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1. Form1.cs

File ini berisi logika utama dari aplikasi berbasis Windows Form yang memungkinkan pengguna memeriksa apakah sebuah angka bernilai positif, negatif, atau nol. Saat tombol "CEK SEKARANG" ditekan, aplikasi mengambil input dari textBoxInput, memanggil metode statis Helper.CariTandaBilangan(), lalu menampilkan hasilnya pada labelOutput. Metode ini juga menangani validasi input agar hanya menerima angka.

```
using System;
using System.Windows.Forms;
using tpmodul12_2311104041;
using tpmodul12_2311104073;

namespace tpmodul12_2311104073
{
    public partial class Form1 : Form
    {
        public Form1()
        {
            InitializeComponent();
        }
        private void Form1_Load(object sender, EventArgs e)
        {
            labelOutput.Text = "Hasil Output";
        }

        public string CariTandaBilangan(int a)
        {
            if (a < 0) return "Negatif";
            else if (a > 0) return "Positif";
            else return "Nol";
        }

        private void buttonCek_Click(object sender, EventArgs e)
        {
            if (int.TryParse(textBoxInput.Text, out int input))
            {
                string hasil = Helper.CariTandaBilangan(input);
                labelOutput.Text = $"Hasil Output : {hasil}";
            }
            else
            {
                labelOutput.Text = "Hasil Output: Input tidak valid!";
            }
        }

        private void labelOutput_Click(object sender, EventArgs e)
        {
        }

        private void pictureBoxSign_Click(object sender, EventArgs e)
        {
        }
    }
}
```

```

    }

    private void panelHeader_Paint(object sender, PaintEventArgs e)
    {

    }
}

```

## 2. Form1.Designer.cs

File ini berisi kode desain antarmuka pengguna (UI) dari form aplikasi, yang dihasilkan secara otomatis oleh Visual Studio. Elemen-elemen UI yang ditentukan meliputi teks input (`textBoxInput`), tombol (`buttonCek`), label instruksi dan output, serta panel header yang menampilkan judul aplikasi. Properti visual seperti warna, ukuran font, dan tata letak juga diatur di sini.

```

namespace tpmodul12_2311104073
{
    partial class Form1
    {
        private System.ComponentModel.IContainer components = null;
        private System.Windows.Forms.TextBox textBoxInput;
        private System.Windows.Forms.Button buttonCek;
        private System.Windows.Forms.Label labelTitle;
        private System.Windows.Forms.Label labelInstruction;
        private System.Windows.Forms.Panel panelHeader;

        protected override void Dispose(bool disposing)
        {
            if (disposing && (components != null))
            {
                components.Dispose();
            }
            base.Dispose(disposing);
        }

        private void InitializeComponent()
        {
            this.textBoxInput = new System.Windows.Forms.TextBox();
            this.buttonCek = new System.Windows.Forms.Button();
            this.labelTitle = new System.Windows.Forms.Label();
            this.labelInstruction = new System.Windows.Forms.Label();
            this.panelHeader = new System.Windows.Forms.Panel();
            this.labelOutput = new System.Windows.Forms.Label();
            this.panelHeader.SuspendLayout();
            this.SuspendLayout();
            //
            // textBoxInput
            //
            this.textBoxInput.BorderStyle =
System.Windows.Forms.BorderStyle.FixedSingle;
            this.textBoxInput.Font = new System.Drawing.Font("Segoe UI",
12F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
            this.textBoxInput.Location = new System.Drawing.Point(45,
162);
            this.textBoxInput.Margin = new
System.Windows.Forms.Padding(4, 5, 4, 5);

