.PictureBox();
this.pictureBox17 = new System.Windows.Forms.PictureBox();
this.pictureBox18 = new System.Windows.Forms.PictureBox();
this.pictureBox19 = new System.Windows.Forms.PictureBox();
this.pictureBox20 = new System.Windows.Forms.PictureBox();
this.pictureBox11 = new System.Windows.Forms.PictureBox();
this.pictureBox12 = new System.Windows.Forms.PictureBox();
this.pictureBox13 = new System.Windows.Forms.PictureBox();
this.pictureBox14 = new System.Windows.Forms.PictureBox();
this.pictureBox15 = new System.Windows.Forms.PictureBox();
this.pictureBox6 = new System.Windows.Forms.PictureBox();
this.pictureBox7 = new System.Windows.Forms.PictureBox();
this.pictureBox8 = new System.Windows.Forms.PictureBox();
this.pictureBox9 = new System.Windows.Forms.PictureBox();
```

```
            this.pictureBox10 = new System.Windows.Forms.PictureBox();

            this.pictureBox5 = new System.Windows.Forms.PictureBox();

            this.pictureBox4 = new System.Windows.Forms.PictureBox();

            this.pictureBox3 = new System.Windows.Forms.PictureBox();

            this.pictureBox2 = new System.Windows.Forms.PictureBox();

            this.pictureBox1 = new System.Windows.Forms.PictureBox();

            this.buttonLoad = new System.Windows.Forms.Button();

            this.groupBoxMatchedPattern = new
System.Windows.Forms.GroupBox();

            this.pictureBoxMatchedHigh = new
System.Windows.Forms.PictureBox();

            this.webBrowser1 = new System.Windows.Forms.WebBrowser();

            this.labelMatchedLow = new System.Windows.Forms.Label();

            this.labelMatchedHigh = new System.Windows.Forms.Label();

            this.label2 = new System.Windows.Forms.Label();

            this.pictureBoxMatchedLow = new
System.Windows.Forms.PictureBox();

            this.pictureBoxInput = new System.Windows.Forms.PictureBox();

            this.textBoxBrowse = new System.Windows.Forms.TextBox();

            this.buttonRecognize = new System.Windows.Forms.Button();

            this.buttonBrowse = new System.Windows.Forms.Button();

            this.buttonClear = new System.Windows.Forms.Button();

            this.radioButtonBrowse = new
System.Windows.Forms.RadioButton();

            this.radioButtonDraw = new System.Windows.Forms.RadioButton();

            this.groupBoxDrawing = new System.Windows.Forms.GroupBox();

            this.drawingPanel1 = new BPSimplified.DrawingPanel();

            this.tabControl1 = new System.Windows.Forms.TabControl();

            this.timer1 = new System.Windows.Forms.Timer(this.components);

            this.toolTip1 = new
System.Windows.Forms.ToolTip(this.components);

            this.button5 = new System.Windows.Forms.Button();
```

```
            this.tabPage2.SuspendLayout();
            this.groupBox2.SuspendLayout();
            this.groupBox3.SuspendLayout();
            this.groupBox1.SuspendLayout();
            this.tabPage1.SuspendLayout();
            this.panel2.SuspendLayout();

((System.ComponentModel.ISupportInitialize)(this.pictureBox16)).BeginInit()
;

((System.ComponentModel.ISupportInitialize)(this.pictureBox17)).BeginInit()
;

((System.ComponentModel.ISupportInitialize)(this.pictureBox18)).BeginInit()
;

((System.ComponentModel.ISupportInitialize)(this.pictureBox19)).BeginInit()
;

((System.ComponentModel.ISupportInitialize)(this.pictureBox20)).BeginInit()
;

((System.ComponentModel.ISupportInitialize)(this.pictureBox11)).BeginInit()
;

((System.ComponentModel.ISupportInitialize)(this.pictureBox12)).BeginInit()
;

((System.ComponentModel.ISupportInitialize)(this.pictureBox13)).BeginInit()
;

((System.ComponentModel.ISupportInitialize)(this.pictureBox14)).BeginInit()
;

((System.ComponentModel.ISupportInitialize)(this.pictureBox15)).BeginInit()
;

((System.ComponentModel.ISupportInitialize)(this.pictureBox6)).BeginInit();

((System.ComponentModel.ISupportInitialize)(this.pictureBox7)).BeginInit();
```

```
((System.ComponentModel.ISupportInitialize)(this.pictureBox8)).BeginInit();

((System.ComponentModel.ISupportInitialize)(this.pictureBox9)).BeginInit();

((System.ComponentModel.ISupportInitialize)(this.pictureBox10)).BeginInit()
;

((System.ComponentModel.ISupportInitialize)(this.pictureBox5)).BeginInit();

((System.ComponentModel.ISupportInitialize)(this.pictureBox4)).BeginInit();

((System.ComponentModel.ISupportInitialize)(this.pictureBox3)).BeginInit();

((System.ComponentModel.ISupportInitialize)(this.pictureBox2)).BeginInit();

((System.ComponentModel.ISupportInitialize)(this.pictureBox1)).BeginInit();
            this.groupBoxMatchedPattern.SuspendLayout();

((System.ComponentModel.ISupportInitialize)(this.pictureBoxMatchedHigh)).Be
ginInit();

((System.ComponentModel.ISupportInitialize)(this.pictureBoxMatchedLow)).Beg
inInit();

((System.ComponentModel.ISupportInitialize)(this.pictureBoxInput)).BeginIni
t();
            this.groupBoxDrawing.SuspendLayout();
            this.tabControl1.SuspendLayout();
            this.SuspendLayout();
            //
            // tabPage2
            //
            this.tabPage2.Controls.Add(this.groupBox2);
            this.tabPage2.Controls.Add(this.label18);
            this.tabPage2.Controls.Add(this.groupBox3);
            this.tabPage2.Controls.Add(this.groupBox1);
```

```
this.tabPage2.Controls.Add(this.buttonSaveSettings);
this.tabPage2.Location = new System.Drawing.Point(4, 25);
this.tabPage2.Name = "tabPage2";
this.tabPage2.Padding = new System.Windows.Forms.Padding(3);
this.tabPage2.Size = new System.Drawing.Size(558, 580);
this.tabPage2.TabIndex = 1;
this.tabPage2.Text = "Settings";
this.tabPage2.UseVisualStyleBackColor = true;
//
// groupBox2
//
this.groupBox2.Controls.Add(this.textBoxState);
this.groupBox2.Controls.Add(this.label1);
this.groupBox2.Controls.Add(this.buttonStop);
this.groupBox2.Controls.Add(this.labelIteration);
this.groupBox2.Controls.Add(this.labelError);
this.groupBox2.Controls.Add(this.buttonSave);
this.groupBox2.Controls.Add(this.buttonTrain);
this.groupBox2.Controls.Add(this.labelTimer);
this.groupBox2.Location = new System.Drawing.Point(15, 336);
this.groupBox2.Name = "groupBox2";
this.groupBox2.Size = new System.Drawing.Size(472, 176);
this.groupBox2.TabIndex = 28;
this.groupBox2.TabStop = false;
this.groupBox2.Text = "Training";
//
// textBoxState
//
this.textBoxState.Location = new System.Drawing.Point(53, 19);
this.textBoxState.Multiline = true;
```

```
            this.textBoxState.Name = "textBoxState";
            this.textBoxState.ReadOnly = true;
            this.textBoxState.ScrollBars =
System.Windows.Forms.ScrollBars.Vertical;
            this.textBoxState.Size = new System.Drawing.Size(413, 60);
            this.textBoxState.TabIndex = 18;
            //
            // label1
            //
            this.label1.AutoSize = true;
            this.label1.Location = new System.Drawing.Point(12, 22);
            this.label1.Name = "label1";
            this.label1.Size = new System.Drawing.Size(35, 13);
            this.label1.TabIndex = 20;
            this.label1.Text = "State:";
            //
            // buttonStop
            //
            this.buttonStop.Enabled = false;
            this.buttonStop.Location = new System.Drawing.Point(380, 85);
            this.buttonStop.Name = "buttonStop";
            this.buttonStop.Size = new System.Drawing.Size(86, 23);
            this.buttonStop.TabIndex = 24;
            this.buttonStop.Text = "Stop Training";
            this.buttonStop.UseVisualStyleBackColor = true;
            this.buttonStop.Click += new
System.EventHandler(this.buttonStop_Click);
            //
            // labelIteration
            //
            this.labelIteration.AutoSize = true;
```

```
            this.labelIteration.Location = new System.Drawing.Point(152,
90);
            this.labelIteration.Name = "labelIteration";
            this.labelIteration.Size = new System.Drawing.Size(48, 13);
            this.labelIteration.TabIndex = 27;
            this.labelIteration.Text = "Iteration:";
            //
            // labelError
            //
            this.labelError.AutoSize = true;
            this.labelError.Location = new System.Drawing.Point(49, 90);
            this.labelError.Name = "labelError";
            this.labelError.Size = new System.Drawing.Size(32, 13);
            this.labelError.TabIndex = 25;
            this.labelError.Text = "Error:";
            //
            // buttonSave
            //
            this.buttonSave.Enabled = false;
            this.buttonSave.Location = new System.Drawing.Point(15, 130);
            this.buttonSave.Name = "buttonSave";
            this.buttonSave.Size = new System.Drawing.Size(89, 23);
            this.buttonSave.TabIndex = 22;
            this.buttonSave.Text = "Save Network";
            this.buttonSave.UseVisualStyleBackColor = true;
            this.buttonSave.Click += new
System.EventHandler(this.buttonSave_Click);
            //
            // buttonTrain
            //
            this.buttonTrain.Location = new System.Drawing.Point(110, 130);
```

