

CS202: Software Tools and Techniques for CSE

Lecture 10

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August 2025

File Edit View Git Project Build Debug Test Analyze Tools Extensions Window Help | Search proj1

GitHub Copilot

Server Explorer

Program.cs

ConsoleApp1

Program

Main(string[] args)

```
public static void Main(string[] args)
{
    int a = 1;
    Console.WriteLine($"{++a} {a++} {++a}");
    a = 1;
    Console.WriteLine("{0} {1} {2}", ++a, a++, ++a);
```

Microsoft Visual Studio Debug Console

2 2 4
2 2 4
C#

C:\Users\shouvik\Desktop\IITGN\cache_test>call_conv.exe

3 2 3

C/C++

Type here to search

Ready

23:31 13-10-2025 ENG



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Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs* □ ×

C# ConsoleApp1 Program Main(string[] args)

```
1 class Program //this is a class
2 {
3     public int data; //this is a field
4     static void M (field) int Program.data
5     {
6         Console.WriteLine("Hello, World!"); //this is a statement in the methon Main()
7     }
8 }
```

121 % No issues found

Output

Show output from: Build

```
1>ConsoleApp1 -> C:\Users\shouwick\Desktop\IITGN\playground\ConsoleApp1\bin\Debug\net8.0\ConsoleApp1.dll
===== Build: 1 succeeded, 0 failed, 0 up-to-date, 0 skipped =====
===== Build completed at 19:38 and took 00.452 seconds =====
```

Server Explorer

Error List

Output

↑ Add to Source Control ▾ Select Repository ▾

Build succeeded

Type here to search



Solution Explorer

Search Solution Explorer (Ctrl+;) ConsoleApp1

Solution 'ConsoleApp1' (1 of 1 project)

ConsoleApp1

Dependencies

Program.cs

Solution Explorer Git Changes

Properties

19:40
23-03-2025
ENG



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Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs*

```
ConsoleApp1    Program    data
1 class Program //this is a class
2 {
3     public int data; //this is a field
4     static void Main(string[] args) //this is a method in the class
5     {
6         Console.WriteLine("Hello, World!"); //this is a statement in the methon Main()
7     }
8 }
```

Solution Explorer

Search Solution Explorer (Ctrl+;)

Solution 'ConsoleApp1' (1 of 1 project)

- ConsoleApp1
 - Dependencies
 - Program.cs
 - Program
 - data : int
 - Main(string[]) : void

Solution Explorer Git Changes

Properties

Program Class

Misc

Name	Program
------	---------

Name
The name of this item.

121% No issues found

Output

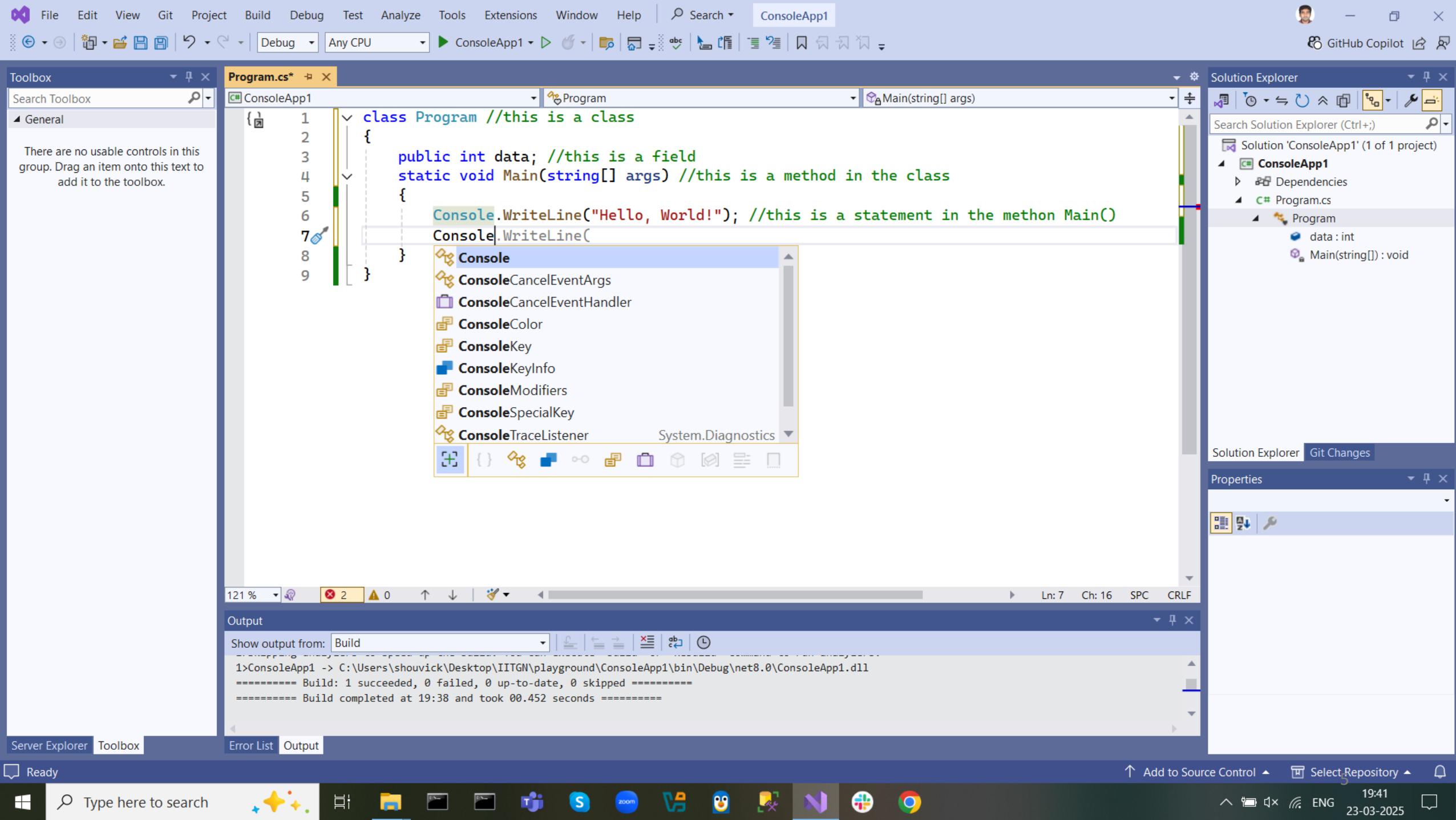
Show output from: Build

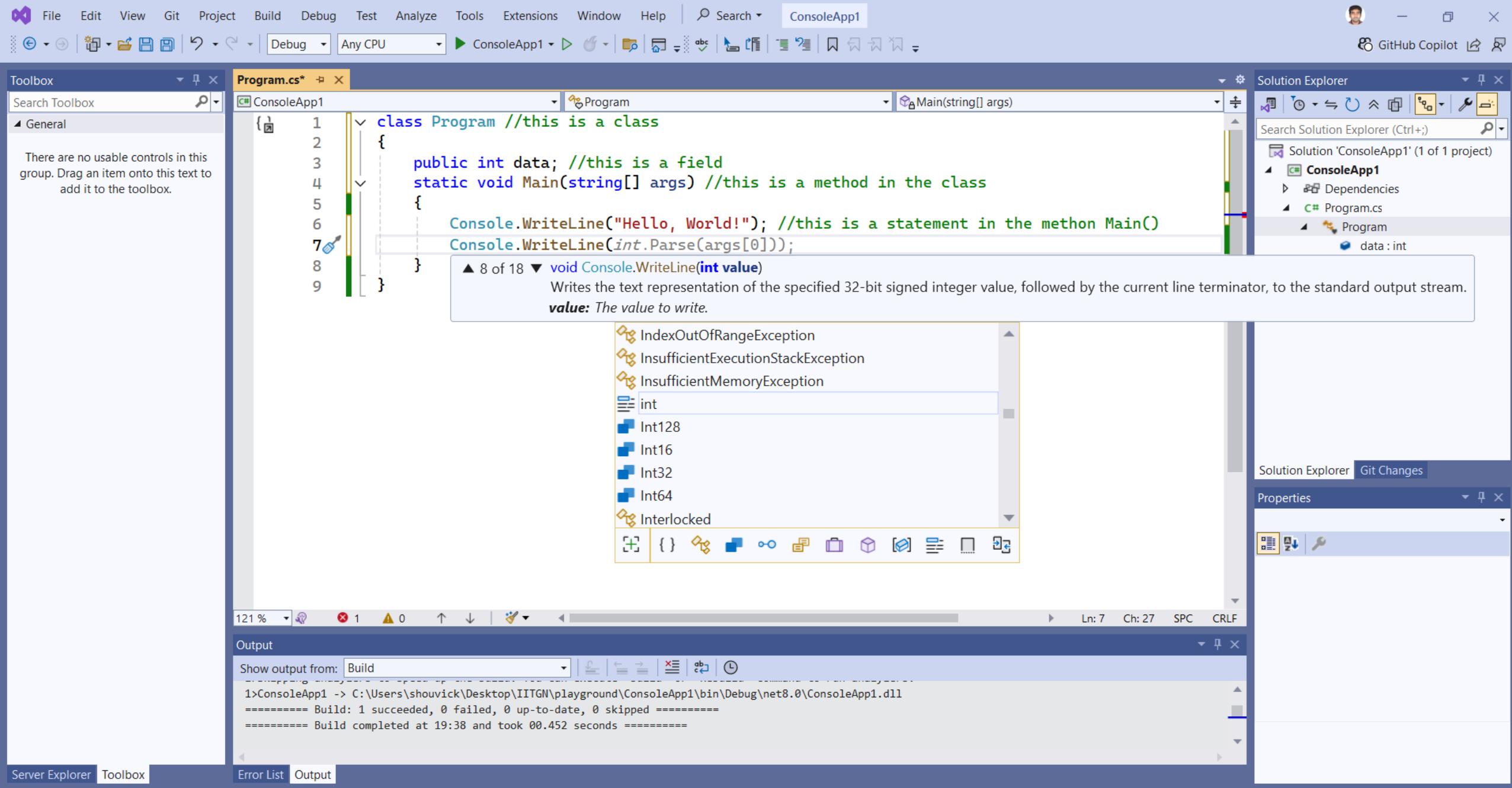
```
1>ConsoleApp1 -> C:\Users\shouwick\Desktop\IITGN\playground\ConsoleApp1\bin\Debug\net8.0\ConsoleApp1.dll
===== Build: 1 succeeded, 0 failed, 0 up-to-date, 0 skipped =====
===== Build completed at 19:38 and took 00.452 seconds =====
```

Server Explorer Toolbox

Error List Output

↑ Add to Source Control Select Repository





Toolbox

Search Toolbox

General

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Program.cs*

```
ConsoleApp1 Program Main(string[] args)
1 class Program //this is a class
2 {
3     public int data; //this is a field
4     static void Main(string[] args) //this is a method in the class
5     {
6         Console.WriteLine("Hello, World!"); //this is a statement in the methon Main()
7         Console.WriteLine(data);
8     }
9 }
```

121% 2 0 ↑ ↓ ⌂ Ln: 6 Ch: 45 SPC CRLF

Output

Show output from: Build

```
1>ConsoleApp1 -> C:\Users\shouwick\Desktop\IITGN\playground\ConsoleApp1\bin\Debug\net8.0\ConsoleApp1.dll
===== Build: 1 succeeded, 0 failed, 0 up-to-date, 0 skipped ======
===== Build completed at 19:38 and took 00.452 seconds ======
```

Server Explorer

Toolbox

Error List

Output

↑ Add to Source Control ▾ Select Repository ▾



Type here to search



19:42
ENG
23-03-2025



Solution Explorer

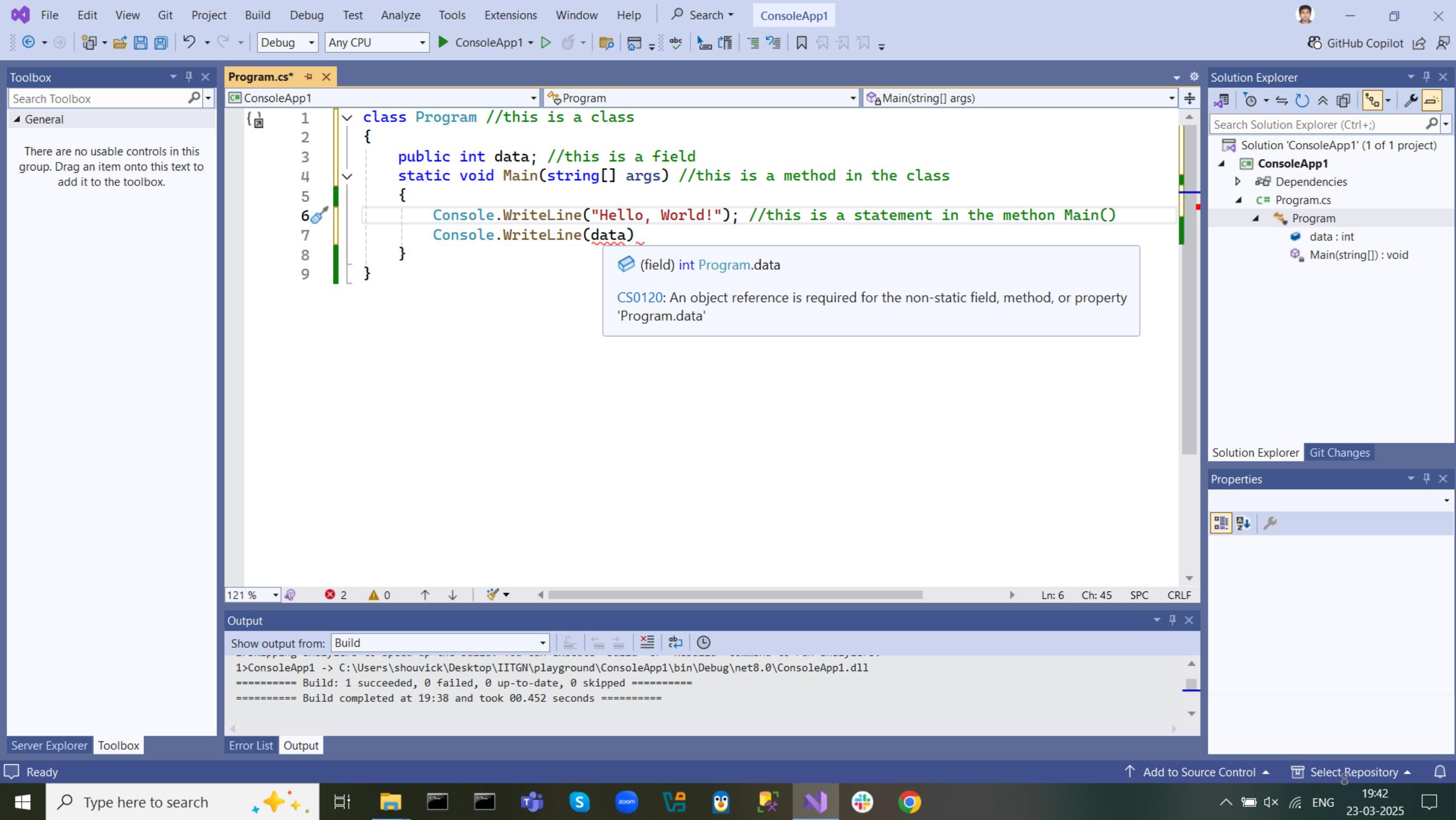
Search Solution Explorer (Ctrl+;)

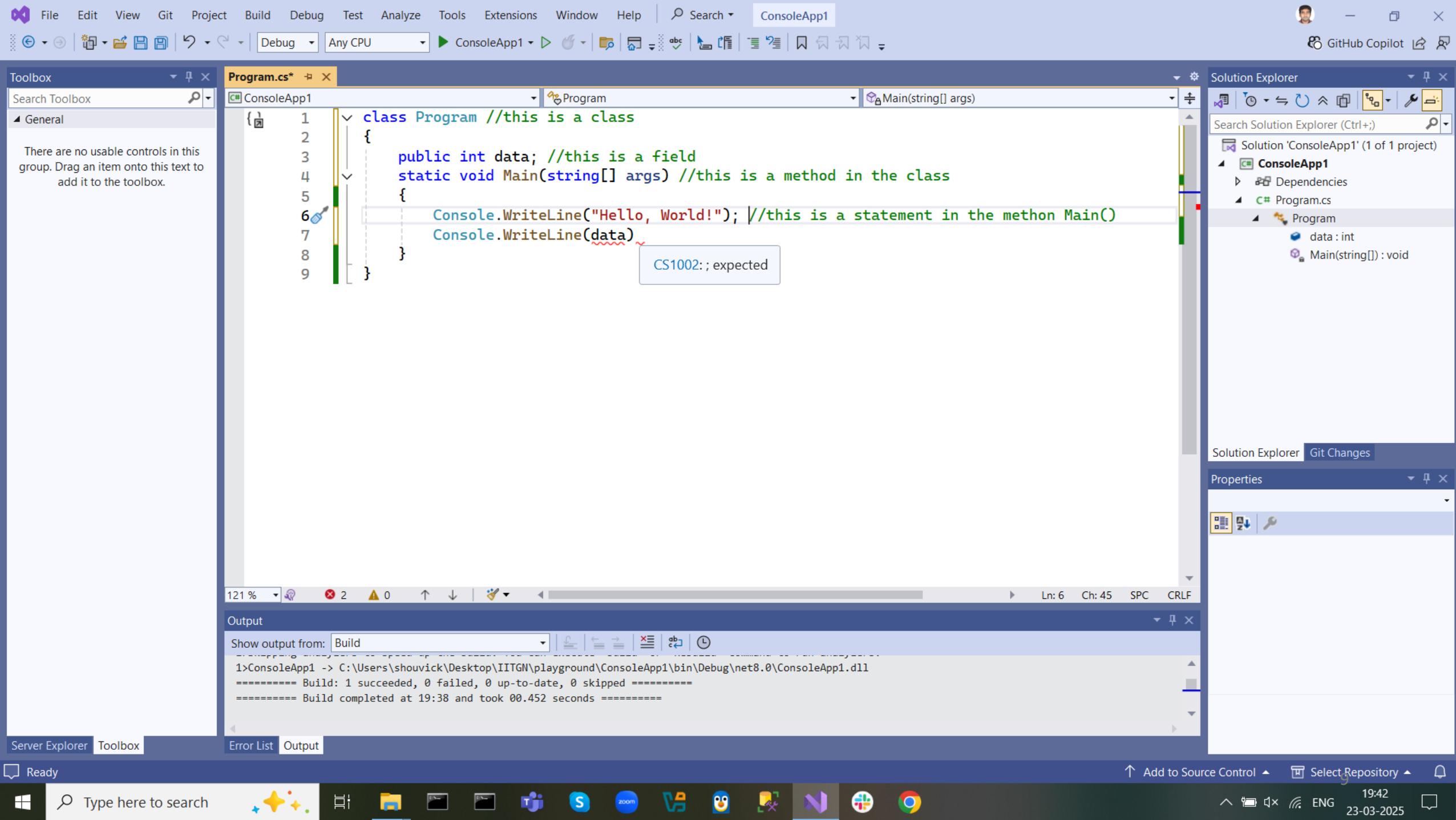
Solution 'ConsoleApp1' (1 of 1 project)

- ConsoleApp1
 - Dependencies
 - Program.cs
 - Program
 - data : int
 - Main(string[]) : void

Solution Explorer Git Changes

Properties







Toolbox

Search Toolbox

General

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Program.cs

```
C# ConsoleApp1 Program Main(string[] args)
1 class Program //this is a class
2 {
3     public int data; //this is a field
4     static void Main(string[] args) //this is a method in the class
5     {
6         Console.WriteLine("Hello, World!"); //this is a statement in the methon Main()
7         Console.WriteLine(data);
8     }
9 }
```

Add argument name 'value' 
Introduce parameter for 'data' 

```
-     Console.WriteLine("Hello, World!"); //this is a statement in the methon Main()
+     Console.WriteLine(data);
+     Console.WriteLine(value: data);
}
```

Preview changes

121%  1  0      Ln: 7 Ch: 30 SPC CRLF

Output

Show output from: Build 

```
1>ConsoleApp1 -> C:\Users\shouwick\Desktop\IITGN\playground\ConsoleApp1\bin\Debug\net8.0\ConsoleApp1.dll
===== Build: 1 succeeded, 0 failed, 0 up-to-date, 0 skipped =====
===== Build completed at 19:38 and took 00.452 seconds =====
```

Server Explorer

Toolbox

Error List

Output

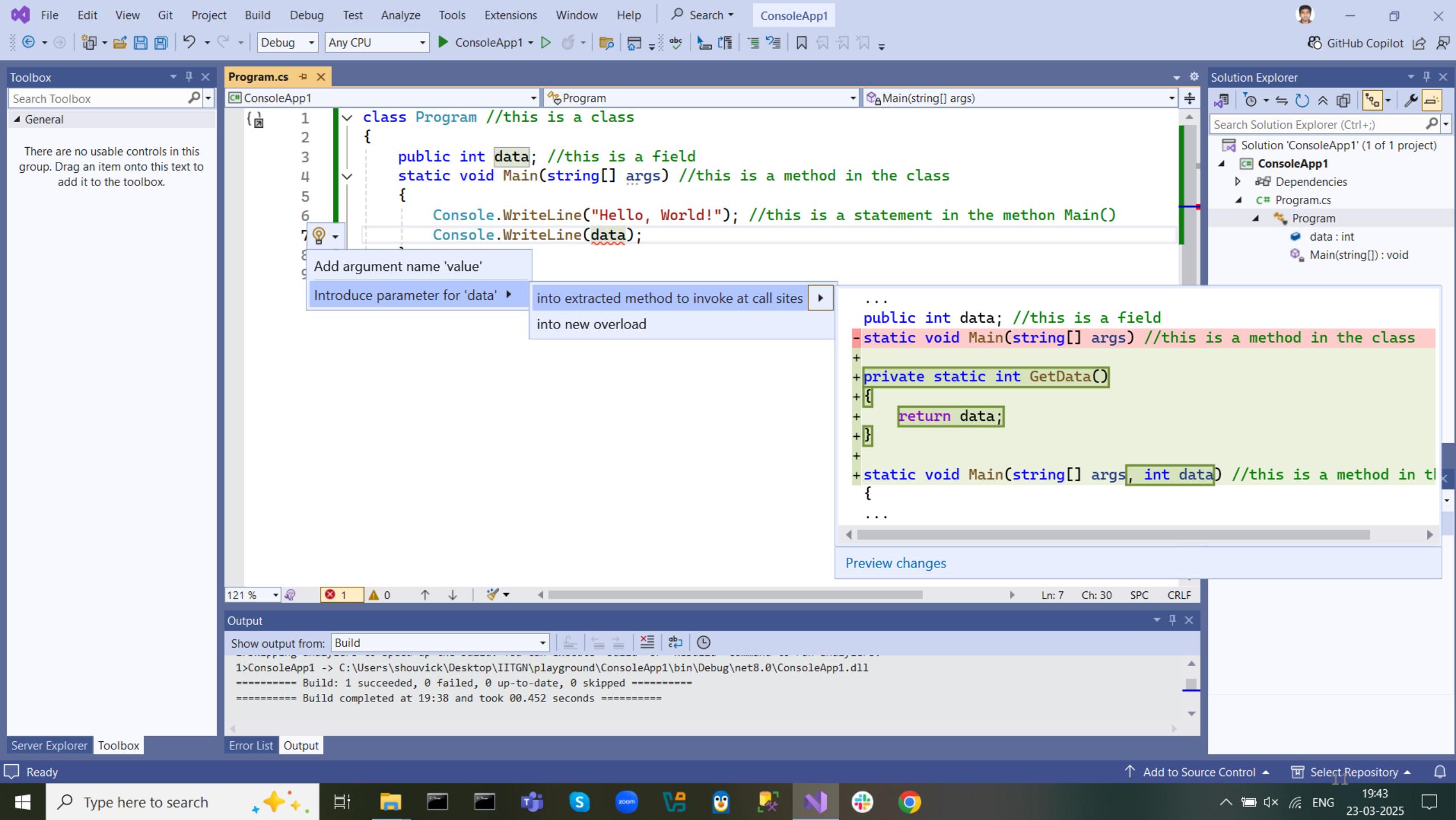
↑ Add to Source Control  Select Repository  10



Type here to search 



Ready ENG 19:42
23-03-2025



Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs

```
ConsoleApp1 Program Main(string[] args)
1 class Program //this is a class
2 {
3     public int data; //this is a field
4     static void Main(string[] args) //this is a method in the class
5     {
6         Console.WriteLine("Hello, World!"); //this is a statement in the methon Main()
7         Console.WriteLine(data);
8     }
9     Add argument name 'value'
10    Introduce parameter for 'data' ▾ into extracted method to invoke at call sites
11    into new overload
```

Solution Explorer

```
Search Solution Explorer (Ctrl+;) Solution 'ConsoleApp1' (1 of 1 project)
  ConsoleApp1
    Dependencies
    Program.cs
      Program
        data : int
        Main(string[]) : void
```

```
...
public int data; //this is a field
static void Main(string[] args) //this is a method in the class
+
private static void Main(string[] args)
{
    Main(args, data);
}
+
static void Main(string[] args, int data) //this is a method in the class
{
    ...
}
```

Preview changes

121%  1 0          Ln: 7 Ch: 30 SPC CRLF

Output

Show output from: Build 

```
1>ConsoleApp1 -> C:\Users\shouwick\Desktop\IITGN\playground\ConsoleApp1\bin\Debug\net8.0\ConsoleApp1.dll
===== Build: 1 succeeded, 0 failed, 0 up-to-date, 0 skipped ======
===== Build completed at 19:38 and took 00.452 seconds ======
```