```

```

        this.textBoxInput.Name = "textBoxInput";
        this.textBoxInput.Size = new System.Drawing.Size(509, 39);
        this.textBoxInput.TabIndex = 2;
        //
        // buttonCek
        //
        this.buttonCek.BackColor =
System.Drawing.Color.FromArgb(((int)(((byte)(41))))),
((int)(((byte)(128))))), ((int)(((byte)(185)))));
        this.buttonCek.FlatAppearance.BorderSize = 0;
        this.buttonCek.FlatStyle =
System.Windows.Forms.FlatStyle.Flat;
        this.buttonCek.Font = new System.Drawing.Font("Segoe UI",
9.75F, System.Drawing.FontStyle.Bold, System.Drawing.GraphicsUnit.Point,
((byte)(0)));
        this.buttonCek.ForeColor = System.Drawing.Color.White;
        this.buttonCek.Location = new System.Drawing.Point(45, 231);
        this.buttonCek.Margin = new System.Windows.Forms.Padding(4,
5, 4, 5);
        this.buttonCek.Name = "buttonCek";
        this.buttonCek.Size = new System.Drawing.Size(510, 62);
        this.buttonCek.TabIndex = 3;
        this.buttonCek.Text = "CEK SEKARANG";
        this.buttonCek.UseVisualStyleBackColor = false;
        this.buttonCek.Click += new
System.EventHandler(this.buttonCek_Click);
        //
        // labelTitle
        //
        this.labelTitle.AutoSize = true;
        this.labelTitle.Font = new System.Drawing.Font("Segoe UI",
15.75F, System.Drawing.FontStyle.Bold,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
        this.labelTitle.ForeColor = System.Drawing.Color.White;
        this.labelTitle.Location = new System.Drawing.Point(18, 23);
        this.labelTitle.Margin = new System.Windows.Forms.Padding(4,
0, 4, 0);
        this.labelTitle.Name = "labelTitle";
        this.labelTitle.Size = new System.Drawing.Size(313, 45);
        this.labelTitle.TabIndex = 0;
        this.labelTitle.Text = "Cek Tanda Bilangan";
        //
        // labelInstruction
        //
        this.labelInstruction.AutoSize = true;
        this.labelInstruction.Font = new System.Drawing.Font("Segoe
UI", 9.75F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
        this.labelInstruction.ForeColor =
System.Drawing.Color.FromArgb(((int)(((byte)(64))))),
((int)(((byte)(64))))), ((int)(((byte)(64)))));
        this.labelInstruction.Location = new
System.Drawing.Point(45, 123);
        this.labelInstruction.Margin = new
System.Windows.Forms.Padding(4, 0, 4, 0);
        this.labelInstruction.Name = "labelInstruction";
        this.labelInstruction.Size = new System.Drawing.Size(343,
28);
        this.labelInstruction.TabIndex = 1;
        this.labelInstruction.Text = "Masukkan angka yang ingin
diperiksa:";
        //
        // panelHeader

```

```

        //
        this.panelHeader.BackColor =
System.Drawing.Color.FromArgb(((int)(((byte)(41))))),
((int)(((byte)(128))))), ((int)(((byte)(185)))));
        this.panelHeader.Controls.Add(this.labelTitle);
        this.panelHeader.Dock = System.Windows.Forms.DockStyle.Top;
        this.panelHeader.Location = new System.Drawing.Point(0, 0);
        this.panelHeader.Margin = new
System.Windows.Forms.Padding(4, 5, 4, 5);
        this.panelHeader.Name = "panelHeader";
        this.panelHeader.Size = new System.Drawing.Size(600, 92);
        this.panelHeader.TabIndex = 0;
        this.panelHeader.Paint += new
System.Windows.Forms.PaintEventHandler(this.panelHeader_Paint);
        //
        // labelOutput
        //
        this.labelOutput.AutoSize = true;
        this.labelOutput.Font = new System.Drawing.Font("Segoe UI",
11.25F, System.Drawing.FontStyle.Regular,
System.Drawing.GraphicsUnit.Point, ((byte)(0)));
        this.labelOutput.Location = new System.Drawing.Point(44,
314);
        this.labelOutput.Margin = new
System.Windows.Forms.Padding(4, 0, 4, 0);
        this.labelOutput.Name = "labelOutput";
        this.labelOutput.Size = new System.Drawing.Size(149, 31);
        this.labelOutput.TabIndex = 0;
        this.labelOutput.Text = "Hasil Output ";
        this.labelOutput.Click += new
System.EventHandler(this.labelOutput_Click);
        //
        // Form1
        //
        this.AutoScaleMode = new System.Drawing.SizeF(9F,
20F);
        this.AutoScaleMode =
System.Windows.Forms.AutoScaleMode.Font;
        this.BackColor = System.Drawing.Color.White;
        this.ClientSize = new System.Drawing.Size(600, 492);
        this.Controls.Add(this.labelOutput);
        this.Controls.Add(this.buttonCek);
        this.Controls.Add(this.textBoxInput);
        this.Controls.Add(this.labelInstruction);
        this.Controls.Add(this.panelHeader);
        this.FormBorderStyle =
System.Windows.Forms.FormBorderStyle.FixedSingle;
        this.Margin = new System.Windows.Forms.Padding(4, 5, 4, 5);
        this.MaximizeBox = false;
        this.Name = "Form1";
        this.StartPosition =
System.Windows.Forms.FormStartPosition.CenterScreen;
        this.Text = "Aplikasi Cek Tanda Bilangan";
        this.Load += new System.EventHandler(this.Form1_Load);
        this.panelHeader.ResumeLayout(false);
        this.panelHeader.PerformLayout();
        this.ResumeLayout(false);
        this.PerformLayout();

    }

    private System.Windows.Forms.Label labelOutput;
}