```
            this.buttonTrain.Name = "buttonTrain";
            this.buttonTrain.Size = new System.Drawing.Size(90, 23);
            this.buttonTrain.TabIndex = 16;
            this.buttonTrain.Text = "Train Network";
            this.buttonTrain.UseVisualStyleBackColor = true;
            this.buttonTrain.Click += new
System.EventHandler(this.buttonTrain_Click);
            //
            // labelTimer
            //
            this.labelTimer.AutoSize = true;
            this.labelTimer.Location = new System.Drawing.Point(261, 90);
            this.labelTimer.Name = "labelTimer";
            this.labelTimer.Size = new System.Drawing.Size(49, 13);
            this.labelTimer.TabIndex = 26;
            this.labelTimer.Text = "00:00:00";
            //
            // label18
            //
            this.label18.Location = new System.Drawing.Point(114, 287);
            this.label18.Name = "label18";
            this.label18.Size = new System.Drawing.Size(288, 20);
            this.label18.TabIndex = 20;
            this.label18.Text = "Saving the settings requires to (re)train
or load the network";
            //
            // groupBox3
            //
            this.groupBox3.Controls.Add(this.textBoxTrainingBrowse);
            this.groupBox3.Controls.Add(this.buttonTrainingBrowse);
            this.groupBox3.Controls.Add(this.label4);
```

```
            this.groupBox3.Location = new System.Drawing.Point(15, 194);
            this.groupBox3.Name = "groupBox3";
            this.groupBox3.Size = new System.Drawing.Size(472, 73);
            this.groupBox3.TabIndex = 19;
            this.groupBox3.TabStop = false;
            this.groupBox3.Text = "Training Images\' Properties";
            //
            // textBoxTrainingBrowse
            //
            this.textBoxTrainingBrowse.Location = new
System.Drawing.Point(6, 36);
            this.textBoxTrainingBrowse.Name = "textBoxTrainingBrowse";
            this.textBoxTrainingBrowse.Size = new System.Drawing.Size(381,
20);
            this.textBoxTrainingBrowse.TabIndex = 4;
            //
            // buttonTrainingBrowse
            //
            this.buttonTrainingBrowse.Location = new
System.Drawing.Point(393, 34);
            this.buttonTrainingBrowse.Name = "buttonTrainingBrowse";
            this.buttonTrainingBrowse.Size = new System.Drawing.Size(59,
23);
            this.buttonTrainingBrowse.TabIndex = 3;
            this.buttonTrainingBrowse.Text = "Browse";
            this.buttonTrainingBrowse.UseVisualStyleBackColor = true;
            this.buttonTrainingBrowse.Click += new
System.EventHandler(this.buttonTrainingBrowse_Click);
            //
            // label4
            //
            this.label4.AutoSize = true;
```

```
            this.label4.Location = new System.Drawing.Point(3, 20);
            this.label4.Name = "label4";
            this.label4.Size = new System.Drawing.Size(264, 13);
            this.label4.TabIndex = 2;
            this.label4.Text = "The Directory Where Training Images Exist
As Images:";
            //
            // groupBox1
            //
            this.groupBox1.Controls.Add(this.label8);
            this.groupBox1.Controls.Add(this.textBoxMaxError);
            this.groupBox1.Controls.Add(this.comboBoxLayers);
            this.groupBox1.Controls.Add(this.label9);
            this.groupBox1.Controls.Add(this.label19);
            this.groupBox1.Controls.Add(this.textBoxInputUnit);
            this.groupBox1.Controls.Add(this.textBoxOutputUnit);
            this.groupBox1.Controls.Add(this.label3);
            this.groupBox1.Controls.Add(this.textBoxHiddenUnit);
            this.groupBox1.Controls.Add(this.label17);
            this.groupBox1.Location = new System.Drawing.Point(15, 33);
            this.groupBox1.Name = "groupBox1";
            this.groupBox1.Size = new System.Drawing.Size(472, 155);
            this.groupBox1.TabIndex = 18;
            this.groupBox1.TabStop = false;
            this.groupBox1.Text = "Network Properties";
            //
            // label8
            //
            this.label8.AutoSize = true;
            this.label8.Location = new System.Drawing.Point(20, 91);
            this.label8.Name = "label8";
```

```
            this.label8.Size = new System.Drawing.Size(219, 13);
            this.label8.TabIndex = 10;
            this.label8.Text = "Number of Hidden Unit(For Three Layer
Net):";
            //
            // textBoxMaxError
            //
            this.textBoxMaxError.Location = new System.Drawing.Point(285,
21);
            this.textBoxMaxError.Name = "textBoxMaxError";
            this.textBoxMaxError.Size = new System.Drawing.Size(43, 20);
            this.textBoxMaxError.TabIndex = 17;
            //
            // comboBoxLayers
            //
            this.comboBoxLayers.FormattingEnabled = true;
            this.comboBoxLayers.Items.AddRange(new object[] {
            "1",
            "2",
            "3"});
            this.comboBoxLayers.Location = new System.Drawing.Point(119,
21);
            this.comboBoxLayers.Name = "comboBoxLayers";
            this.comboBoxLayers.Size = new System.Drawing.Size(42, 21);
            this.comboBoxLayers.TabIndex = 1;
            this.comboBoxLayers.SelectedIndexChanged += new
System.EventHandler(this.comboBoxLayers_SelectedIndexChanged);
            //
            // label9
            //
            this.label9.AutoSize = true;
            this.label9.Location = new System.Drawing.Point(20, 59);
```

```
            this.label9.Name = "label9";
            this.label9.Size = new System.Drawing.Size(245, 13);
            this.label9.TabIndex = 11;
            this.label9.Text = "Number of Input Unit(For Two or Three Layer
Net):";
            //
            // label19
            //
            this.label19.AutoSize = true;
            this.label19.Location = new System.Drawing.Point(171, 24);
            this.label19.Name = "label19";
            this.label19.Size = new System.Drawing.Size(79, 13);
            this.label19.TabIndex = 16;
            this.label19.Text = "Maximum Error:";
            //
            // textBoxInputUnit
            //
            this.textBoxInputUnit.Location = new System.Drawing.Point(285,
56);
            this.textBoxInputUnit.Name = "textBoxInputUnit";
            this.textBoxInputUnit.Size = new System.Drawing.Size(43, 20);
            this.textBoxInputUnit.TabIndex = 12;
            //
            // textBoxOutputUnit
            //
            this.textBoxOutputUnit.Location = new System.Drawing.Point(285,
121);
            this.textBoxOutputUnit.Name = "textBoxOutputUnit";
            this.textBoxOutputUnit.Size = new System.Drawing.Size(43, 20);
            this.textBoxOutputUnit.TabIndex = 15;
            //
            // label3
```

```
            //
            this.label3.AutoSize = true;
            this.label3.Location = new System.Drawing.Point(20, 24);
            this.label3.Name = "label3";
            this.label3.Size = new System.Drawing.Size(93, 13);
            this.label3.TabIndex = 0;
            this.label3.Text = "Number of Layers:";
            //
            // textBoxHiddenUnit
            //
            this.textBoxHiddenUnit.Location = new System.Drawing.Point(285,
88);
            this.textBoxHiddenUnit.Name = "textBoxHiddenUnit";
            this.textBoxHiddenUnit.Size = new System.Drawing.Size(43, 20);
            this.textBoxHiddenUnit.TabIndex = 13;
            //
            // label17
            //
            this.label17.AutoSize = true;
            this.label17.Location = new System.Drawing.Point(20, 124);
            this.label17.Name = "label17";
            this.label17.Size = new System.Drawing.Size(116, 13);
            this.label17.TabIndex = 14;
            this.label17.Text = "Number of Output Unit:";
            //
            // buttonSaveSettings
            //
            this.buttonSaveSettings.Location = new System.Drawing.Point(15,
282);
            this.buttonSaveSettings.Name = "buttonSaveSettings";
            this.buttonSaveSettings.Size = new System.Drawing.Size(87, 23);
```

```
            this.buttonSaveSettings.TabIndex = 15;

            this.buttonSaveSettings.Text = "Save Settings";

            this.buttonSaveSettings.UseVisualStyleBackColor = true;

            this.buttonSaveSettings.Click += new
System.EventHandler(this.buttonSaveSettings_Click);

            //

            // buttonProcess

            //

            this.buttonProcess.Location = new System.Drawing.Point(329,
548);

            this.buttonProcess.Name = "buttonProcess";

            this.buttonProcess.Size = new System.Drawing.Size(85, 23);

            this.buttonProcess.TabIndex = 28;

            this.buttonProcess.Text = "Suara";

            this.buttonProcess.UseVisualStyleBackColor = true;

            this.buttonProcess.Click += new
System.EventHandler(this.buttonProcess_Click);

