

**PRAKTIKUM KONSTRUKSI PERANGKAT LUNAK**  
**TUGAS JURNAL 05**

**Generics**



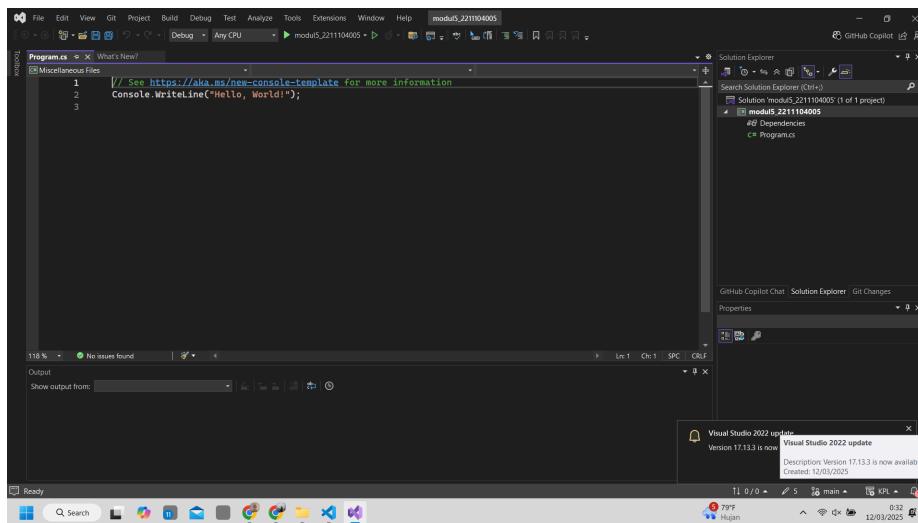
**Telkom  
University**

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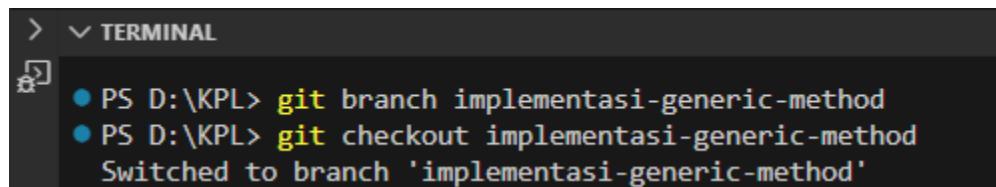
SE0601

**S1 REKAYASA PERANGKAT LUNAK**  
**FAKULTAS INFORMATIKA**  
**TELKOM UNIVERSITY**  
**2025**

## 1. Membuat Project Console/Tanpa Gui



## 2. Membuat Branch Baru Pada Git Project



## 3. Menambahkan Method Dengan Generic

```
Program.cs  What's New?
modul5_2211104005  Program
1 reference
1
2 public class Penjumlahan
{
3     1 reference
4         public static T JumlahTigaAngka<T>(T a, T b, T c) where T : struct
5             {
6                 dynamic x = a;
7                 dynamic y = b;
8                 dynamic z = c;
9                 return x + y + z;
10            }
11
12     0 references
13     class Program
14     {
15         0 references
16         static void Main()
17         {
18             double hasil = Penjumlahan.JumlahTigaAngka(22.0, 11.0, 10.0);
19             Console.WriteLine($"Hasil penjumlahan: {hasil}");
19 ↴ }
```

