

TUGAS PENDAHULUAN
KONSTRUKSI PERANGKAT LUNAK
PERFORMANCE ANALYSIS, UNIT TESTING, DAN DEBUGGING

Modul 12



Dibuat Oleh :

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SE0601

PROGRAM STUDI S1 SOFTWARE ENGINEERING

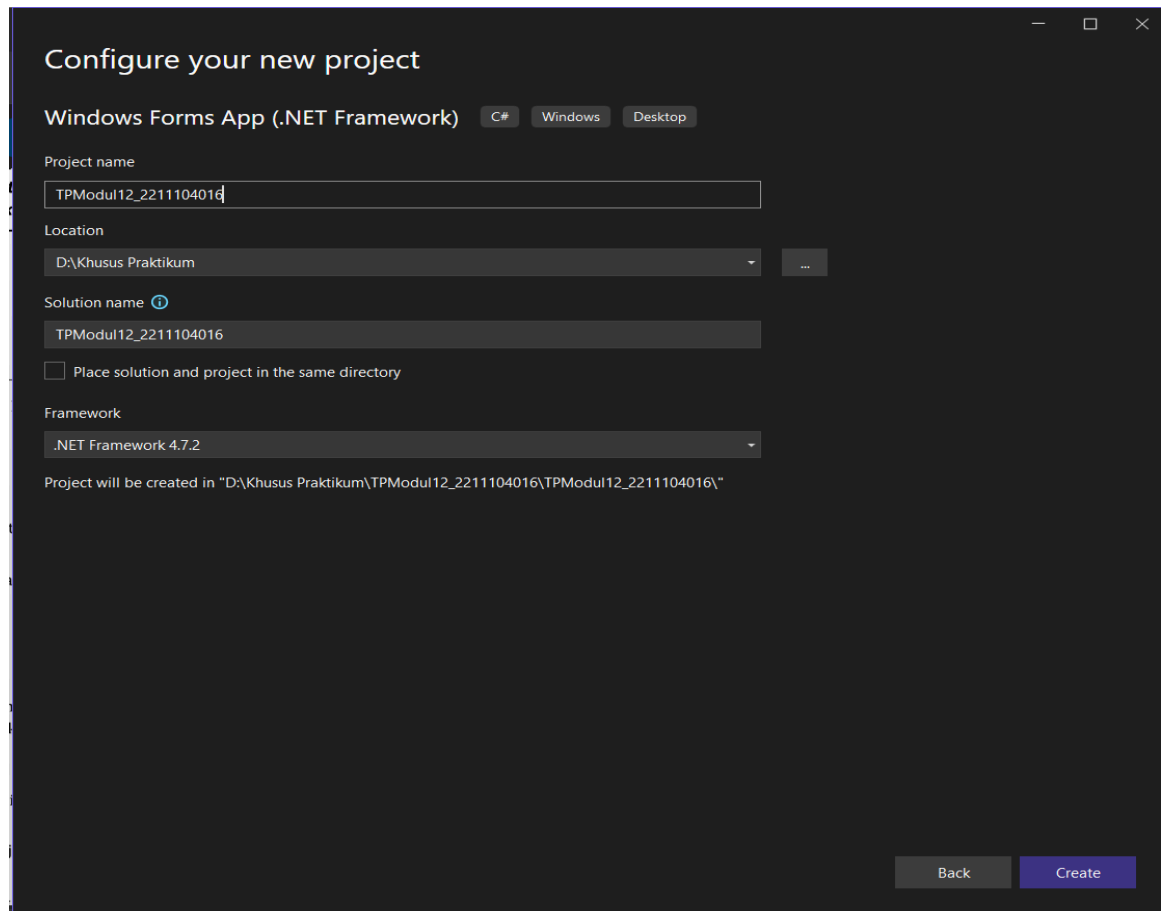
FAKULTAS INFORMATIKA

TELKOM UNIVERSITY PURWOKERTO

2025

1. MEMBUAT PROJECT GUI BARU

- Membuat Project baru



Configure your new project

Windows Forms App (.NET Framework) C# Windows Desktop

Project name
TPModul12_2211104016

Location
D:\Khusus Praktikum

Solution name ⓘ
TPModul12_2211104016