            //

            // tabPage1

            //

            this.tabPage1.Controls.Add(this.btnProses);

            this.tabPage1.Controls.Add(this.button1);

            this.tabPage1.Controls.Add(this.buttonProcess);

            this.tabPage1.Controls.Add(this.panel2);

            this.tabPage1.Controls.Add(this.buttonLoad);

            this.tabPage1.Controls.Add(this.groupBoxMatchedPattern);

            this.tabPage1.Controls.Add(this.textBoxBrowse);

            this.tabPage1.Controls.Add(this.buttonRecognize);

            this.tabPage1.Controls.Add(this.buttonBrowse);

            this.tabPage1.Controls.Add(this.buttonClear);

            this.tabPage1.Controls.Add(this.radioButtonBrowse);

            this.tabPage1.Controls.Add(this.radioButtonDraw);
```

```
            this.tabPage1.Controls.Add(this.groupBoxDrawing);
            this.tabPage1.Location = new System.Drawing.Point(4, 25);
            this.tabPage1.Name = "tabPage1";
            this.tabPage1.Padding = new System.Windows.Forms.Padding(3);
            this.tabPage1.Size = new System.Drawing.Size(558, 580);
            this.tabPage1.TabIndex = 0;
            this.tabPage1.Text = "Main";
            this.tabPage1.UseVisualStyleBackColor = true;
            //
            // btnProses
            //
            this.btnProses.Location = new System.Drawing.Point(231, 388);
            this.btnProses.Name = "btnProses";
            this.btnProses.Size = new System.Drawing.Size(87, 23);
            this.btnProses.TabIndex = 30;
            this.btnProses.Text = "Proses";
            this.btnProses.UseVisualStyleBackColor = true;
            this.btnProses.Visible = false;
            this.btnProses.Click += new
System.EventHandler(this.btnProses_Click);
            //
            // button1
            //
            this.button1.Location = new System.Drawing.Point(420, 548);
            this.button1.Name = "button1";
            this.button1.Size = new System.Drawing.Size(99, 23);
            this.button1.TabIndex = 29;
            this.button1.Text = "Lihat Animasi";
            this.button1.UseVisualStyleBackColor = true;
            this.button1.Click += new
System.EventHandler(this.button1_Click);
```

```
//
// panel2
//
this.panel2.Controls.Add(this.pictureBox16);
this.panel2.Controls.Add(this.pictureBox17);
this.panel2.Controls.Add(this.pictureBox18);
this.panel2.Controls.Add(this.pictureBox19);
this.panel2.Controls.Add(this.pictureBox20);
this.panel2.Controls.Add(this.pictureBox11);
this.panel2.Controls.Add(this.pictureBox12);
this.panel2.Controls.Add(this.pictureBox13);
this.panel2.Controls.Add(this.pictureBox14);
this.panel2.Controls.Add(this.pictureBox15);
this.panel2.Controls.Add(this.pictureBox6);
this.panel2.Controls.Add(this.pictureBox7);
this.panel2.Controls.Add(this.pictureBox8);
this.panel2.Controls.Add(this.pictureBox9);
this.panel2.Controls.Add(this.pictureBox10);
this.panel2.Controls.Add(this.pictureBox5);
this.panel2.Controls.Add(this.pictureBox4);
this.panel2.Controls.Add(this.pictureBox3);
this.panel2.Controls.Add(this.pictureBox2);
this.panel2.Controls.Add(this.pictureBox1);
this.panel2.Dock = System.Windows.Forms.DockStyle.Top;
this.panel2.Location = new System.Drawing.Point(3, 3);
this.panel2.Name = "panel2";
this.panel2.Size = new System.Drawing.Size(552, 292);
this.panel2.TabIndex = 24;
//
// pictureBox16
```

```
            //
            this.pictureBox16.Anchor =
System.Windows.Forms.AnchorStyles.Top;
            this.pictureBox16.Image =
global::Hanacaraka.Properties.Resources.NGA;
            this.pictureBox16.Location = new System.Drawing.Point(434,
213);
            this.pictureBox16.Name = "pictureBox16";
            this.pictureBox16.Size = new System.Drawing.Size(73, 47);
            this.pictureBox16.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.StretchImage;
            this.pictureBox16.TabIndex = 19;
            this.pictureBox16.TabStop = false;
            this.toolTip1.SetToolTip(this.pictureBox16, "NGA");
            //
            // pictureBox17
            //
            this.pictureBox17.Anchor =
System.Windows.Forms.AnchorStyles.Top;
            this.pictureBox17.Image =
global::Hanacaraka.Properties.Resources.THA;
            this.pictureBox17.Location = new System.Drawing.Point(338,
213);
            this.pictureBox17.Name = "pictureBox17";
            this.pictureBox17.Size = new System.Drawing.Size(73, 47);
            this.pictureBox17.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.StretchImage;
            this.pictureBox17.TabIndex = 18;
            this.pictureBox17.TabStop = false;
            this.toolTip1.SetToolTip(this.pictureBox17, "THA");
            //
            // pictureBox18
            //
```

```
            this.pictureBox18.Anchor =
System.Windows.Forms.AnchorStyles.Top;

            this.pictureBox18.Image =
global::Hanacaraka.Properties.Resources.BA;

            this.pictureBox18.Location = new System.Drawing.Point(242,
213);

            this.pictureBox18.Name = "pictureBox18";

            this.pictureBox18.Size = new System.Drawing.Size(73, 47);

            this.pictureBox18.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.StretchImage;

            this.pictureBox18.TabIndex = 17;

            this.pictureBox18.TabStop = false;

            this.toolTip1.SetToolTip(this.pictureBox18, "BA");

            //

            // pictureBox19

            //

            this.pictureBox19.Anchor =
System.Windows.Forms.AnchorStyles.Top;

            this.pictureBox19.Image =
global::Hanacaraka.Properties.Resources.GA;

            this.pictureBox19.Location = new System.Drawing.Point(146,
213);

            this.pictureBox19.Name = "pictureBox19";

            this.pictureBox19.Size = new System.Drawing.Size(73, 47);

            this.pictureBox19.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.StretchImage;

            this.pictureBox19.TabIndex = 16;

            this.pictureBox19.TabStop = false;

            this.toolTip1.SetToolTip(this.pictureBox19, "GA");

            //

            // pictureBox20

            //

            this.pictureBox20.Anchor =
System.Windows.Forms.AnchorStyles.Top;
```

```
            this.pictureBox20.Image =
global::Hanacaraka.Properties.Resources.MA;

            this.pictureBox20.Location = new System.Drawing.Point(50, 213);

            this.pictureBox20.Name = "pictureBox20";

            this.pictureBox20.Size = new System.Drawing.Size(73, 47);

            this.pictureBox20.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.StretchImage;

            this.pictureBox20.TabIndex = 15;

            this.pictureBox20.TabStop = false;

            this.toolTip1.SetToolTip(this.pictureBox20, "MA");

            //

            // pictureBox11

            //

            this.pictureBox11.Anchor =
System.Windows.Forms.AnchorStyles.Top;

            this.pictureBox11.Image =
global::Hanacaraka.Properties.Resources.NYA;

            this.pictureBox11.Location = new System.Drawing.Point(434,
149);

            this.pictureBox11.Name = "pictureBox11";

            this.pictureBox11.Size = new System.Drawing.Size(73, 47);

            this.pictureBox11.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.StretchImage;

            this.pictureBox11.TabIndex = 14;

            this.pictureBox11.TabStop = false;

            this.toolTip1.SetToolTip(this.pictureBox11, "NYA");

            //

            // pictureBox12

            //

            this.pictureBox12.Anchor =
System.Windows.Forms.AnchorStyles.Top;

            this.pictureBox12.Image =
global::Hanacaraka.Properties.Resources.YA;
```

```
            this.pictureBox12.Location = new System.Drawing.Point(338,
149);

            this.pictureBox12.Name = "pictureBox12";

            this.pictureBox12.Size = new System.Drawing.Size(73, 47);

            this.pictureBox12.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.StretchImage;

            this.pictureBox12.TabIndex = 13;

            this.pictureBox12.TabStop = false;

            this.toolTip1.SetToolTip(this.pictureBox12, "YA");

            //

            // pictureBox13

            //

            this.pictureBox13.Anchor =
System.Windows.Forms.AnchorStyles.Top;

            this.pictureBox13.Image =
global::Hanacaraka.Properties.Resources.JA;

            this.pictureBox13.Location = new System.Drawing.Point(242,
149);

            this.pictureBox13.Name = "pictureBox13";

            this.pictureBox13.Size = new System.Drawing.Size(73, 47);

            this.pictureBox13.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.StretchImage;

            this.pictureBox13.TabIndex = 12;

            this.pictureBox13.TabStop = false;

            this.toolTip1.SetToolTip(this.pictureBox13, "JA");

            //

            // pictureBox14

            //

            this.pictureBox14.Anchor =
System.Windows.Forms.AnchorStyles.Top;

            this.pictureBox14.Image =
global::Hanacaraka.Properties.Resources.DHA;

            this.pictureBox14.Location = new System.Drawing.Point(146,
149);
```

```
            this.pictureBox14.Name = "pictureBox14";

            this.pictureBox14.Size = new System.Drawing.Size(73, 47);

            this.pictureBox14.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.StretchImage;

            this.pictureBox14.TabIndex = 11;

            this.pictureBox14.TabStop = false;

            this.toolTip1.SetToolTip(this.pictureBox14, "DA");

            //

            // pictureBox15

            //

            this.pictureBox15.Anchor =
System.Windows.Forms.AnchorStyles.Top;

            this.pictureBox15.Image =
global::Hanacaraka.Properties.Resources.PA;

            this.pictureBox15.Location = new System.Drawing.Point(50, 149);

            this.pictureBox15.Name = "pictureBox15";

            this.pictureBox15.Size = new System.Drawing.Size(73, 47);

            this.pictureBox15.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.StretchImage;

            this.pictureBox15.TabIndex = 10;

            this.pictureBox15.TabStop = false;

            this.toolTip1.SetToolTip(this.pictureBox15, "PA");