```

```
}
```

### 3. Helper.cs

File ini mendefinisikan kelas statis Helper yang berisi metode CariTandaBilangan(int a), yang mengembalikan string sesuai dengan nilai integer yang dimasukkan—"Bilangan Positif", "Bilangan Negatif", atau "Bilangan Nol". Kelas ini memisahkan logika inti dari antarmuka pengguna, sehingga mendukung prinsip pemisahan tanggung jawab dan memungkinkan pengujian unit.

```
namespace tpmodul12_2311104041
{
    public class Helper
    {
        public static string CariTandaBilangan(int a)
        {
            if (a < 0) return "Bilangan Negatif";
            else if (a > 0) return "Bilangan Positif";
            else return "Bilangan Nol";
        }
    }
}
```

### 4. UnitTest1.cs

File ini berisi unit test menggunakan framework MSTest untuk menguji metode Helper.CariTandaBilangan(). Terdapat tiga metode pengujian: TestNegatif, TestPositif, dan TestNol, masing-masing memastikan bahwa output dari fungsi sesuai dengan ekspektasi ketika diberikan input negatif, positif, atau nol.

```
using Microsoft.VisualStudio.TestTools.UnitTesting;
using System.Runtime.Remoting.Messaging;
using tpmodul12_2311104041;
using tpmodul12_2311104041Tests;
using tpmodul12_2311104073;

namespace tpmodul12_2311104041Tests
{
    [TestClass]
    public class UnitTest1
    {
        [TestMethod]
        public void TestNegatif()
        {
            string result = Helper.CariTandaBilangan(-10);
            Assert.AreEqual("Bilangan Negatif", result);
        }

        [TestMethod]
        public void TestPositif()
        {
            string result = Helper.CariTandaBilangan(10);
            Assert.AreEqual("Bilangan Positif", result);
        }

        [TestMethod]
        public void TestNol()
        {
            string result = Helper.CariTandaBilangan(0);
            Assert.AreEqual("Bilangan Nol", result);
        }
    }
}
```

```
    }  
  }  
}
```

#### 5. Program.cs

File ini merupakan titik masuk (entry point) aplikasi. Metode Main() memanggil Application.Run(new Form1()) untuk menjalankan Form1 sebagai tampilan utama dari aplikasi Windows Form. Konfigurasi visual dan pengaturan rendering teks juga diinisialisasi di sini sebelum form dijalankan.

```
using System;  
using System.Windows.Forms;  
using tpmodul12_2311104073;  
  
namespace tpmodul12_2311104073  
{  
    static class Program  
    {  
        [STAThread]  
        static void Main()  
        {  
            Application.EnableVisualStyles();  
            Application.SetCompatibleTextRenderingDefault(false);  
            Application.Run(new Form1());  
        }  
    }  
}
```

Hasil Output dan unit test

## Cek Tanda Bilangan

Masukkan angka yang ingin diperiksa:

**CEK SEKARANG**

Hasil Output : Bilangan Positif

## Cek Tanda Bilangan

Masukkan angka yang ingin diperiksa:

**CEK SEKARANG**

Hasil Output : Bilangan Negatif





Masukkan angka yang ingin diperiksa:

**CEK SEKARANG**

Hasil Output : Bilangan Nol