Server Explorer

Toolbox

Error List

Output

Add to Source Control Select Repository  12



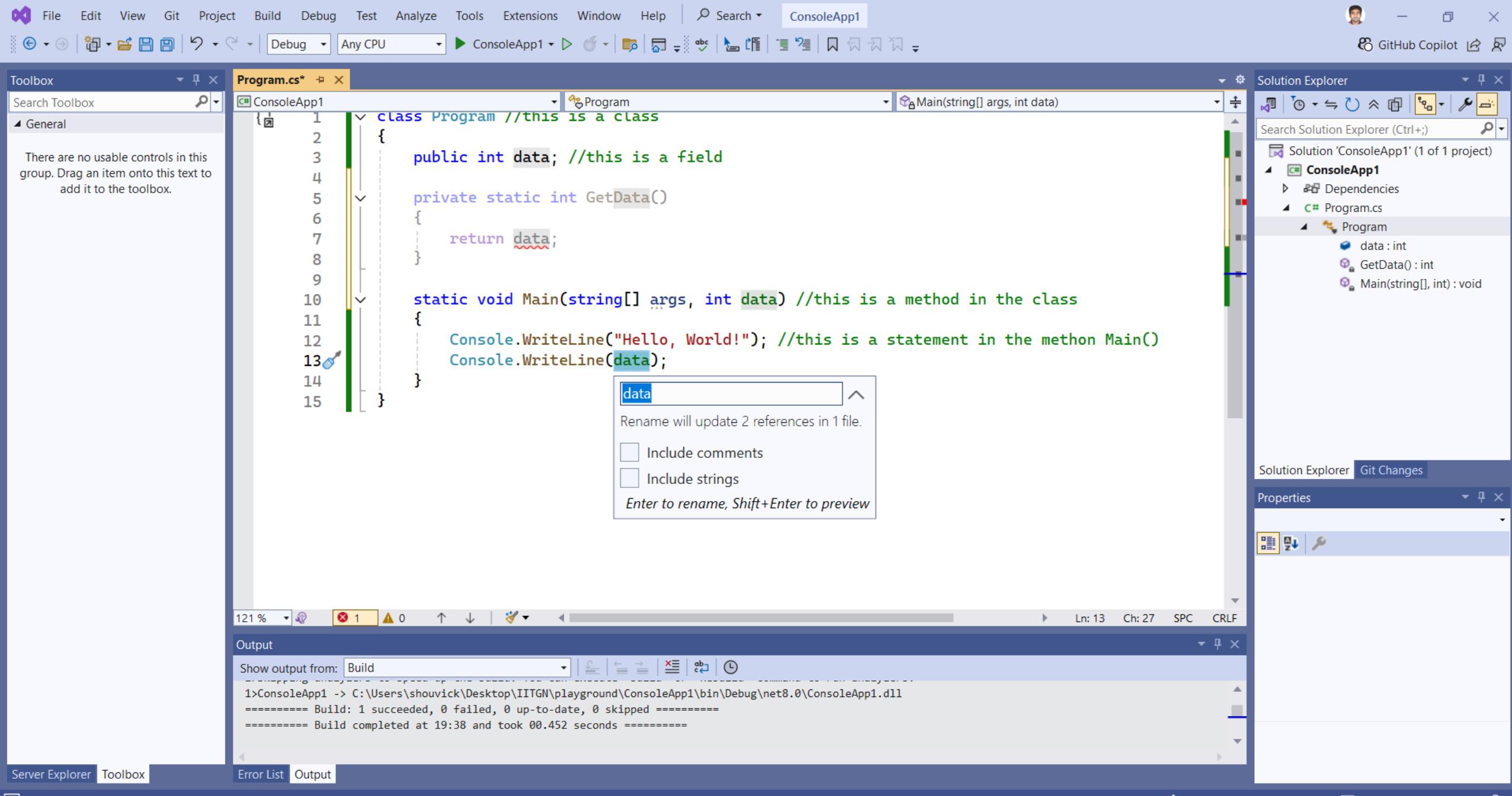
Type here to search

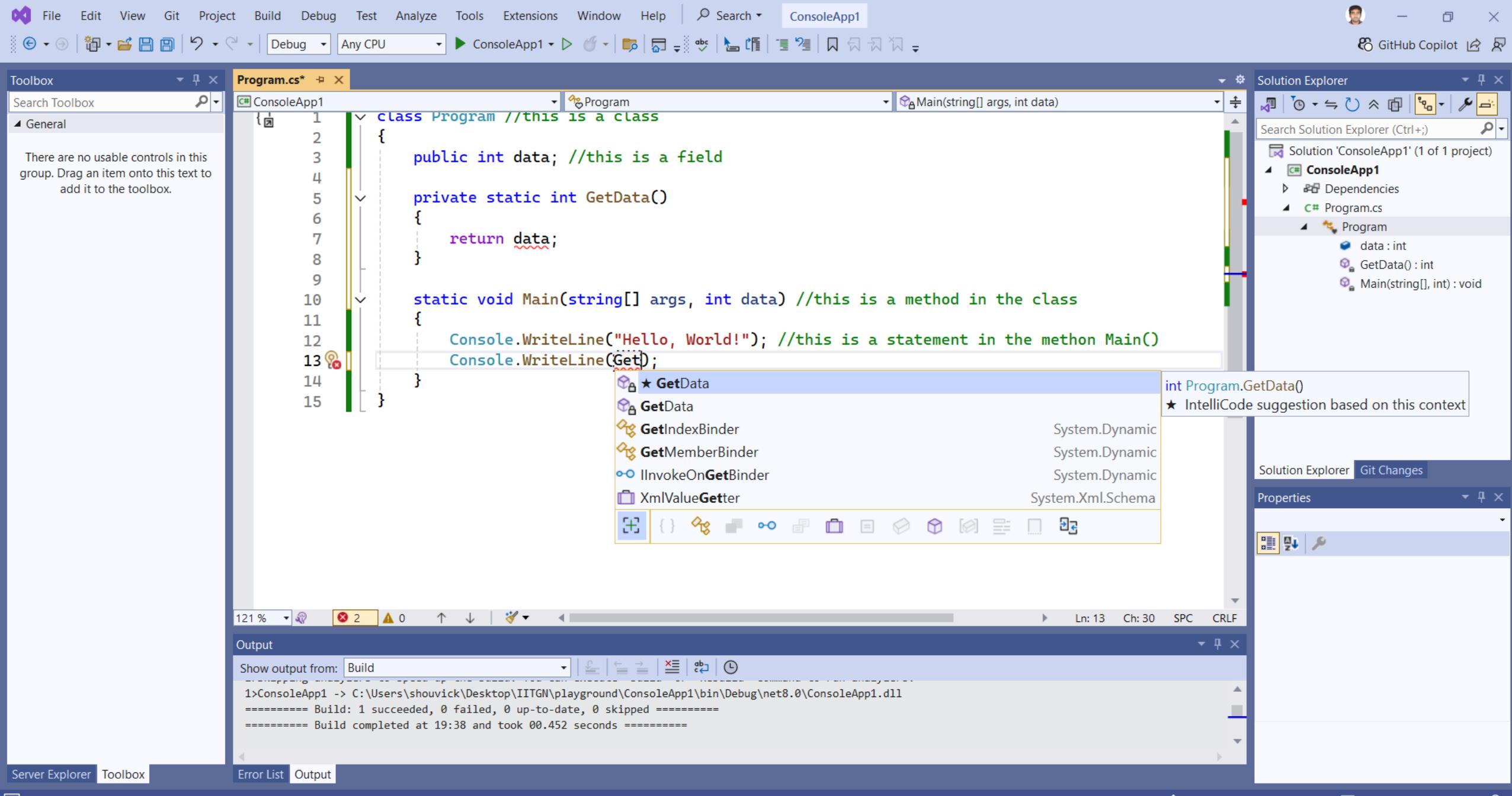


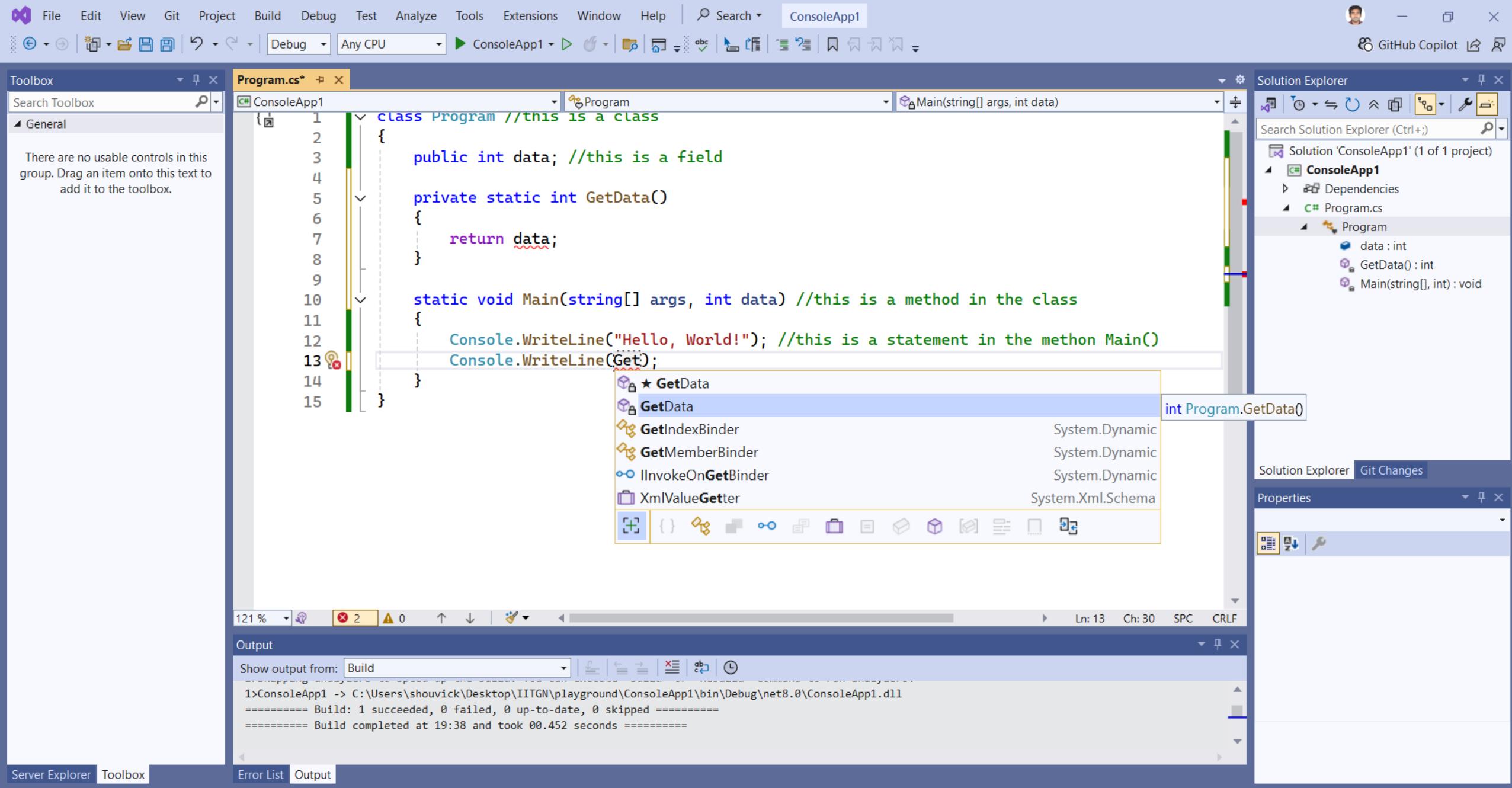
19:43

ENG

23-03-2025









Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs*

```
ConsoleApp1    Program.cs    Main(string[] args, int data)
```

```
1 class Program //this is a class
2 {
3     public int data; //this is a field
4
5     private static int GetData()
6     {
7         return data;
8     }
9
10    static void Main(string[] args, int data) //this is a method in the class
11    {
12        Console.WriteLine("Hello, World!"); //this is a statement in the methon Main()
13        Console.WriteLine(GetData());
14    }
15 }
```



int Program.GetData()

CS8974: Converting method group 'GetData' to non-delegate type 'object'. Did you intend to invoke the method?

Show potential fixes (Alt+Enter or Ctrl+.)

121 %

Output

Show output from: Build

```
1>ConsoleApp1 -> C:\Users\shouwick\Desktop\IITGN\playground\ConsoleApp1\bin\Debug\net8.0\ConsoleApp1.dll
===== Build: 1 succeeded, 0 failed, 0 up-to-date, 0 skipped =====
===== Build completed at 19:38 and took 00.452 seconds =====
```

Server Explorer

Toolbox

Error List Output

Add to Source Control Select Repository

16 19:44
ENG 23-03-2025



Type here to search



Ready

16 19:44
ENG 23-03-2025

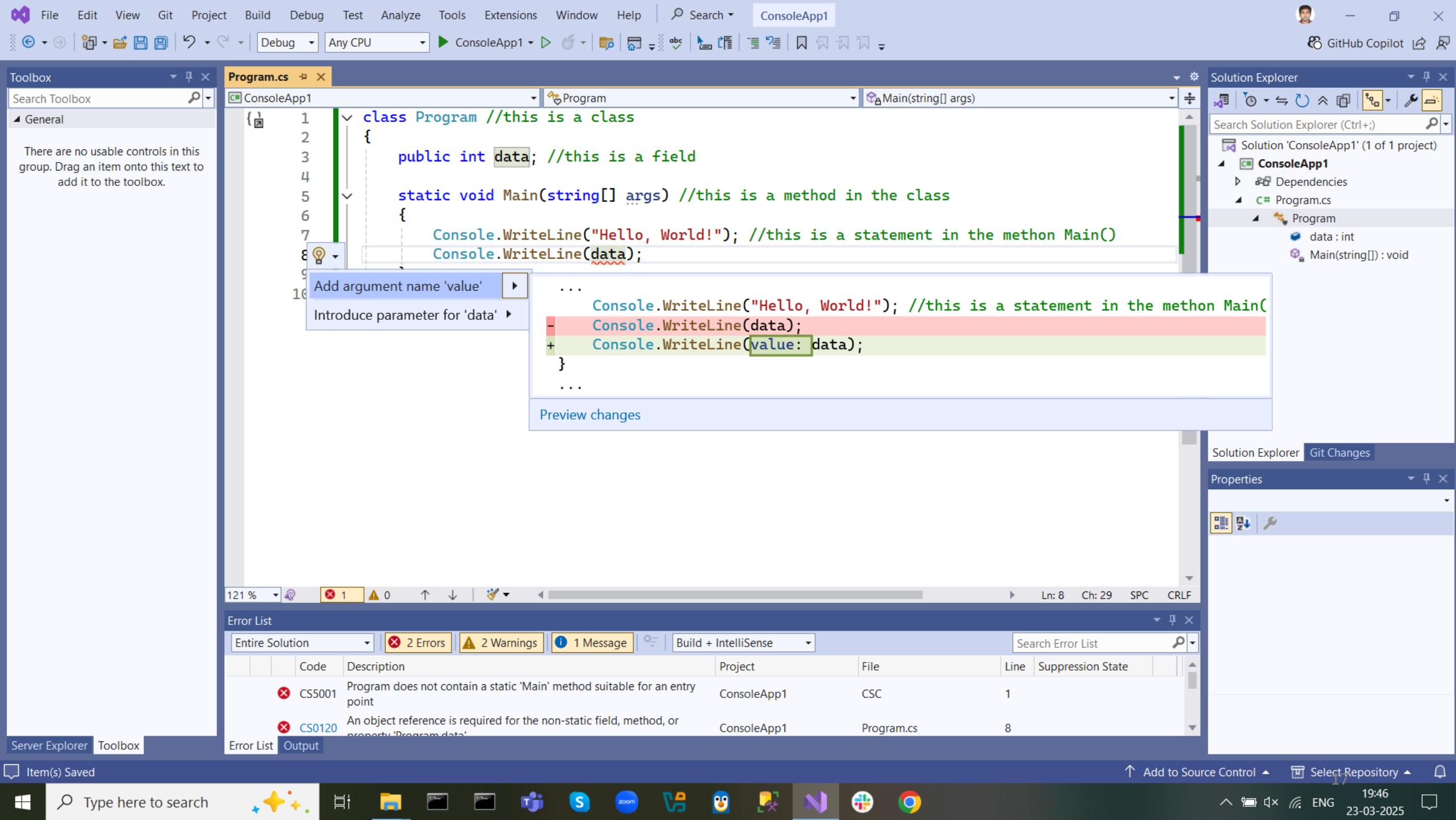
Solution Explorer

Search Solution Explorer (Ctrl+;)

```
Solution 'ConsoleApp1' (1 of 1 project)
  ConsoleApp1
    Dependencies
    Program.cs
      Program
        data : int
        GetData() : int
        Main(string[], int) : void
```

Solution Explorer Git Changes

Properties





Toolbox  X

Search Toolbox  X

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs*  X

ConsoleApp1 Program Main(string[] args)

```
1 class Program //this is a class
2 {
3     public int data; //this is a field
4
5     static void Main(string[] args) //this is a method in the class
6     {
7         Console.WriteLine("Hello, World!"); //this is a statement in the methon Main()
8         Console.WriteLine(new Pr);
9     }
10 }
```

PreAllocatedOverlapped
Predicate<>
PriorityQueue<>
Program
Progress<>
propa
propdp
propfull
HttpProtocolException

121%  2 Errors  0 Warnings  0 Messages  Build + IntelliSense  Search Error List

Error List

	Code	Description	Project	File	Line	Suppression State
CS5001	CS5001	Program does not contain a static 'Main' method suitable for an entry point	ConsoleApp1	CSC	1	
CS0246	CS0246	The type or namespace name 'Pr' could not be found (are you missing a using directive or an assembly reference?)	ConsoleApp1	Program.cs	8	

Server Explorer  Toolbox  X

Error List Output

Solution Explorer  X

Search Solution Explorer (Ctrl+;)  X

Solution 'ConsoleApp1' (1 of 1 project)

- ConsoleApp1
 - Dependencies
 - Program.cs
 - Program
 - data : int
 - Main(string[]) : void

Solution Explorer  Git Changes  X

Properties  X



Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs* □ ×

ConsoleApp1 Program Main(string[] args)

```
1 class Program //this is a class
2 {
3     public int data; //this is a field
4
5     static void Main(string[] args) //this is a method in the class
6     {
7         Console.WriteLine("Hello, World!"); //this is a statement in the methon Main()
8         Console.WriteLine((new Program).D);
9     }
10 }
```

IntelliSense dropdown:

- ★ ToString
- ★ Equals
- ★ MemberwiseClone
- ★ data
- ★ GetType
- data (field) int Program.data
- Equals
- GetHashCode
- GetType

Properties:

- Code
- Description
- Project
- File
- Line
- Suppression State

Error List

Entire Solution	Code	Description	Project	File	Line	Suppression State
CS5001	Program does not contain a static 'Main' method suitable for an entry point	ConsoleApp1	CSC		1	
CS1526	A new expression requires an argument list or ()[], or {} after type	ConsoleApp1	Program.cs		8	

Solution Explorer

Search Solution Explorer (Ctrl+Shift+F)

Solution 'ConsoleApp1' (1 of 1 project)

- ConsoleApp1
 - Dependencies
 - Program.cs
 - Program
 - data : int
 - Main(string[]) : void

Solution Explorer Git Changes

Properties



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Toolbox

Search Toolbox

General

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Program.cs

```
ConsoleApp1 Program Main(string[] args)
1 class Program //this is a class
2 {
3     public int data; //this is a field
4
5     static void Main(string[] args) //this is a method in the class
6     {
7         Console.WriteLine("Hello, World!"); //this is a statement in the methon Main()
8         Console.WriteLine((new Program).data);
9     }
10 }
```

Remove unnecessary parentheses ►

IDE0047 Parentheses can be removed

...
Console.WriteLine("Hello, World!"); //this is a statement in the methon Main()
- Console.WriteLine((new Program).data);
+ Console.WriteLine(new Program.data);
}

...

Preview changes

Fix all occurrences in: Document | Project | Solution | Containing Member | Containing Type

121 %

Error List

Entire Solution	Code	Description	Project	File	Line	Suppression State
CS5001	Program does not contain a static 'Main' method suitable for an entry point	ConsoleApp1	CSC		1	
CS1526	A new expression requires an argument list or ()[], or {} after type	ConsoleApp1	Program.cs		8	

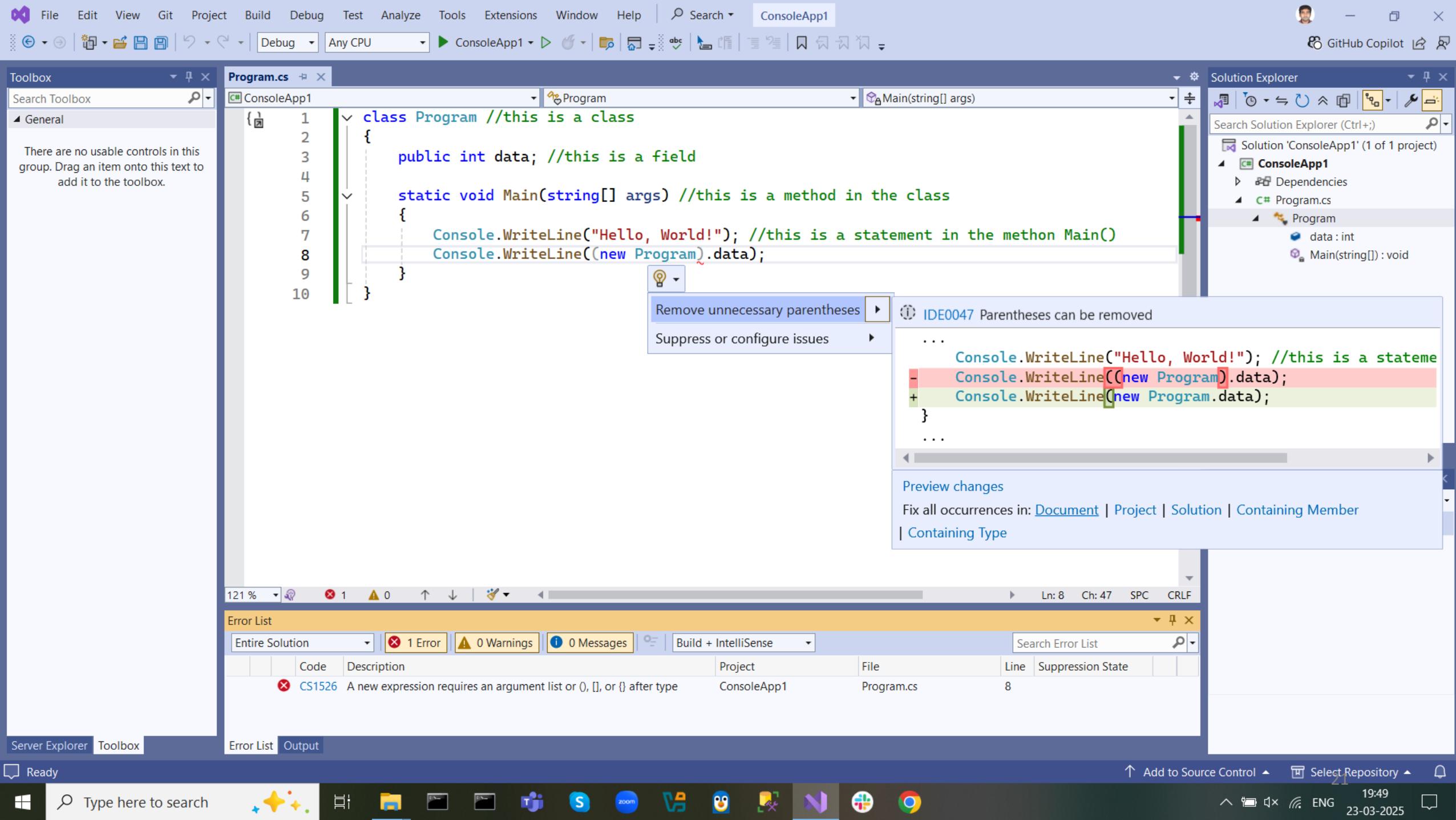
Solution Explorer

Search Solution Explorer (Ctrl+Shift+F)

Solution 'ConsoleApp1' (1 of 1 project)

- ConsoleApp1
 - Dependencies
 - Program.cs
 - Program
 - data : int
 - Main(string[]) : void

Git Changes





Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs

```
ConsoleApp1 Program.cs Main(string[] args)
```

Preview Changes - Fix all occurrences

Fix all 'IDE0047' in 'Program.cs'

- Fix all occurrences
- C# Program.cs
- Console.WriteLine(new Program.data);

Preview Code Changes:

```
class Program //this is a class
{
    public int data; //this is a field
    static void Main(string[] args) //this is a method
    {
        Console.WriteLine("Hello, World!"); //this
        Console.WriteLine(new Program.data);
    }
}
```

Apply Cancel

121 % Error List

Entire Solution 1 Error 0 Warnings 0 Messages Build + IntelliSense Search Error List

CS1526 A new expression requires an argument list or () or {} after type

Solution Explorer

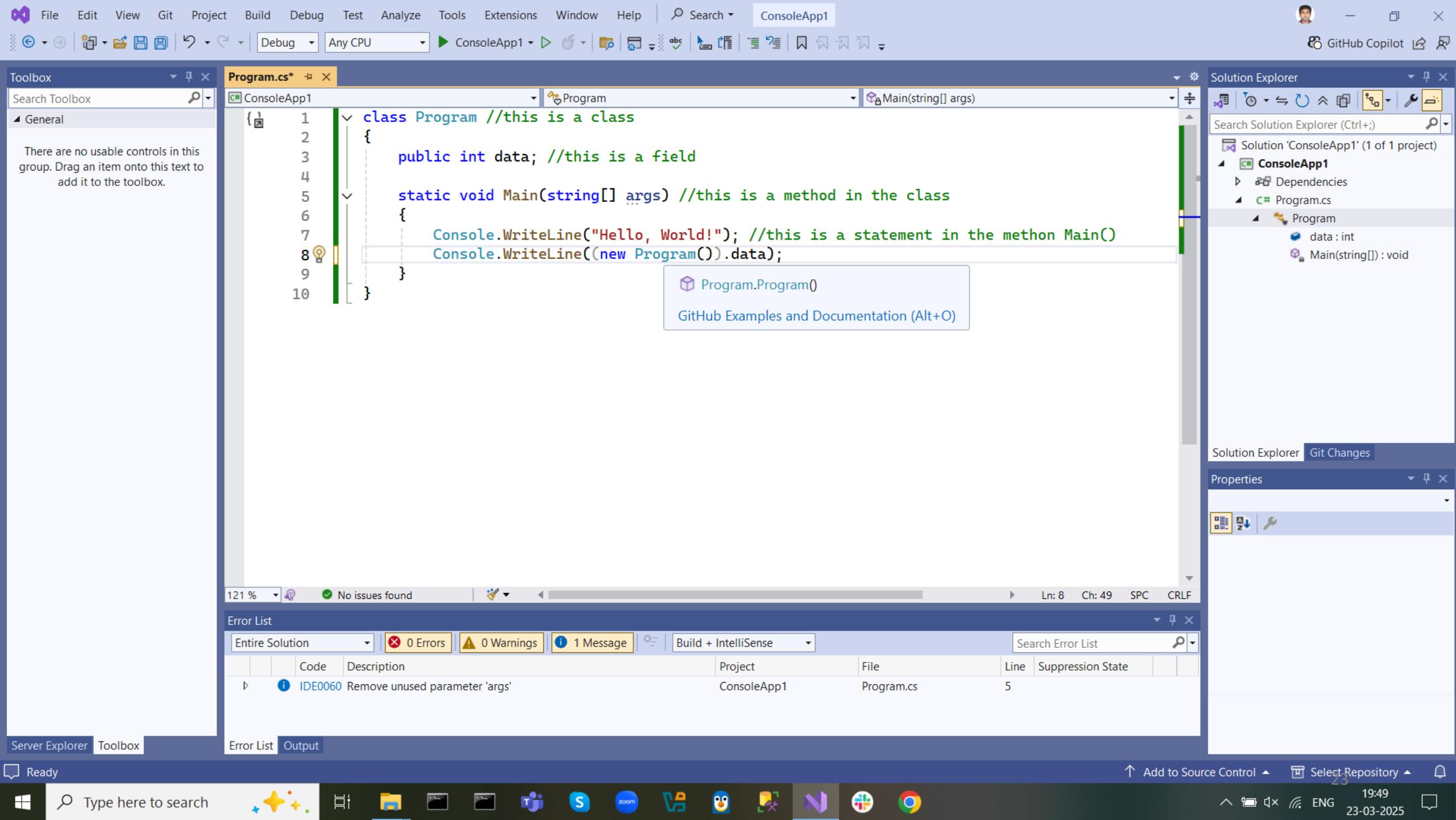
Search Solution Explorer (Ctrl+Shift+F)

Solution 'ConsoleApp1' (1 of 1 project)

- ConsoleApp1
- Dependencies
- Program.cs
- Program
- data : int
- Main(string[]) : void

Solution Explorer Git Changes

Properties



Toolbox

Search Toolbox

General

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Program.cs

```
ConsoleApp1 Program Main(string[] args)
1 class Program //this is a class
2 {
3     public int data; //this is a field
4
5     static void Main(string[] args) //this is a method in the class
6     {
7         Console.WriteLine("Hello, World!"); //this is a statement in the method Main()
8         Console.WriteLine((new Program()).data);
9     }
10 }
```

Remove unnecessary parentheses

- Introduce parameter for 'Console.WriteLine((new Program()).data)' ▾
- Suppress or configure issues ▾

IDE0047 Parentheses can be removed

```
...
Console.WriteLine("Hello, World!"); //this is a statement in the method Main()
- Console.WriteLine((new Program()).data);
+ Console.WriteLine(new Program().data);
}
```

Preview changes

Fix all occurrences in: Document | Project | Solution | Containing Member | Containing Type

121 % No issues found

Output

Show output from: Build

Error List Output

Add to Source Control Select Repository

24



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Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs

```
ConsoleApp1 Program Main(string[] args)
1 class Program //this is a class
2 {
3     public int data; //this is a field
4
5     static void Main(string[] args) //this is a method in the class
6     {
7         Console.WriteLine("Hello, World!"); //this is a statement in the methon Main()
8         Console.WriteLine(new Program().data);
9     }
10}
```

Introduce parameter for 'Console.WriteLine(new Program().data)' ▾ and update call sites directly
into extracted method to invoke at call sites
into new overload

```
+ static void Main(string[] args, void v) ▾
{
    Console.WriteLine("Hello, World!"); //
    Console.WriteLine(new Program().data);
    v;
}
```