            //

            // pictureBox6

            //

            this.pictureBox6.Anchor =
System.Windows.Forms.AnchorStyles.Top;

            this.pictureBox6.Image =
global::Hanacaraka.Properties.Resources.LA;

            this.pictureBox6.Location = new System.Drawing.Point(434, 83);

            this.pictureBox6.Name = "pictureBox6";

            this.pictureBox6.Size = new System.Drawing.Size(73, 47);
```

```
            this.pictureBox6.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.StretchImage;

            this.pictureBox6.TabIndex = 9;

            this.pictureBox6.TabStop = false;

            this.toolTip1.SetToolTip(this.pictureBox6, "LA");

            //

            // pictureBox7

            //

            this.pictureBox7.Anchor =
System.Windows.Forms.AnchorStyles.Top;

            this.pictureBox7.Image =
global::Hanacaraka.Properties.Resources.WA;

            this.pictureBox7.Location = new System.Drawing.Point(338, 83);

            this.pictureBox7.Name = "pictureBox7";

            this.pictureBox7.Size = new System.Drawing.Size(73, 47);

            this.pictureBox7.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.StretchImage;

            this.pictureBox7.TabIndex = 8;

            this.pictureBox7.TabStop = false;

            this.toolTip1.SetToolTip(this.pictureBox7, "WA");

            //

            // pictureBox8

            //

            this.pictureBox8.Anchor =
System.Windows.Forms.AnchorStyles.Top;

            this.pictureBox8.Image =
global::Hanacaraka.Properties.Resources.SA;

            this.pictureBox8.Location = new System.Drawing.Point(242, 83);

            this.pictureBox8.Name = "pictureBox8";

            this.pictureBox8.Size = new System.Drawing.Size(73, 47);

            this.pictureBox8.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.StretchImage;

            this.pictureBox8.TabIndex = 7;
```

```
            this.pictureBox8.TabStop = false;

            this.toolTip1.SetToolTip(this.pictureBox8, "SA");

            //

            // pictureBox9

            //

            this.pictureBox9.Anchor =
System.Windows.Forms.AnchorStyles.Top;

            this.pictureBox9.Image =
global::Hanacaraka.Properties.Resources.TA;

            this.pictureBox9.Location = new System.Drawing.Point(146, 83);

            this.pictureBox9.Name = "pictureBox9";

            this.pictureBox9.Size = new System.Drawing.Size(73, 47);

            this.pictureBox9.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.StretchImage;

            this.pictureBox9.TabIndex = 6;

            this.pictureBox9.TabStop = false;

            this.toolTip1.SetToolTip(this.pictureBox9, "TA");

            //

            // pictureBox10

            //

            this.pictureBox10.Anchor =
System.Windows.Forms.AnchorStyles.Top;

            this.pictureBox10.Image =
global::Hanacaraka.Properties.Resources.DA;

            this.pictureBox10.Location = new System.Drawing.Point(50, 83);

            this.pictureBox10.Name = "pictureBox10";

            this.pictureBox10.Size = new System.Drawing.Size(73, 47);

            this.pictureBox10.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.StretchImage;

            this.pictureBox10.TabIndex = 5;

            this.pictureBox10.TabStop = false;

            this.toolTip1.SetToolTip(this.pictureBox10, "DA");

            //
```

```
            // pictureBox5
            //
            this.pictureBox5.Anchor =
System.Windows.Forms.AnchorStyles.Top;
            this.pictureBox5.Image =
global::Hanacaraka.Properties.Resources.KA;
            this.pictureBox5.Location = new System.Drawing.Point(434, 21);
            this.pictureBox5.Name = "pictureBox5";
            this.pictureBox5.Size = new System.Drawing.Size(73, 47);
            this.pictureBox5.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.StretchImage;
            this.pictureBox5.TabIndex = 4;
            this.pictureBox5.TabStop = false;
            this.toolTip1.SetToolTip(this.pictureBox5, "KA");
            //
            // pictureBox4
            //
            this.pictureBox4.Anchor =
System.Windows.Forms.AnchorStyles.Top;
            this.pictureBox4.Image =
global::Hanacaraka.Properties.Resources.RA;
            this.pictureBox4.Location = new System.Drawing.Point(338, 21);
            this.pictureBox4.Name = "pictureBox4";
            this.pictureBox4.Size = new System.Drawing.Size(73, 47);
            this.pictureBox4.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.StretchImage;
            this.pictureBox4.TabIndex = 3;
            this.pictureBox4.TabStop = false;
            this.toolTip1.SetToolTip(this.pictureBox4, "RA");
            //
            // pictureBox3
            //
```

```
            this.pictureBox3.Anchor =
System.Windows.Forms.AnchorStyles.Top;

            this.pictureBox3.Image =
global::Hanacaraka.Properties.Resources.CA;

            this.pictureBox3.Location = new System.Drawing.Point(242, 21);

            this.pictureBox3.Name = "pictureBox3";

            this.pictureBox3.Size = new System.Drawing.Size(73, 47);

            this.pictureBox3.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.StretchImage;

            this.pictureBox3.TabIndex = 2;

            this.pictureBox3.TabStop = false;

            this.toolTip1.SetToolTip(this.pictureBox3, "CA");

            //

            // pictureBox2

            //

            this.pictureBox2.Anchor =
System.Windows.Forms.AnchorStyles.Top;

            this.pictureBox2.Image =
global::Hanacaraka.Properties.Resources.NA;

            this.pictureBox2.Location = new System.Drawing.Point(146, 21);

            this.pictureBox2.Name = "pictureBox2";

            this.pictureBox2.Size = new System.Drawing.Size(73, 47);

            this.pictureBox2.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.StretchImage;

            this.pictureBox2.TabIndex = 1;

            this.pictureBox2.TabStop = false;

            this.toolTip1.SetToolTip(this.pictureBox2, "NA");

            //

            // pictureBox1

            //

            this.pictureBox1.Anchor =
System.Windows.Forms.AnchorStyles.Top;

            this.pictureBox1.Image =
global::Hanacaraka.Properties.Resources.HA;
```

```
            this.pictureBox1.Location = new System.Drawing.Point(50, 21);
            this.pictureBox1.Name = "pictureBox1";
            this.pictureBox1.Size = new System.Drawing.Size(73, 47);
            this.pictureBox1.SizeMode =
System.Windows.Forms.PictureBoxSizeMode.StretchImage;
            this.pictureBox1.TabIndex = 0;
            this.pictureBox1.TabStop = false;
            this.toolTip1.SetToolTip(this.pictureBox1, "HA");
            //
            // buttonLoad
            //
            this.buttonLoad.Location = new System.Drawing.Point(115, 548);
            this.buttonLoad.Name = "buttonLoad";
            this.buttonLoad.Size = new System.Drawing.Size(88, 23);
            this.buttonLoad.TabIndex = 23;
            this.buttonLoad.Text = "Ambil Network";
            this.buttonLoad.UseVisualStyleBackColor = true;
            this.buttonLoad.Click += new
System.EventHandler(this.buttonLoad_Click);
            //
            // groupBoxMatchedPattern
            //
this.groupBoxMatchedPattern.Controls.Add(this.pictureBoxMatchedHigh);
            this.groupBoxMatchedPattern.Controls.Add(this.webBrowser1);
            this.groupBoxMatchedPattern.Controls.Add(this.labelMatchedLow);
this.groupBoxMatchedPattern.Controls.Add(this.labelMatchedHigh);
            this.groupBoxMatchedPattern.Controls.Add(this.label2);
this.groupBoxMatchedPattern.Controls.Add(this.pictureBoxMatchedLow);
            this.groupBoxMatchedPattern.Controls.Add(this.pictureBoxInput);
```

```
            this.groupBoxMatchedPattern.Location = new
System.Drawing.Point(331, 338);

            this.groupBoxMatchedPattern.Name = "groupBoxMatchedPattern";

            this.groupBoxMatchedPattern.Size = new System.Drawing.Size(187,
195);

            this.groupBoxMatchedPattern.TabIndex = 21;

            this.groupBoxMatchedPattern.TabStop = false;

            //

            // pictureBoxMatchedHigh

            //

            this.pictureBoxMatchedHigh.Location = new
System.Drawing.Point(11, 32);

            this.pictureBoxMatchedHigh.Name = "pictureBoxMatchedHigh";

            this.pictureBoxMatchedHigh.Size = new System.Drawing.Size(160,
148);

            this.pictureBoxMatchedHigh.TabIndex = 1;

            this.pictureBoxMatchedHigh.TabStop = false;

            //

            // webBrowser1

            //

            this.webBrowser1.Location = new System.Drawing.Point(560, 30);

            this.webBrowser1.MinimumSize = new System.Drawing.Size(20, 20);

            this.webBrowser1.Name = "webBrowser1";

            this.webBrowser1.Size = new System.Drawing.Size(173, 149);

            this.webBrowser1.TabIndex = 6;

