Jurnal Modul 12
Konstruksi Perangkat Lunak
PRODI REKAYASA PERANGKAT LUNAK

Nama :

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S1SE-07-02
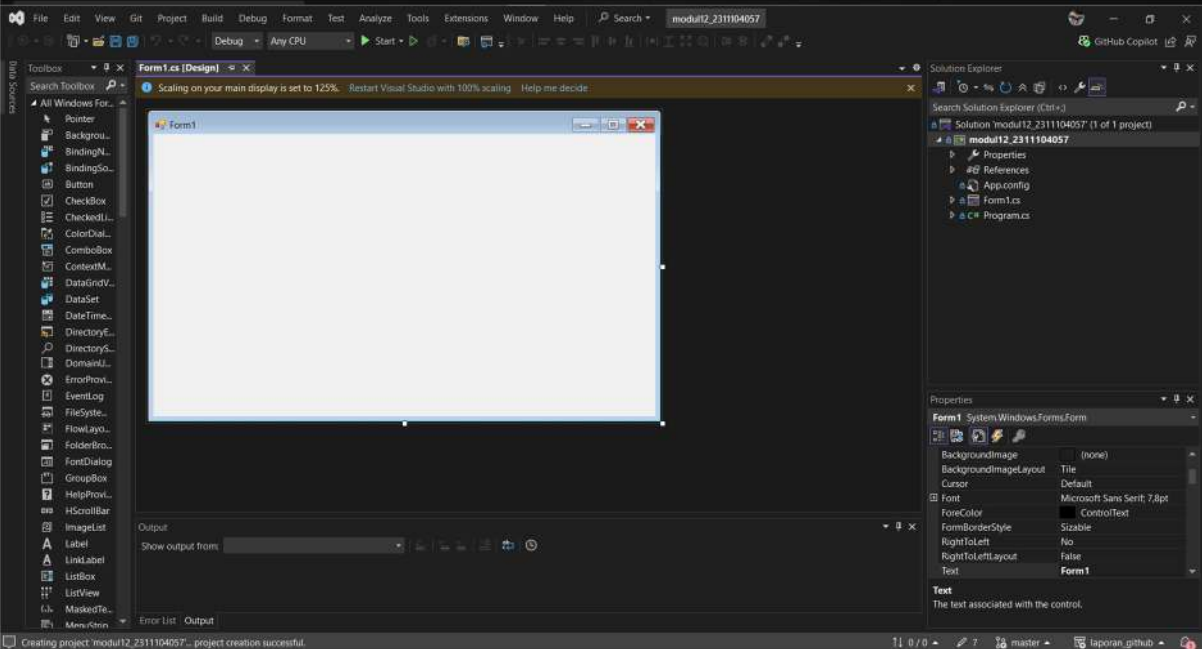
DIREKTORAT TELKOM UNIVERSITY
PURWOKERTO