Preview changes

Output

Show output from: Build

Server Explorer Toolbox Error List Output

Build succeeded

Add to Source Control Select Repository

Type here to search

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Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs

```
1 class Program //this is a class
2 {
3     public int data; //this is a field
4
5     static void M (field) int Program.data his is a method in the clas
6     {
7         Console.WriteLine("Hello, World!"); //this is a statement
8         Console.WriteLine((new Program()).data);
9     }
10 }
```

Solution Explorer

Search Solution Explorer (Ctrl+Shift+F)

Solution 'ConsoleApp1' (1 of 1 project)

- ConsoleApp1
- Dependencies
- Program.cs
- Program
- data : int
- Main(string[]) : void

Microsoft Visual Studio Debug Console

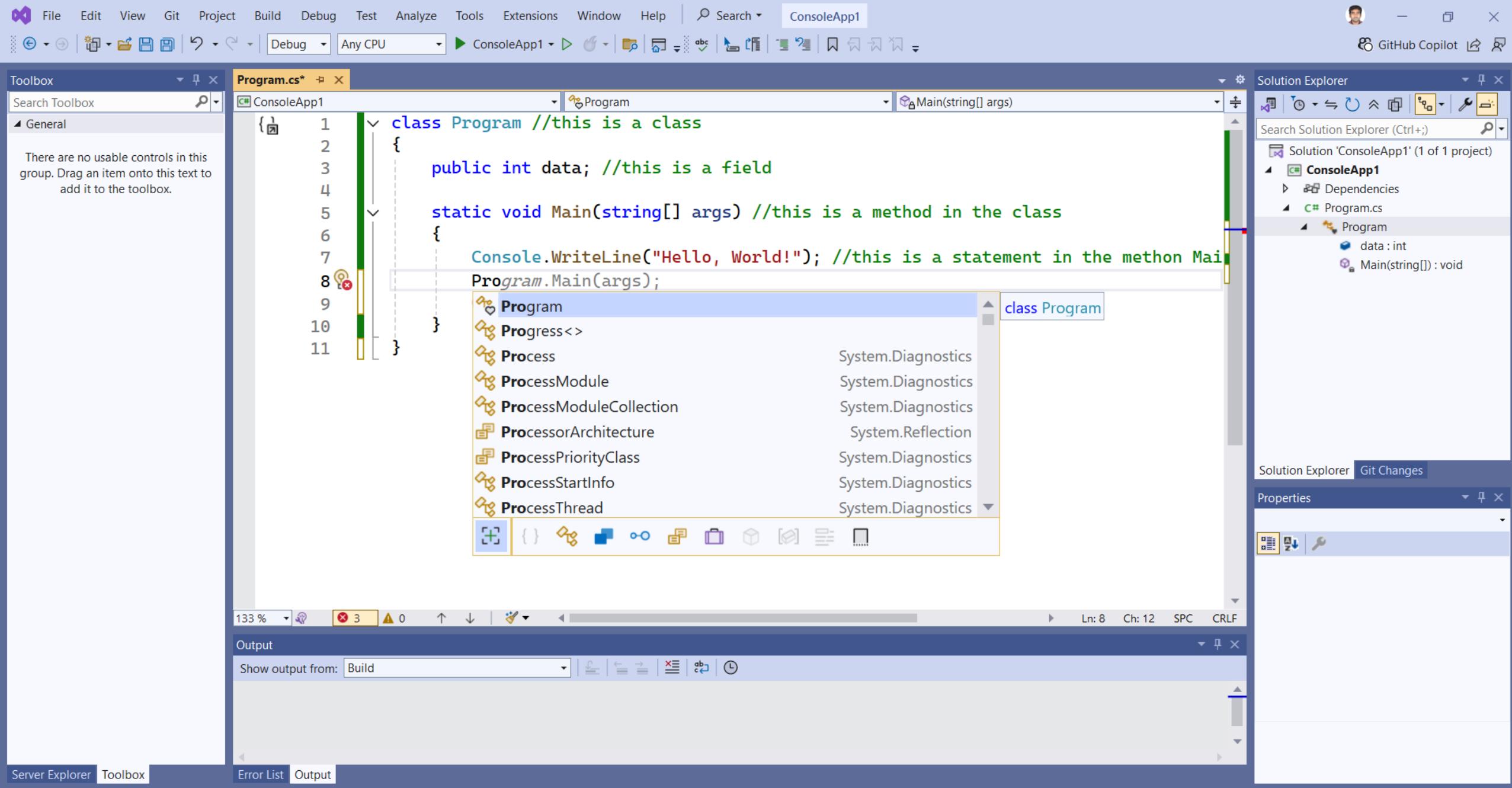
```
Hello, World!
0

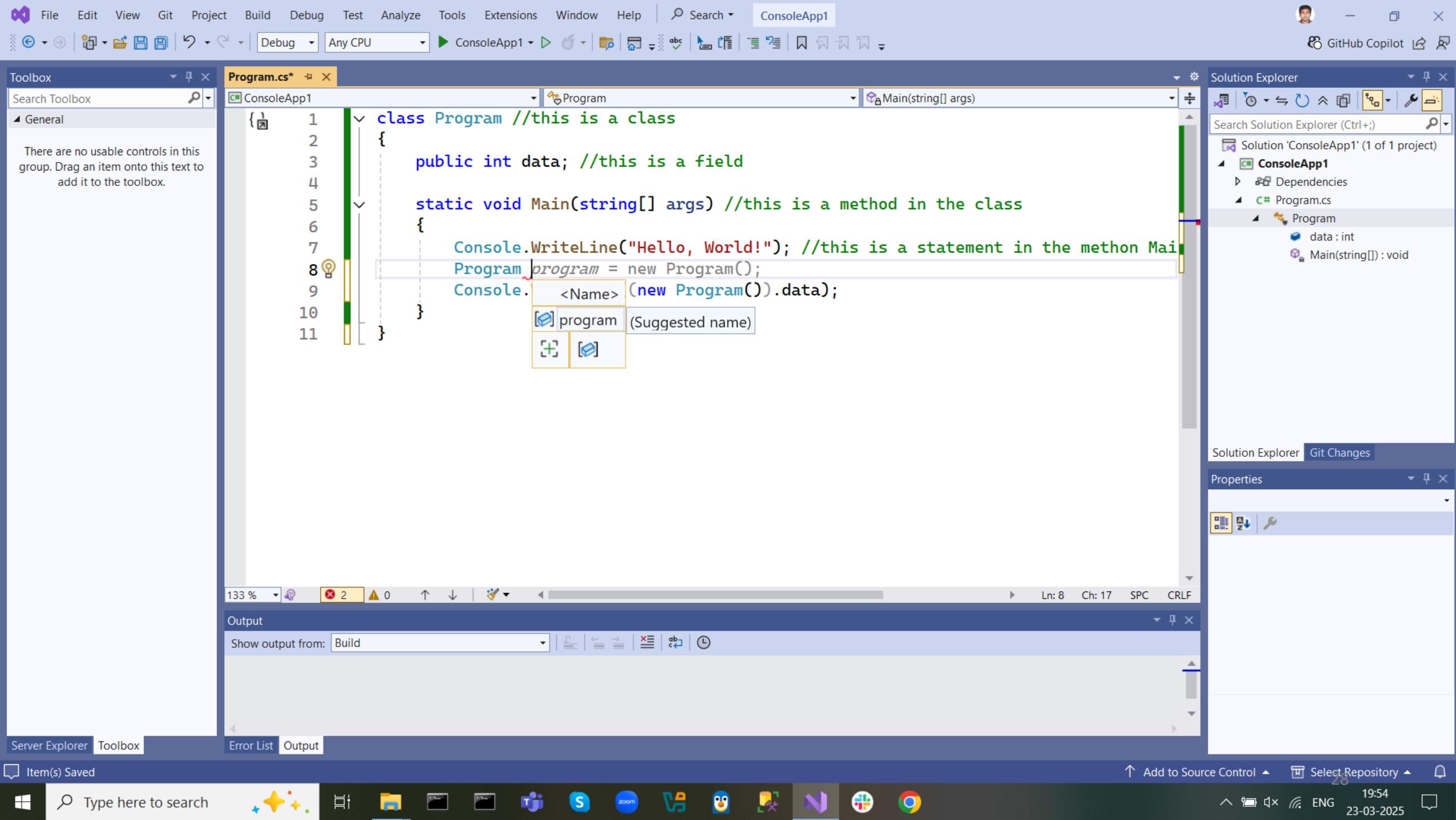
C:\Users\shouwick\Desktop\IITGN\playground\ConsoleA
0 (0x0).
Press any key to close this window . . .
```

161 % No issues found

Output

Show output from: Build





Toolbox

Search Toolbox 

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs* □ ×

ConsoleApp1 Program Main(string[] args)

```
1 class Program //this is a class
2 {
3     public int data; //this is a field
4
5     static void Main(string[] args) //this is a method in the class
6     {
7         Console.WriteLine("Hello, World!"); //this is a statement in the method Main
8         Program program = new Program();
9         Con .WriteLine((new Program()).data);
10    }
11 }
```

Use discard ' ' 

Suppress or configure issues ▾

Solution Explorer

Search Solution Explorer (Ctrl+;) 

Solution 'ConsoleApp1' (1 of 1 project)

- ConsoleApp1
- Dependencies
- Program.cs
- Program
- data : int
- Main(string[]) : void

IDE0059 Unnecessary assignment of a value to 'program'

...
Console.WriteLine("Hello, World!"); //this is a statement in the method Main
~~-Program program = new Program();~~
+ = new Program();
Console.WriteLine((new Program()).data);
...

Preview changes

Fix all occurrences in: Document | Project | Solution | Containing Member | Containing Type

133 %  No issues found 

Output

Show output from: Build 

Server Explorer Toolbox

Error List Output

Add to Source Control  Select Repository 



Type here to search 



19:54 23-03-2025 ENG



Toolbox ▾ X

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs* ▾ X

ConsoleApp1 Program Main(string[] args)

```
1 class Program //this is a class
2 {
3     public int data; //this is a field
4
5     static void Main(string[] args) //this is a method in the class
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8         Program program = new Program();
9         Console.WriteLine((new Program()).data);
10    }
11 }
```

133% No issues found

Output

Show output from: Build

Solution Explorer ▾

Search Solution Explorer (Ctrl+;)

Solution 'ConsoleApp1' (1 of 1 project)

- ConsoleApp1
 - Dependencies
 - Program.cs
 - Program
 - data : int
 - Main(string[]) : void

Solution Explorer Git Changes

Properties

Toolbox

Search Toolbox

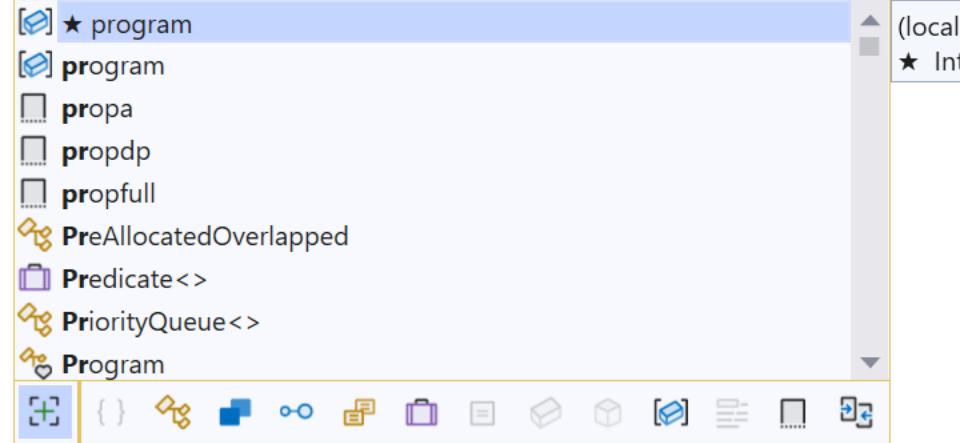
General

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Program.cs*

ConsoleApp1 Program Main(string[] args)

```
1 class Program //this is a class
2 {
3     public int data; //this is a field
4
5     static void Main(string[] args) //this is a method in the class
6     {
7         Console.WriteLine("Hello, World!"); //this is a statement in the method Main
8         Program program = new Program();
9         Console.WriteLine(pr.data);
10    }
11 }
```



Solution Explorer

Search Solution Explorer (Ctrl+Shift+F)

Solution 'ConsoleApp1' (1 of 1 project)

- ConsoleApp1
 - Dependencies
- Program.cs
 - Program
 - data : int
 - Main(string[]) : void

(local variable) Program program
★ IntelliCode suggestion based on this context

Solution Explorer Git Changes

Properties

Server Explorer

Toolbox

Error List Output

Item(s) Saved

Add to Source Control Select Repository

19:55
23-03-2025



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Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs* □ ×

ConsoleApp1 Program Main(string[] args)

```
1 class Program //this is a class
2 {
3     public int data; //this is a field
4
5     static void Main(string[] args) //this is a method in the class
6     {
7         Console.WriteLine("Hello, World!"); //this is a statement in the method Main
8         Program program = new Program();
9         Console.WriteLine(program.data);
10    }
11 }
```

133 % No issues found

Output

Show output from: Build

Solution Explorer

Search Solution Explorer (Ctrl+Shift+F)

Solution 'ConsoleApp1' (1 of 1 project)

ConsoleApp1

Dependencies

Program.cs

Program

data : int

Main(string[]) : void

Solution Explorer Git Changes

Properties



Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs* □ ×

ConsoleApp1 Program Main(string[] args)

```
1 class Program //this is a class
2 {
3     public int data; //this is a field
4
5     static void Main(string[] args) //this is a method in the class
6     {
7         Console.WriteLine("Hello, World!"); //this is a statement in the method Main
8         Program program = new Program();
9         Console.WriteLine(program.data);
10    }
11 }
```

(local variable) Program program
'program' is not null here.

133 % No issues found

Output

Show output from: Build

Solution Explorer

Search Solution Explorer (Ctrl+Shift+F)

Solution 'ConsoleApp1' (1 of 1 project)

- ConsoleApp1
- Dependencies
- Program.cs
- Program
- data : int
- Main(string[]) : void

Solution Explorer Git Changes

Properties



Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs

```
ConsoleApp1 Program Main(string[] args)
1 class Program //this is a class
2 {
3     public int data; //this is a field
4
5     static void Main(string[] args) //this is a method in the class
6     {
7         Console.WriteLine("Hello, World!"); //this is a statement in the method Main
8         Program program = new Program();
9         Console.WriteLine(program.data);
10    }
11 }
```

Solution Explorer

Search Solution Explorer (Ctrl+Shift+F)

Solution 'ConsoleApp1' (1 of 1 project)

- ConsoleApp1
 - Dependencies
- C# Program.cs
 - Program
 - data : int
 - Main(string[]) : void

Microsoft Visual Studio Debug Console

```
Hello, World!
0

C:\Users\shouwick\Desktop\IITGN\playground\ConsoleApp1\
0 (0x0).
Press any key to close this window . . .
```

133 % No issues found

Output

Show output from: Build

```
1>ConsoleApp1 - C:\Users\shouwick\Desktop\IITGN\playground\ConsoleApp1\ConsoleApp1.csproj
1>Done building project "ConsoleApp1.csproj".
===== Build: 1 succeeded, 0 failed
===== Build completed at 19:55 am
```

Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs*

```
ConsoleApp1 Program Main(string[] args)
1 class Program //this is a class
2 {
3     public int data; //this is a field
4
5     static void Main(string[] args) //this is a method in the class
6     {
7         Console.WriteLine("Hello, World!"); //this is a statement in the methon Main
8         Program program1 = new Program();
9         Program program2 = new Program();
10        Program program3 = new Program();
11    }
12 }
13 }
```

133 %

Output

```
Show output from: Build
1>Done building project "ConsoleApp1.csproj".
===== Build: 1 succeeded, 0 failed, 0 up-to-date, 0 skipped =====
===== Build completed at 19:55 and took 00.480 seconds =====
```

Server Explorer

Toolbox

Error List

Output

Build succeeded

↑ Add to Source Control ▾ Select Repository ▾

33

19:56

23-03-2025

Solution Explorer

Search Solution Explorer (Ctrl+;) 

- Solution 'ConsoleApp1' (1 of 1 project)
 - ConsoleApp1
 - Dependencies
 - Program.cs
 - Program
 - data : int
 - Main(string[]) : void

Solution Explorer

Properties



Type here to search





Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs*

ConsoleApp1 Program Main(string[] args)

```
1 class Program //this is a class
2 {
3     public int data; //this is a field
4
5     static void Main(string[] args) //this is a method in the class
6     {
7         Console.WriteLine("Hello, World!"); //this is a statement in the methon Main
8         Program program1 = new Program();
9         Program program2 = new Program();
10        Program program3 = new Program();
11        program1.data = 1;
12    }
13 }
```

Solution Explorer

Search Solution Explorer (Ctrl+Shift+F)

Solution 'ConsoleApp1' (1 of 1 project)

- ConsoleApp1
- Dependencies
- Program.cs
- Program
 - data : int
 - Main(string[]) : void

Solution Explorer Git Changes

Properties

Output

Show output from: Build

```
1>Done building project "ConsoleApp1.csproj".
===== Build: 1 succeeded, 0 failed, 0 up-to-date, 0 skipped =====
===== Build completed at 19:55 and took 00.480 seconds =====
```

Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs*

```
ConsoleApp1    Program    Main(string[] args)
1   class Program //this is a class
2   {
3       public int data; //this is a field
4
5       static void Main(string[] args) //this is a method in the class
6       {
7           Console.WriteLine("Hello, World!"); //this is a statement in the methon Main
8           Program program1 = new Program();
9           Program program2 = new Program();
10          Program program3 = new Program();
11          program1.data = 1;
12          program2.data = 2;
13      }
14  }
```

Solution Explorer

Search Solution Explorer (Ctrl+;) GitHub Copilot

- Solution 'ConsoleApp1' (1 of 1 project)
 - ConsoleApp1
 - Dependencies
 - C# Program.cs
 - Program
 - data : int
 - Main(string[]) : void

Solution Explorer Git Changes

Properties

133% No issues found

Output

Show output from: Build

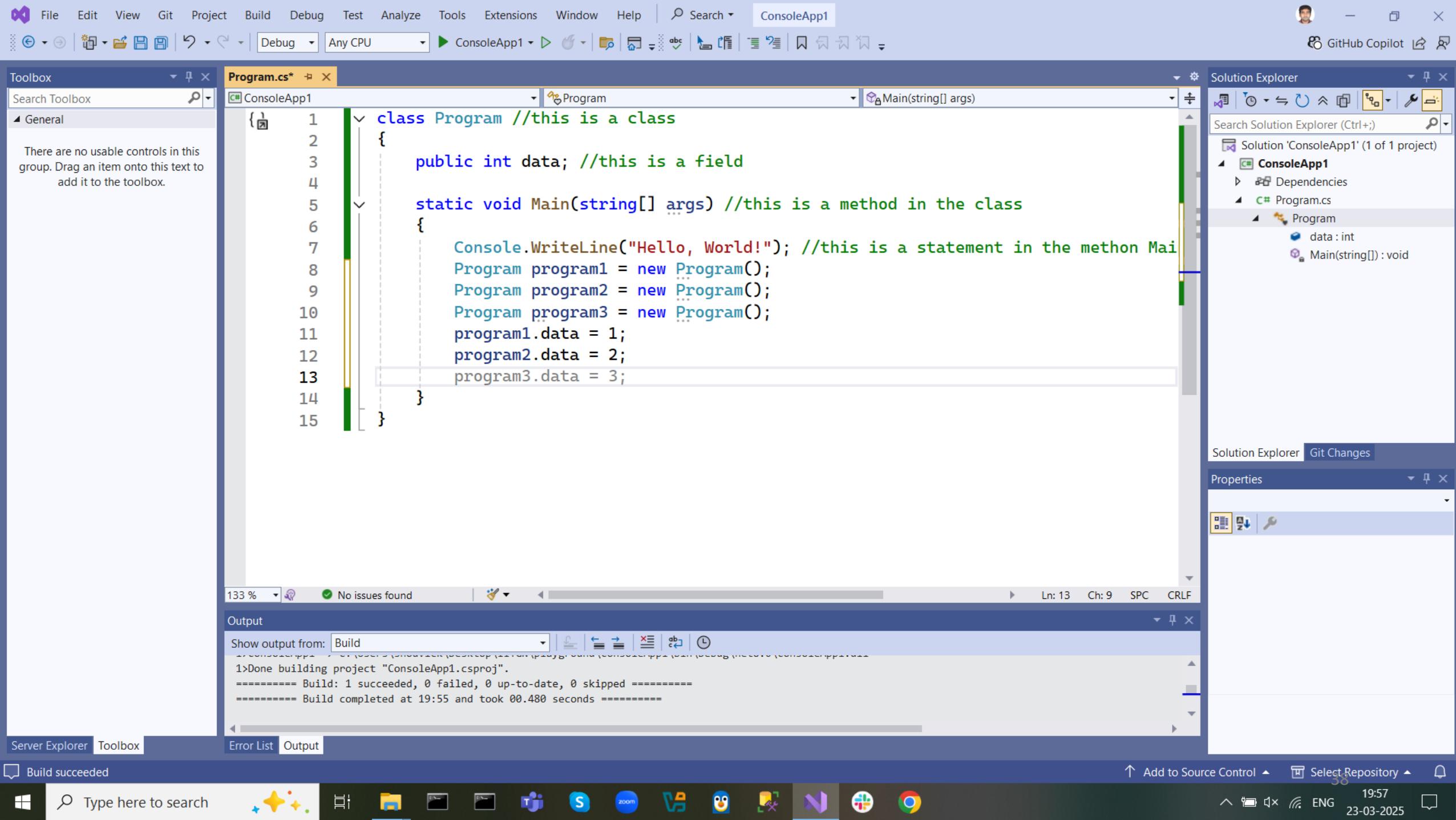
```
1>Done building project "ConsoleApp1.csproj".
===== Build: 1 succeeded, 0 failed, 0 up-to-date, 0 skipped =====
===== Build completed at 19:55 and took 00.480 seconds =====
```

Server Explorer

Error List Output

Build succeeded Add to Source Control Select Repository

19:57
23-03-2025





Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs* □ ×

ConsoleApp1 Program Main(string[] args)

```
1 class Program //this is a class
2 {
3     public int data; //this is a field
4
5     static void Main(string[] args) //this is a method in the class
6     {
7         Console.WriteLine("Hello, World!"); //this is a statement in the methon Main
8         Program program1 = new Program();
9         Program program2 = new Program();
10        Program program3 = new Program();
11        program1.data = 1;
12        program2.data = 2;
13        program3.data = 3;
14        program3.data = 4;
15    }
16 }
```

133 % No issues found

Solution Explorer

Search Solution Explorer (Ctrl+;)

Solution 'ConsoleApp1' (1 of 1 project)

- ConsoleApp1
- Dependencies
- Program.cs
- Program
 - data : int
 - Main(string[]) : void