            //

            // labelMatchedLow

            //

            this.labelMatchedLow.AutoSize = true;

            this.labelMatchedLow.Location = new System.Drawing.Point(189,
14);

            this.labelMatchedLow.Name = "labelMatchedLow";
```

```
            this.labelMatchedLow.Size = new System.Drawing.Size(75, 13);
            this.labelMatchedLow.TabIndex = 5;
            this.labelMatchedLow.Text = "Matched Low:";
            //
            // labelMatchedHigh
            //
            this.labelMatchedHigh.AutoSize = true;
            this.labelMatchedHigh.Location = new System.Drawing.Point(12,
14);
            this.labelMatchedHigh.Name = "labelMatchedHigh";
            this.labelMatchedHigh.Size = new System.Drawing.Size(80, 13);
            this.labelMatchedHigh.TabIndex = 4;
            this.labelMatchedHigh.Text = "Matched Hight:";
            //
            // label2
            //
            this.label2.AutoSize = true;
            this.label2.Location = new System.Drawing.Point(376, 14);
            this.label2.Name = "label2";
            this.label2.Size = new System.Drawing.Size(34, 13);
            this.label2.TabIndex = 3;
            this.label2.Text = "Input:";
            //
            // pictureBoxMatchedLow
            //
            this.pictureBoxMatchedLow.Location = new
System.Drawing.Point(192, 31);
            this.pictureBoxMatchedLow.Name = "pictureBoxMatchedLow";
            this.pictureBoxMatchedLow.Size = new System.Drawing.Size(167,
148);
            this.pictureBoxMatchedLow.TabIndex = 2;
            this.pictureBoxMatchedLow.TabStop = false;
```

```
            //
            // pictureBoxInput
            //
            this.pictureBoxInput.Location = new System.Drawing.Point(379,
30);
            this.pictureBoxInput.Name = "pictureBoxInput";
            this.pictureBoxInput.Size = new System.Drawing.Size(162, 149);
            this.pictureBoxInput.TabIndex = 0;
            this.pictureBoxInput.TabStop = false;
            //
            // textBoxBrowse
            //
            this.textBoxBrowse.Enabled = false;
            this.textBoxBrowse.Location = new System.Drawing.Point(199,
311);
            this.textBoxBrowse.Name = "textBoxBrowse";
            this.textBoxBrowse.Size = new System.Drawing.Size(184, 20);
            this.textBoxBrowse.TabIndex = 14;
            //
            // buttonRecognize
            //
            this.buttonRecognize.Enabled = false;
            this.buttonRecognize.Location = new System.Drawing.Point(229,
427);
            this.buttonRecognize.Name = "buttonRecognize";
            this.buttonRecognize.Size = new System.Drawing.Size(86, 23);
            this.buttonRecognize.TabIndex = 17;
            this.buttonRecognize.Text = "Deteksi";
            this.buttonRecognize.UseVisualStyleBackColor = true;
            this.buttonRecognize.Click += new
System.EventHandler(this.buttonRecognize_Click);
            //
```

```
            // buttonBrowse
            //
            this.buttonBrowse.Enabled = false;
            this.buttonBrowse.Location = new System.Drawing.Point(389,
309);
            this.buttonBrowse.Name = "buttonBrowse";
            this.buttonBrowse.Size = new System.Drawing.Size(53, 23);
            this.buttonBrowse.TabIndex = 15;
            this.buttonBrowse.Text = "Browse";
            this.buttonBrowse.UseVisualStyleBackColor = true;
            this.buttonBrowse.Click += new
System.EventHandler(this.buttonBrowse_Click);
            //
            // buttonClear
            //
            this.buttonClear.Location = new System.Drawing.Point(26, 548);
            this.buttonClear.Name = "buttonClear";
            this.buttonClear.Size = new System.Drawing.Size(75, 23);
            this.buttonClear.TabIndex = 13;
            this.buttonClear.Text = "Bersihkan";
            this.buttonClear.UseVisualStyleBackColor = true;
            this.buttonClear.Click += new
System.EventHandler(this.buttonClear_Click);
            //
            // radioButtonBrowse
            //
            this.radioButtonBrowse.AutoSize = true;
            this.radioButtonBrowse.Location = new System.Drawing.Point(107,
312);
            this.radioButtonBrowse.Name = "radioButtonBrowse";
            this.radioButtonBrowse.Size = new System.Drawing.Size(87, 17);
            this.radioButtonBrowse.TabIndex = 12;
```

```
            this.radioButtonBrowse.Text = "Pilih Gambar:";
            this.radioButtonBrowse.UseVisualStyleBackColor = true;
            this.radioButtonBrowse.CheckedChanged += new
System.EventHandler(this.radioButton_CheckedChanged);
            //
            // radioButtonDraw
            //
            this.radioButtonDraw.AutoSize = true;
            this.radioButtonDraw.Checked = true;
            this.radioButtonDraw.Location = new System.Drawing.Point(27,
312);
            this.radioButtonDraw.Name = "radioButtonDraw";
            this.radioButtonDraw.Size = new System.Drawing.Size(47, 17);
            this.radioButtonDraw.TabIndex = 11;
            this.radioButtonDraw.TabStop = true;
            this.radioButtonDraw.Text = "Tulis";
            this.radioButtonDraw.UseVisualStyleBackColor = true;
            this.radioButtonDraw.CheckedChanged += new
System.EventHandler(this.radioButton_CheckedChanged);
            //
            // groupBoxDrawing
            //
            this.groupBoxDrawing.Controls.Add(this.drawingPanel1);
            this.groupBoxDrawing.Location = new System.Drawing.Point(26,
338);
            this.groupBoxDrawing.Name = "groupBoxDrawing";
            this.groupBoxDrawing.Size = new System.Drawing.Size(197, 195);
            this.groupBoxDrawing.TabIndex = 10;
            this.groupBoxDrawing.TabStop = false;
            //
            // drawingPanel1
            //
```

```
            this.drawingPanel1.BackColor = System.Drawing.Color.White;
            this.drawingPanel1.ImageOnPanel =
((System.Drawing.Bitmap)(resources.GetObject("drawingPanel1.ImageOnPanel"))
);
            this.drawingPanel1.Location = new System.Drawing.Point(15, 14);
            this.drawingPanel1.Name = "drawingPanel1";
            this.drawingPanel1.PointSize = 18;
            this.drawingPanel1.Size = new System.Drawing.Size(164, 165);
            this.drawingPanel1.TabIndex = 0;
            //
            // tabControl1
            //
            this.tabControl1.Anchor =
System.Windows.Forms.AnchorStyles.None;
            this.tabControl1.Appearance =
System.Windows.Forms.TabAppearance.Buttons;
            this.tabControl1.Controls.Add(this.tabPage1);
            this.tabControl1.Controls.Add(this.tabPage2);
            this.tabControl1.ItemSize = new System.Drawing.Size(42, 21);
            this.tabControl1.Location = new System.Drawing.Point(26, 49);
            this.tabControl1.Name = "tabControl1";
            this.tabControl1.SelectedIndex = 0;
            this.tabControl1.Size = new System.Drawing.Size(566, 609);
            this.tabControl1.TabIndex = 1;
            //
            // timer1
            //
            this.timer1.Interval = 1000;
            this.timer1.Tick += new System.EventHandler(this.timer1_Tick);
            //
            // button5
            //
```

```
            this.button5.Anchor = System.Windows.Forms.AnchorStyles.None;

            this.button5.Location = new System.Drawing.Point(216, 667);

            this.button5.Name = "button5";

            this.button5.Size = new System.Drawing.Size(174, 53);

            this.button5.TabIndex = 6;

            this.button5.Text = "Kembali";

            this.button5.UseVisualStyleBackColor = true;

            this.button5.Click += new
System.EventHandler(this.button5_Click);

            //

            // NeuralDemo

            //

            this.AutoScaleDimensions = new System.Drawing.SizeF(6F, 13F);

            this.AutoScaleMode = System.Windows.Forms.AutoScaleMode.Font;

            this.AutoSizeMode =
System.Windows.Forms.AutoSizeMode.GrowAndShrink;

            this.BackgroundImage =
((System.Drawing.Image)(resources.GetObject("$this.BackgroundImage")));

            this.ClientSize = new System.Drawing.Size(614, 732);

            this.Controls.Add(this.button5);

            this.Controls.Add(this.tabControl1);

            this.MaximizeBox = false;

            this.Name = "NeuralDemo";

            this.StartPosition =
System.Windows.Forms.FormStartPosition.CenterScreen;

            this.Text = "Hanacaraka";

            this.Load += new System.EventHandler(this.NeuralDemo_Load);

            this.FormClosing += new
System.Windows.Forms.FormClosingEventHandler(this.NeuralDemo_FormClosing);

            this.tabPage2.ResumeLayout(false);

            this.groupBox2.ResumeLayout(false);

            this.groupBox2.PerformLayout();
```

```
            this.groupBox3.ResumeLayout(false);
            this.groupBox3.PerformLayout();
            this.groupBox1.ResumeLayout(false);
            this.groupBox1.PerformLayout();
            this.tabPage1.ResumeLayout(false);
            this.tabPage1.PerformLayout();
            this.panel2.ResumeLayout(false);

((System.ComponentModel.ISupportInitialize)(this.pictureBox16)).EndInit();
((System.ComponentModel.ISupportInitialize)(this.pictureBox17)).EndInit();
((System.ComponentModel.ISupportInitialize)(this.pictureBox18)).EndInit();
((System.ComponentModel.ISupportInitialize)(this.pictureBox19)).EndInit();
((System.ComponentModel.ISupportInitialize)(this.pictureBox20)).EndInit();
((System.ComponentModel.ISupportInitialize)(this.pictureBox11)).EndInit();
((System.ComponentModel.ISupportInitialize)(this.pictureBox12)).EndInit();
((System.ComponentModel.ISupportInitialize)(this.pictureBox13)).EndInit();
((System.ComponentModel.ISupportInitialize)(this.pictureBox14)).EndInit();
((System.ComponentModel.ISupportInitialize)(this.pictureBox15)).EndInit();
((System.ComponentModel.ISupportInitialize)(this.pictureBox6)).EndInit();
((System.ComponentModel.ISupportInitialize)(this.pictureBox7)).EndInit();
((System.ComponentModel.ISupportInitialize)(this.pictureBox8)).EndInit();
((System.ComponentModel.ISupportInitialize)(this.pictureBox9)).EndInit();
((System.ComponentModel.ISupportInitialize)(this.pictureBox10)).EndInit();
```