☐ Place solution and project in the same directory

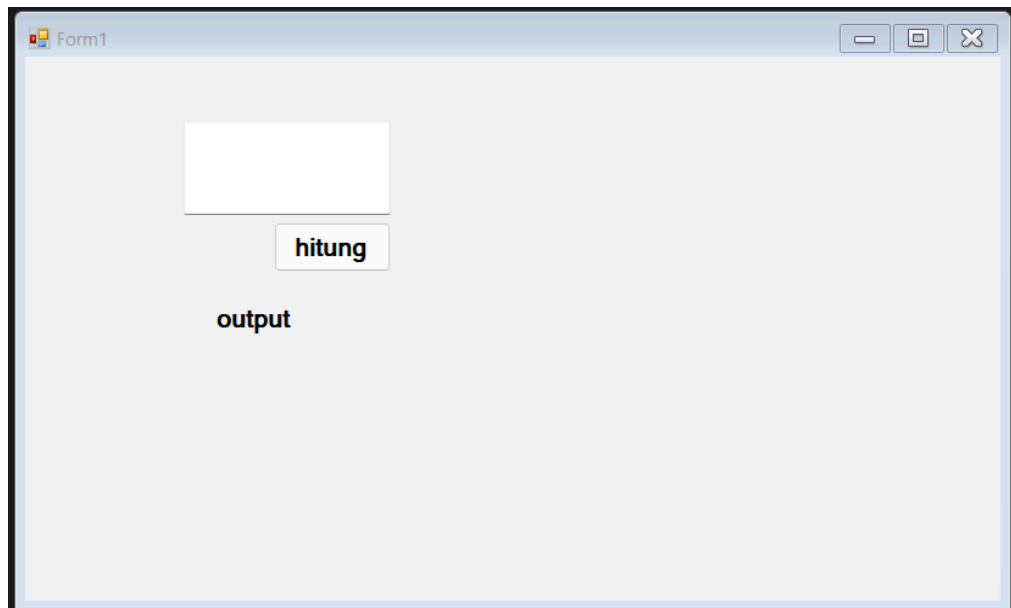
Framework
.NET Framework 4.7.2

Project will be created in "D:\Khusus Praktikum\TPModul12_2211104016\TPModul12_2211104016\."

Back Create

2. MEMBUAT GUI SEDERHANA

- Membuat tampilan GUI sederhana



- Membuat Code Method cariTandaBilangan(int a)

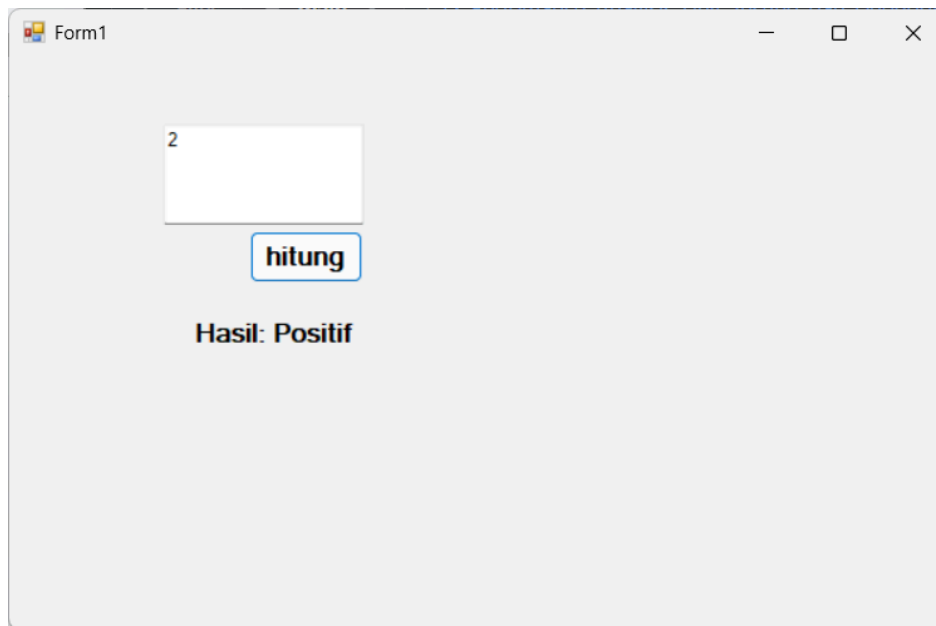
```
1 reference
private string CariTandaBilangan(int a)
{
    if (a < 0)
        return "Negatif";
    else if (a > 0)
        return "Positif";
    else
        return "Nol";
}
```