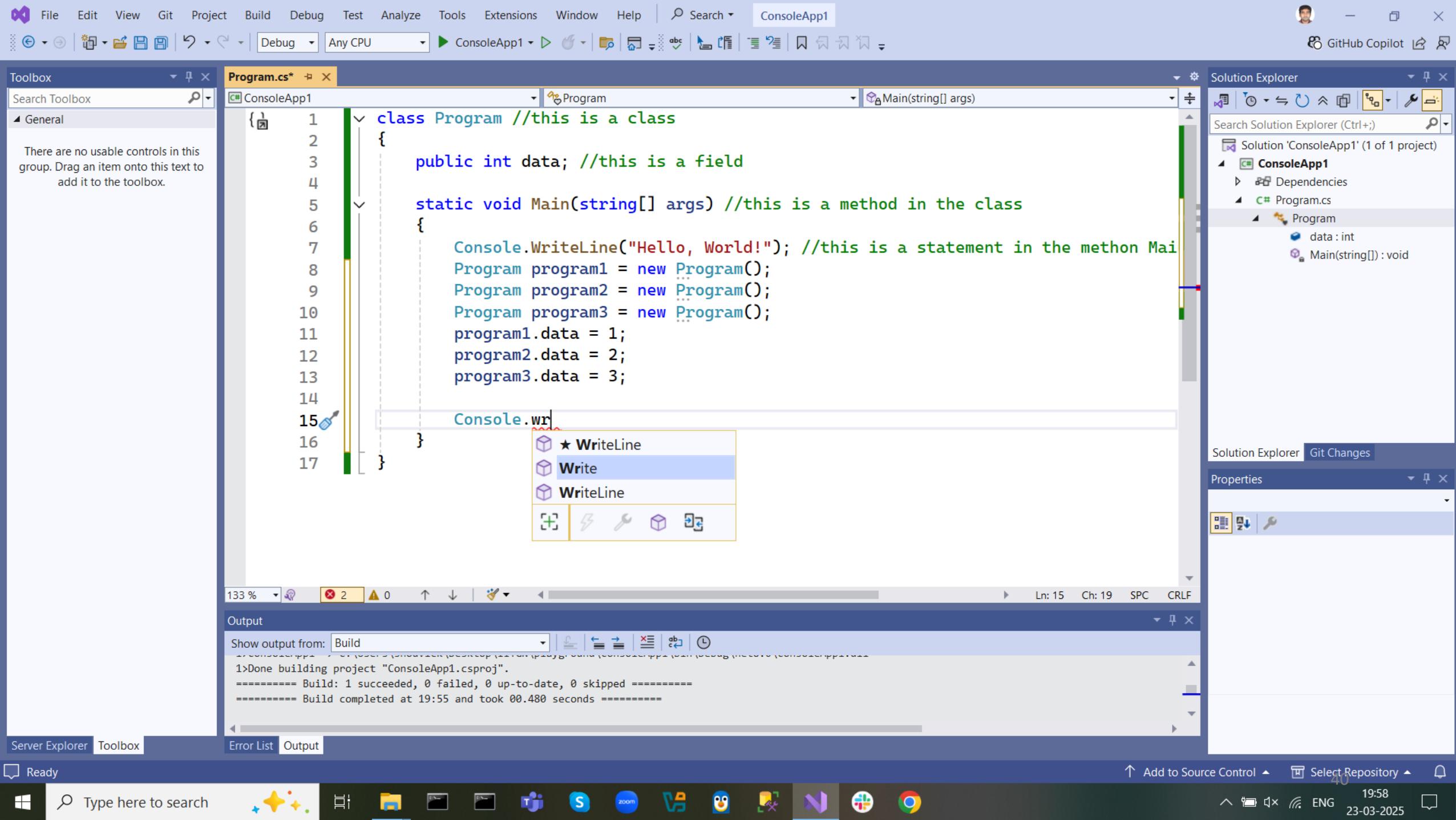
Solution Explorer Git Changes

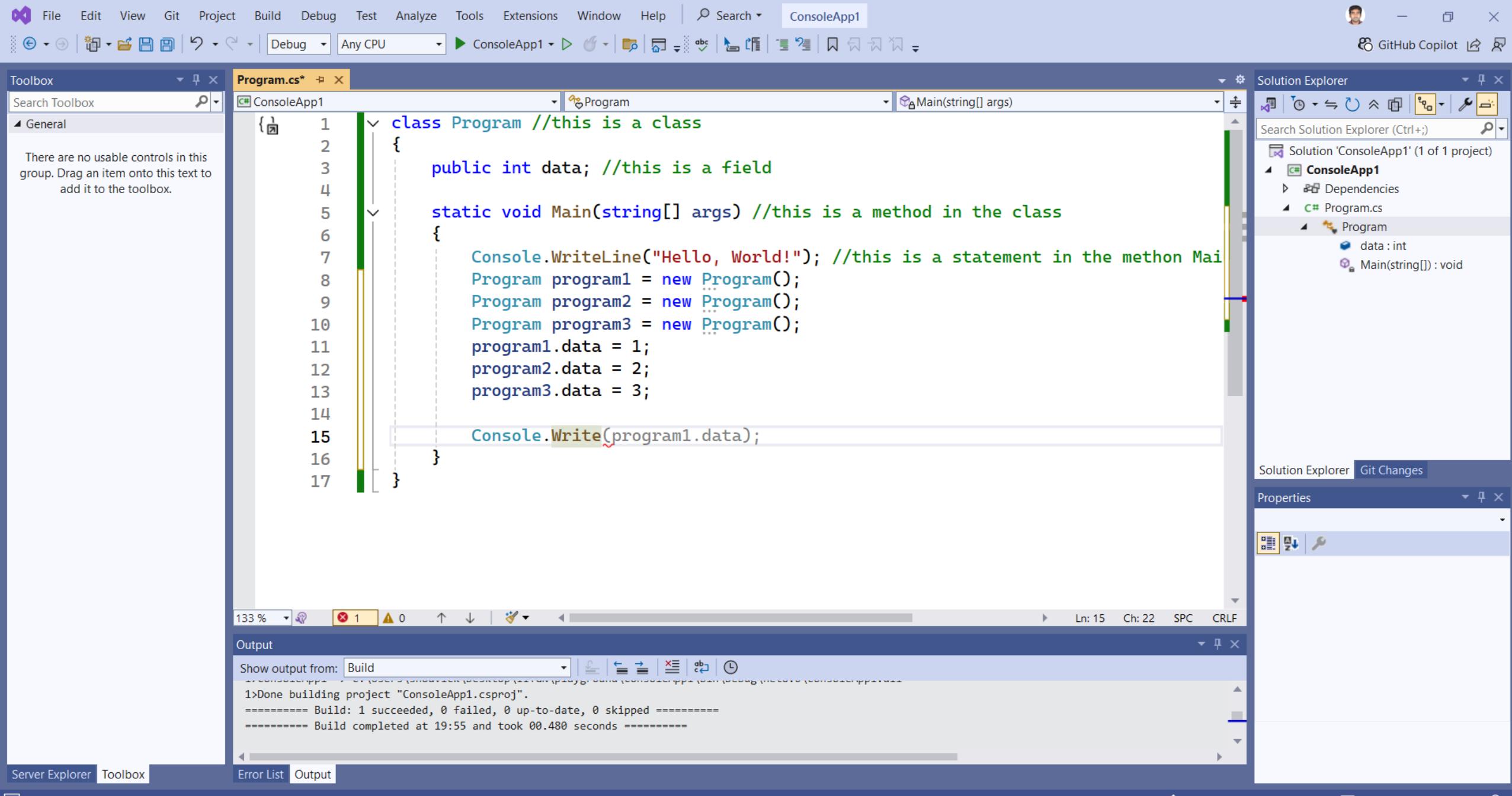
Properties

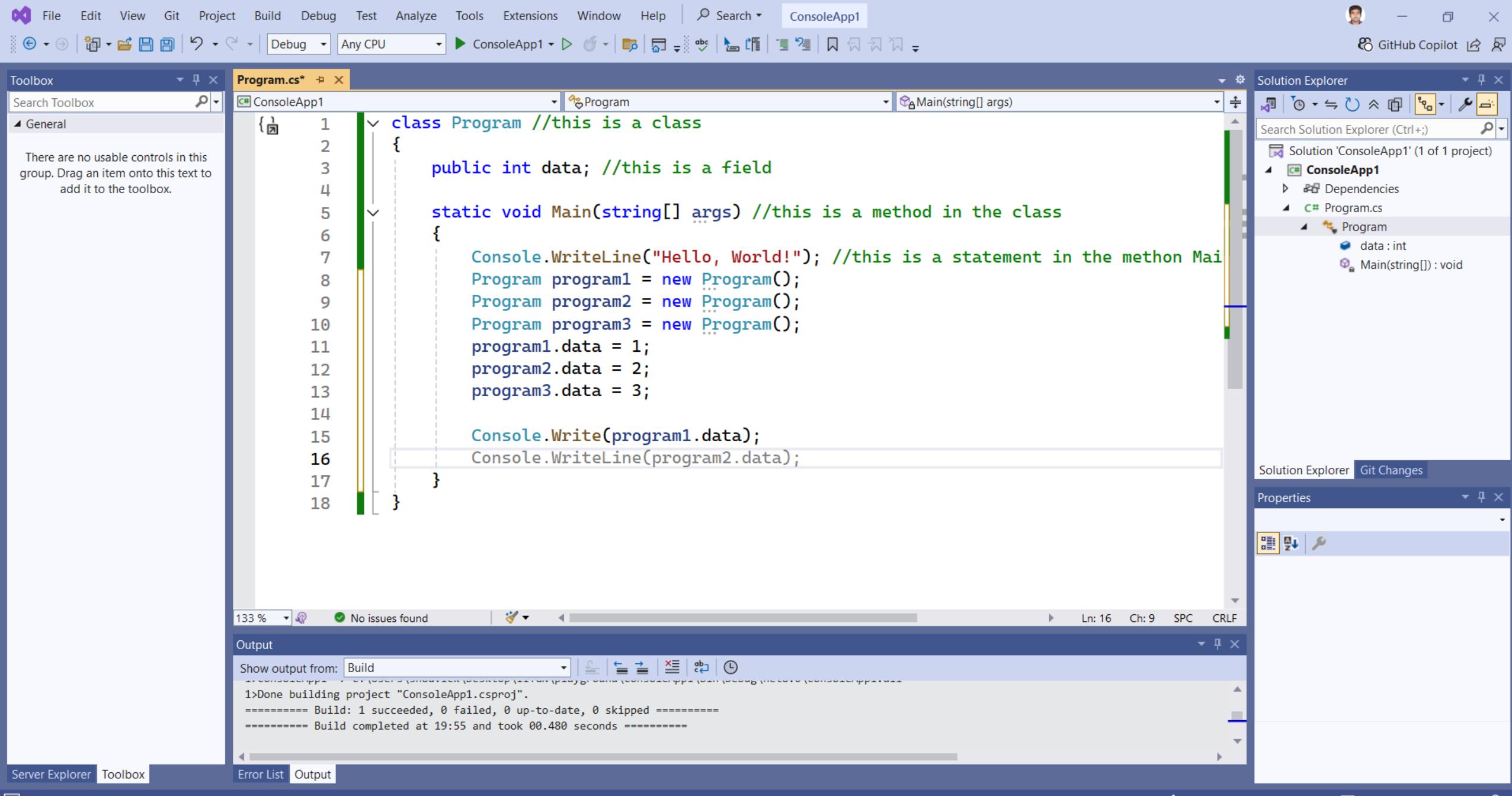
Output

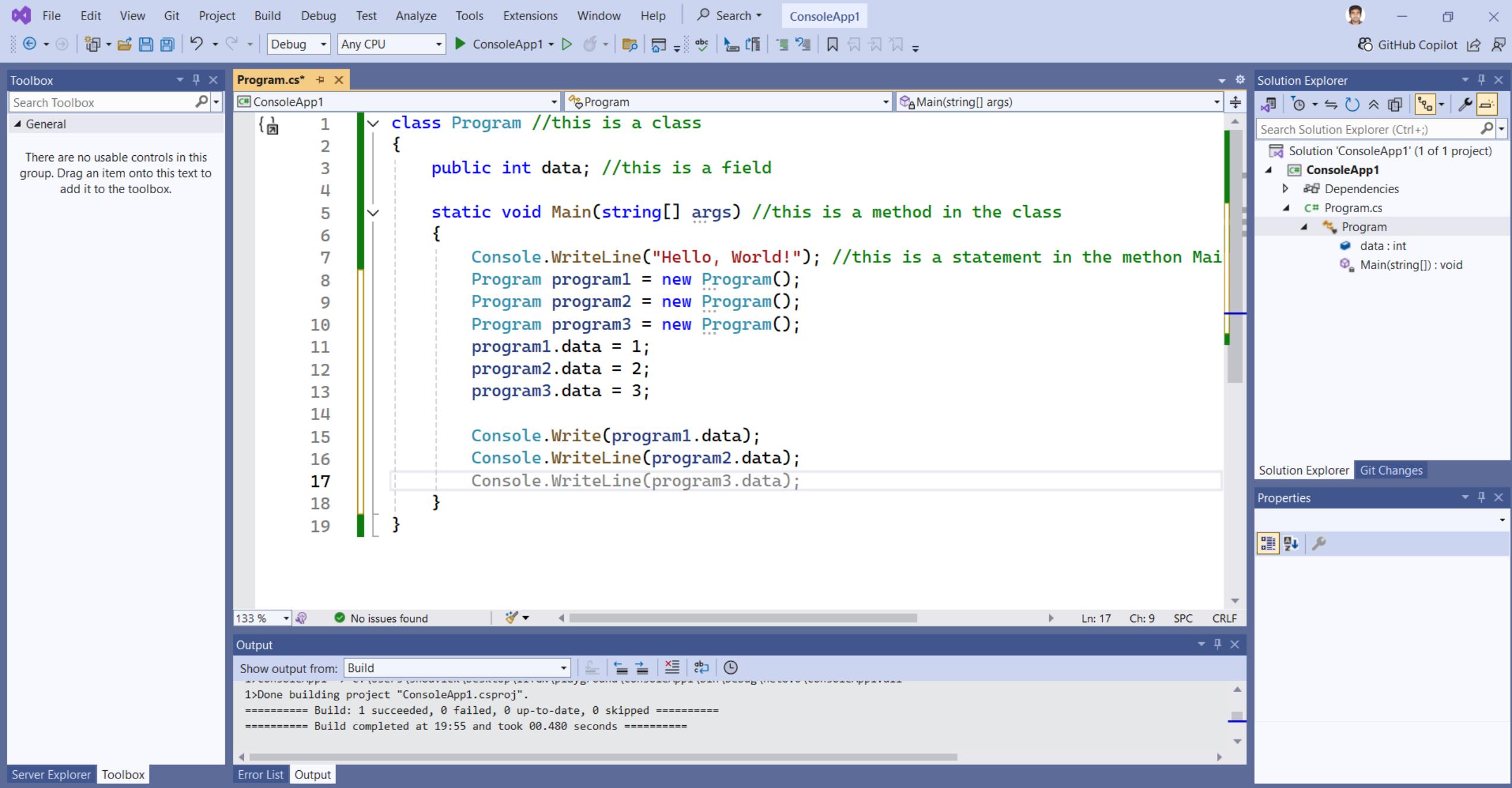
Show output from: Build

```
1>Done building project "ConsoleApp1.csproj".
===== Build: 1 succeeded, 0 failed, 0 up-to-date, 0 skipped =====
===== Build completed at 19:55 and took 00.480 seconds =====
```









Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs

```
ConsoleApp1 Program Main(string[] args)
1 class Program //this is a class
2 {
3     public int data; //this is a field
4
5     static void Main(string[] args) //this is a method in the class
6     {
7         Console.WriteLine("Hello, World!"); //this is a statement in the methon Main
8         Program program1 = new Program();
9         Program program2 = new Program();
10        Program program3 = new Program();
11        program1.data = 1;
12        program2.data = 2;
13        program3.data = 3;
14
15        Console.Write(program1.data);
16        Console.WriteLine(program2.data);
17        Console.WriteLine(program3.data);
18    }
19 }
```

Saved Change

Solution Explorer

Search Solution Explorer (Ctrl+Shift+F)

Solution 'ConsoleApp1' (1 of 1 project)

- ConsoleApp1
- Dependencies
- Program.cs
- Program
 - data : int
 - Main(string[]) : void

Solution Explorer Git Changes

Properties

133% No issues found

Output

Show output from: Build

```
1>Done building project "ConsoleApp1.csproj".
===== Build: 1 succeeded, 0 failed, 0 up-to-date, 0 skipped =====
===== Build completed at 19:55 and took 00.480 seconds =====
```

Server Explorer Toolbox

Error List Output

Add to Source Control Select Repository



Type here to search



44

19:59
ENG
23-03-2025

Toolbox ▾ X

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs ▾ X

C# ConsoleApp1 Program Main(string[] args)

```
1 class Program //this is a class
2 {
3     public int data; //this is a field
4
5     static void Main(string[] args) //this is a method in the class
6     {
7         Console.WriteLine("Hello, World!"); //this is a statement in the methon Mai
8         Program program1 = new Program();
9         Program program2 = new Program();
10        Program program3 = new Program();
11        program1.data = 1;
12        program2.data = 2;
13        program3.data = 3;
14
15        Console.Write(program1.data);
16        Console.WriteLine(program2.data);
17        Console.WriteLine(program3.data);
18    }
19 }
```

133 % No issues found

Output Show output from: Build

Solution Explorer ▾ X

Search Solution Explorer (Ctrl+;)

Solution 'ConsoleApp1' (1 of 1 project)

- ConsoleApp1
 - Dependencies
- Program.cs
 - Program
 - data : int
 - Main(string[]) : void

Microsoft Visual Studio Debug Console

Hello, World!

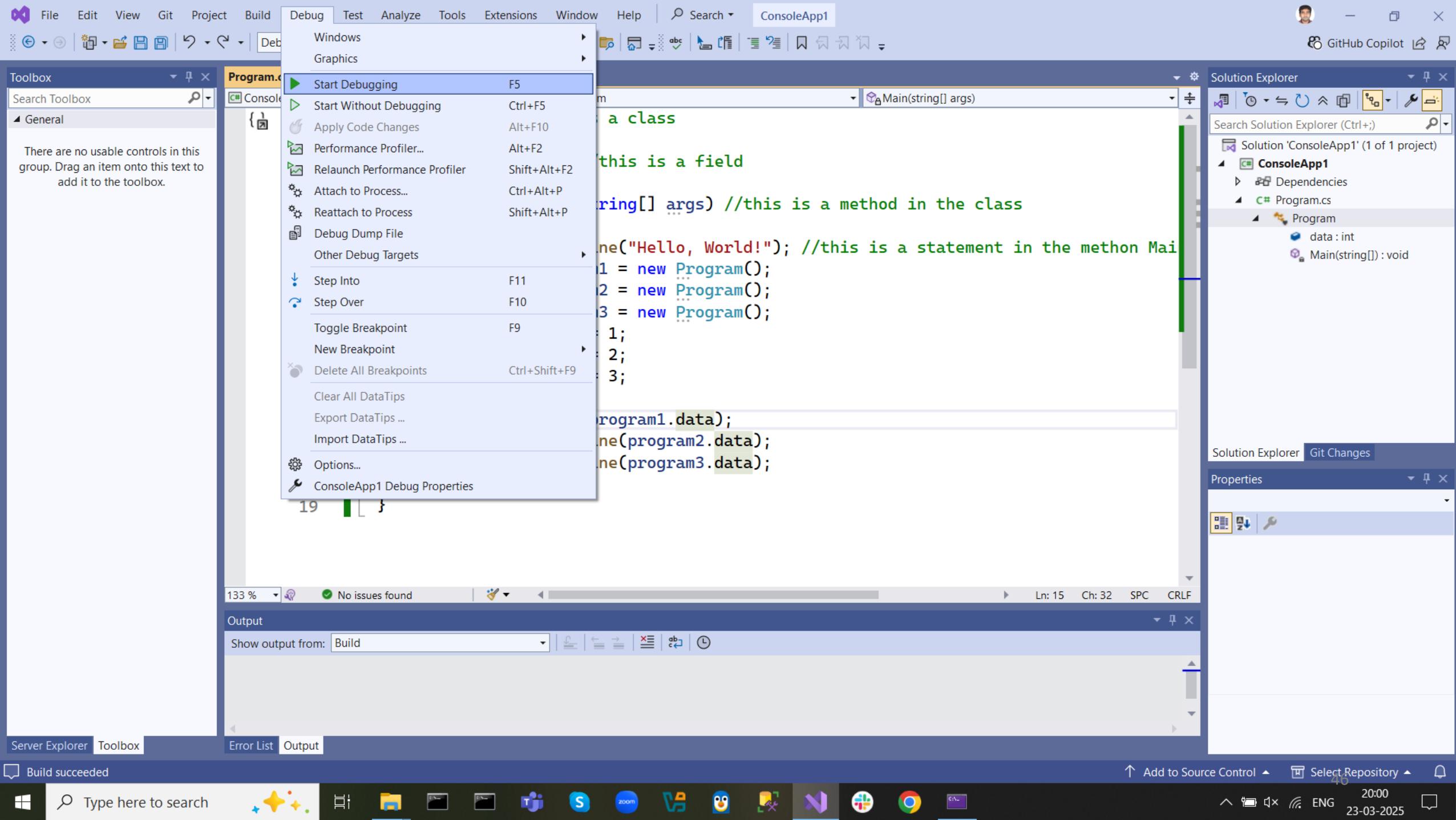
12

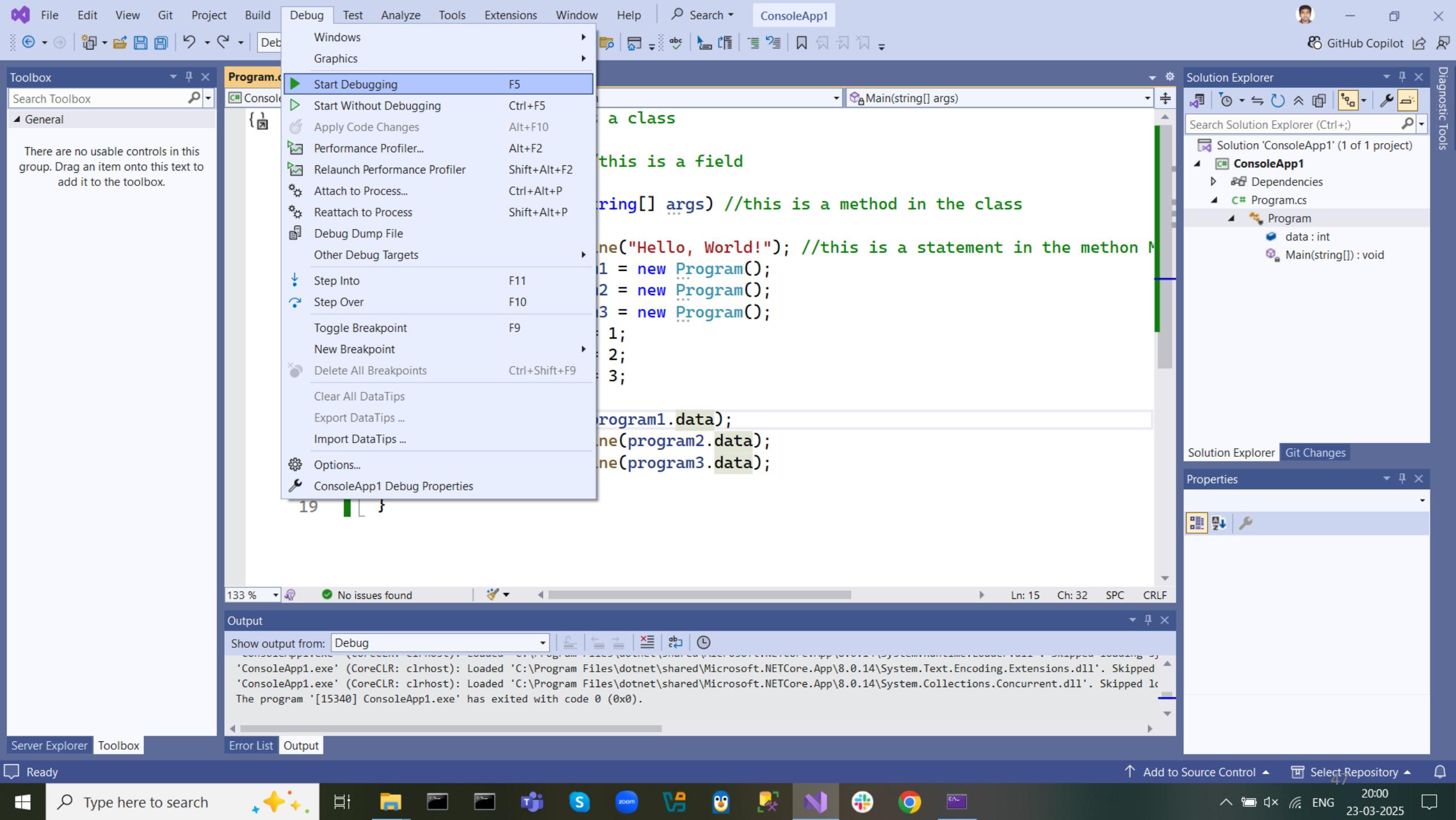
3

C:\Users\shouwick\Desktop\IITGN\pl

0 (0x0).

Press any key to close this window







Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs

```
ConsoleApp1 Program Main(string[] args)
1 class Program //this is a class
2 {
3     public int data; //this is a field
4
5     static void Main(string[] args) //this is a method in the class
6     {
7         Console.Wri
8         Program pro
9         Program pro
10        Program pro
11        program1.da
12        program2.da
13        program3.da
14
15        Console.Wri
16        Console.Wri
17        Console.Wri
18    }
19 }
```

Microsoft Visual Studio Debug Console

```
Hello, World!
Program pro12
Program pro3
Program proC:\Users\shouvik\Desktop\IITGN\playground\ConsoleApp1\bin\Debug\net8.0\ConsoleApp1.exe (process 6476) exited with code
program1.da0 (0x0).
program2.daTo automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the conso
le when debugging stops.
program3.daPress any key to close this window . . .
```

133 %

Output

```
Show output from: Debug
ConsoleApp1.exe' (CoreCLR: clrhost): Loaded 'C:\Program Files\dotnet\shared\Microsoft.NET Core Hostlibs\OSAbstraction.dll'
'ConsoleApp1.exe' (CoreCLR: clrhost): Loaded 'C:\Program Files\dotnet\shared\Microsoft.NET Core Hostlibs\Windows.dll'
'ConsoleApp1.exe' (CoreCLR: clrhost): Loaded 'C:\Program Files\dotnet\shared\Microsoft.NET Core Hostlibs\Windows.dll'
The program '[6476] ConsoleApp1.exe' has exited with code 0.
```

Solution Explorer

Search Solution Explorer (Ctrl+;) 

- Solution 'ConsoleApp1' (1 of 1 project)
 - ConsoleApp1
 - Dependencies
 - Program.cs
 - Program

Server Explorer

Toolbox

Error List

Output

Add to Source Control Select Repository  48



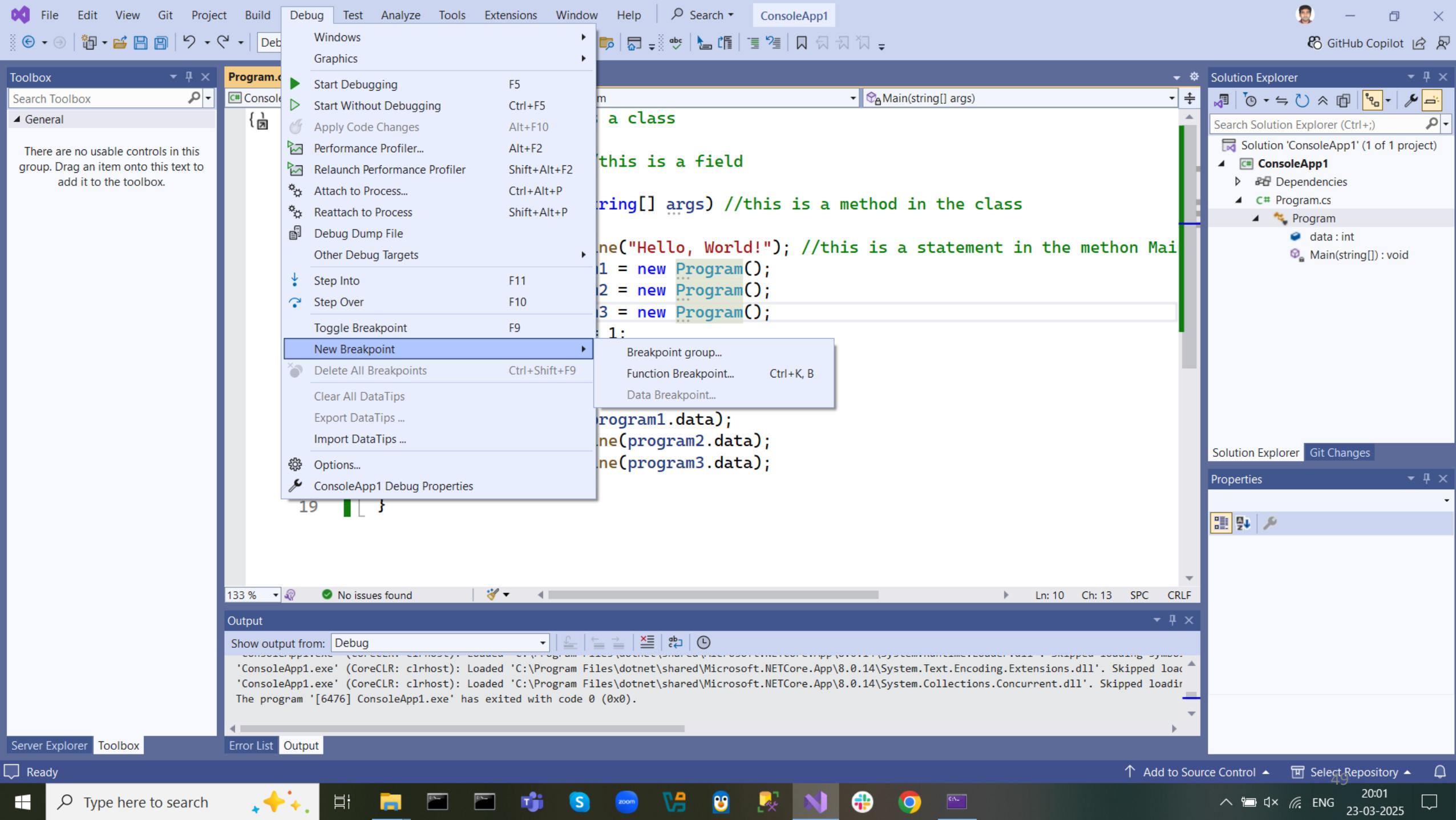
Type here to search



20:00

23-03-2025







GitHub Copilot

Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs

```
ConsoleApp1 Program Main(string[] args)
{
    class Program //this is a class
    {
        public int data; //this is a field

        static void Main(string[] args) //this is a method in the class
        {
            Console.WriteLine("Hello, World!"); //this is a statement in the methon Main
            Program program1 = new Program();
            Program program2 = new Program();
            Program program3 = new Program();
            program1.data = 1;
            program2.data = 2;
            program3.data = 3;

            Console.Write(program1.data);
            Console.WriteLine(program2.data);
            Console.WriteLine(program3.data);
        }
    }
}
```

133 % No issues found

Output

Show output from: Debug

```
ConsoleApp1.exe' (CoreCLR: clrhost): Loaded 'C:\Program Files\dotnet\shared\Microsoft.NETCore.App\8.0.14\System.Text.Encoding.Extensions.dll'. Skipped loading symbols.
'ConsoleApp1.exe' (CoreCLR: clrhost): Loaded 'C:\Program Files\dotnet\shared\Microsoft.NETCore.App\8.0.14\System.Collections.Concurrent.dll'. Skipped loading symbols.
The program '[6476] ConsoleApp1.exe' has exited with code 0 (0x0).
```

Solution Explorer

Search Solution Explorer (Ctrl+;)

Solution 'ConsoleApp1' (1 of 1 project)

- ConsoleApp1
 - Dependencies
- Program.cs
 - Program
 - data : int
 - Main(string[]) : void

Solution Explorer Git Changes

Properties

Server Explorer

Toolbox

Error List Output

Add to Source Control Select Repository

20:01

23-03-2025



Type here to search



Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs

```
ConsoleApp1 Program Main(string[] args)
1 class Program //this is a class
2 {
3     public int data; //this is a field
4
5     static void Main(string[] args) //this is a method in the class
6     {
7         Console.WriteLine("Hello, World!"); //this is a statement in the methon Main
8         Program program1 = new Program();
9         Program program2 = new Program();
10        Program program3 = new Program();
11        program2.data = 2;
12        program3.data = 3;
13
14        Console.Write(program1.data);
15        Console.WriteLine(program2.data);
16        Console.WriteLine(program3.data);
17
18    }
19 }
```

133 % No issues found

Output

Show output from: Debug

```
ConsoleApp1.exe (CoreCLR: clrhost): Loaded 'C:\Program Files\dotnet\shared\Microsoft.NETCore.App\8.0.14\System.Text.Encoding.Extensions.dll'. Skipped loading symbols.
'ConsoleApp1.exe' (CoreCLR: clrhost): Loaded 'C:\Program Files\dotnet\shared\Microsoft.NETCore.App\8.0.14\System.Collections.Concurrent.dll'. Skipped loading symbols.
The program '[6476] ConsoleApp1.exe' has exited with code 0 (0x0).
```

Server Explorer

Toolbox

Error List

Output

Add to Source Control Select Repository

20:02

23-03-2025

Solution Explorer

Search Solution Explorer (Ctrl+;) Solution 'ConsoleApp1' (1 of 1 project)

- ConsoleApp1
- Dependencies
- Program.cs
- Program
 - data : int
 - Main(string[]) : void

Solution Explorer

Properties



Type here to search



Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs

```
ConsoleApp1 Program Main(string[] args)
1 class Program //this is a class
2 {
3     public int data; //this is a field
4
5     static void Main(string[] args) //this is a method in the class
6     {
7         Console.WriteLine("Hello, World!"); //this is a statement in the methon Main
8         Program program1 = new Program();
9         Program program2 = new Program();
10        Program program3 = new Program();
11        program1.data = 1;
12        program2.data = 2;
13        program3.data = 3;
14
15        Console.WriteLine(program1.data);
16        Console.WriteLine(program2.data);
17        Console.WriteLine(program3.data);
18    }
19 }
```

- Delete Breakpoint
- Disable Breakpoint Ctrl+F9
- Conditions... Alt+F9, C
- Actions... Alt+F9, L
- Add to Breakpoint Group
- Export...