```
((System.ComponentModel.ISupportInitialize)(this.pictureBox5)).EndInit();

((System.ComponentModel.ISupportInitialize)(this.pictureBox4)).EndInit();

((System.ComponentModel.ISupportInitialize)(this.pictureBox3)).EndInit();

((System.ComponentModel.ISupportInitialize)(this.pictureBox2)).EndInit();

((System.ComponentModel.ISupportInitialize)(this.pictureBox1)).EndInit();
            this.groupBoxMatchedPattern.ResumeLayout(false);
            this.groupBoxMatchedPattern.PerformLayout();

((System.ComponentModel.ISupportInitialize)(this.pictureBoxMatchedHigh)).En
dInit();

((System.ComponentModel.ISupportInitialize)(this.pictureBoxMatchedLow)).End
Init();

((System.ComponentModel.ISupportInitialize)(this.pictureBoxInput)).EndInit(
);
            this.groupBoxDrawing.ResumeLayout(false);
            this.tabControl1.ResumeLayout(false);
            this.ResumeLayout(false);

        }

        #endregion

        private System.Windows.Forms.TabPage tabPage2;
        private System.Windows.Forms.Label label18;
        private System.Windows.Forms.GroupBox groupBox3;
        private System.Windows.Forms.TextBox textBoxTrainingBrowse;
        private System.Windows.Forms.Button buttonTrainingBrowse;
        private System.Windows.Forms.Label label4;
```

```
private System.Windows.Forms.GroupBox groupBox1;
private System.Windows.Forms.Label label8;
private System.Windows.Forms.TextBox textBoxMaxError;
private System.Windows.Forms.ComboBox comboBoxLayers;
private System.Windows.Forms.Label label9;
private System.Windows.Forms.Label label19;
private System.Windows.Forms.TextBox textBoxInputUnit;
private System.Windows.Forms.TextBox textBoxOutputUnit;
private System.Windows.Forms.Label label3;
private System.Windows.Forms.TextBox textBoxHiddenUnit;
private System.Windows.Forms.Label label17;
private System.Windows.Forms.Button buttonSaveSettings;
private System.Windows.Forms.TabPage tabPage1;
private System.Windows.Forms.Label labelTimer;
private System.Windows.Forms.Label labelError;
private System.Windows.Forms.Button buttonStop;
private System.Windows.Forms.Button buttonLoad;
private System.Windows.Forms.Button buttonSave;
private System.Windows.Forms.GroupBox groupBoxMatchedPattern;
private System.Windows.Forms.Label labelMatchedLow;
private System.Windows.Forms.Label labelMatchedHigh;
private System.Windows.Forms.Label label2;
private System.Windows.Forms.PictureBox pictureBoxMatchedLow;
private System.Windows.Forms.PictureBox pictureBoxMatchedHigh;
private System.Windows.Forms.PictureBox pictureBoxInput;
private System.Windows.Forms.Label label1;
private System.Windows.Forms.TextBox textBoxState;
private System.Windows.Forms.TextBox textBoxBrowse;
private System.Windows.Forms.Button buttonRecognize;
private System.Windows.Forms.Button buttonTrain;
```

```
private System.Windows.Forms.Button buttonBrowse;
private System.Windows.Forms.Button buttonClear;
private System.Windows.Forms.RadioButton radioButtonBrowse;
private System.Windows.Forms.RadioButton radioButtonDraw;
private System.Windows.Forms.GroupBox groupBoxDrawing;
private System.Windows.Forms.TabControl tabControl1;
private DrawingPanel drawingPanel1;
private System.Windows.Forms.Label labelIteration;
private System.Windows.Forms.Timer timer1;
private System.Windows.Forms.Button buttonProcess;
private System.Windows.Forms.WebBrowser webBrowser1;
private System.Windows.Forms.Panel panel2;
private System.Windows.Forms.PictureBox pictureBox16;
private System.Windows.Forms.PictureBox pictureBox17;
private System.Windows.Forms.PictureBox pictureBox18;
private System.Windows.Forms.PictureBox pictureBox19;
private System.Windows.Forms.PictureBox pictureBox20;
private System.Windows.Forms.PictureBox pictureBox11;
private System.Windows.Forms.PictureBox pictureBox12;
private System.Windows.Forms.PictureBox pictureBox13;
private System.Windows.Forms.PictureBox pictureBox14;
private System.Windows.Forms.PictureBox pictureBox15;
private System.Windows.Forms.PictureBox pictureBox6;
private System.Windows.Forms.PictureBox pictureBox7;
private System.Windows.Forms.PictureBox pictureBox8;
private System.Windows.Forms.PictureBox pictureBox9;
private System.Windows.Forms.PictureBox pictureBox10;
private System.Windows.Forms.PictureBox pictureBox5;
private System.Windows.Forms.PictureBox pictureBox4;
private System.Windows.Forms.PictureBox pictureBox3;
```

```
        private System.Windows.Forms.PictureBox pictureBox2;
        private System.Windows.Forms.PictureBox pictureBox1;
        private System.Windows.Forms.ToolTip toolTip1;
        private System.Windows.Forms.GroupBox groupBox2;
        private System.Windows.Forms.Button button1;
        private System.Windows.Forms.Button btnProses;
        private System.Windows.Forms.Button button5;

    }
}

using System;
using System.Collections.Generic;
using System.Data;
using System.Drawing;
using System.Text;
using System.Windows.Forms;
using System.IO;
using System.Collections.Specialized;
using System.Configuration;
using System.Threading;
using BPSimplified.Lib;
using System.Media;
using System.Runtime.InteropServices;
using System.Diagnostics;
using Hanacaraka.Lib;
using Hanacaraka;

namespace BPSimplified
{
```

```
public partial class NeuralDemo : Form
{
    public Form RefToForm1 { get; set; }

    //Neural Network Object With Output Type String
    private NeuralNetwork<string> neuralNetwork = null;

    //Data Members Required For Neural Network
    private Dictionary<string, double[]> TrainingSet = null;
    private int av_ImageHeight = 0;
    private int av_ImageWidth = 0;
    private int NumOfPatterns = 0;

    //For Asynchronized Programming Instead of Handling Threads
    private delegate bool TrainingCallBack();
    private AsyncCallback asyCallBack = null;
    private IAsyncResult res = null;
    private ManualResetEvent ManualReset = null;

    private DateTime DTStart;

    public NeuralDemo()
    {
        InitializeComponent();
        InitializeSettings();

        GenerateTrainingSet();
        CreateNeuralNetwork();

        asyCallBack = new AsyncCallback(TraningCompleted);
```

```
            ManualReset = new ManualResetEvent(false);
        }

        void neuralNetwork_IterationChanged(object o, NeuralEventArgs args)
        {
            UpdateError(args.CurrentError);
            UpdateIteration(args.CurrentIteration);

            if (ManualReset.WaitOne(0, true))
                args.Stop = true;
        }

        private void buttonTrain_Click(object sender, EventArgs e)
        {
            buttonSaveSettings_Click(sender, e);
            Thread.Sleep(1000);
            UpdateState("Began Training Process..\r\n");
            SetButtons(false);
            ManualReset.Reset();

            TrainingCallBack TR = new
TrainingCallBack(neuralNetwork.Train);
            res = TR.BeginInvoke(asyCallBack, TR);
            DTStart = DateTime.Now;
            timer1.Start();
        }

        private void TraningCompleted(IAsyncResult result)
        {
            if(result.AsyncState is TrainingCallBack)
            {
```

```
                TrainingCallBack TR = (TrainingCallBack)result.AsyncState;


                bool isSuccess = TR.EndInvoke(res);
                if (isSuccess)
                    UpdateState("Completed Training Process
Successfully\r\n");
                else
                    UpdateState("Training Process is Aborted or Exceed
Maximum Iteration\r\n");


                SetButtons(true);
                timer1.Stop();
            }
        }


        public Bitmap tresholding(float treshold)
        {
            Bitmap image = new Bitmap(drawingPanel1.ImageOnPanel);
            for (int i = 0; i < image.Height; i++)
                for (int j = 0; j < image.Width; j++)
                {
                    Color c = image.GetPixel(i, j);
                    double magnitude = 1 / 3d * (c.R + c.G + c.B);


                    if (magnitude < treshold)
                    {
                        image.SetPixel(i, j, Color.FromArgb(0, 0, 0));
                    }
                    else
                    {
                        image.SetPixel(i, j, Color.FromArgb(255, 255,
255));
```

```
                }
            }
        return image;
    }

    Wavelet_db Haar = new Wavelet_db();
    double[,] matrixImage;
    public Bitmap Wavelet(Bitmap inputImage) {
        //Bitmap image = new Bitmap(drawingPanel1.Image);
        Bitmap image; //= new Bitmap(inputImage);

        matrixImage = Haar.convertToMatrix(inputImage);
        Haar.haar2D(matrixImage, matrixImage.GetLength(0),
matrixImage.GetLength(1));

        image = Haar.convertToImage(matrixImage);

        return image;