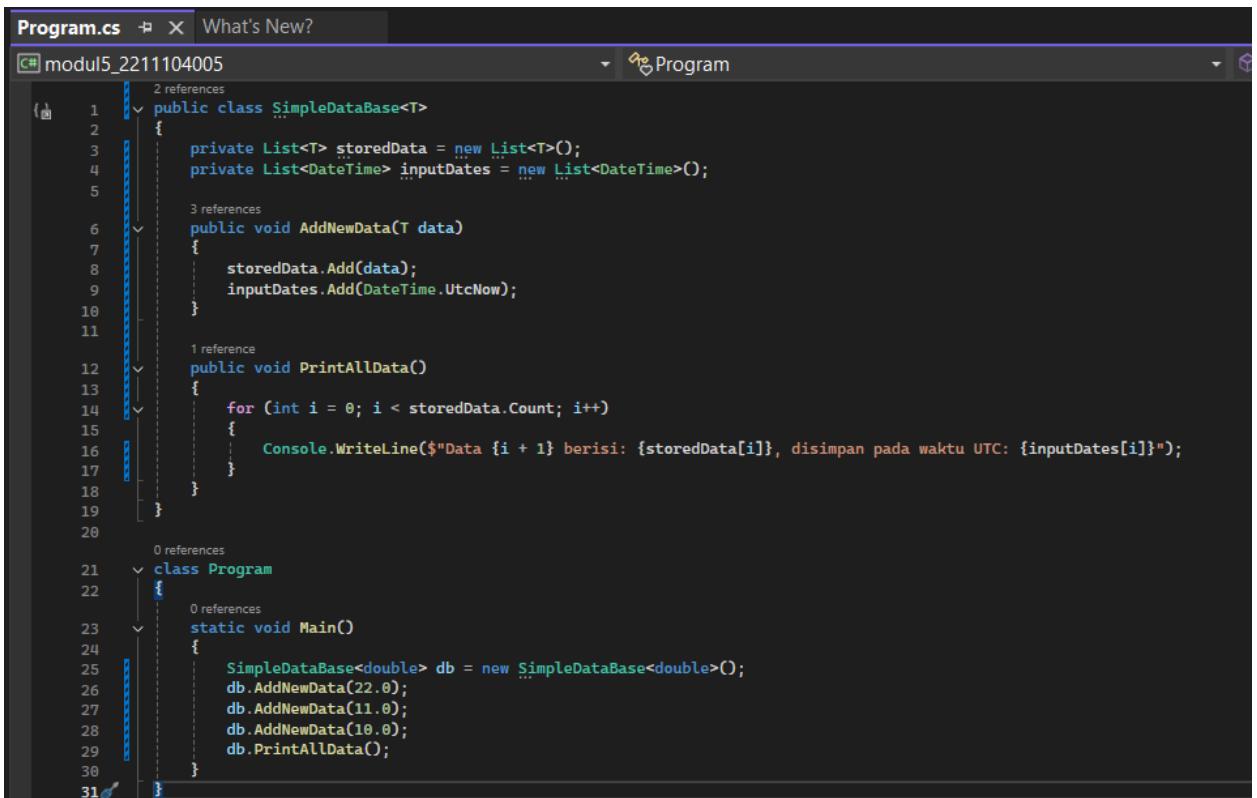
The code editor shows a class 'Penjumlahan' with a static generic method 'JumlahTigaAngka'. A tooltip for 'dynamic' is visible over line 6. The 'Program' class has a 'Main' method that calls this generic method with three double parameters and prints the result.

```

● PS D:\KPL> git add 05_Generics/modul5_2211104005/modul5_2211104005/Program.cs
● PS D:\KPL> git commit -m "Menambahkan class Penjumlahan dengan method JumlahTigaAngka"
[implementasi-generic-method bd458bf] Menambahkan class Penjumlahan dengan method JumlahTigaAngka
  1 file changed, 19 insertions(+)
   create mode 100644 05_Generics/modul5_2211104005/modul5_2211104005/Program.cs
● PS D:\KPL> git push origin implementasi-generic-method
Enumerating objects: 8, done.
Counting objects: 100% (8/8), done.
Delta compression using up to 2 threads
Compressing objects: 100% (4/4), done.
Writing objects: 100% (6/6), 726 bytes | 22.00 KiB/s, done.
Total 6 (delta 1), reused 0 (delta 0), pack-reused 0 (from 0)
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
To https://github.com/Nitaa1904/KPL_NitaFitrotulMar-ah_2211104005_S1SE0601.git
  fa29847..bd458bf  implementasi-generic-method -> implementasi-generic-method
● PS D:\KPL> git branch implementasi-generic-class
● PS D:\KPL> git checkout implementasi-generic-class
Switched to branch 'implementasi-generic-class'
○ PS D:\KPL>

```

#### 4. Menambahkan Class Generic "SimpleDataBase"



The screenshot shows the `Program.cs` file in a code editor. The code defines a generic class `SimpleDataBase<T>` and a `Program` class with a `Main` method.

```

Program.cs  What's New?

modul5_2211104005

1  public class SimpleDataBase<T>
2  {
3      private List<T> storedData = new List<T>();
4      private List<DateTime> inputDates = new List<DateTime>();
5
6      public void AddNewData(T data)
7      {
8          storedData.Add(data);
9          inputDates.Add(DateTime.UtcNow);
10     }
11
12     public void PrintAllData()
13     {
14         for (int i = 0; i < storedData.Count; i++)
15         {
16             Console.WriteLine($"Data {i + 1} berisi: {storedData[i]}, disimpan pada waktu UTC: {inputDates[i]}");
17         }
18     }
19
20
21     class Program
22     {
23         static void Main()
24         {
25             SimpleDataBase<double> db = new SimpleDataBase<double>();
26             db.AddNewData(22.0);
27             db.AddNewData(11.0);
28             db.AddNewData(10.0);
29             db.PrintAllData();
30         }
31     }