Output

Show output from: Debug

```
ConsoleApp1.exe' (CoreCLR: clrhost): Loaded 'C:\Program Files\dotnet\shared\Microsoft.NETCore.App\8.0.14\System.Text.Encoding.Extensions.dll'. Skipped loading symbols.
'ConsoleApp1.exe' (CoreCLR: clrhost): Loaded 'C:\Program Files\dotnet\shared\Microsoft.NETCore.App\8.0.14\System.Collections.Concurrent.dll'. Skipped loading symbols.
The program '[6476] ConsoleApp1.exe' has exited with code 0 (0x0).
```

Solution Explorer

Solution 'ConsoleApp1' (1 of 1 project)

- ConsoleApp1
 - Dependencies
 - Program.cs
 - Program
 - data : int
 - Main(string[]) : void

Solution Explorer Git Changes

Properties



Server Explorer

Toolbox

Error List

Output

↑ Add to Source Control ▾ Select Repository ▾

Ready Type here to search  20:02 23-03-2025 ENG

Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs

ConsoleApp1

```
class Program //this is a class
{
    public int data; //this is a field

    static void Main(string[] args) //this is a method in the class
    {
        Console.WriteLine("Hello, World!"); //this is a statement in the methon Main
        Program program1 = new Program();
        Program program2 = new Program();
        Program program3 = new Program();
        program1.data = 1;
        program2.data = 2;
        program3.data = 3;

        Console.Write(program1.data);
        Console.WriteLine(program2.data);
        e(program3.data);
    }
}
```

Location: Program.cs, line 16 character 9 ('Program.Main(string[] args)')

19 }

133 %

Output

Show output from: Debug

```
ConsoleApp1.exe (CoreCLR: clrhost): Loaded 'C:\Program Files\dotnet\shared\Microsoft.NETCore.App\8.0.14\System.Text.Encoding.Extensions.dll'. Skipped loading symbols.
'ConsoleApp1.exe' (CoreCLR: clrhost): Loaded 'C:\Program Files\dotnet\shared\Microsoft.NETCore.App\8.0.14\System.Collections.Concurrent.dll'. Skipped loading symbols.
The program '[6476] ConsoleApp1.exe' has exited with code 0 (0x0).
```

Server Explorer

Toolbox

Error List

Output

Add to Source Control Select Repository

33 20:02
ENG 23-03-2025



Type here to search



Ready Add to Source Control Select Repository 33 20:02 ENG 23-03-2025

Solution Explorer

Search Solution Explorer (Ctrl+Shift+F)

Solution 'ConsoleApp1' (1 of 1 project)

ConsoleApp1

Dependencies

Program.cs

Program

data : int

Main(string[]) : void

Solution Explorer Git Changes

Properties

Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs

ConsoleApp1

Program

Main(string[] args)

```
1 class Program //this is a class
2 {
3     public int data; //this is a field
4
5     static void Main(string[] args) //this is a method in the class
6     {
7         Console.WriteLine("Hello, World!"); //this is a statement in the methon Main
8         Program program1 = new Program();
9         Program program2 = new Program();
10        Program program3 = new Program();
11        program1.data = 1;
12        program2.data = 2;
13        program3.data = 3;
14
15        Console.Write(program1.data);
16        Console.WriteLine(program2.data);
17        Console.WriteLine(program3.data);
18    }
19 }
```

133 %



No issues found

Output

Show output from: Debug

```
ConsoleApp1.exe' (CoreCLR: clrhost): Loaded 'C:\Program Files\dotnet\shared\Microsoft.NETCore.App\8.0.14\System.Text.Encoding.Extensions.dll'. Skipped loading symbols.
'ConsoleApp1.exe' (CoreCLR: clrhost): Loaded 'C:\Program Files\dotnet\shared\Microsoft.NETCore.App\8.0.14\System.Collections.Concurrent.dll'. Skipped loading symbols.
The program '[6476] ConsoleApp1.exe' has exited with code 0 (0x0).
```

Server Explorer

Toolbox

Error List

Output

Add to Source Control Select Repository

34

20:02

23-03-2025

Solution Explorer

Search Solution Explorer (Ctrl+Shift+F)

Solution 'ConsoleApp1' (1 of 1 project)

ConsoleApp1

Dependencies

Program.cs

Program

data : int

Main(string[]) : void

Solution Explorer Git Changes

Properties

A Z

Key



Type here to search





Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs

```
ConsoleApp1 Program Main(string[] args)
1 class Program //this is a class
2 {
3     public int data; //this is a field
4
5     static void Main(string[] args) //this is a method in the class
6     {
7         Console.WriteLine("Hello, World!"); //this is a statement in the methon Main
8         Program program1 = new Program();
9         Program program2 = new Program();
10        Program program3 = new Program();
11        program1.data = 1;
12        program2.data = 2;
13        program3.data = 3;
14
15        Console.Write(program1.data);
16        Console.WriteLine(program2.data);
17        Console.WriteLine(program3.data);
18    }
19 }
```

Solution Explorer

Search Solution Explorer (Ctrl+Shift+F)

Solution 'ConsoleApp1' (1 of 1 project)

- ConsoleApp1
 - Dependencies
 - Program.cs
 - Program
 - data : int
 - Main(string[]) : void

Solution Explorer Git Changes

Properties

133 % No issues found

Output

Show output from: Debug

```
ConsoleApp1.exe (CoreCLR: clrhost): Loaded 'C:\Program Files\dotnet\shared\Microsoft.NETCore.App\8.0.14\System.Text.Encoding.Extensions.dll'. Skipped loading symbols.
'ConsoleApp1.exe' (CoreCLR: clrhost): Loaded 'C:\Program Files\dotnet\shared\Microsoft.NETCore.App\8.0.14\System.Collections.Concurrent.dll'. Skipped loading symbols.
The program '[6476] ConsoleApp1.exe' has exited with code 0 (0x0).
```

Server Explorer Toolbox

Error List Output

A breakpoint could not be inserted at this location.

Add to Source Control Select Repository



Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs

```
ConsoleApp1
```

Program

Main(string[] args)

```
class Program //this is a class
{
    public int data; //this is a field

    static void Main(string[] args) //this is a method in the class
    {
        Console.WriteLine("Hello, World!"); //this is a statement in the methon Main
        Program program1 = new Program();
        Program program2 = new Program();
        Program program3 = new Program();
        program1.data = 1;
        program2.data = 2;
        program3.data = 3;

        Console.Write(program1.data);
        Console.WriteLine(program2.data);
        Console.WriteLine(program3.data);
    }
}
```

Solution Explorer

Search Solution Explorer (Ctrl+Shift+F)

Solution 'ConsoleApp1' (1 of 1 project)

- ConsoleApp1
- Dependencies
- Program.cs
- Program
 - data : int
 - Main(string[]) : void

Solution Explorer Git Changes

Properties

133% No issues found

Output

Show output from: Debug

```
ConsoleApp1.exe' (CoreCLR: clrhost): Loaded 'C:\Program Files\dotnet\shared\Microsoft.NETCore.App\8.0.14\System.Text.Encoding.Extensions.dll'. Skipped loading symbols.
'ConsoleApp1.exe' (CoreCLR: clrhost): Loaded 'C:\Program Files\dotnet\shared\Microsoft.NETCore.App\8.0.14\System.Collections.Concurrent.dll'. Skipped loading symbols.
The program '[6476] ConsoleApp1.exe' has exited with code 0 (0x0).
```

File Edit View Git Project Build Debug Test Analyze Tools Extensions Window Help Search ConsoleApp1

Process: [1072] ConsoleApp1.exe Lifecycle Events Thread: [10428] Main Thread Stack Frame: Program.Main

Program.cs

```
ConsoleApp1
Program.cs
Main(string[] args)
```

```
1 class Program //this is a class
2 {
3     public int data; //this is a field
4
5     static void Main(string[] args) //this is a method in the class
6     {
7         Console.WriteLine("Hello, World!"); //this is a statement in the methon Main()
8         Program program1 = new Program();
9         Program program2 = new Program();
10        Program program3 = new Program();
11        program1.data = 1;
12        program2.data = 2;
13        program3.data = 3;
14
15        Console.Write(program1.data);
16        Console.WriteLine(program2.data);
17        Console.WriteLine(program3.data);
18    }
19 }
```

Diagnostic Tools

Diagnostics session: 0 seconds (415 ms selected)

Events

Process Memory

CPU (% of all processors)

Summary Events Counters Memory Usage CPU

Events

.NET Counters

Memory Usage

Take Snapshot

Autos

Search (Ctrl+E) Search Depth: 3

Name	Value	Type
program1	{Program}	Program
program2	null	Program

Error List

Entire Solution

Code	Description	Project	File	Line	Suppression State
IDE0060	Remove unused parameter 'args'	ConsoleApp1	Program.cs	5	
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	8	
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	9	

Call Stack Breakpoints Exception Settings Command Window Immediate Window Output Error List

Ready Add to Source Control Select Repository 20:04 23-03-2025

File Edit View Git Project Build Debug Test Analyze Tools Extensions Window Help Search ConsoleApp1

Process: [1072] ConsoleApp1.exe Lifecycle Events Thread: [10428] Main Thread Stack Frame: Program.Main

Program.cs

```
ConsoleApp1
Program.cs
Main(string[] args)
```

Diagnostic Tools

Diagnostics session: 0 seconds (415 ms selected)

Events

Process Memory

CPU (% of all processors)

Summary Events Counters Memory Usage CPU

Events

.NET Counters

Memory Usage

Take Snapshot

Program.cs

```
1 class Program //this is a class
2 {
3     public int data; //this is a field
4
5     static void Main(string[] args) //this is a method in the class
6     {
7         Console.WriteLine("Hello, World!"); //this is a statement in the method Main()
8         Program program1 = new Program();
9         Program program2 = new Program(); // Line 9
10        Program program3 = null; // Line 10
11        program1.data = 1;
12        program2.data = 2;
13        program3.data = 3;
14
15        Console.Write(program1.data);
16        Console.WriteLine(program2.data);
17        Console.WriteLine(program3.data);
18    }
19 }
```

Autos

Search (Ctrl+E) Search Depth: 3

Name	Value	Type
program1	{Program}	Program
program2	null	Program

Error List

Entire Solution 0 Errors 0 Warnings 4 Messages Build + IntelliSense

	Code	Description	Project	File	Line	Suppression State
IDE0060	Remove unused parameter 'args'	ConsoleApp1	Program.cs	5		
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	8		
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	9		

Call Stack Breakpoints Exception Settings Command Window Immediate Window Output Error List

Ready Add to Source Control Select Repository 20:04 23-03-2025

Type here to search

Screenshot of Microsoft Visual Studio showing a debugging session.

The main window displays the code for `Program.cs`:

```
1 class Program //this is a class
2 {
3     public int data; //this is a field
4
5     static void Main(string[] args) //this is a method in the class
6     {
7         Console.WriteLine("Hello, World!"); //this is a statement in the methon Main()
8         Program program1 = new Program();
9         Program program2 = new Program();
10        Program program3 = new Program();    ≤ 1ms elapsed
11        program1.data = 1;
12        program2.data = 2;
13        program3.data = 3;
14
15        Console.Write(program1.data);
16        Console.WriteLine(program2.data);
17        Console.WriteLine(program3.data);
18    }
19 }
```

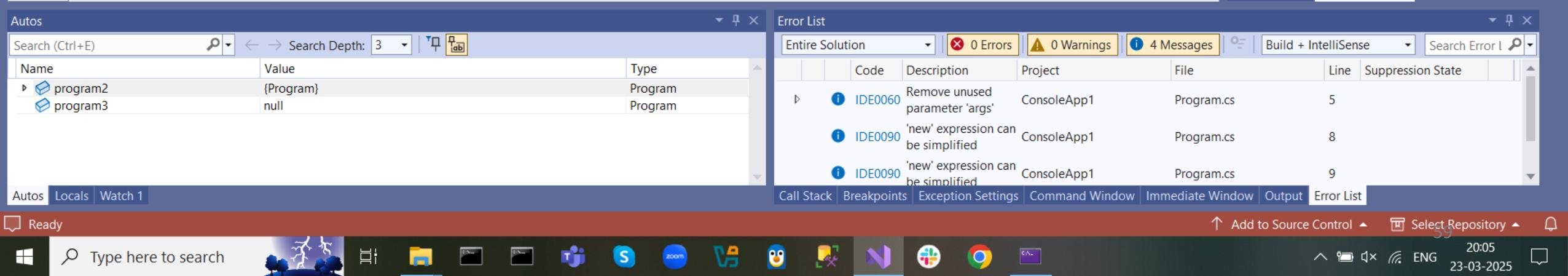
The code shows three instances of the `Program` class being created. The variable `program3` is highlighted with a yellow background. A tooltip indicates "`≤ 1ms elapsed`".

The **Diagnostic Tools** window shows performance metrics:

- Diagnostics session: 0 seconds (416 ms selected)
- Process Memory (MB): 9 MB
- CPU (% of all processors): 100%

The **Error List** window shows the following messages:

Code	Description	Project	File	Line	Suppression State
IDE0060	Remove unused parameter 'args'	ConsoleApp1	Program.cs	5	
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	8	
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	9	



Screenshot of Microsoft Visual Studio IDE showing a C# console application named "ConsoleApp1".

The code in Program.cs is:

```
class Program //this is a class
{
    public int data; //this is a field

    static void Main(string[] args) //this is a method in the class
    {
        Console.WriteLine("Hello, World!"); //this is a statement in the methon Main()
        Program program1 = new Program();
        Program program2 = new Program();
        Program program3 = new Program(); // 1ms elapsed
        program1.data = 1;
        program2.data = 2;
        program3.data = 3;

        Console.Write(program1.data);
        Console.WriteLine(program2.data);
        Console.WriteLine(program3.data);
    }
}
```

The Diagnostic Tools window shows performance metrics for the application.

Visual Studio interface showing the Error List and Autos windows.

Error List:

Entire Solution	Code	Description	Project	File	Line	Suppression State
0 Errors	IDE0060	Remove unused parameter 'args'	ConsoleApp1	Program.cs	5	
0 Warnings	IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	8	
4 Messages	IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	9	

Autos:

Name	Value	Type
program2	{Program}	Program
program3	null	Program

Bottom status bar: Ready, Add to Source Control, Select Repository, 20:05, 23-03-2025, ENG.

Screenshot of Microsoft Visual Studio IDE showing a C# console application named "ConsoleApp1".

The code in Program.cs is:

```
class Program //this is a class
{
    public int data; //this is a field

    static void Main(string[] args) //this is a method in the class
    {
        Console.WriteLine("Hello, World!"); //this is a statement in the methon Main()
        Program program1 = new Program();
        Program program2 = new Program();
        Program program3 = new Program(); // 1ms elapsed
        program1.data = 1;
        program2.data = 2;
        program3.data = 3;

        Console.Write(program1.data);
        Console.WriteLine(program2.data);
        Console.WriteLine(program3.data);
    }
}
```

The Diagnostic Tools window shows performance metrics for the application.

Visual Studio interface showing the Error List and Autos windows.

Error List:

Entire Solution	Code	Description	Project	File	Line	Suppression State
0 Errors	IDE0060	Remove unused parameter 'args'	ConsoleApp1	Program.cs	5	
0 Warnings	IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	8	
4 Messages	IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	9	

Autos:

Name	Value	Type
program2	{Program}	Program
program3	null	Program

Bottom status bar: Ready, Add to Source Control, Select Repository, 20:05, 23-03-2025, ENG.

Screenshot of Microsoft Visual Studio showing a C# console application named "ConsoleApp1".

The code in Program.cs is:

```
class Program //this is a class
{
    public int data; //this is a field

    static void Main(string[] args) //this is a method in the class
    {
        Console.WriteLine("Hello, World!"); //this is a statement in the methon Main()
        Program program1 = new Program();
        Program program2 = new Program();
        Program program3 = new Program(); // 1ms elapsed
        program1.data = 1;
        program2.data = 2;
        program3.data = 3;

        Console.Write(program1.data);
        Console.WriteLine(program2.data);
        Console.WriteLine(program3.data);
    }
}
```

The Diagnostic Tools window shows performance metrics for the application.

Visual Studio interface showing the Error List and Autos windows.

Autos Window:

Name	Value	Type
program2	{Program}	Program
program3	null	Program

Error List Window:

Code	Description	Project	File	Line	Suppression State
IDE0060	Remove unused parameter 'args'	ConsoleApp1	Program.cs	5	
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	8	
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	9	

Bottom status bar: Ready, Add to Source Control, Select Repository, 20:05, 23-03-2025, ENG.

Process: [1072] ConsoleApp1.exe Lifecycle Events Thread: [10428] Main Thread Stack Frame: Program.Main

Program.cs

```
ConsoleApp1
Program.cs
Main(string[] args)
1 class Program //this is a class
2 {
3     public int data; //this is a field
4
5     static void Main(string[] args) //this is a method in the class
6     {
7         Console.WriteLine("Hello, World!"); //this is a statement in the method Main()
8         Program program1 = new Program();
9         Program program2 = new Program();
10        Program program3 = new Program();
11        program1.data = 1; ≤ 1ms elapsed
12        program2.data = 2;
13        program3.data = 3;
14
15        Console.Write(program1.data);
16        Console.WriteLine(program2.data);
17        Console.WriteLine(program3.data);
18    }
19 }
```

Diagnostic Tools

Diagnostics session: 0 seconds (416 ms selected)

Events

Process Memory (MB)

CPU (% of all processors)

Summary Events Counters Memory Usage CPU

Events

.NET Counters

Memory Usage

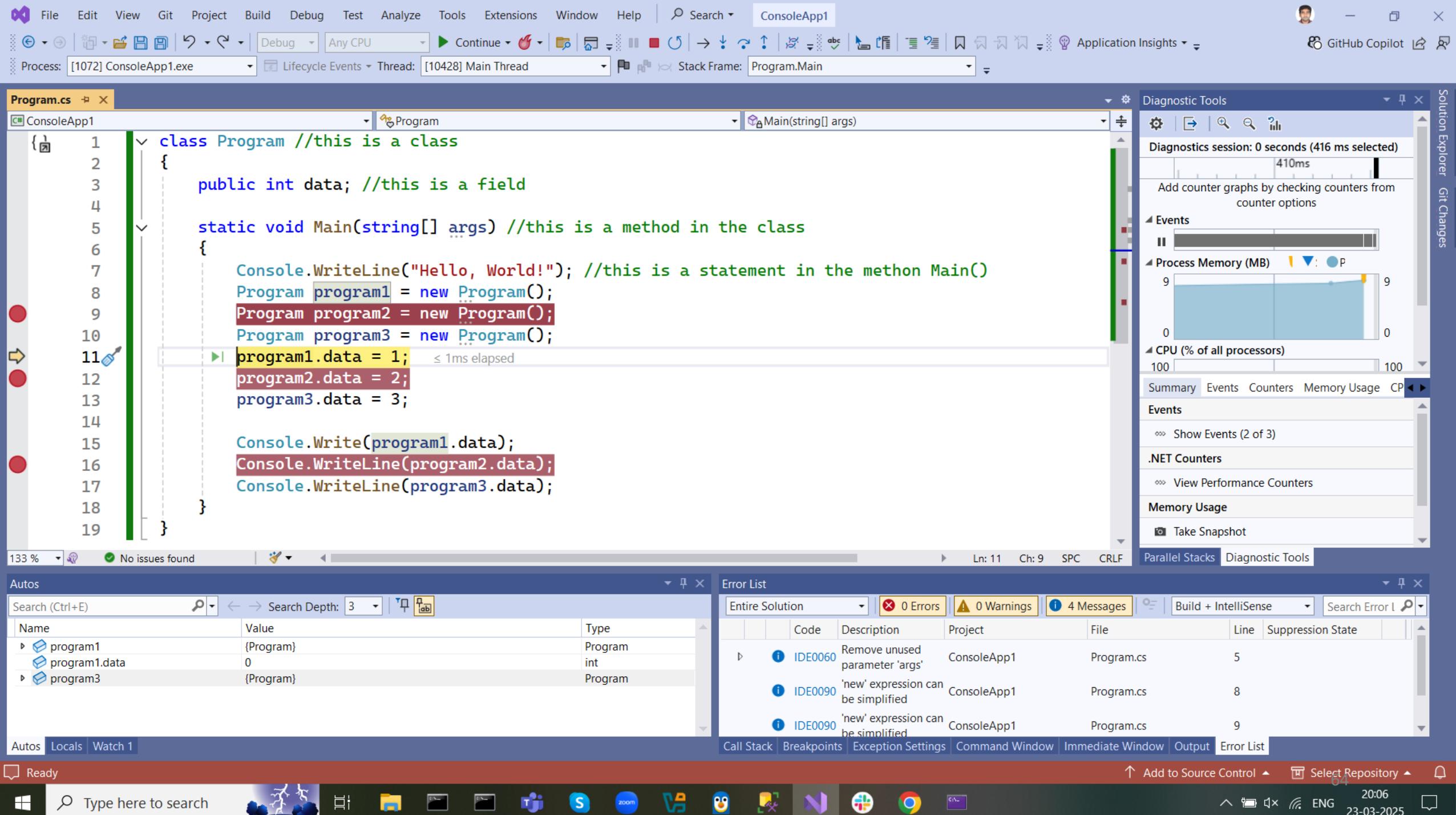
Take Snapshot

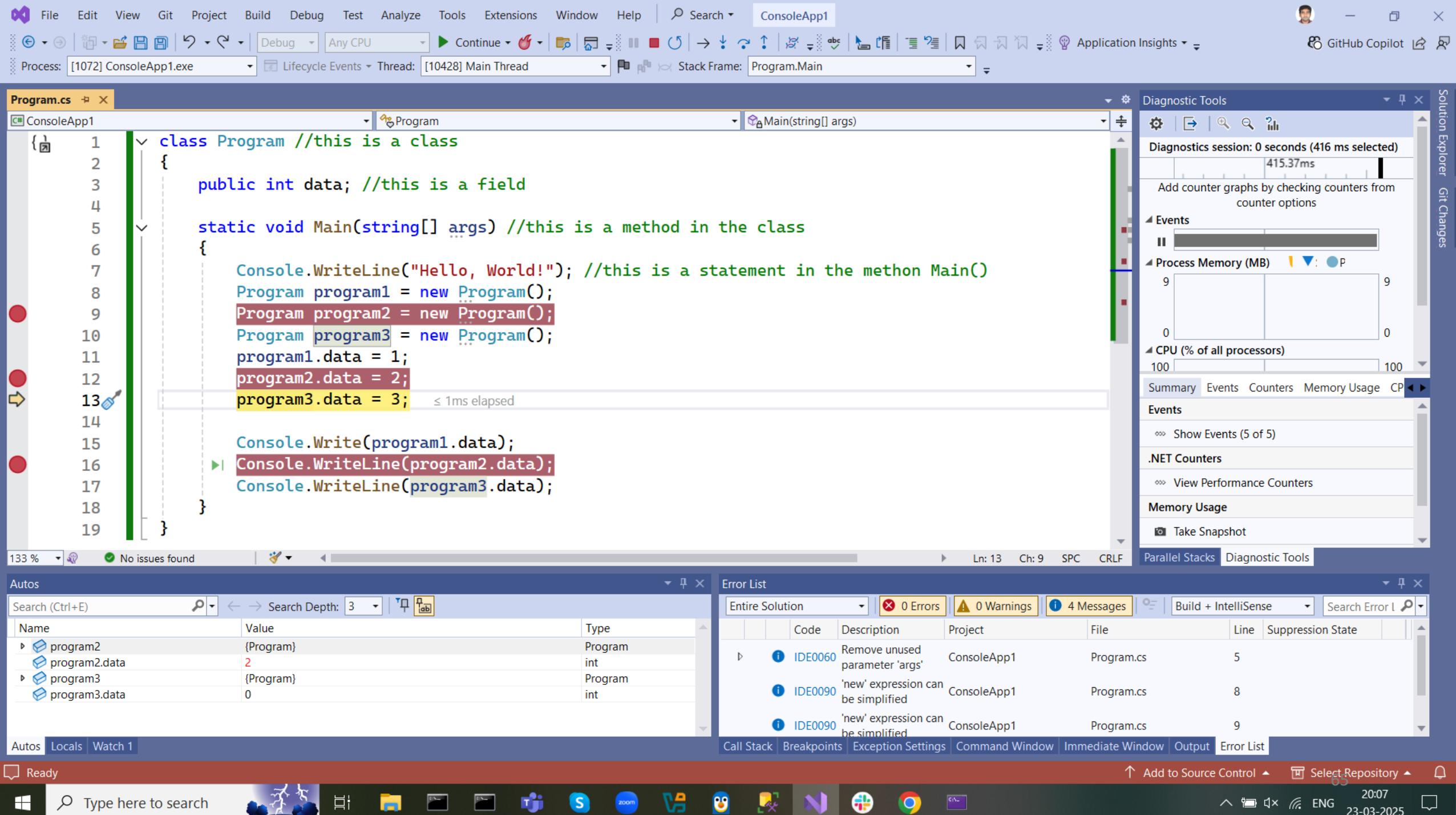
Autos

Name	Value	Type
program1	{Program}	Program
program1.data	0	int
program3	{Program}	Program

Error List

Entire Solution	0 Errors	0 Warnings	4 Messages
IDE0060 Remove unused parameter 'args'	ConsoleApp1	Program.cs	5
IDE0090 'new' expression can be simplified	ConsoleApp1	Program.cs	8
IDE0090 'new' expression can be simplified	ConsoleApp1	Program.cs	9







Process: [1072] ConsoleApp1.exe | Lifecycle Events | Thread: [10428] Main Thread | Stack Frame: Program.Main

Program.cs

```
ConsoleApp1
Program
Main(string[] args)
5 static void Main(string[] args) //this is a method in the class
6 {
7     Console.WriteLine("Hello, World!"); //this is a statement in the methon Main()
8     Program program1 = new Program();
9     Program program2 = new Program();
10    Program program3 = new Program();
11    program1.data = 1;
12    program2.data = 2;
13    program3.data = 3;
14
15    Console.Write(program1.data);
16    Console.WriteLine(program2.data);
17    Console.WriteLine(program3.data);
```

Diagnostic Tools

Diagnostics session: 0 seconds (417 ms selected)

415ms 416ms

Add counter graphs by checking counters from counter options

Events

C:\Users\shouvik\Desktop\IITGN\playground\ConsoleApp1\bin\Debug\net8.0\ConsoleApp1.exe

Hello, World!

12

133 % No issues found

Autos

Search (Ctrl+E) Search Depth: 3

Name	Value	Type
program2	{Program}	Program
program2.data	2	int
program3	{Program}	Program
program3.data	3	int

Autos Locals Watch 1



Process: [1072] ConsoleApp1.exe Lifecycle Events Thread: [10428] Main Thread Stack Frame: Program.Main

Program.cs

```
ConsoleApp1
Program
Main(string[] args)
5 static void Main(string[] args) //this is a method in the class
6 {
7     Console.WriteLine("Hello, World!"); //this is a statement in the methon Main()
8     Program program1 = new Program();
9     Program program2 = new Program();
10    Program program3 = new Program();
11    program1.data = 1;
12    program2.data = 2;
13    program3.data = 3;
14
15    Console.Write(program1.data);
16    Console.WriteLine(program2.data);
17    Console.WriteLine(program3.data);
18 }
19 }
```

Diagnostic Tools

Diagnostics session: 0 seconds (418 ms selected)

416ms

Add counter graphs by checking counters from counter options

Events

C:\Users\shouvik\Desktop\IITGN\playground\ConsoleApp1\bin\Debug\net8.0\ConsoleApp1.exe

Hello, World!