    }

    public string namaFile;
    private void buttonRecognize_Click(object sender, EventArgs e)
    {
        string MatchedHigh = "?", MatchedLow = "?";
        double OutputValueHight = 0, OutputValueLow = 0;

        double[] input =
ImageProcessing.ToMatrix(drawingPanel1.ImageOnPanel,
            av_ImageHeight, av_ImageWidth);
```

```
            neuralNetwork.Recognize(input, ref MatchedHigh, ref
OutputValueHight,

                ref MatchedLow, ref OutputValueLow);


            namaFile = MatchedHigh;

            ShowRecognitionResults(MatchedHigh, MatchedLow,
OutputValueHight, OutputValueLow);


        }


        private void ShowRecognitionResults(string MatchedHigh, string
MatchedLow, double OutputValueHight, double OutputValueLow)

        {

            labelMatchedHigh.Text = "Hight: " + MatchedHigh + " (%" +
((int)100 * OutputValueHight).ToString("##") + ")";

            labelMatchedLow.Text = "Low: " + MatchedLow + " (%" + ((int)100
* OutputValueLow).ToString("##") + ")";


            pictureBoxInput.Image = new Bitmap(drawingPanel1.ImageOnPanel,

                pictureBoxInput.Width, pictureBoxInput.Height);


            if (MatchedHigh != "?")

                pictureBoxMatchedHigh.Image = new Bitmap(new
Bitmap(textBoxTrainingBrowse.Text + "\\" + MatchedHigh + ".bmp"),

                    pictureBoxMatchedHigh.Width,
pictureBoxMatchedHigh.Height);


            if (MatchedLow != "?")

                pictureBoxMatchedLow.Image = new Bitmap(new
Bitmap(textBoxTrainingBrowse.Text + "\\" + MatchedLow + ".bmp"),

                    pictureBoxMatchedLow.Width,
pictureBoxMatchedLow.Height);

        }
```

```
        private void buttonClear_Click(object sender, EventArgs e)
        {
            drawingPanel1.Clear();
        }

        private void buttonBrowse_Click(object sender, EventArgs e)
        {
            OpenFileDialog FD = new OpenFileDialog();
            FD.Filter = "Bitmap Image(*.bmp)|*.bmp";
            FD.InitialDirectory = textBoxTrainingBrowse.Text;

            if (FD.ShowDialog() == DialogResult.OK)
            {
                string FileName = FD.FileName;
                if (Path.GetExtension(FileName) == ".bmp")
                {
                    textBoxBrowse.Text = FileName;
                    drawingPanel1.ImageOnPanel = new Bitmap(
                        new Bitmap(FileName), drawingPanel1.Width,
drawingPanel1.Height);
                }
            }
            FD.Dispose();
        }

        private void buttonTrainingBrowse_Click(object sender, EventArgs e)
        {
            FolderBrowserDialog FD = new FolderBrowserDialog();
            FD.SelectedPath = textBoxTrainingBrowse.Text;
```

```
            if (FD.ShowDialog() == DialogResult.OK)
            {
                textBoxTrainingBrowse.Text = FD.SelectedPath;
            }
            FD.Dispose();
        }

        private void GenerateTrainingSet()
        {
            textBoxState.AppendText("Generating Training Set..");

            string[] Patterns =
Directory.GetFiles(textBoxTrainingBrowse.Text, "*.bmp");

            TrainingSet = new Dictionary<string,
double[]>(Patterns.Length);
            foreach (string s in Patterns)
            {
                Bitmap Temp = new Bitmap(s);
                TrainingSet.Add(Path.GetFileNameWithoutExtension(s),
                    ImageProcessing.ToMatrix(Temp, av_ImageHeight,
av_ImageWidth));
                Temp.Dispose();
            }

            textBoxState.AppendText("Done!\r\n");
        }

        private void buttonSaveSettings_Click(object sender, EventArgs e)
        {
            textBoxState.AppendText("Saving Settings..");
```

```
            string[] Images =
Directory.GetFiles(textBoxTrainingBrowse.Text, "*.bmp");
            NumOfPatterns = Images.Length;

            av_ImageHeight = 0;
            av_ImageWidth = 0;

            foreach (string s in Images)
            {
                Bitmap Temp = new Bitmap(s);
                av_ImageHeight += Temp.Height;
                av_ImageWidth += Temp.Width;
                Temp.Dispose();
            }
            av_ImageHeight /= NumOfPatterns;
            av_ImageWidth /= NumOfPatterns;

            int networkInput = av_ImageHeight * av_ImageWidth;

            //textBoxInputUnit.Text = ((int)((double)(networkInput +
NumOfPatterns) * .5)).ToString();
            //textBoxHiddenUnit.Text = ((int)((double)(networkInput +
NumOfPatterns) * .3)).ToString();
            textBoxOutputUnit.Text = NumOfPatterns.ToString();

            buttonRecognize.Enabled = false;
            buttonSave.Enabled = false;

            textBoxState.AppendText("Done!\r\n");

            GenerateTrainingSet();
```

```
            CreateNeuralNetwork();
        }

        private void InitializeSettings()
        {
            textBoxState.AppendText("Initializing Settings..");

            try
            {
                NameValueCollection AppSettings =
ConfigurationManager.AppSettings;

                comboBoxLayers.SelectedIndex =
(Int16.Parse(AppSettings["NumOfLayers"]) - 1);
                //textBoxTrainingBrowse.Text =
Path.GetFullPath(AppSettings["PatternsDirectory"]);
                textBoxTrainingBrowse.Text = LokasiGambarLatihan();
                textBoxMaxError.Text = AppSettings["MaxError"];

                string[] Images =
Directory.GetFiles(textBoxTrainingBrowse.Text, "*.bmp");
                NumOfPatterns = Images.Length;

                av_ImageHeight = 0;
                av_ImageWidth = 0;

                foreach (string s in Images)
                {
                    Bitmap Temp = new Bitmap(s);
                    av_ImageHeight += Temp.Height;
                    av_ImageWidth += Temp.Width;
                    Temp.Dispose();
```

```
                }
                av_ImageHeight /= NumOfPatterns;
                av_ImageWidth /= NumOfPatterns;

                int networkInput = av_ImageHeight * av_ImageWidth;

                textBoxInputUnit.Text = ((int)((double)(networkInput +
NumOfPatterns) * .33)).ToString();
                textBoxHiddenUnit.Text = ((int)((double)(networkInput +
NumOfPatterns) * .11)).ToString();
                textBoxOutputUnit.Text = NumOfPatterns.ToString();


            }
            catch (Exception ex)
            {
                MessageBox.Show("Error Initializing Settings: " +
ex.Message, "Error",
                    MessageBoxButtons.OK, MessageBoxIcon.Error);
            }

            textBoxState.AppendText("Done!\r\n");
        }

        private void CreateNeuralNetwork()
        {
            if (TrainingSet == null)
                throw new Exception("Unable to Create Neural Network As
There is No Data to Train..");

            if (comboBoxLayers.SelectedIndex == 0)
            {
```

```
                neuralNetwork = new NeuralNetwork<string>
                    (new BP1Layer<string>(av_ImageHeight * av_ImageWidth,
NumOfPatterns), TrainingSet);

            }
            else if (comboBoxLayers.SelectedIndex == 1)
            {
                int InputNum = Int16.Parse(textBoxInputUnit.Text);

                neuralNetwork = new NeuralNetwork<string>
                    (new BP2Layer<string>(av_ImageHeight * av_ImageWidth,
InputNum, NumOfPatterns), TrainingSet);

            }
            else if (comboBoxLayers.SelectedIndex == 2)
            {
                int InputNum = Int16.Parse(textBoxInputUnit.Text);
                int HiddenNum = Int16.Parse(textBoxHiddenUnit.Text);

                neuralNetwork = new NeuralNetwork<string>
                    (new BP3Layer<string>(av_ImageHeight * av_ImageWidth,
InputNum, HiddenNum, NumOfPatterns), TrainingSet);

            }

            neuralNetwork.IterationChanged +=
                new
NeuralNetwork<string>.IterationChangedCallBack(neuralNetwork_IterationChang
ed);

            neuralNetwork.MaximumError =
Double.Parse(textBoxMaxError.Text);
```

```
}

private void buttonStop_Click(object sender, EventArgs e)
{
    ManualReset.Set();
}

private void timer1_Tick(object sender, EventArgs e)
{
    TimeSpan TSElapsed = DateTime.Now.Subtract(DTStart);
    UpdateTimer(TSElapsed.Hours.ToString("D2") + ":" +
        TSElapsed.Minutes.ToString("D2") + ":" +
        TSElapsed.Seconds.ToString("D2"));
}

private void buttonSave_Click(object sender, EventArgs e)
{
    SaveFileDialog FD = new SaveFileDialog();
    FD.InitialDirectory = LokasiTrainSet();
    FD.Filter = "Network File(*.net)|*.net";
    if (FD.ShowDialog() == DialogResult.OK)
    {
        neuralNetwork.SaveNetwork(FD.FileName);
    }
    FD.Dispose();
}

private void buttonLoad_Click(object sender, EventArgs e)
{
    OpenFileDialog FD = new OpenFileDialog();
```