- Membuat Code untuk mengfungsikan button

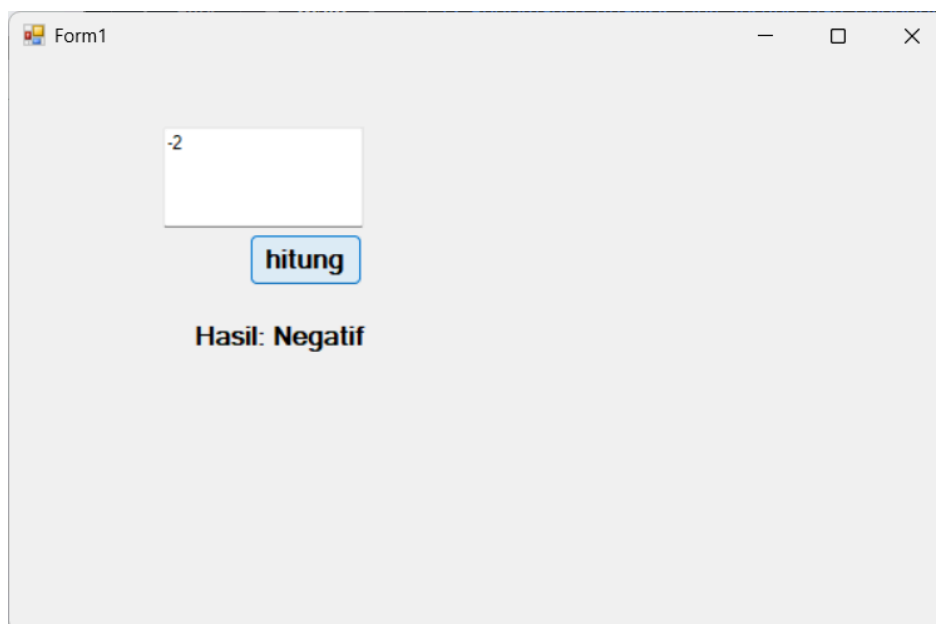
```
1 reference
private void button1_Click(object sender, EventArgs e)
{
    if (string.IsNullOrWhiteSpace(textBox1.Text))
    {
        label1.Text = "Masukkan angka terlebih dahulu";
        return;
    }

    try
    {
        int input = int.Parse(textBox1.Text);
        string hasil = CariTandaBilangan(input);
        label1.Text = $"Hasil: {hasil}";
    }
    catch (FormatException)
    {
        label1.Text = "Input tidak valid (harus angka)";
    }
    catch (Exception ex)
    {
        label1.Text = $"Terjadi error: {ex.Message}";
    }
}
```

- Hasil Output Running



A screenshot of a Windows application window titled "Form1". Inside the window, there is a text input field containing the number "2". Below the input field is a button labeled "hitung". Below the button, the text "Hasil: Positif" is displayed.



A screenshot of a Windows application window titled "Form1". Inside the window, there is a text input field containing the number "-2". Below the input field is a button labeled "hitung". Below the button, the text "Hasil: Negatif" is displayed.

3. MELAKUKAN SOFTWARE PROFILING

- Pada saat program berjalan, catat dan amati CPU usage dari aplikasi yang sedang berjalan tanpa melakukan input apapun.

Name	Status	22% CPU	86% Memory	1% Disk	0% Network
Apps (6)					
> Google Chrome (21)		1,7%	1.364,3 MB	0,2 MB/s	0 Mbps
Microsoft Visual Studio 2022		2,7%	148,6 MB	0,1 MB/s	0 Mbps
TPModul12_2211104016 (...)					
> Task Manager		4,0%	53,7 MB	0,1 MB/s	0 Mbps
TPModul12_2211104016 (32 b...		0%	2,9 MB	0 MB/s	0 Mbps
Form1					

- Pada saat program berjalan, catat dan amati memory usage dari aplikasi yang sedang berjalan tanpa melakukan input apapun.