12

3

Autos

Search (Ctrl+E) Search Depth: 3

Name	Value	Type
program3	{Program}	Program
program3.data	3	int

Locals Watch 1

Ready

Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs

```
static void Main(string[] args) //this is a method in the class
{
    Console.WriteLine("Hello, World!"); //this is a statement in the method Main
    Program program1 = new Program();
    Program program2 = new Program();
    Program program3 = new Program();
    program1.data = 1;
    program2.data =
    program3.data =
}

Console.WriteLine(1);
Console.WriteLine(2);
Console.WriteLine(3)
```

Hello, World!

1

2

3

C:\Users\shouwick\Desktop\IITGN\playground\ConsoleApp1\bin\Debug\net6.0\ConsoleApp1.exe

To automatically close the console when debugging stops.

Press any key to close this window . . .

133 % No issues found

Output

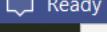
Show output from: Debug

```
The thread '.NET Worker' (16912) has exited with code 0 (0x0).
The thread '.NET TP Worker' (16912) has exited with code 0 (0x0).
Step into: Stepping over non-user code 'Program..ctor'
The program '[1072] ConsoleApp1.exe' has exited with code 0 (0x0).
```

Server Explorer

Error List

Output



Type here to search



Screenshot of Microsoft Visual Studio showing a debugging session of a C# console application.

The code in `Program.cs` is as follows:

```
public int data; //this is a field

static void Main(string[] args) //this is a method in the class
{
    Console.WriteLine("Hello, World!"); //this is a statement in the methon Main()
    Program program1 = new Program();
    Program program2 = new Program();
    Program program3 = new Program(); < 1ms elapsed
    program1.data = 1;
    program2.data = 2;
    program3.data = 3;

    Console.Write(program1.data);
    Console.WriteLine(program2.data);
    Console.WriteLine(program3.data);
}
```

The `Diagnostic Tools` window shows a performance session with the following details:

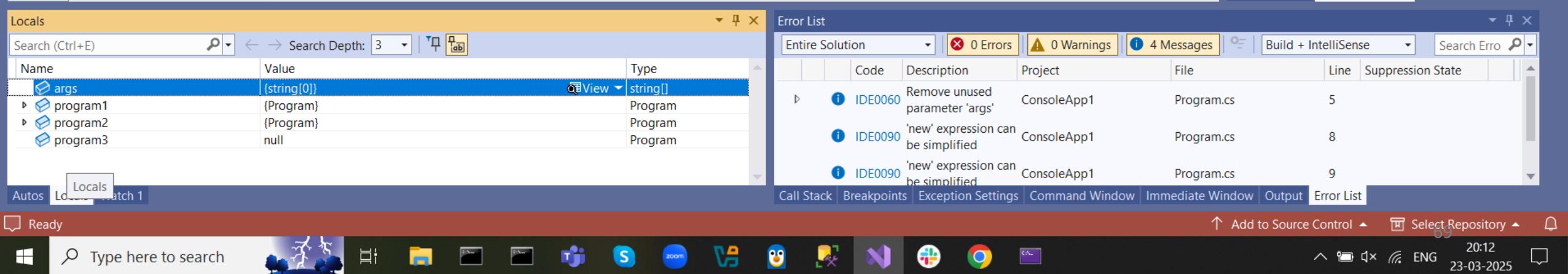
- Diagnostics session: 0 seconds (581 ms selected)
- Process Memory (MB): 9 MB
- CPU (% of all processors): 100%

The `Locals` window shows the current variable values:

Name	Type	Value
args	string[]	{string[0]}
program1	Program	{Program}
program2	Program	{Program}
program3	Program	null

The `Error List` window shows the following messages:

Code	Description	Project	File	Line	Suppression State
IDE0060	Remove unused parameter 'args'	ConsoleApp1	Program.cs	5	
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	8	
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	9	



File Edit View Git Project Build Debug Test Analyze Tools Extensions Window Help | Search ConsoleApp1

Process: [492] ConsoleApp1.exe | Lifecycle Events | Thread: [1164] Main Thread | Stack Frame: Program.Main

Program.cs

```
1 public int data; //this is a field
2
3 static void Main(string[] args) //this is a method in the class
4 {
5     Console.WriteLine("Hello, World!"); //this is a statement in the methon Main()
6     Program program1 = new Program();
7     Program program2 = new Program();
8     Program program3 = new Program();
9     program1.data = 1; ≤ 1ms elapsed
10    program2.data = 2;
11    program3.data = 3;
12
13    Console.Write(program1.data);
14    Console.WriteLine(program2.data);
15    Console.WriteLine(program3.data);
16
17
18
19 }
```

Diagnostic Tools

Diagnostics session: 0 seconds (503 ms selected)

Add counter graphs by checking counters from counter options

Events

Process Memory (MB)

CPU (% of all processors)

Summary Events Counters Memory Usage CP

Events

.NET Counters

Memory Usage

Take Snapshot

Parallel Stacks Diagnostic Tools

Locals

Name	Value	Type
program1	{Program}	Program
data	0	int
program2	{Program}	Program
data	0	int
program3	{Program}	Program
data	0	int

Search (Ctrl+E) Search Depth: 3

Code Description Project File Line Suppression State

Entire Solution 0 Errors 0 Warnings 4 Messages Build + IntelliSense Search Error

IDE0060 Remove unused parameter 'args' ConsoleApp1 Program.cs 5

IDE0090 'new' expression can be simplified ConsoleApp1 Program.cs 8

IDE0090 'new' expression can be simplified ConsoleApp1 Program.cs 9

Call Stack Breakpoints Exception Settings Command Window Immediate Window Output Error List

Ready Add to Source Control Select Repository 20:13 23-03-2025

Type here to search

Process: [492] ConsoleApp1.exe Lifecycle Events Thread: [1164] Main Thread Stack Frame: Program.Main

Program.cs

```
ConsoleApp1
Program.cs
Main(string[] args)
1 public int data; //this is a field
2
3 static void Main(string[] args) //this is a method in the class
4 {
5     Console.WriteLine("Hello, World!"); //this is a statement in the methon Main()
6     Program program1 = new Program();
7     Program program2 = new Program();
8     Program program3 = new Program();
9     program1.data = 1;
10    program2.data = 2;
11    program3.data = 3;
12
13    Console.Write(program1.data);    ≤ 1ms elapsed
14    Console.WriteLine(program2.data);
15    Console.WriteLine(program3.data);
16
17
18
19 }
```

Diagnostic Tools

Diagnostics session: 0 seconds (503 ms selected) 502ms

Add counter graphs by checking counters from counter options

Events

Process Memory (MB)

CPU (% of all processors)

Summary Events Counters Memory Usage CPU

Events

.NET Counters

Memory Usage

Take Snapshot

Locals

Search (Ctrl+E) Search Depth: 3

Name	Value	Type
program1	{Program}	Program
data	1	int
program2	{Program}	Program
data	2	int
program3	{Program}	Program
data	3	int

Error List

Entire Solution 0 Errors 0 Warnings 4 Messages

Code	Description	Project	File	Line	Suppression State
IDE0060	Remove unused parameter 'args'	ConsoleApp1	Program.cs	5	
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	8	
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	9	

Call Stack Breakpoints Exception Settings Command Window Immediate Window Output Error List

Ready Add to Source Control Select Repository 20:14 23-03-2025



GitHub Copilot

Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs

```
1 class Program //this is a class
2 {
3     public int data; //this is a field
4
5     static void Main(string[] args) //this is a method in the class
6     {
7         Console.WriteLine("Hello, World!"); //this is a statement in the method
8         Program program1 = new Program();
9         Program program2 = new Program();
10        Program program3 = new Program();
11        program1.data = 1;
12        program2.data = 2;
13        program3.data = 3;
14
15        Console.Write(program1.data);
16        Console.WriteLine(program2.data);
17        Console.WriteLine(program3.data);
18    }
19 }
```

133 % No issues found

Output

```
Show output from: Debug
The thread '.NET TP Worker' (16712) has exited with code 0 (0x0).
The thread '.NET TP Worker' (2664) has exited with code 0 (0x0).
The thread '.NET TP Worker' (16712) has exited with code 0 (0x0).
The program '[492] ConsoleApp1.exe' has exited with code 0 (0x0).
```

Solution Explorer

Diagnostic Tools

Search Solution Explorer (Ctrl+Shift+F)

Solution 'ConsoleApp1' (1 of 1 project)

- ConsoleApp1
 - Dependencies
 - C# Program.cs
 - Program
 - data : int
 - Main(string[]) : void

Solution Explorer Git Changes

Properties



GitHub Copilot

Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs*

C# ConsoleApp1 Program Main(string[] args)

```
1 class Program //this is a class
2 {
3     public int data; //this is a field
4
5     //let us add a constructor
6
7     static void Main(string[] args) //this is a method in the class
8     {
9         Console.WriteLine("Hello, World!"); //this is a statement in the method
10        Program program1 = new Program();
11        Program program2 = new Program();
12        Program program3 = new Program();
13        program1.data = 1;
14        program2.data = 2;
15        program3.data = 3;
16
17        Console.Write(program1.data);
18        Console.WriteLine(program2.data);
19        Console.WriteLine(program3.data);
20    }
21 }
```

133 % No issues found

Output

Show output from: Debug

```
The thread '.NET Worker' (16712) has exited with code 0 (0x0).
The thread '.NET TP Worker' (2664) has exited with code 0 (0x0).
The thread '.NET TP Worker' (16712) has exited with code 0 (0x0).
The program '[492] ConsoleApp1.exe' has exited with code 0 (0x0).
```

Solution Explorer

Search Solution Explorer (Ctrl+Shift+F)

Solution 'ConsoleApp1' (1 of 1 project)

- ConsoleApp1
 - Dependencies
 - C# Program.cs
 - Program
 - data : int
 - Main(string[]) : void

Solution Explorer Git Changes

Properties



Type here to search



Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs* □ x

ConsoleApp1 Program Program()

```
1 class Program //this is a class
2 {
3     public int data; //this is a field
4
5     //let us add a constructor
6     Program()
7     {
8         Console.WriteLine("Program: Constructor Called");
9     }
10    Use expression body for constructor
11    Introduce parameter for 'Console.WriteLine("Program: Constructor Called")' ▶
12
13    Console.WriteLine("Hello, World!"); //this
14    Program program1 = new Program();
15    Program program2 = new Program();
16    Program program3 = new Program();
17    program1.data = 1;
18    program2.data = 2;
19    program3.data = 3;
20
21    Console.Write(program1.data);
22    Console.WriteLine(program2.data);
```

133 % No issues found

...
//let us add a constructor
- Program()
- {
- Console.WriteLine("Program: Constructor Called");
- }
+ Program() => Console.WriteLine("Program: Constructor Called")
...

Preview changes

Fix all occurrences in: Document | Project | Solution | Containing Type | Containing Member

Output

Show output from: Debug

```
The thread '.NET TP Worker' (2664) has exited with code 0 (0x0).
The thread '.NET TP Worker' (16712) has exited with code 0 (0x0).
The program '[492] ConsoleApp1.exe' has exited with code 0 (0x0).
```



GitHub Copilot

Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs*

ConsoleApp1

Program

Program()

```
1 class Program //this is a class
2 {
3     public int data; //this is a field
4
5     //let us add a constructor
6     Program() => Console.WriteLine("Program: Constructor Called");
7
8     static void Main(string[] args) //this is a method in the class
9     {
10         Console.WriteLine("Hello, World!"); //this is a statement in the method Main
11         Program program1 = new Program();
12         Program program2 = new Program();
13         Program program3 = new Program();
14         program1.data = 1;
15         program2.data = 2;
16         program3.data = 3;
17
18         Console.Write(program1.data);
19         Console.WriteLine(program2.data);
20         Console.WriteLine(program3.data);
21     }
22 }
```

133 % No issues found

Output

Show output from: Debug

The thread '.NET TP Worker' (2664) has exited with code 0 (0x0).

The thread '.NET TP Worker' (16712) has exited with code 0 (0x0).

The program '[492] ConsoleApp1.exe' has exited with code 0 (0x0).

Solution Explorer

Search Solution Explorer (Ctrl+)

Solution 'ConsoleApp1' (1 of 1 project)

ConsoleApp1

Dependencies

C# Program.cs

Program

data : int

Program()

Main(string[]) : void

Solution Explorer Git Changes

Properties





GitHub Copilot

Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs

```
ConsoleApp1 Program.cs Program() Program()
1 class Program //this is a class
2 {
3     public int data; //this is a field
4
5     //let us add a constructor
6     Program()
7     {
8         Console.WriteLine("Program: Constructor Called");
9
10    static void Main(string[] args) //this is a method in the class
11    {
12        Console.WriteLine("Hello, World!"); //this is a statement in the method Main()
13        Program program1 = new Program();
14        Program program2 = new Program();
15        Program program3 = new Program();
16        program1.data = 1;
17        program2.data = 2;
18        program3.data = 3;
19
20        Console.Write(program1.data);
21        Console.WriteLine(program2.data);
22        Console.WriteLine(program3.data);
23    }
24
25 }
```

110% No issues found Ln: 6 Ch: 5 SPC CRLF

Output

Show output from: Debug

```
The thread '.NET TP Worker' (16712) has exited with code 0 (0x0).
The thread '.NET TP Worker' (2664) has exited with code 0 (0x0).
The thread '.NET TP Worker' (16712) has exited with code 0 (0x0).
The program '[492] ConsoleApp1.exe' has exited with code 0 (0x0).
```

Solution Explorer

Search Solution Explorer (Ctrl+Shift+F)

Solution 'ConsoleApp1' (1 of 1 project)

- ConsoleApp1
 - Dependencies
 - Program.cs
 - Program
 - data : int
 - Program()
 - Main(string[]) : void

Solution Explorer Git Changes

Properties



Type here to search



Process: [17824] ConsoleApp1.exe Lifecycle Events Thread: [17828] Main Thread Stack Frame: Program.Program

Program.cs

```
ConsoleApp1
Program.cs
1 class Program //this is a class
2 {
3     public int data; //this is a field
4
5     //let us add a constructor
6     Program()
7     {
8         Console.WriteLine("Program: Constructor Called");
9     }
10
11     static void Main(string[] args) //this is a method in the class
12     {
13         Console.WriteLine("Hello, World!"); //this is a statement in the method Main()
14         Program program1 = new Program();
15         Program program2 = new Program();
16         Program program3 = new Program();
17         program1.data = 1;
18         program2.data = 2;
19         program3.data = 3;
20
21         Console.Write(program1.data);
22         Console.WriteLine(program2.data);
23         Console.WriteLine(program3.data);
    }
```

Diagnostic Tools

Diagnostics session: 0 seconds (532 ms selected)

Add counter graphs by checking counters from counter options

Events

Process Memory

CPU (% of all processors)

Summary Events Counters Memory Usage CPU

Events

.NET Counters

Memory Usage

Take Snapshot

Autos

Name	Value	Type
this	{Program}	Program

Error List

Entire Solution	0 Errors	0 Warnings	4 Messages	
IDE0060	Remove unused parameter 'args'	ConsoleApp1	Program.cs	11
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	14
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	15



GitHub Copilot

Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs

```
C# ConsoleApp1 Program Main(string[] args)
1 class Program //this is a class
2 {
3     public int data; //this is a field
4
5     //let us add a constructor
6     Program()
7     {
8         Console.WriteLine("Program: Constructor Called");
9     }
10
11     static void Main(string[] args) //this is a method in the class
12     {
13         Console.WriteLine("Hello! ", World!); //this is a statement in the methon Main()
14         Program program1 = new Program();
15         Program program2 = new Program();
16         Program program3 = new Program();
17         program1.data = 1;
18         program2.data = 2;
19         program3.data = 3;
20
21         Console.Write(program1.data);
22         Console.WriteLine(program2.data);
23         Console.WriteLine(program3.data);
24     }
25 }
```

110% No issues found

Output

Show output from: Debug

```
ConsoleApp1.exe' (CoreCLR: clrhost): Loaded 'C:\Program Files\Microsoft Visual Studio\2022\Community\Common7\IDE\PrivateAssemblies\Runtime\Microsoft.Vi
'ConsoleApp1.exe' (CoreCLR: clrhost): Loaded 'C:\Program Files\dotnet\shared\Microsoft.NETCore.App\8.0.14\netstandard.dll'. Skipped loading symbols. Mo
The program '[15144] ConsoleApp1.exe' has exited with code 4294967295 (0xffffffff).
```

Solution Explorer

Search Solution Explorer (Ctrl+)

Solution 'ConsoleApp1' (1 of 1 project)

- ConsoleApp1
 - Dependencies
 - Program.cs
 - Program
 - data : int
 - Program()
 - Main(string[]) : void

Solution Explorer Git Changes

Properties



Type here to search



File Edit View Git Project Build Debug Test Analyze Tools Extensions Window Help Search ConsoleApp1 GitHub Copilot

Process: [12176] ConsoleApp1.exe Lifecycle Events Thread: [12844] Main Thread Stack Frame: Program.Main

Program.cs

```
ConsoleApp1
Program.cs
Main(string[] args)

1 class Program //this is a class
2 {
3     public int data; //this is a field
4
5     //let us add a constructor
6     Program()
7     {
8         Console.WriteLine("Program: Constructor Called");
9     }
10
11    static void Main(string[] args) //this is a method in the class
12    {
13        Console.WriteLine("Hello, World!"); //this is a statement in the methon Main()
14        Program program1 = new Program();
15        Program program2 = new Program();
16        Program program3 = new Program();
17        program1.data = 1;
18        program2.data = 2;
19        program3.data = 3;
20
21        Console.Write(program1.data);
22        Console.WriteLine(program2.data);
23        Console.WriteLine(program3.data);
    }
```

Diagnostic Tools

Diagnostics session: 0 seconds (428 ms selected)

Add counter graphs by checking counters from counter options

Events

Process Memory

CPU (% of all processors)

Summary Events Counters Memory Usage CPU

Events

.NET Counters

Memory Usage

Take Snapshot

Locals

Search (Ctrl+E) Search Depth: 3

Name	Value	Type
args	{string[0]}	string[]
program1	null	Program
program2	null	Program
program3	null	Program

Error List

Entire Solution 0 Errors 0 Warnings 4 Messages Build + IntelliSense

	Code	Description	Project	File	Line	Suppression State
IDE0060	Remove unused parameter 'args'	ConsoleApp1	Program.cs	11		
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	14		
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	15		

File Edit View Git Project Build Debug Test Analyze Tools Extensions Window Help Search ConsoleApp1

Process: [12176] ConsoleApp1.exe Lifecycle Events Thread: [12844] Main Thread Stack Frame: Program.Main

Program.cs

```
ConsoleApp1
Program.cs
Main(string[] args)

1 class Program //this is a class
2 {
3     public int data; //this is a field
4
5     //let us add a constructor
6     Program()
7     {
8         Console.WriteLine("Program: Constructor Called");
9     }
10
11    static void Main(string[] args) //this is a method in the class
12    {
13        Console.WriteLine("Hello, World!"); //this is a statement in the methon Main() ≤ 1ms elapsed
14        Program program1 = new Program();
15        Program program2 = new Program();
16        Program program3 = new Program();
17        program1.data = 1;
18        program2.data = 2;
19        program3.data = 3;
20
21        Console.Write(program1.data);
22        Console.WriteLine(program2.data);
23        Console.WriteLine(program3.data);
    }
```

Diagnostic Tools

Diagnostics session: 0 seconds (428 ms selected) 427ms

Add counter graphs by checking counters from counter options

Events

Process Memory (MB)

CPU (% of all processors)

Summary Events Counters Memory Usage CPU

Events

.NET Counters

Memory Usage

Take Snapshot

Parallel Stacks Diagnostic Tools

Locals

Name	Value	Type
args	{string[0]}	string[]
program1	null	Program
program2	null	Program
program3	null	Program

Error List

Entire Solution	Code	Description	Project	File	Line	Suppression State
IDE0060	Remove unused parameter 'args'	ConsoleApp1	Program.cs	11		
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	14		
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	15		

Call Stack Breakpoints Exception Settings Command Window Immediate Window Output Error List

Ready Add to Source Control Select Repository 20:20 23-03-2025

Type here to search

Process: [12176] ConsoleApp1.exe Lifecycle Events Thread: [12844] Main Thread Stack Frame: Program.Main

Program.cs

```
ConsoleApp1
class Program //this is a class
{
    public int data; //this is a field

    //let us add a constructor
    Program()
    {
        Console.WriteLine("Program: Constructor Called");
    }

    static void Main(string[] args) //this is a method in the class
    {
        Console.WriteLine("Hello, World!"); //this is a statement in the method Main()
        Program program1 = new Program(); < 3ms elapsed
        Program program2 = new Program();
        Program program3 = new Program();
        program1.data = 1;
        program2.data = 2;
        program3.data = 3;

        Console.Write(program1.data);
        Console.WriteLine(program2.data);
        Console.WriteLine(program3.data);
    }
}
```

Diagnostic Tools

Diagnostics session: 0 seconds (430 ms selected) 428ms

Add counter graphs by checking counters from counter options

Events

Process Memory (MB)

CPU (% of all processors)

Summary Events Counters Memory Usage CPU

Events

.NET Counters

Memory Usage

Take Snapshot

Locals

Name	Type
args	{string[0]}
program1	Program
program2	Program
program3	Program

Error List

Code	Description	Project	File	Line	Suppression State
IDE0060	Remove unused parameter 'args'	ConsoleApp1	Program.cs	11	
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	14	
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	15	

File Edit View Git Project Build Debug Test Analyze Tools Extensions Window Help Search ConsoleApp1 GitHub Copilot

Process: [12176] ConsoleApp1.exe Lifecycle Events Thread: [12844] Main Thread Stack Frame: Program.Program

Program.cs

```
ConsoleApp1
class Program //this is a class
{
    public int data; //this is a field

    //let us add a constructor
    Program()
    {
        Console.WriteLine("Program: Constructor Called");
    }

    static void Main(string[] args) //this is a method in the class
    {
        Console.WriteLine("Hello, World!"); //this is a statement in the method Main()
        Program program1 = new Program();
        Program program2 = new Program();
        Program program3 = new Program();
        program1.data = 1;
        program2.data = 2;
        program3.data = 3;

        Console.Write(program1.data);
        Console.WriteLine(program2.data);
        Console.WriteLine(program3.data);
    }
}
```

Diagnostic Tools

Diagnostics session: 0 seconds (431 ms selected)

Add counter graphs by checking counters from counter options

Events

Process Memory (MB)

CPU (% of all processors)

Summary Events Counters Memory Usage CPU

Events

.NET Counters

Memory Usage

Take Snapshot

Locals

No issues found

Name	Value	Type
this	{Program}	Program

Autos Locals Watch 1

Error List

Entire Solution 0 Errors 0 Warnings 4 Messages Build + IntelliSense Search Error

Code	Description	Project	File	Line	Suppression State
IDE0060	Remove unused parameter 'args'	ConsoleApp1	Program.cs	11	
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	14	
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	15	

Call Stack Breakpoints Exception Settings Command Window Immediate Window Output Error List

Process: [12176] ConsoleApp1.exe Lifecycle Events Thread: [12844] Main Thread Stack Frame: Program.Program

Program.cs

```
ConsoleApp1
class Program //this is a class
{
    public int data; //this is a field

    //let us add a constructor
    Program()
    {
        Console.WriteLine("Program: Constructor Called");
    }

    static void Main(string[] args) //this is a method in the class
    {
        Console.WriteLine("Hello, World!");
        Program program1 = new Program();
        Program program2 = new Program();
        Program program3 = new Program();
        program1.data = 1;
        program2.data = 2;
        program3.data = 3;

        Console.Write(program1.data);
        Console.WriteLine(program2.data);
        Console.WriteLine(program3.data);
    }
}
```

Diagnostic Tools

Diagnostics session: 0 seconds (431 ms selected)

Add counter graphs by checking counters from counter options

Events

Process Memory (MB)

CPU (% of all processors)

Summary Events Counters Memory Usage CPU

Events

.NET Counters

Memory Usage

Take Snapshot

Locals

Name	Value	Type
this	{Program}	Program

Error List

Entire Solution	0 Errors	0 Warnings	4 Messages	
IDE0060	Remove unused parameter 'args'	ConsoleApp1	Program.cs	11
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	14
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	15

File Edit View Git Project Build Debug Test Analyze Tools Extensions Window Help Search ConsoleApp1 GitHub Copilot

Process: [12176] ConsoleApp1.exe Lifecycle Events Thread: [12844] Main Thread Stack Frame: Program.Main

Program.cs

```
ConsoleApp1
class Program //this is a class
{
    public int data; //this is a field

    //let us add a constructor
    Program()
    {
        Console.WriteLine("Program: Constructor Called");
    }

    static void Main(string[] args) //this is a method in the class
    {
        Console.WriteLine("Hello, World!"); //this is a statement in the method Main()
        Program program1 = new Program();
        Program program2 = new Program(); ≤ 1ms elapsed
        Program program3 = new Program();
        program1.data = 1;
        program2.data = 2;
        program3.data = 3;

        Console.Write(program1.data);
        Console.WriteLine(program2.data);
        Console.WriteLine(program3.data);
    }
}
```

Diagnostic Tools

Diagnostics session: 0 seconds (432 ms selected)

Add counter graphs by checking counters from counter options

Events

Process Memory (MB)

CPU (% of all processors)

Summary Events Counters Memory Usage CPU

Events

.NET Counters

Memory Usage

Take Snapshot

Locals

Name	Value	Type
args	{string[0]}	string[]
program1	{Program}	Program
program2	null	Program
program3	null	Program

Error List

Entire Solution	0 Errors	0 Warnings	4 Messages	
IDE0060	Remove unused parameter 'args'	ConsoleApp1	Program.cs	11
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	14
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	15

Process: [12176] ConsoleApp1.exe Lifecycle Events Thread: [12844] Main Thread Stack Frame: Program.Program

Program.cs

```
ConsoleApp1
1 class Program //this is a class
2 {
3     public int data; //this is a field
4
5     //let us add a constructor
6     Program() ≤ 1ms elapsed
7     {
8         Console.WriteLine("Program: Constructor Called");
9     }
10
11    static void Main(string[] args) //this is a method in the class
12    {
13        Console.WriteLine("Hello, World!"); //this is a statement in the method Main()
14        Program program1 = new Program();
15        Program program2 = new Program();
16        Program program3 = new Program();
17        program1.data = 1;
18        program2.data = 2;
19        program3.data = 3;
20
21        Console.Write(program1.data);
22        Console.WriteLine(program2.data);
23        Console.WriteLine(program3.data);
    }
```

No issues found

Diagnostic Tools

Diagnostics session: 0 seconds (432 ms selected) 430ms

Add counter graphs by checking counters from counter options

Events

Process Memory (MB)

CPU (% of all processors)

Summary Events Counters Memory Usage CPU

Events

.NET Counters

Memory Usage

Take Snapshot

Locals

Name	Value	Type
this	{Program}	Program

Error List

Entire Solution	0 Errors	0 Warnings	4 Messages	
IDE0060	Remove unused parameter 'args'	ConsoleApp1	Program.cs	11
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	14
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	15

File Edit View Git Project Build Debug Test Analyze Tools Extensions Window Help Search ConsoleApp1 GitHub Copilot

Process: [12176] ConsoleApp1.exe Lifecycle Events Thread: [12844] Main Thread Stack Frame: Program.Main

Program.cs

```
ConsoleApp1
class Program //this is a class
{
    public int data; //this is a field

    //let us add a constructor
    Program()
    {
        Console.WriteLine("Program: Constructor Called");
    }

    static void Main(string[] args) //this is a method in the class
    {
        Console.WriteLine("Hello, World!"); //this is a statement in the method Main()
        Program program1 = new Program();
        Program program2 = new Program(); // 1ms elapsed
        Program program3 = new Program();
        program1.data = 1;
        program2.data = 2;
        program3.data = 3;

        Console.Write(program1.data);
        Console.WriteLine(program2.data);
        Console.WriteLine(program3.data);
    }
}
```

Diagnostic Tools

Diagnostics session: 0 seconds (433 ms selected)

Events

Process Memory (MB)

CPU (% of all processors)

Summary Events Counters Memory Usage CPU

Events

.NET Counters

Memory Usage

Take Snapshot

Locals

Name	Value	Type
args	{string[0]}	string[]
program1	{Program}	Program
program2	null	Program
program3	null	Program

Error List

Entire Solution	0 Errors	0 Warnings	4 Messages	
IDE0060	Remove unused parameter 'args'	ConsoleApp1	Program.cs	11
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	14
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	15

Screenshot of Microsoft Visual Studio IDE showing a C# console application named ConsoleApp1.