Jurnal Modul 12

1. Initialize project dan push

2. Membuat GUI
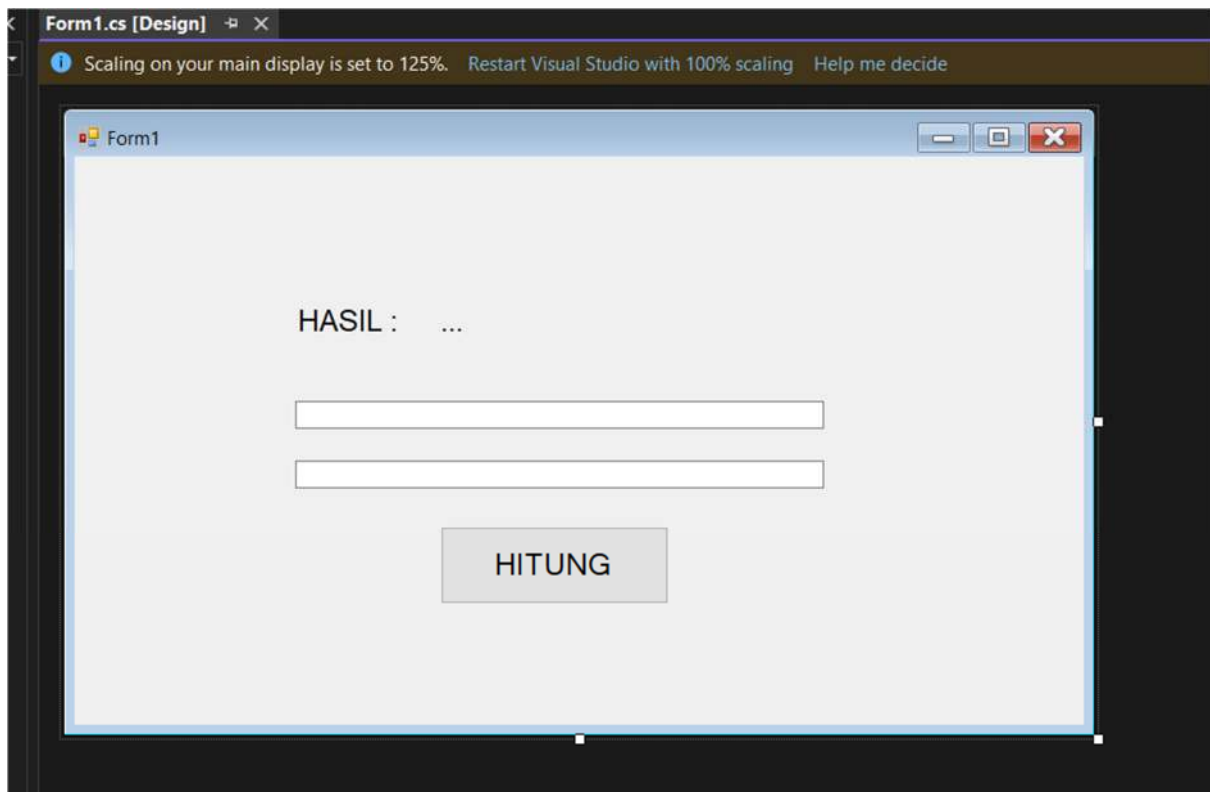
3. Membuat function untuk mencari nilai pangkat

```csharp
namespace modul12_2311104057
{
    1 reference
    public class Utilities
    {
        0 references
        public static int CariNilaiPangkat(int a, int b)
        {
            if (b == 0)
                return 1;
            if (b < 0)
                return -1;
            if (b > 10 || a > 100)
                return -2;

            try
            {
                checked
                {
                    int hasil = 1;
                    for (int i = 1; i <= b; i++)
                    {
                        hasil *= a;
                    }
                    return hasil;
                }
            }
            catch (OverflowException)
            {
                return -3;
            }
        }
    }
}
```

Dibuat di class berbeda untuk mempermudah unittest dan meningkatkan modularity

4. Implementasi untuk button click


```
10
11      namespace modul12_2311104057
12      {
            3 references
13          public partial class Form1: Form
14          {
                1 reference
15              public Form1()
16              {
17                  InitializeComponent();
18              }
19
                1 reference
20              private void buttonHitung_Click(object sender, EventArgs e)
21              {
22                  try
23                  {
24                      int a = int.Parse(textBoxA.Text);
25                      int b = int.Parse(textBoxB.Text);
26                      int hasil = Utilities.CariNilaiPangkat(a, b);
27                      labelOutput.Text = $"Hasil: {hasil}";
28                  }
29                  catch (Exception ex)
30                  {
31                      labelOutput.Text = "Input tidak valid";
32                  }
33
34              }
35          }
36      }
37
```

5. Memory Profiling

	ID	Time	Objects (Diff)	Heap Size (Diff)	Label
	1	11.36s	2.398 (n/a)	191,52 KB (n/a)	
	2	46.22s	2.425 (+27 ⬆)	192,23 KB (+0,70 KB ⬆)	
	3	55.23s	2.432 (+7 ⬆)	192,54 KB (+0,31 KB ⬆)	
	4	67.82s	2.432 (+0)	192,54 KB (+0,00 KB)	
	5	87.75s	2.432 (+0)	192,54 KB (+0,00 KB)	
	6	99.67s	2.539 (+107 ⬆)	201,56 KB (+9,02 KB ⬆)	

6. CPU Profiling

CPU startup app

Time: 604,08ms
Value: 14 % of all processors
Profiling Enabled

CPU typing

Time: 10,595s
Value: 2 % of all processors
Profiling Enabled

CPU 3 pangkat 19

Time: 43,703s
Value: 4 % of all processors
Profiling Enabled

CPU 9 pangkat 30

Time: 58,456s
Value: 8 % of all processors
Profiling Enabled

CPU format exception

Time: 1:35,979min
Value: 2 % of all processors
Profiling Enabled
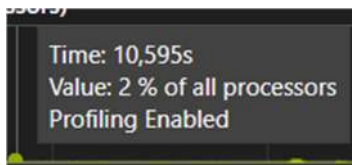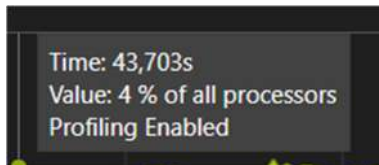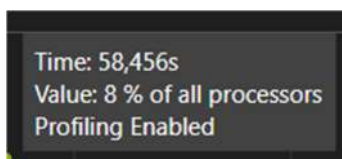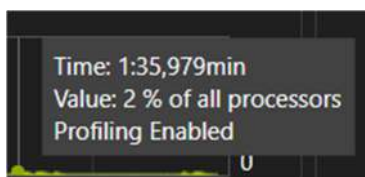
7. Membuat unit test