```

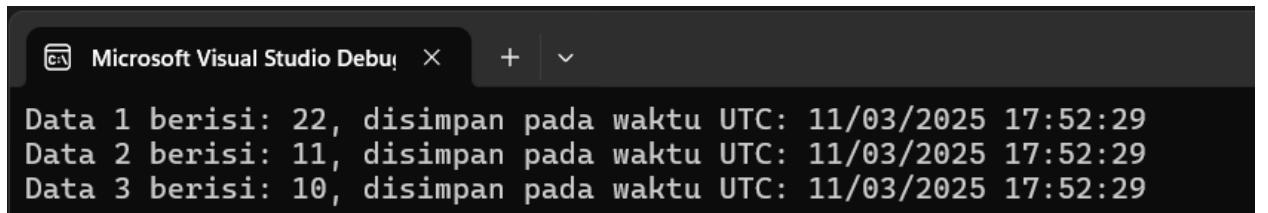
The `SimpleDataBase` class has two private fields: `storedData` (of type `List<T>`) and `inputDates` (of type `List<DateTime>`). It contains two methods: `AddNewData` which adds a new item to both lists, and `PrintAllData` which iterates through the stored data and prints each item along with its corresponding timestamp. The `Program` class contains a single `Main` method that creates an instance of `SimpleDataBase<double>`, adds three double values (22.0, 11.0, 10.0) to it, and then calls `PrintAllData` to print the results.

```

● PS D:\KPL> git add 05_Generics/modul5_2211104005/modul5_2211104005/Program.cs
● PS D:\KPL> git commit -m "Menambahkan class SimpleDataBase"
[implementasi-generic-class 48cb6e4] Menambahkan class SimpleDataBase
  1 file changed, 20 insertions(+), 8 deletions(-)
● PS D:\KPL> git push origin implementasi-generic-class
Enumerating objects: 10, done.
Counting objects: 100% (10/10), done.
Delta compression using up to 2 threads
Compressing objects: 100% (4/4), done.
Writing objects: 100% (6/6), 802 bytes | 401.00 KiB/s, done.
Total 6 (delta 1), reused 0 (delta 0), pack-reused 0 (from 0)
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
remote:
remote: Create a pull request for 'implementasi-generic-class' on GitHub by visiting:
remote:   https://github.com/Nitaa1904/KPL_NitaFitrotulMar-ah_2211104005_S1SE0601/pull/new/implementasi-generic-class
remote:
To https://github.com/Nitaa1904/KPL_NitaFitrotulMar-ah_2211104005_S1SE0601.git
 * [new branch]      implementasi-generic-class -> implementasi-generic-class
● PS D:\KPL> git checkout main
Switched to branch 'main'
Your branch is up to date with 'origin/main'.
● PS D:\KPL> git merge implementasi-generic-method
Updating 6656b48..bd458bf
Fast-forward
  .../modul5_2211104005/modul5_2211104005/Program.cs    | 19 ++++++-----
  1 file changed, 19 insertions(+)
  create mode 100644 05_Generics/modul5_2211104005/modul5_2211104005/Program.cs
● PS D:\KPL> git merge implementasi-generic-class
Updating bd458bf..48cb6e4
Fast-forward
  .../modul5_2211104005/modul5_2211104005/Program.cs | 28 ++++++-----
  1 file changed, 20 insertions(+), 8 deletions(-)
● PS D:\KPL> git push origin main
Total 0 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To https://github.com/Nitaa1904/KPL_NitaFitrotulMar-ah_2211104005_S1SE0601.git
  6656b48..48cb6e4  main -> main
○ PS D:\KPL>

```

## 5. Screenshot Hasil Run & Link Repository



```

Microsoft Visual Studio Debug X + ▾

Data 1 berisi: 22, disimpan pada waktu UTC: 11/03/2025 17:52:29
Data 2 berisi: 11, disimpan pada waktu UTC: 11/03/2025 17:52:29
Data 3 berisi: 10, disimpan pada waktu UTC: 11/03/2025 17:52:29

```

## 6. Penjelasan Implementasi

### a. Class Penjumlahan

- Menggunakan generic method JumlahTigaAngka.
- Parameter bertipe T untuk fleksibilitas.
- Memanfaatkan dynamic untuk penjumlahan.

### b. Class SimpleDataBase

- Menggunakan List untuk menyimpan data.
- AddNewData(T) menambahkan data sekaligus menyimpan waktu input.
- PrintAllData() mencetak semua data dengan timestamp.