```
            FD.Filter = "Network File(*.net)|*.net";
            FD.InitialDirectory = LokasiTrainSet();
            if (FD.ShowDialog() == DialogResult.OK)
            {
                neuralNetwork.LoadNetwork(FD.FileName);
            }
            buttonRecognize.Enabled = true;
            buttonSave.Enabled = true;

            FD.Dispose();
        }

        #region Methods To Invoke UI Components If Required
        private delegate void UpdateUI(object o);
        private void SetButtons(object o)
        {
            //if invoke is required for a control, sure, it is also
required for others
            //then, it is not needed to check all controls
            if (buttonStop.InvokeRequired)
            {
                buttonStop.Invoke(new UpdateUI(SetButtons), o);
            }
            else
            {
                bool b = (bool)o;
                buttonStop.Enabled = !b;
                buttonRecognize.Enabled = b;
                buttonTrain.Enabled = b;
                buttonLoad.Enabled = b;
                buttonSave.Enabled = b;
```

```
    }
}
private void UpdateError(object o)
{
    if (labelError.InvokeRequired)
    {
        labelError.Invoke(new UpdateUI(UpdateError), o);
    }
    else
    {
        labelError.Text = "Error: " + ((double)o).ToString(".###");
    }
}
private void UpdateIteration(object o)
{
    if (labelIteration.InvokeRequired)
    {
        labelIteration.Invoke(new UpdateUI(UpdateIteration), o);
    }
    else
    {
        labelIteration.Text = "Iteration: " + ((int)o).ToString();
    }
}

private void UpdateState(object o)
{
    if (textBoxState.InvokeRequired)
    {
        textBoxState.Invoke(new UpdateUI(UpdateState), o);
```

```
        }
        else
        {
            textBoxState.AppendText((string)o);
        }
    }

    private void UpdateTimer(object o)
    {
        if (labelTimer.InvokeRequired)
        {
            labelTimer.Invoke(new UpdateUI(UpdateTimer), o);
        }
        else
        {
            labelTimer.Text = (string)o;
        }
    }

    #endregion

    #region RadioButton & CheckBox Event Handlers- Not Important
    private void radioButton_CheckedChanged(object sender, EventArgs e)
    {
        if (radioButtonBrowse.Checked)
        {
            textBoxBrowse.Enabled = true;
            buttonBrowse.Enabled = true;
            drawingPanel1.Enabled = false;
        }
```

```
            else
            {
                textBoxBrowse.Enabled = false;
                buttonBrowse.Enabled = false;
                drawingPanel1.Enabled = true;
            }
        }

        private void comboBoxLayers_SelectedIndexChanged(object sender,
EventArgs e)
        {
            if (comboBoxLayers.SelectedIndex == 0)
            {
                textBoxInputUnit.Enabled = false;
                textBoxHiddenUnit.Enabled = false;
            }
            else if (comboBoxLayers.SelectedIndex == 1)
            {
                textBoxInputUnit.Enabled = true;
                textBoxHiddenUnit.Enabled = false;
            }
            else if (comboBoxLayers.SelectedIndex == 2)
            {
                textBoxInputUnit.Enabled = true;
                textBoxHiddenUnit.Enabled = true;
            }
        }
        #endregion

        [DllImport("winmm.dll")]
```

```
        private static extern long mciSendString(string strCommand,
StringBuilder strReturn, int iReturnLength, IntPtr hwndCallback);


        public string LokasiTrainSet()
        {
            String line;
            string appPath =
Path.GetDirectoryName(Application.ExecutablePath);
            line = "";
            try
            {
                //Pass the file path and file name to the StreamReader
constructor
                StreamReader sr = new StreamReader(appPath +
@"\..\Source\Konfigurasi.txt");

                //Read the first line of text
                line = sr.ReadLine();

                //Continue to read until you reach end of file
                while (line != null)
                {
                    if (line.Substring(0, 8) == "trainset")
                    {
                        return line.Substring(9, line.Length - 9);
                    }
                    //Read the next line
                    line = sr.ReadLine();
                }

                //close the file
                sr.Close();
```

```
                return line;
            }
            catch (Exception e)
            {
                MessageBox.Show("Exception: " + e.Message);
                return line;
            }

        }
        public string LokasiAudio()
        {
            String line;
            string appPath =
Path.GetDirectoryName(Application.ExecutablePath);
            line = "";
            try
            {
                //Pass the file path and file name to the StreamReader
constructor
                StreamReader sr = new StreamReader(appPath +
@"\..\Source\Konfigurasi.txt");

                //Read the first line of text
                line = sr.ReadLine();

                //Continue to read until you reach end of file
                while (line != null)
                {
                    if (line.Substring(0, 5) == "audio")
                    {
                        return line.Substring(6, line.Length - 6);
                    }
```

```
                //Read the next line
                line = sr.ReadLine();
            }

            //close the file
            sr.Close();
            return line;
        }
        catch (Exception e)
        {
            MessageBox.Show("Exception: " + e.Message);
            return line;
        }

    }
    public string LokasiGambarLatihan()
    {
        String line;
        string appPath =
Path.GetDirectoryName(Application.ExecutablePath);
        line = "";
        try
        {
            //Pass the file path and file name to the StreamReader
constructor
            StreamReader sr = new StreamReader(appPath +
@"\..\Source\Konfigurasi.txt");

            //Read the first line of text
            line = sr.ReadLine();

            //Continue to read until you reach end of file
```

```
                while (line != null)
                {
                    if (line.Substring(0, 8) == "latihpic")
                    {
                        return line.Substring(9, line.Length - 9);
                    }
                    //Read the next line
                    line = sr.ReadLine();
                }

                //close the file
                sr.Close();
                return line;
            }
            catch (Exception e)
            {
                MessageBox.Show("Exception: " + e.Message);
                return line;
            }

        }
        public string LokasiSwf()
        {
            String line;
            string appPath =
Path.GetDirectoryName(Application.ExecutablePath);
            line = "";
            try
            {
                //Pass the file path and file name to the StreamReader
constructor
```

```
            StreamReader sr = new StreamReader(appPath +
@"\..\Source\Konfigurasi.txt");

            //Read the first line of text
            line = sr.ReadLine();

            //Continue to read until you reach end of file
            while (line != null)
            {
                if (line.Substring(0, 3) == "swf")
                {
                    return line.Substring(4, line.Length - 4);
                }
                //Read the next line
                line = sr.ReadLine();
            }

            //close the file
            sr.Close();
            return line;
        }
        catch (Exception e)
        {
            MessageBox.Show("Exception: " + e.Message);
            return line;
        }

    }

    private void buttonProcess_Click(object sender, EventArgs e)
    {
```

```
            ////sp.SoundLocation = @"C:\Project\Hanacaraka\Audio\HA.mp3";
            try
            {
                mciSendString("open \"" + LokasiAudio() + "\\" + namaFile +
".mp3" + "\" type mpegvideo alias MediaFile", null, 0, IntPtr.Zero);
                mciSendString("play MediaFile", null, 0, IntPtr.Zero);
                Thread.Sleep(1000);
                mciSendString("close MediaFile", null, 0, IntPtr.Zero);
                //Process.Start(@"C:\Documents and
Settings\VMUser_Admin\Desktop\bahan\huruf\flash\" + namaFile + ".swf");
                ////axShockwaveFlash1.Movie = @"C:\Documents and
Settings\VMUser_Admin\Desktop\bahan\huruf\flash\" + namaFile + ".swf";
                ////axShockwaveFlash1.Play();
                //webBrowser1.Navigate(LokasiSwf() + "\\" + namaFile +
".swf");
            }
            catch (Exception ex)
            {
                MessageBox.Show(ex.Message);
            }
        }

        private void NeuralDemo_FormClosing(object sender,
FormClosingEventArgs e)
        {
            this.RefToForm1.Show();
        }

        FormState formState = new FormState();
        private void NeuralDemo_Load(object sender, EventArgs e)
        {
            formState.Maximize(this);
```

```
            // Create the ToolTip and associate with the Form container.
            ToolTip toolTip1 = new ToolTip();

            // Set up the delays for the ToolTip.
            toolTip1.AutoPopDelay = 5000;
            toolTip1.InitialDelay = 1000;
            toolTip1.ReshowDelay = 500;
            // Force the ToolTip text to be displayed whether or not the
form is active.
            toolTip1.ShowAlways = true;

            try {
                    neuralNetwork.LoadNetwork(LokasiTrainSet() +
"\\Layer1_Error1.5.net");
                    buttonRecognize.Enabled = true;
                    buttonSave.Enabled = true;
            }
            catch { }

            // Set up the ToolTip text for the Button and Checkbox.
            //int i;
            //for (i=1; i<=20; i++) {
            //    string namaPic;
            //    namaPic = "pictureBox" + Convert.ToString(i);
            //    PictureBox p = panel2.Controls[namaPic] as PictureBox;
            //    toolTip1.SetToolTip(p, p.Image.ToString());
            //}
         }

        private void button1_Click(object sender, EventArgs e)
        {
```

```
            FrmAnimasi f = new FrmAnimasi();
            f.RefToForm1 = this;
            f.label1.Text = namaFile;
            f.webBrowser1.Navigate(LokasiSwf() + "\\" + namaFile + ".swf");
            this.Hide();
            f.Show();
            //Process.Start(LokasiSwf() + "\\" + namaFile + ".swf");

        }

        private void btnProses_Click(object sender, EventArgs e)
        {
            drawingPanel1.ImageOnPanel =
Wavelet(drawingPanel1.ImageOnPanel);
        }

        private void button5_Click(object sender, EventArgs e)
        {
            Close();
        }
    }
```