The screenshot shows the Visual Studio IDE with a C# project named 'Form1.cs' open. The code in the editor includes a button click event handler that updates a label with the input value and calculates a result. Overlaid on the IDE is the Windows Task Manager window, which displays the 'Processes' tab. The Task Manager shows the following data for the running applications:

Name	Status	CPU	Memory	Disk	Network
Google Chrome (18)		0,7%	1.319,1 MB	0,1 MB/s	
Microsoft Visual Studio 2022		2,0%	191,1 MB	0,1 MB/s	
TPModul12_2211104016 (...)					
Task Manager		2,7%	53,0 MB	0 MB/s	0 Mb/s
TPModul12_2211104016 (32 b...)		0,1%	3,8 MB	0 MB/s	0 Mb/s
Form1					

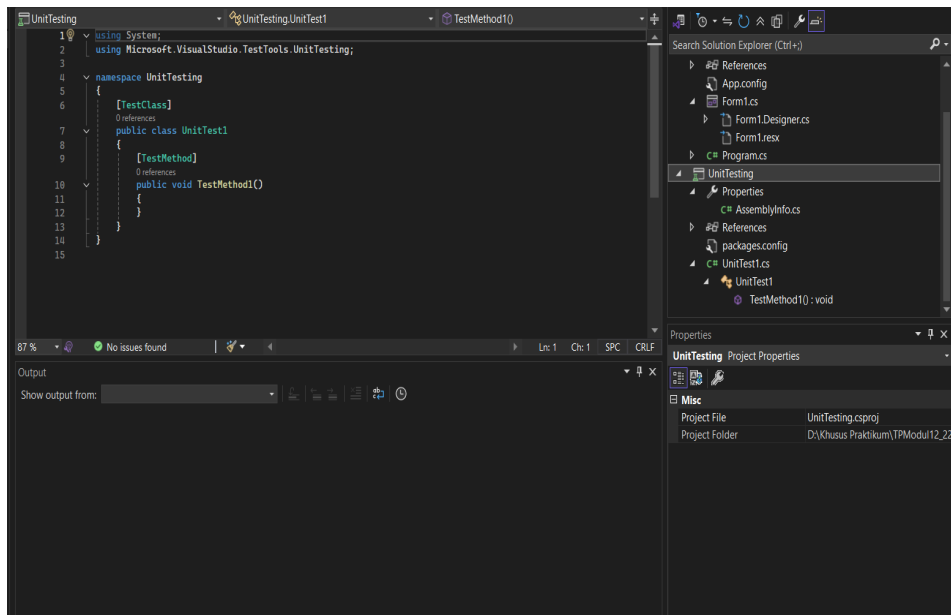
The 'Form1' application window is also visible, showing a text input field with the value '578', a 'hitung' button, and a label displaying 'Hasil: Positif'.

- Laporkan apakah terdapat perubahan pada CPU usage dan memory (apabila tidak ada perubahan juga perlu dilaporkan di file docx).

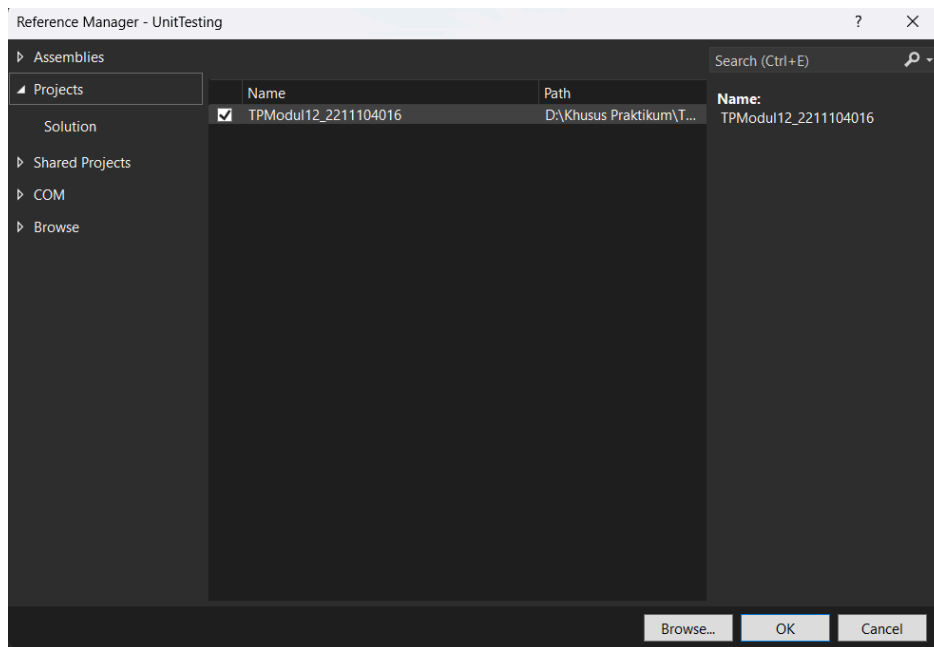
Tidak terdapat perubahan drastis pada penggunaan CPU dan pada penggunaan Memory, terpantau cenderung menurun