9. Menambahkan unittest

Add New Item - modul12_2311104057_Test

▲ Installed

Sort by: Default

Search (Ctrl+E)

▲ C# Items
  Code
  Data
  General
  ▷ Web
  SQL Server
  Test
▷ Online

	TypeScript JSON Configuration File	C# Items
	TypeScript JSX File	C# Items
	Windows Script Host	C# Items
	Windows Service	C# Items
	XML File	C# Items
	XML Schema	C# Items
	XSLT File	C# Items
	Markdown file	C# Items
	MSBuild Directory.Build.props file	C# Items
	MSBuild Directory.Build.targets file	C# Items
	MSBuild Directory.Packages.props file	C# Items
	MSTest Test Class	C# Items
	NUnit 3 Test Item (Aleksei Kharlov aka halex2005 (code... C# Items

Type: C# Items

Creates a new MSTest test class

Name: MathHelperTest.cs

Show Compact View   Add   Cancel

```
 9          [TestMethod]
            0 references
10          public void Test_B_Pangkat0_Return1()
11          {
12              Assert.AreEqual(1, Utilities.CariNilaiPangkat(0, 0));
13              Assert.AreEqual(1, Utilities.CariNilaiPangkat(5, 0));
14          }
15
16          [TestMethod]
            0 references
17          public void Test_B_Negatif_ReturnMinus1()
18          {
19              Assert.AreEqual(-1, Utilities.CariNilaiPangkat(2, -3));
20          }
21
22          [TestMethod]
            0 references
23          public void Test_B_LebihDari10_Atau_A_LebihDari100_ReturnMinus2()
24          {
25              Assert.AreEqual(-2, Utilities.CariNilaiPangkat(2, 11));
26              Assert.AreEqual(-2, Utilities.CariNilaiPangkat(101, 2));
27          }
28
29          [TestMethod]
            0 references
30          public void Test_Overflow_ReturnMinus3()
31          {
32              Assert.AreEqual(-3, Utilities.CariNilaiPangkat(100000, 5));
33          }
34
35          [TestMethod]
            0 references
36          public void Test_NormalCase_ReturnPangkat()
37          {
38              Assert.AreEqual(8, Utilities.CariNilaiPangkat(2, 3));
39              Assert.AreEqual(81, Utilities.CariNilaiPangkat(3, 4));
40          }
41      }
42  }
```
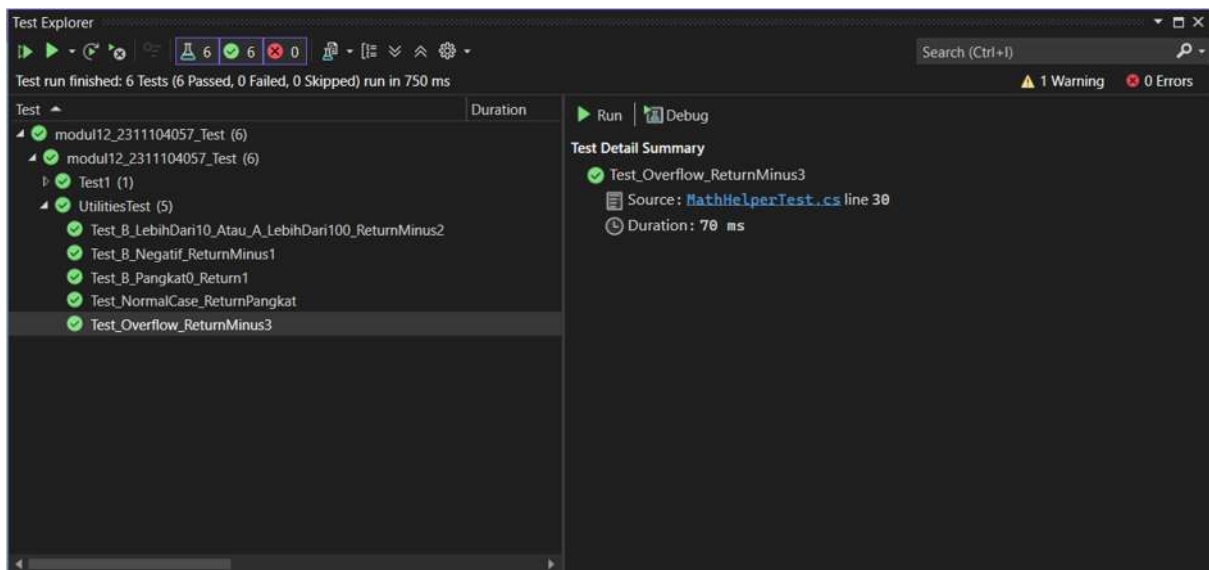
10. Hasil Unittest

PUSH