Microsoft
.NET

C# Basics

24 April 2025

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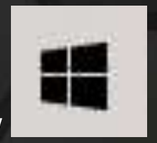
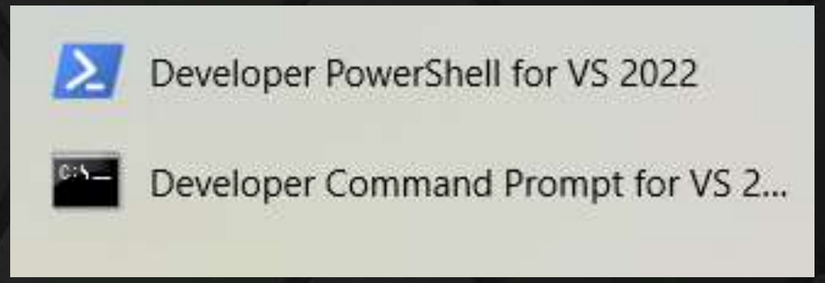
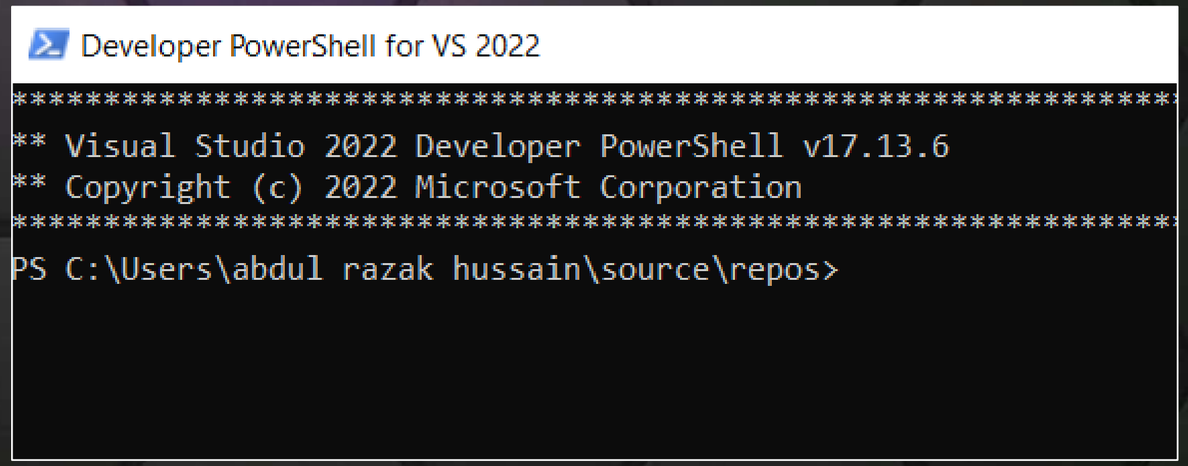
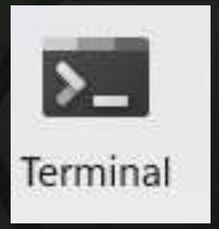
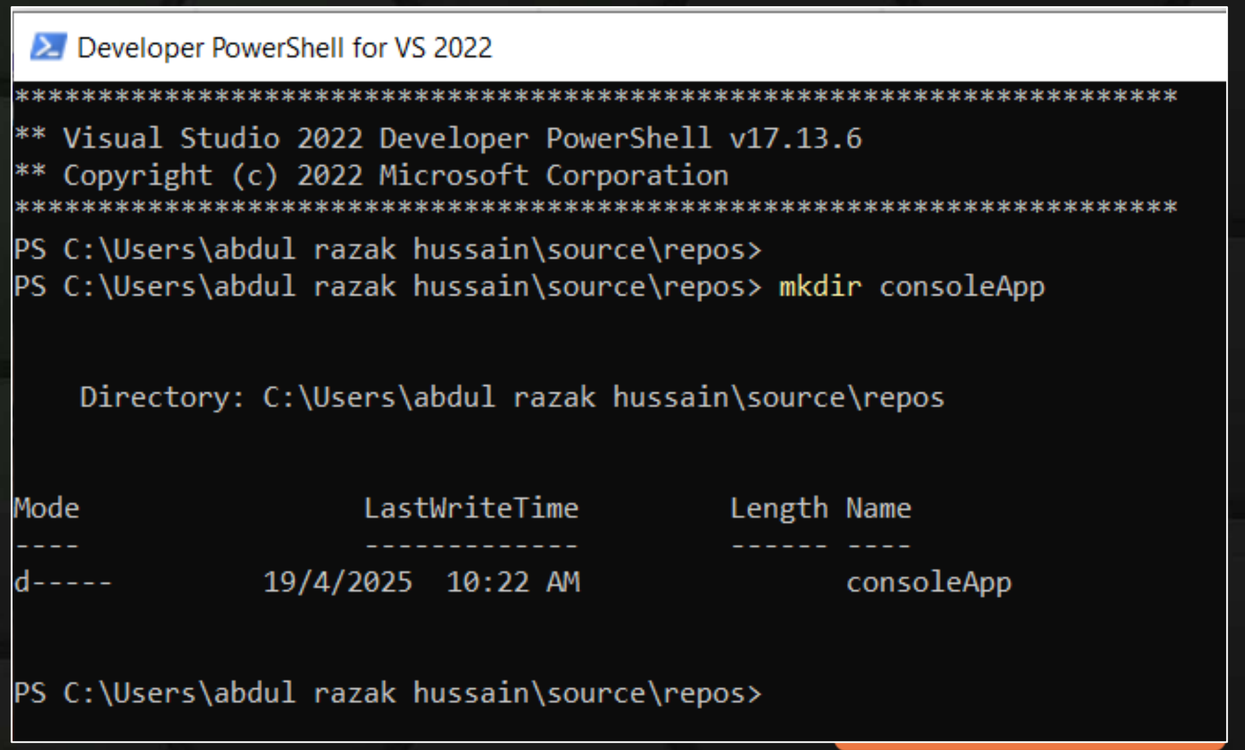
01 C# Console Application: Command prompt