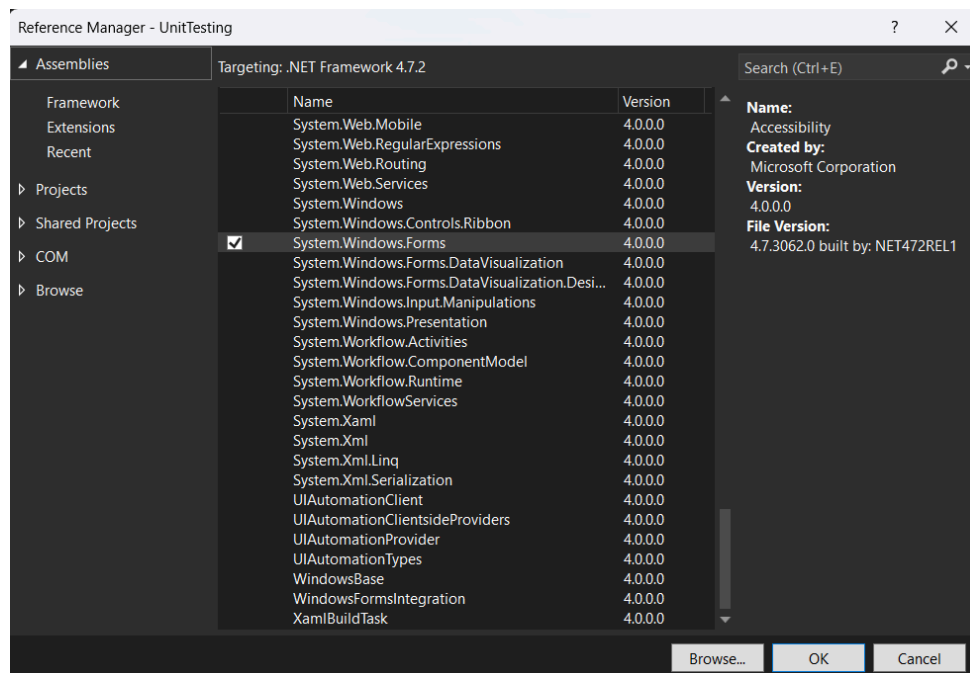
4. MENAMBAHKAN UNIT TESTING\

- Membuat Project untuk Unit testing



- Menambahkan reference ke project utama





- Merubah Method yang dari private ke public agar unit test bisa diakses

```

4 references | 3/3 passing
public string CariTandaBilangan(int a)
{
    if (a < 0)
        return "Negatif";
    else if (a > 0)
        return "Positif";
    else
        return "No!";
}

```

- Membuat Code Unit Testing Untuk Method Cari Tanda Bilangan

```

UnitTesting
using Microsoft.VisualStudio.TestTools.UnitTesting;
using TPMModul12_2211104016;
namespace UnitTesting
{
    [TestClass]
    public class UnitTest1
    {
        [TestMethod]
        public void Test_CariTandaBilangan_Negatif()
        {
            var form = new Form1();
            var result = form.CariTandaBilangan(-5);
            Assert.AreEqual("Negatif", result);
        }

        [TestMethod]
        public void Test_CariTandaBilangan_Positif()
        {
            var form = new Form1();
            var result = form.CariTandaBilangan(10);
            Assert.AreEqual("Positif", result);
        }

        [TestMethod]
        public void Test_CariTandaBilangan_No()
        {
            var form = new Form1();
            var result = form.CariTandaBilangan(0);
            Assert.AreEqual("No!", result);
        }
    }
}

```

- Menjalankan Code testing