The code in Program.cs is:

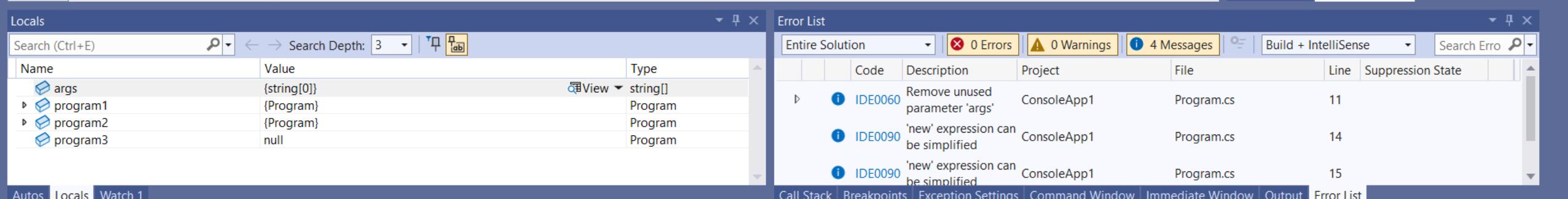
```
class Program //this is a class
{
    public int data; //this is a field

    //let us add a constructor
    Program()
    {
        Console.WriteLine("Program: Constructor Called");
    }

    static void Main(string[] args) //this is a method in the class
    {
        Console.WriteLine("Hello, World!"); //this is a statement in the method Main()
        Program program1 = new Program();
        Program program2 = new Program();
        Program program3 = new Program(); //line 16
        program1.data = 1;
        program2.data = 2;
        program3.data = 3;

        Console.Write(program1.data);
        Console.WriteLine(program2.data);
        Console.WriteLine(program3.data);
    }
}
```

The Diagnostic Tools window shows a performance session with a duration of 433 ms. It displays CPU usage, Process Memory (MB), and Events. A tooltip indicates "≤ 1ms elapsed" for the creation of program3.



Process: [12176] ConsoleApp1.exe Lifecycle Events Thread: [12844] Main Thread Stack Frame: Program.Program

Program.cs

```
ConsoleApp1
1 class Program //this is a class
2 {
3     public int data; //this is a field
4
5     //let us add a constructor
6     Program() ≤ 1ms elapsed
7     {
8         Console.WriteLine("Program: Constructor Called");
9     }
10
11    static void Main(string[] args) //this is a method in the class
12    {
13        Console.WriteLine("Hello, World!"); //this is a statement in the method Main()
14        Program program1 = new Program();
15        Program program2 = new Program();
16        Program program3 = new Program();
17        program1.data = 1;
18        program2.data = 2;
19        program3.data = 3;
20
21        Console.Write(program1.data);
22        Console.WriteLine(program2.data);
23        Console.WriteLine(program3.data);
    }
```

No issues found

Diagnostic Tools

Diagnostics session: 0 seconds (433 ms selected) 432ms

Add counter graphs by checking counters from counter options

Events

Process Memory (MB)

CPU (% of all processors)

Summary Events Counters Memory Usage CPU

Events

.NET Counters

Memory Usage

Take Snapshot

Locals

Name	Value	Type
this	{Program}	Program

Error List

Entire Solution	0 Errors	0 Warnings	4 Messages	Build + IntelliSense	Search Error
IDE0060	Remove unused parameter 'args'	ConsoleApp1	Program.cs	11	
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	14	
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	15	

Call Stack Breakpoints Exception Settings Command Window Immediate Window Output Error List

File Edit View Git Project Build Debug Test Analyze Tools Extensions Window Help Search ConsoleApp1 GitHub Copilot

Process: [12176] ConsoleApp1.exe Lifecycle Events Thread: [12844] Main Thread Stack Frame: Program.Main

Program.cs

```
ConsoleApp1
Program.cs
Main(string[] args)

1 class Program //this is a class
2 {
3     public int data; //this is a field
4
5     //let us add a constructor
6     Program()
7     {
8         Console.WriteLine("Program: Constructor Called");
9     }
10
11    static void Main(string[] args) //this is a method in the class
12    {
13        Console.WriteLine("Hello, World!"); //this is a statement in the method Main()
14        Program program1 = new Program();
15        Program program2 = new Program();
16        Program program3 = new Program();
17        program1.data = 1;
18        program2.data = 2;
19        program3.data = 3;
20
21        Console.Write(program1.data); ≤ 1ms elapsed
22        Console.WriteLine(program2.data);
23        Console.WriteLine(program3.data);
    }
```

Diagnostic Tools

Diagnostics session: 0 seconds (435 ms selected)

Add counter graphs by checking counters from counter options

Events

Process Memory (MB)

CPU (% of all processors)

Summary Events Counters Memory Usage CPU

Events

.NET Counters

Memory Usage

Take Snapshot

Locals

Search (Ctrl+E) Search Depth: 3

Name	Type
args	{string[0]}
program1	{Program}
program2	{Program}
program3	{Program}

Error List

Entire Solution 0 Errors 0 Warnings 4 Messages

Code	Description	Project	File	Line	Suppression State
IDE0060	Remove unused parameter 'args'	ConsoleApp1	Program.cs	11	
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	14	
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	15	

Call Stack Breakpoints Exception Settings Command Window Immediate Window Output Error List

Ready Add to Source Control Select Repository 20:21 23-03-2025

Type here to search



Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs* □ x

C# ConsoleApp1 Program ~Program()

```
1 class Program //this is a class
2 {
3     public int data; //this is a field
4
5     //let us add a constructor
6     Program()
7     {
8         Console.WriteLine("Program: Constructor Called");
9     }
10
11    //let us add a destructor
12    ~Program()
13    {
14        Console.WriteLine("Program: Destructor Called");
15    }
16
17    static void Main(string[] args) //this is a method in the class
18    {
19        Console.WriteLine("Hello, World!"); //this is a statement in the
20        Program program1 = new Program();
```

146 % No issues found

Solution Explorer

Search Solution Explorer (Ctrl+Shift+F)

Solution 'ConsoleApp1' (1 of 1 project)

- ConsoleApp1
- Dependencies
- Program.cs
- Program
- data : int
- Program()
- ~Program()
- Main(string[]) : void

Solution Explorer Git Changes

Properties



GitHub Copilot

Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs

```
1 class Program //this is a class
2 {
3     public int data; //this is a field
4
5     //let us add a constructor
6     Program()
7     {
8         Console.WriteLine("Program: Constructor Called");
9     }
10
11    //let us add a destructor
12    ~Program()
13    {
14        Console.WriteLine("Program: Destructor Called");
15    }
16
17    static void Main(string[] args) //this is a method in the class
18    {
19        Console.WriteLine("Hello, World!"); //this is a statement in the method
20        Program program1 = new Program();
21        Program program2 = new Program();
22        Program program3 = new Program();
    }
```

Settings Disable

Location: Program.cs, line 18 character 5 ('Program.Main(string[] args)')

```
= new Program();
Program program2 = new Program();
Program program3 = new Program();
```

133 %

No issues found

Ln: 14 Ch: 9 SPC CRLF



GitHub Copilot

Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs

```
C# ConsoleApp1    Program.cs    Main(string[] args)
public int data; //this is a field

//let us add a constructor
Program()
{
    Console.WriteLine("Program: Constructor Called");
}

//let us add a destructor
~Program()
{
    Console.WriteLine("Program: Destructor Called");
}

static void Main(string[] args) //this is a method in the class
{
    Console.WriteLine("Hello, World!"); //this is a statement in the methon Main()
    Program program1 = new Program();
    Program program2 = new Program();
    Program program3 = new Program();
    program1.data = 1;
    program2.data = 2;
    program3.data = 3;

    Console.Write(program1.data);
    Console.WriteLine(program2.data);
    Console.WriteLine(program3.data);
}
```

100 %

No issues found

Ln: 20 Ch: 37 SPC CRLF

Output

```
Show output from: Debug
ConsoleApp1.exe' (CoreCLR: clrhost): Loaded 'C:\Program Files\Microsoft Visual Studio\2022\Community\Common7\IDE\PrivateAssemblies\Runtime\Microsoft.Vi
'ConsoleApp1.exe' (CoreCLR: clrhost): Loaded 'C:\Program Files\dotnet\shared\Microsoft.NETCore.App\8.0.14\netstandard.dll'. Skipped loading symbols. Mo
The program '[9564] ConsoleApp1.exe' has exited with code 4294967295 (0xffffffff).
```

Server Explorer

Toolbox

Error List

Output

↑ Add to Source Control ▾ Select Repository ▾

92



Type here to search



Ready

ENG

20:25

23-03-2025

Diagnostic Tools

Solution Explorer

Search Solution Explorer (Ctrl+)

Solution 'ConsoleApp1' (1 of 1 project)

- ConsoleApp1
 - Dependencies
 - Program.cs
 - Program
 - data : int
 - Program()
 - ~Program()
 - Main(string[]) : void

Solution Explorer Git Changes

Properties

File Edit View Git Project Build Debug Test Analyze Tools Extensions Window Help Search ConsoleApp1

Process: [8836] ConsoleApp1.exe Lifecycle Events Thread: [14000] Main Thread Stack Frame: Program.Main

Program.cs

```
5 //let us add a constructor
6 Program()
7 {
8     Console.WriteLine("Program: Constructor Called");
9 }
10
11 //let us add a destructor
12 ~Program()
13 {
14     Console.WriteLine("Program: Destructor Called");
15 }
16
17 static void Main(string[] args) //this is a method in the class
18 {
19     Console.WriteLine("Hello, World!"); //this is a statement in the methon Main()
20     Program program1 = new Program();
21     Program program2 = new Program();
22     Program program3 = new Program();
23     program1.data = 1;
24     program2.data = 2;
25     program3.data = 3;
26
27     Console.WriteLine(program1.data);
28     Console.WriteLine(program2.data);
29     Console.WriteLine(program3.data);
30 }
```

Diagnostic Tools

Diagnostics session: 0 seconds (612 ms selected)

Add counter graphs by checking counters from counter options

Events

Process Memory

CPU (% of all processors)

Summary Events Counters Memory Usage CPU

Events

.NET Counters

Memory Usage

Take Snapshot

Locals

Search (Ctrl+E) Search Depth: 3

Name	Value	Type
args	{string[0]}	string[]
program1	null	Program
program2	null	Program
program3	null	Program

Error List

Entire Solution 0 Errors 0 Warnings 4 Messages Build + IntelliSense

	Code	Description	Project	File	Line	Suppression State
IDE0060	Remove unused parameter 'args'	ConsoleApp1	Program.cs		17	
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs		20	
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs		21	

Call Stack Breakpoints Exception Settings Command Window Immediate Window Output Error List

Ready Add to Source Control Select Repository 20:25 23-03-2025

Type here to search

Process: [8836] ConsoleApp1.exe | Lifecycle Events | Thread: [14000] Main Thread | Stack Frame: Program.Main

Program.cs

```
ConsoleApp1
7     {
8         Console.WriteLine("Program: Constructor Called");
9     }
10
11     //let us add a destructor
12     ~Program()
13     {
14         Console.WriteLine("Program: Destructor Called");
15     }
16
17     static void Main(string[] args) //this is a method in the class
18     {
19         Console.WriteLine("Hello, World!"); //this is a statement in the methon Main()
20         Program program1 = new Program(); < 4ms elapsed
21         Program program2 = new Program();
22         Program program3 = new Program();
23         program1.data = 1;
24         program2.data = 2;
25         program3.data = 3;
26
27         Console.WriteLine(program1.data);
28         Console.WriteLine(program2.data);
29         Console.WriteLine(program3.data);
30     }
31 }
```

Diagnostic Tools

Diagnostics session: 0 seconds (616 ms selected)

Add counter graphs by checking counters from counter options

Events

Process Memory (MB)

CPU (% of all processors)

Summary Events Counters Memory Usage CP

Events

.NET Counters

Memory Usage

Take Snapshot

Locals

Search (Ctrl+E) Search Depth: 3

Name	Type
args	{string[0]}
program1	Program
program2	Program
program3	Program

Error List

Entire Solution

Code	Description	Project	File	Line	Suppression State
IDE0060	Remove unused parameter 'args'	ConsoleApp1	Program.cs	17	
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	20	
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	21	

Screenshot of Microsoft Visual Studio IDE showing a C# application named "ConsoleApp1".

The code in Program.cs contains:

```
//let us add a constructor
Program()
{
    Console.WriteLine("Program: Constructor Called");
}

//let us add a destructor
~Program()
{
    Console.WriteLine("Program: Destructor Called");
}

static void Main(string[] args) //this is a method in the class
{
    Console.WriteLine("Hello, World!"); //this is a statement in the methon Main()
    Program program1 = new Program();
    Program program2 = new Program();
    Program program3 = new Program();
    program1.data = 1;
    program2.data = 2;
    program3.data = 3;

    Console.WriteLine(program1.data);
    Console.WriteLine(program2.data);
    Console.WriteLine(program3.data);
}
```

The Diagnostic Tools window shows a performance session with a duration of 616 ms. It includes a timeline chart, a Process Memory (MB) graph, and a CPU (% of all processors) graph.

Locals

Name	Value	Type
this	{Program}	Program

Error List

Entire Solution	0 Errors	0 Warnings	4 Messages	
IDE0060	Remove unused parameter 'args'	ConsoleApp1	Program.cs	17
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	20
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	21

Screenshot of Microsoft Visual Studio IDE showing a C# application named "ConsoleApp1".

The code in Program.cs contains:

```
//let us add a constructor
Program()
{
    Console.WriteLine("Program: Constructor Called");
}

//let us add a destructor
~Program()
{
    Console.WriteLine("Program: Destructor Called");
}

static void Main(string[] args) //this is a method in the class
{
    Console.WriteLine("Hello, World!"); //this is a statement in the methon Main()
    Program program1 = new Program();
    Program program2 = new Program();
    Program program3 = new Program();
    program1.data = 1;
    program2.data = 2;
    program3.data = 3;

    Console.WriteLine(program1.data);
    Console.WriteLine(program2.data);
    Console.WriteLine(program3.data);
}
```

The Diagnostic Tools window shows a performance session with a duration of 616 ms. It includes a timeline chart for Events, Process Memory (MB), and CPU (% of all processors). The CPU usage is at 100%.

Locals

Name	Value	Type
this	{Program}	Program

Error List

Entire Solution	0 Errors	0 Warnings	4 Messages	
IDE0060	Remove unused parameter 'args'	ConsoleApp1	Program.cs	17
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	20
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	21

Screenshot of Microsoft Visual Studio showing a debugging session.

The main window displays the code for `Program.cs` in the `ConsoleApp1` project. The code includes a constructor, a destructor, and the `Main` method. A breakpoint is set on line 22, which is highlighted in yellow. The status bar indicates "≤ 1ms elapsed" between the creation of `program1` and `program2`.

The Diagnostic Tools window shows performance metrics for the current session:

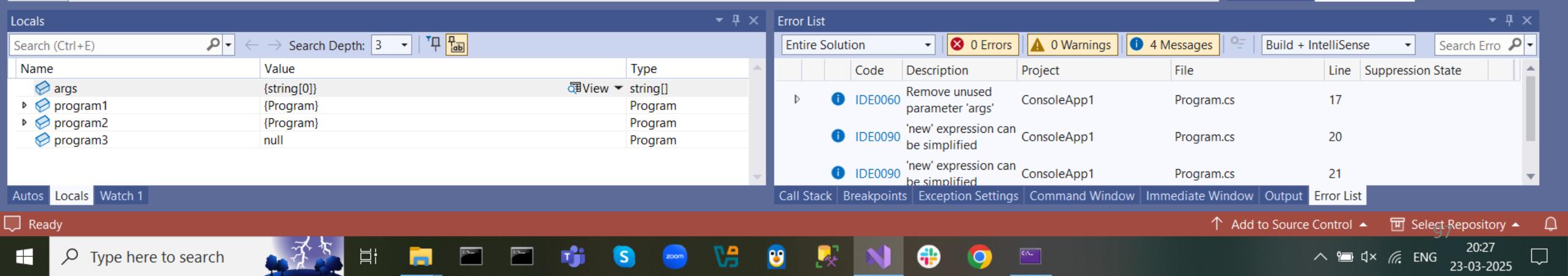
- Diagnostics session: 0 seconds (618 ms selected)
- Process Memory (MB): 10 MB
- CPU (% of all processors): 100%

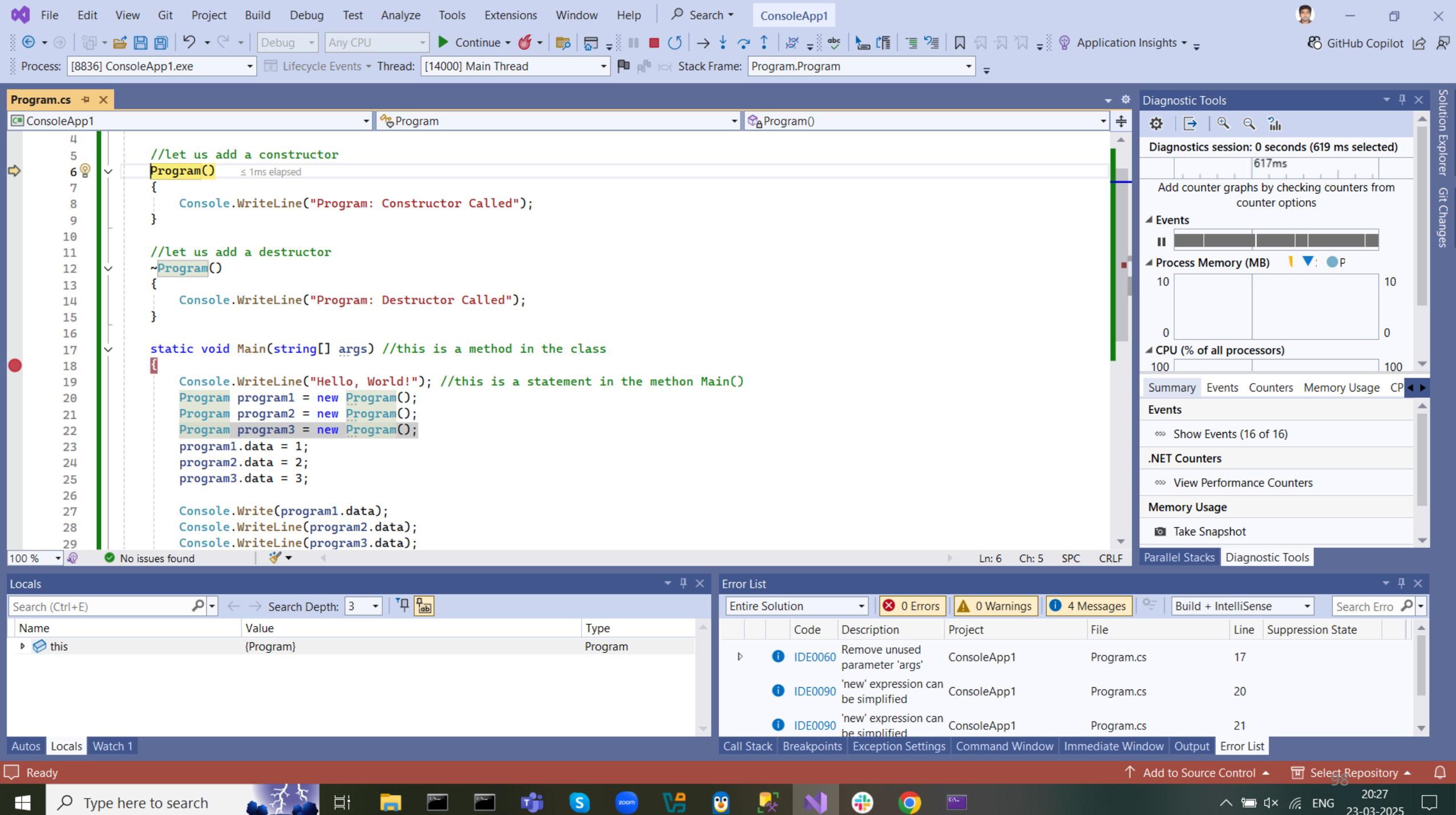
The Locals window shows the current state of variables:

Name	Value	Type
args	{string[0]}	string[]
program1	{Program}	Program
program2	{Program}	Program
program3	null	Program

The Error List window shows three messages from the IDE:

Code	Description	Project	File	Line	Suppression State
IDE0060	Remove unused parameter 'args'	ConsoleApp1	Program.cs	17	
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	20	
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	21	





Screenshot of Microsoft Visual Studio showing a debugging session for a C# application named ConsoleApp1.

The code in Program.cs is as follows:

```
4 //let us add a constructor
5 Program()
6 {
7     Console.WriteLine("Program: Constructor Called");
8 }
9
10 //let us add a destructor
11 ~Program()
12 {
13     Console.WriteLine("Program: Destructor Called");
14 }
15
16 static void Main(string[] args) //this is a method in the class
17 {
18     Console.WriteLine("Hello, World!"); //this is a statement in the methon Main()
19     Program program1 = new Program();
20     Program program2 = new Program();
21     Program program3 = new Program();
22     program1.data = 1;
23     program2.data = 2;
24     program3.data = 3; ≤ 1ms elapsed
25
26     Console.WriteLine(program1.data);
27     Console.WriteLine(program2.data);
28     Console.WriteLine(program3.data);
29 }
```

The Diagnostic Tools window shows the following performance metrics:

- Diagnostics session: 0 seconds (620 ms selected) 618.4ms
- Add counter graphs by checking counters from counter options
- Events
- Process Memory (MB): 10 MB
- CPU (% of all processors): 100%

Locals

Name	Value	Type
args	{string[0]}	string[]
program1	{Program}	Program
program2	{Program}	Program
program3	{Program}	Program

Error List

Entire Solution	0 Errors	0 Warnings	4 Messages	
IDE0060	Remove unused parameter 'args'	ConsoleApp1	Program.cs	17
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	20
IDE0090	'new' expression can be simplified	ConsoleApp1	Program.cs	21

Filter by title

> Polymorphism

> Members

> Properties

> Methods

> Constructors

Finalizers

Object and Collection Initializers

How to initialize objects by using an object initializer

How to initialize a dictionary with a collection initializer

Nested Types

Partial Classes and Methods

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garbage collection by calling [Collect](#), but most of the time, this call should be avoided because it may create performance issues.

! Note

Whether or not finalizers are run as part of application termination is specific to each [implementation of .NET](#). When an application terminates, .NET Framework makes every reasonable effort to call finalizers for objects that haven't yet been garbage collected, unless such cleanup has been suppressed (by a call to the library method `GC.SuppressFinalize`, for example). [.NET 5 \(including .NET Core\) and later versions don't call finalizers as part of application termination](#). For more information, see GitHub issue [dotnet/csharpstandard #291](#).

If you need to perform cleanup reliably when an application exits, register a handler for the [System.AppDomain.ProcessExit](#) event. That handler would ensure [IDisposable.Dispose\(\)](#) (or, [IAsyncDisposable.DisposeAsync\(\)](#)) has been called for all objects that require cleanup before application exit. Because you can't call [Finalize](#) directly, and you can't guarantee the garbage collector calls all finalizers before exit, you must use [Dispose](#) or [DisposeAsync](#) to ensure resources are freed.





Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs

```
17     Console.WriteLine("Program: Destructor Called");
18 }
19
20 static void Main() //this is a method in the class
21 {
22     Console.WriteLine("Hello, World!"); //this is a statement in the methon Main()
23     Program program1 = new Program();
24     Program program2 = new Program();
25     Program program3 = new Program();
26     program1.data = 1;
27     program2.data = 2;
28     program3.data = 3;
29 }
30 }
```

Solution Explorer

Search Solution Explorer (Ctrl+Shift+F)

Solution 'ConsoleApp1' (1 of 1 project)

ConsoleApp1

- Dependencies
- C# Program.cs

Solution Explorer | Git Changes

Properties

ConsoleApp1 Project Properties

Misc

File Name	ConsoleApp1.csproj
Full Path	C:\Users\shouvik\Desktop\ConsoleApp1\ConsoleApp1\
Project Folder	C:\Users\shouvik\Desktop\ConsoleApp1\ConsoleApp1\

File Name
Name of the project file.



File Edit View Git Project Build Debug Test Analyze Tools Extensions Window Help | Search | ConsoleApp1

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Toolbox

Program.cs

ConsoleApp1

Program

Main()

17
18
19
20
21
22
23
24
25
26
27
28
29
30

```
    Console.WriteLine("Program: Destructor Called");  
}  
  
static void Main() //this is a method in the class  
{  
    Console.WriteLine("Hello, World!"); //this is a statement in the method Main()  
    Program program1 = new Program();  
    Program program2 = new Program();  
    Program program3 = new Program();  
    program1.data = 1;  
    program2.data = 2;  
    program3.data = 3;  
}
```

Build
Rebuild
Clean
Analyze and Code Cleanup
Pack
Publish...
Upgrade
Collapse All Descendants Ctrl+Left Arrow
Scope to This
New Solution Explorer View
File Nesting
Edit Project File
Add
Manage NuGet Packages...
Manage User Secrets
Remove Unused References...
Sync Namespaces
Configure Startup Projects...
Set as Startup Project
Debug
Cut Ctrl+X
Remove Del
Rename F2
Unload Project
Load Direct Dependencies
Load Entire Dependency Tree
Copy Full Path
Open Folder in File Explorer
Open in Terminal

Properties Alt+Enter

110 % No issues found

Output

Show output from: Debug

ConsoleApp1.exe (CoreCLR: clrhost): Loaded 'C:\Program Files\dotnet\shared\Microsoft.NETCore.App\8.0.14\System.Collections.Concurrent.dll'. Skipped loading symbols.
'ConsoleApp1.exe' (CoreCLR: clrhost): Loaded 'C:\Program Files\dotnet\shared\Microsoft.NETCore.App\8.0.14\System.Text.Encoding.Extensions.dll'. Skipped
The program '[17544] ConsoleApp1.exe' has exited with code 0 (0x0).

Server Explorer Toolbox Error List Output

Type here to search

Ready

102

21:03 23-03-2025 ENG

Google C# destructor not called - Goog x Finalizers - C# | Microsoft Learn +

learn.microsoft.com/en-us/dotnet/csharp/programming-guide/classes-and-structs/finalizers

Filter by title

Learn / .NET / C# /

Finalizers (C# Programming Guide)

Article • 03/14/2023 • 6 contributors

Feedback

In this article

Remarks

Using finalizers to release resources

Explicit release of resources

Example

Show 2 more

Finalizers (historically referred to as **destructors**) are used to perform any necessary final clean-up when a class instance is being collected by the garbage collector. In most cases, you can avoid writing a finalizer by using the `System.Runtime.InteropServices.SafeHandle` or derived classes to wrap any unmanaged handle.

Additional resources

Training

Module

Manage Class Implementations - Training

Learn how to implement classes using advanced techniques like static classes, partial classes, and object initializers tha...

Documentation

Understand profiler performance collection methods - Visual Studio (Windows)

Explore data collection methods that tools within the Visual Studio Performance Profiler utilize, including...

CPU profiling in the Performance Profiler - Visual Studio (Windows)

Learn about the CPU profiler performance tool, which shows the CPU time and percentage spent executing...

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21:07 23-03-2025 ENG

garbage collector. In most cases, you can avoid writing a finalizer by using the [System.Runtime.InteropServices.SafeHandle](#) or derived classes to wrap any unmanaged handle.

Remarks

- Finalizers cannot be defined in structs. They are only used with classes.
- A class can only have one finalizer.
- Finalizers cannot be inherited or overloaded.
- **Finalizers cannot be called. They are invoked automatically.**
- A finalizer does not take modifiers or have parameters.

For example, the following is a declaration of a finalizer for the `car` class.

```
C#  
  
class Car  
{  
    ~Car() // finalizer  
    {  
        // cleanup statements...  
    }  
}
```

A finalizer can also be implemented as an expression body definition, as the

Module

Manage Class Implementations - Training

Learn how to implement classes using advanced techniques like static classes, partial classes, and object initializers tha...

Documentation

Understand profiler performance collection methods - Visual Studio (Windows)

Explore data collection methods that tools within the Visual Studio Performance Profiler utilize, including...

CPU profiling in the Performance Profiler - Visual Studio (Windows)

Learn about the CPU profiler performance tool, which shows the CPU time and percentage spent executing...

MSTest attributes - .NET

Learn about the various attributes of MSTest.

Show 4 more

Filter by title

Classes, Structs, and Records

Polymorphism

Members

Properties

Methods

Constructors

Finalizers

Object and Collection

Initializers

How to initialize objects by using an object initializer

How to initialize a dictionary with a collection initializer

Nested Types

Partial Classes and Methods

How to return subsets of

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104

21:07

23-03-2025

ENG



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Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs*

```
C# ConsoleApp1 Program Main()
1  using System.Reflection.Metadata.Ecma335;
2
3  class Program //this is a class
4  {
5      public int data; //this is a field
6      public int excess32() //this is method
7      {
8          return data+32;
9      }
10
11     static void Main() //this is a method in the class
12     {
13         Console.WriteLine("Hello, World!"); //this is a statement in the methon Main()
14         Program program1 = new Program();
15         Program program2 = new Program();
16         Program program3 = new Program();
17         program1.data = 1;
18         program2.data = 2;
19         program3.data = 3;
20         program1.excess32();
21         program2.excess32();
22         program3.excess32();
23         Console.WriteLine(program1.data);
24         Console.WriteLine(program2.data);
25         Console.WriteLine(program3.data);
26     }
27 }
```

110 %

No issues found

Output

Show output from: Build

```
1>ConsoleApp1 -> C:\Users\shouwick\Desktop\IITGN\playground\ConsoleApp1\bin\Debug\net8.0\ConsoleApp1.dll
===== Build: 1 succeeded, 0 failed, 0 up-to-date, 0 skipped =====
===== Build completed at 21:13 and took 00.492 seconds =====
```

Server Explorer

Toolbox

Error List

Output

↑ Add to Source Control ▾ Select Repository ▾



Solution Explorer

Search Solution Explorer (Ctrl+Shift+F)

Solution 'ConsoleApp1' (1 of 1 project)

- ConsoleApp1
 - Dependencies
 - Program.cs

Solution Explorer Git Changes

Properties

Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs

```
ConsoleApp1 Program.cs Main()
using System.Reflection.Metadata.Ecma335;
class Program //this is a class
{
    public int data; //this is a field
    public int excess32() //this is method
    {
        return data+32;
    }
    static void Main() //this is a method in the class
    {
        Console.WriteLine("Hello, World!");
        Program program1 = new Program();
        Program program2 = new Program();
        Program program3 = new Program();
        program1.data = 1;
        program2.data = 2;
        program3.data = 3;
        program1.excess32();
        program2.excess32();
        program3.excess32();
        Console.WriteLine(program1.data);
        Console.WriteLine(program2.data);
        Console.WriteLine(program3.data);
    }
}
```

110 % No issues found

Output

Show output from: Build

1>ConsoleApp1 -> C:\Users\shouwick\Desktop\IITGN\playground\ConsoleApp1\bld
===== Build: 1 succeeded, 0 failed, 0 up-to-date, 0 skipped =====
===== Build completed at 21:15 and took 00.454 seconds =====

Microsoft Visual Studio Debug Console

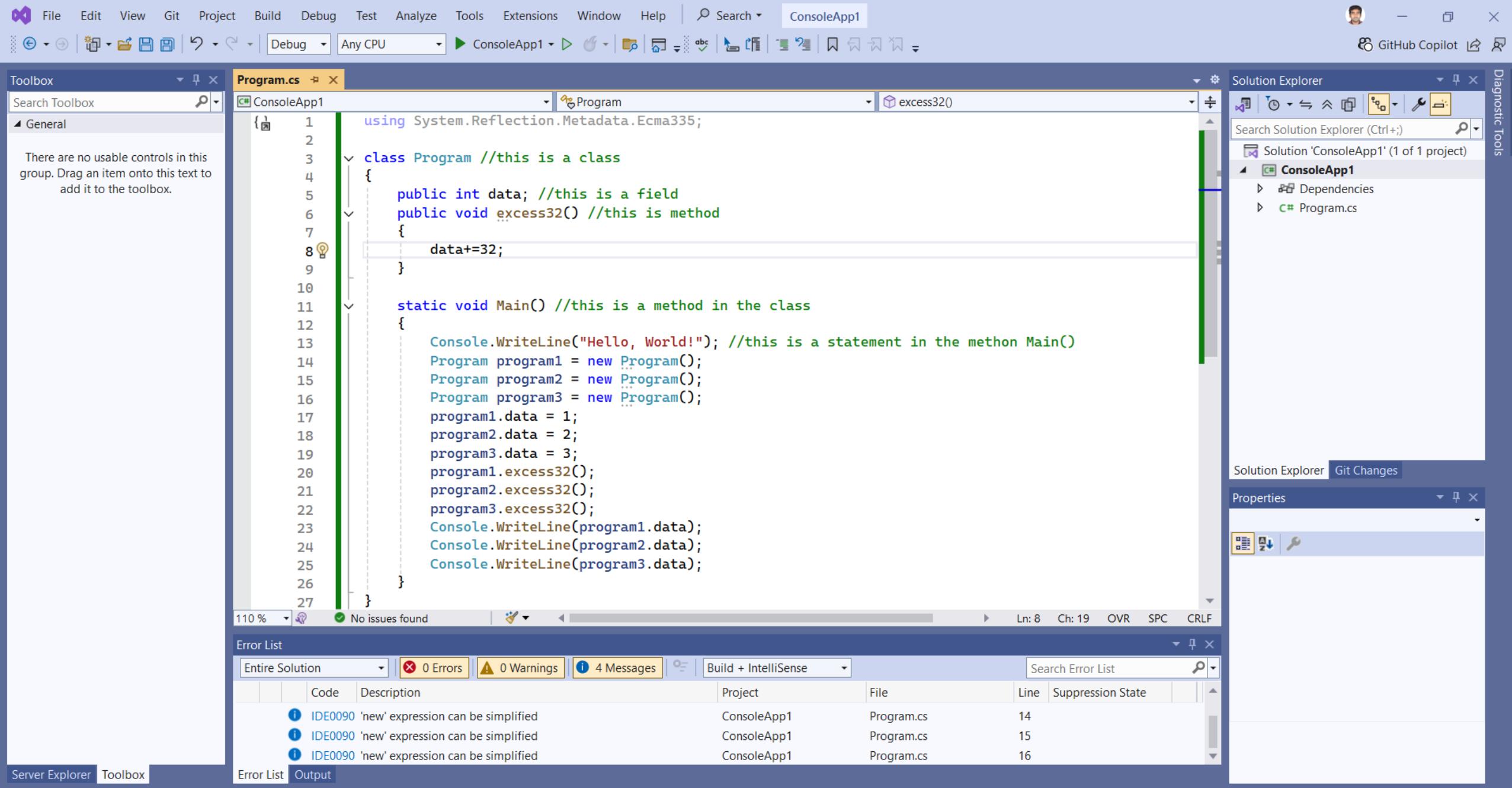
Hello, World!

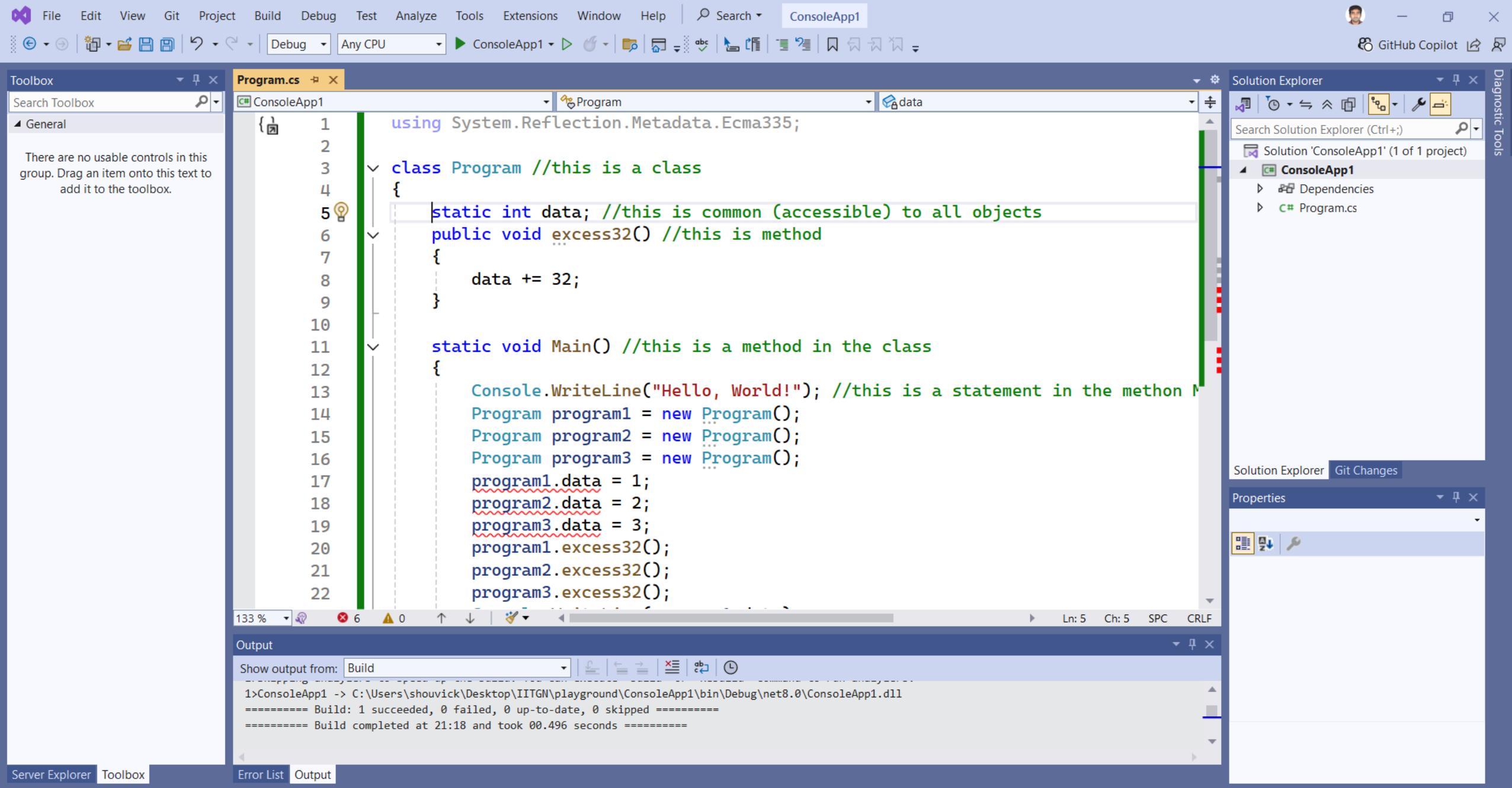
1
2
3

C:\Users\shouwick\Desktop\IITGN\playground\ConsoleApp1\bld
0 (0x0).

Press any key to close this window . . .









GitHub Copilot

Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs

```
1  using System.Reflection.Metadata.Ecma335;
2
3  class Program //this is a class
4  {
5      static int data; //this is common (accessible) to all objects
6      public void excess32() //this is method
7      {
8          data += 32;
9      }
10
11     static void Main() //this is a method in the class
12     {
13         Console.WriteLine("Hello, World!"); //this is a statement in the methon M
14         Program program1 = new Program();
15         Program program2 = new Program();
16         Program program3 = new Program();
17         program1.data = 1;
18         program1.excess32();
19         program2.excess32();
20         program3.excess32();
21         program1.data = 1;
22     }
}
```

(local variable) Program program1
'program1' is not null here.
CS0176: Member 'Program.data' cannot be accessed with an instance reference; qualify it with a type name instead

Output

Show output from: Build

```
1>ConsoleApp1 -> C:\Users\shouwick\Desktop\IITGN\playground\ConsoleApp1\bin\Debug\net8.0\ConsoleApp1.dll
===== Build: 1 succeeded, 0 failed, 0 up-to-date, 0 skipped =====
===== Build completed at 21:18 and took 00.496 seconds =====
```

Server Explorer

Toolbox

Error List

Output



Type here to search



Solution Explorer

Search Solution Explorer (Ctrl+Shift+F)

Solution 'ConsoleApp1' (1 of 1 project)
ConsoleApp1
Dependencies
Program.cs

Solution Explorer

Properties



Diagnostic Tools



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Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs*

ConsoleApp1

```
1  using System.Reflection.Metadata.Ecma335;
2
3  class Program //this is a class
4  {
5      static int data; //this is common (accessible) to all objects
6      public void excess32() //this is method
7      {
8          data += 32;
9      }
10
11     static void Main() //this is a method in the class
12     {
13         Console.WriteLine("Hello, World!"); //this is a statement in the methon M
14         Program program1 = new Program();
15         Program program2 = new Program();
16         Tab to remove 'program2.' ...
17
18         program2.data = 2;
19         data = 2;
20         program3.data = 3;
21         program1.excess32();
22         program2.excess32();
23         excess32();
```

133 %

5

0



Ln: 18 Ch: 9 SPC CRLF

Output

Show output from: Build

```
1>ConsoleApp1 -> C:\Users\shouwick\Desktop\IITGN\playground\ConsoleApp1\bin\Debug\net8.0\ConsoleApp1.dll
===== Build: 1 succeeded, 0 failed, 0 up-to-date, 0 skipped =====
===== Build completed at 21:18 and took 00.496 seconds =====
```

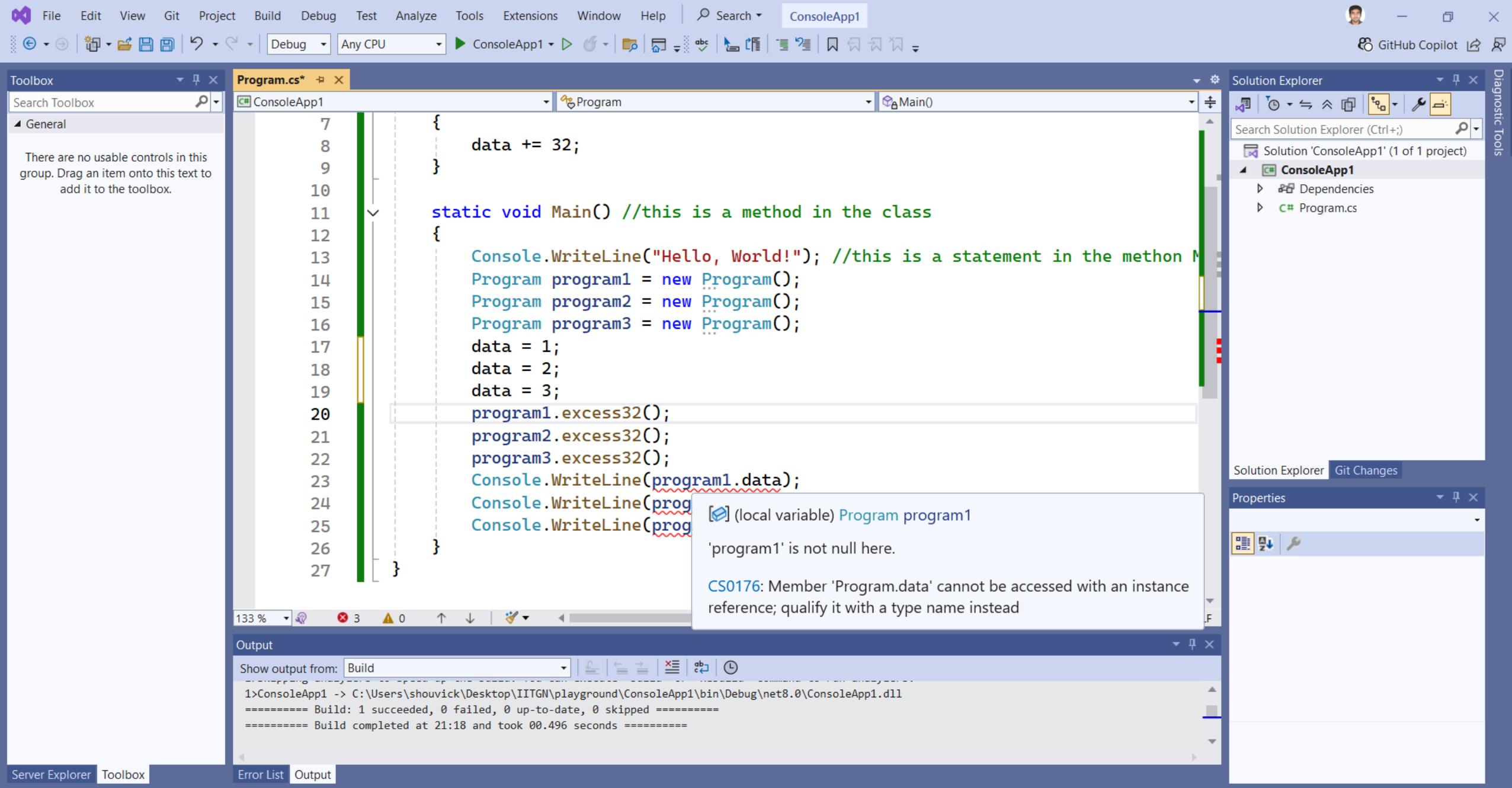
Server Explorer

Toolbox

Error List

Output

↑ Add to Source Control ▾ Select Repository ▾





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Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs

```
ConsoleApp1 Program Main()
4 {
5     static int data; //this is common (accessible) to all objects
6     public void excess32() //this is method
7     {
8         data += 32;
9     }
10
11    static void Main() //this is a method in the class
12    {
13        Console.WriteLine("Hello, World!"); //this is a statement in the methon Main
14        Program program1 = new Program();
15        Program program2 = new Program();
16        Program program3 = new Program();
17        data = 1;
18        data = 2;
19        data = 3;
20        pr (field) static int Program.data
21        program3.excess32();
22        Console.WriteLine(data);
23        Console.WriteLine(data);
24        Console.WriteLine(data);
25 }
```

133 % No issues found

Output

Show output from: Build

```
1>ConsoleApp1 -> C:\Users\shouwick\Desktop\IITGN\playground\ConsoleApp1\bin\Debug\net8.0\ConsoleApp1.dll
===== Build: 1 succeeded, 0 failed, 0 up-to-date, 0 skipped =====
===== Build completed at 21:18 and took 00.496 seconds =====
```

Solution Explorer

Search Solution Explorer (Ctrl+Shift+F)

Solution 'ConsoleApp1' (1 of 1 project)

ConsoleApp1

Dependencies

C# Program.cs

Solution Explorer Git Changes

Properties

Program.cs

```
10 static void Main() //this is a method in the class
11 {
12     Console.WriteLine("Hello, World!"); //this is a statement in the methon Main()
13     Program program1 = new ...;
14     Program program2 = new ...;
15     Program program3 = new ...;
16     data = 1;
17     data = 2;
18     data = 3;
19     program1.excess32();
20     program2.excess32();
21     program3.excess32();
22     Console.WriteLine(data++);
23     Console.WriteLine(++data);
24     Console.WriteLine(data);
25 }
26 }
27 }
```

Diagnostic Tools

Diagnostics session: 0 seconds (438 ms selected)

Add counter graphs by checking counters from counter options

Events

Process Memory

100

C:\Users\shouvik\Desktop\IITGN\playground\ConsoleApp1\bin\Debug\net8.0\ConsoleApp1.exe

Hello, World!

Locals

Search (Ctrl+E) Search Depth: 3

Name	Value	Type
program1	{Program}	Program
Static members		
data	99	int
program2	{Program}	Program
Static members		
data	99	int

Autos Locals Watch 1

Ready



Program.cs

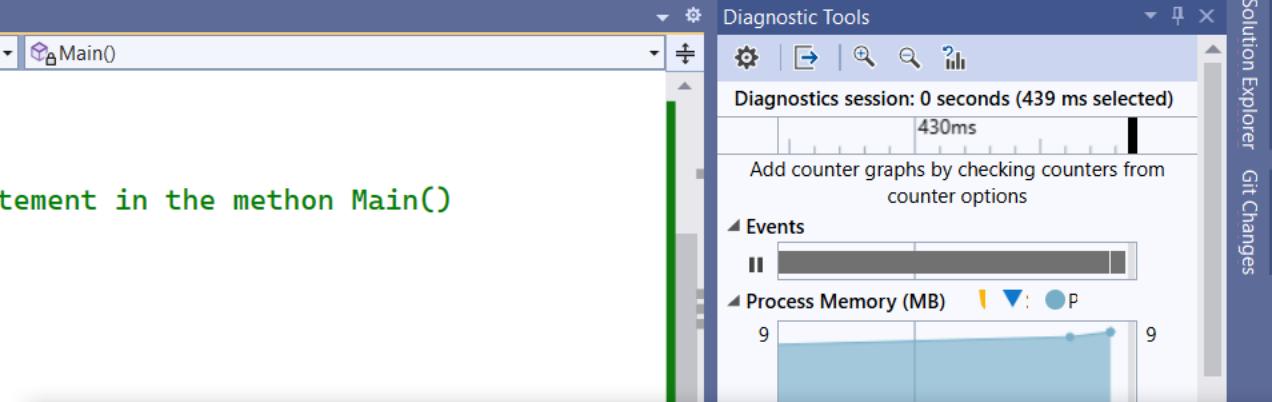
```
10 static void Main() //this is a method in the class
11 {
12     Console.WriteLine("Hello, World!"); //this is a statement in the methon Main()
13     Program program1 = new ...;
14     Program program2 = new ...;
15     Program program3 = new ...;
16     data = 1;
17     data = 2;
18     data = 3;
19     program1.excess32();
20     program2.excess32();
21     program3.excess32();
22     Console.WriteLine(data++);
23     Console.WriteLine(++data); ≤ 1ms elapsed
24     Console.WriteLine(data);
25 }
26 }
27 }
```

C:\Users\shouvik\Desktop\IITGN\playground\ConsoleApp1\bin\Debug\net8.0\ConsoleApp1.exe
Hello, World!
99

Locals

Name	Value	Type
program1	{Program}	Program
Static members		
data	100	int
program2	{Program}	Program
Static members		
data	100	int

Autos Locals Watch 1



Program.cs

```
10 static void Main() //this is a method in the class
11 {
12     Console.WriteLine("Hello, World!"); //this is a statement in the methon Main()
13     Program program1 = new ...;
14     Program program2 = new ...;
15     Program program3 = new ...;
16     data = 1;
17     data = 2;
18     data = 3;
19     program1.excess32();
20     program2.excess32();
21     program3.excess32();
22     Console.WriteLine(data++);
23     Console.WriteLine(++data);
24     Console.WriteLine(data); ≤ 1ms elapsed
25 }
```

Diagnostic Tools

Diagnostics session: 0 seconds (440 ms selected)

430ms

Add counter graphs by checking counters from counter options

Events

Process Memory (MB)

C:\Users\shouvik\Desktop\IITGN\playground\ConsoleApp1\bin\Debug\net8.0\ConsoleApp1.exe

Hello, World!

99

101

Locals

Name	Value	Type
program1	{Program}	Program
Static members		
data	101	int
program2	{Program}	Program
Static members		
data	101	int

Search (Ctrl+E) Search Depth: 3

Autos Locals Watch 1

Ready

Program.cs

```
10 static void Main() //this is a method in the class
11 {
12     Console.WriteLine("Hello, World!"); //this is a statement in the methon Main()
13     Program program1 = new ...;
14     Program program2 = new ...;
15     Program program3 = new ...;
16     data = 1;
17     data = 2;
18     data = 3;
19     program1.excess32();
20     program2.excess32();
21     program3.excess32();
22     Console.WriteLine(data++);
23     Console.WriteLine(++data);
24     Console.WriteLine(data);
25 }
26 } // 1ms elapsed
27 }
```

Diagnostic Tools

Diagnostics session: 0 seconds (440 ms selected) 430ms

Add counter graphs by checking counters from counter options

Events

Process Memory (MB)

C:\Users\shouvik\Desktop\IITGN\playground\ConsoleApp1\bin\Debug\net8.0\ConsoleApp1.exe

Hello, World!
99
101
101

Locals

Name	Value	Type
program1	{Program}	Program
Static members		
data	101	int
program2	{Program}	Program
Static members		
data	101	int

Search (Ctrl+E) Search Depth: 3

Autos Locals Watch 1

Ready



Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs

ConsoleApp1

Program

Main()

```
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
```

```
static void Main() //this is a method in the class
{
    Console.WriteLine("Hello, World!"); //this is a statement in the method Main()
    Program program1 = new Program();
    Program program2 = new Program();
    Program program3 = new Program();
    data = 1;
    data = 2;
    data = 3;
    program1.excess32();
    program2.excess32();
    program3.excess32();
    Console.WriteLine(data++);
    Console.WriteLine(++data);
    Console.WriteLine(data);
}
```

Microsoft Visual Studio Debug Console

```
Hello, World!
99
101
101
```

C:\Users\shouwick\Desktop\IITGN\playground\ConsoleApp1\bin\Debug\netcoreapp3.1\ConsoleApp1.exe

The thread '.NET TP Worker' (9380) has exited with code 0 (0x0).

The thread '.NET TP Worker' (4900) has exited with code 0 (0x0).

The program '[1208] ConsoleApp1.exe' has exited with code 0 (0x0).

To automatically close the console when debugging stops.

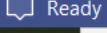
Press any key to close this window . . .

Server Explorer

Toolbox

Error List

Output



Type here to search



Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Program.cs

```
ConsoleApp1 Program.cs
using System.Reflection.Metadata.Ecma335;
class Program //this is a class
{
    public int data; //this is NOT common (accessible) to all objects
    public void excess32() //this is method
    {
        data += 32;
    }
    static void Main() //this is a method in the class
    {
        Console.WriteLine("Hello, World!"); //this is a statement in the method Main()
        Program program1 = new Program();
        Program program2 = new Program();
        Program program3 = new Program();
        program1.data = 1;
        program2.data = 2;
        program3.data = 3;
        program1.excess32();
        program2.excess32();
        program3.excess32();
        Console.WriteLine((program1.data)++);
        Console.WriteLine(++(program2.data));
        Console.WriteLine(program3.data);
    }
}
```

110 %

No issues found

Output

Show output from: Build

```
1>ConsoleApp1 -> C:\Users\shouwick\Desktop\IITGN\playground\ConsoleApp1\bin\Debug\
===== Build: 1 succeeded, 0 failed, 0 up-to-date, 0 skipped =====
===== Build completed at 21:33 and took 00.913 seconds =====
```

Solution Explorer

Search Solution Explorer (Ctrl+Shift+F)

Solution 'ConsoleApp1' (1 of 1 project)

ConsoleApp1

Dependencies

C# Program.cs

Microsoft Visual Studio Debug Console

```
Hello, World!
33
35
35
C:\Users\shouwick\Desktop\IITGN\playground
0 (0x0).
Press any key to close this window . . .
```

Texts, References, and Acknowledgements

Textbook:

- Sharp, J. (2022). *Microsoft Visual C# Step by Step*, 10th edition, Microsoft Press.
- Watson, K., Nagel, C., Pedersen, J. H., Reid, J. D., & Skinner, M. (2008). *Beginning Microsoft Visual C# 2008*. John Wiley & Sons.
- Mark J. Price (2024). *C# 13 and .NET 9 – Modern Cross-Platform Development Fundamentals*, 9th edition, Packt Publishing Ltd.

Reference:

- <https://github.com/dotnet-presentations/home/tree/master/.NET%20Intro>
- Soni, M. (2016). *DevOps for Web Development*. Packt Publishing Ltd.
- Yusuf Sulistyo Nugroho, Hideaki Hata, and Kenichi Matsumoto. 2020. *How different are different diff algorithms in Git? Use --histogram for code changes*. Empirical Softw. Engg. 25, 1 (Jan 2020), 790–823.