- Click the Windows icon,  select Developer PowerShell



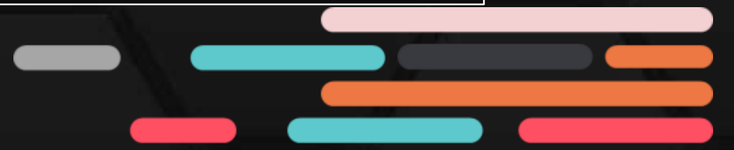


In Windows 11, use Terminal 



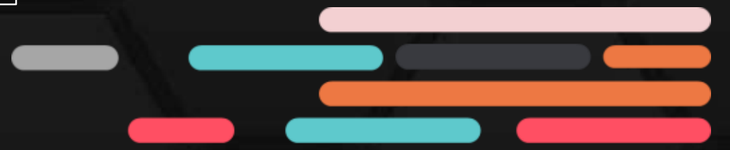
C:> cd consoleApp

```
PS C:\Users\abdul razak hussain\source\repos\consoleApp> dotnet

Usage: dotnet [options]
Usage: dotnet [path-to-application]

Options:
  -h|--help         Display help.
  --info            Display .NET information.
  --list-sdks       Display the installed SDKs.
  --list-runtimes   Display the installed runtimes.

path-to-application:
  The path to an application .dll file to execute.
```

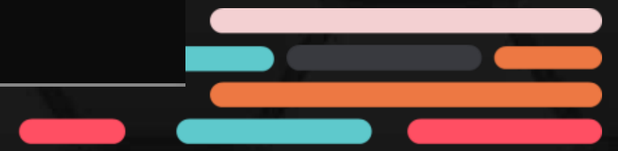


```
PS C:\Users\abdul razak hussain\source\repos> dotnet new
The 'dotnet new' command creates a .NET project based on a template.

Common templates are:
Template Name      Short Name  Language    Tags
---------------    ----------  ----------  --------------------
Blazor Web App     blazor      [C#]        Web/Blazor/WebAssembly
Class Library      classlib    [C#],F#,VB  Common/Library
Console App        console     [C#],F#,VB  Common/Console
Windows Forms App  winforms    [C#],VB     Common/WinForms
WPF Application    wpf         [C#],VB     Common/WPF

An example would be:
   dotnet new console

Display template options with:
   dotnet new console -h
Display all installed templates with:
   dotnet new list
Display templates available on NuGet.org with:
   dotnet new search web
```

C:> consoleApp> dotnet new console



```
PS C:\Users\abdul razak hussain\source\repos\consoleApp> dotnet new console
The template "Console App" was created successfully.

Processing post-creation actions...
Restoring C:\Users\abdul razak hussain\source\repos\consoleApp\consoleApp.csproj:
Restore succeeded.

PS C:\Users\abdul razak hussain\source\repos\consoleApp> dir


    Directory: C:\Users\abdul razak hussain\source\repos\consoleApp


Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
d-----         19/4/2025  10:47 AM                obj
-a----         19/4/2025  10:47 AM            252 consoleApp.csproj
-a----         19/4/2025  10:47 AM            105 Program.cs

PS C:\Users\abdul razak hussain\source\repos\consoleApp> dotnet run
Hello, World!
PS C:\Users\abdul razak hussain\source\repos\consoleApp>
```



```
PS C:\Users\abdul razak hussain\source\repos\consoleApp> notepad .\Program.cs
```

Program.cs - Notepad

File Edit Format View Help

```
// See https://aka.ms/new-console-template for more information
Console.WriteLine("Hello, World!");
```

```
PS C:\Users\abdul razak hussain\source\repos\consoleApp>
```

File Edit View Git Project Debug Test Analyze Tools Extensions Window Help Search Solution1

Attach...

Program.cs

Miscellaneous Files

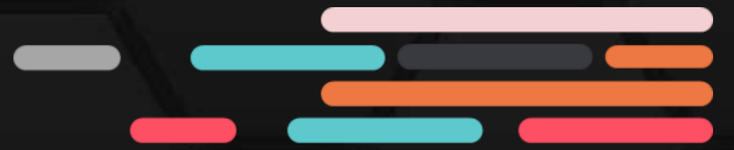
```
// See https://aka.ms/new-console-template for more information
Console.WriteLine("Hello, World!");
```

C# Interactive (.NET Core)

```
Microsoft (R) Visual C# Interactive Compiler version 4.13.0-3.25167.3 ()
Loading context from 'CSharpInteractive.rsp'.
Type "#help" for more information.
> Console.WriteLine("Hello, World!");
Hello, World!
>
```

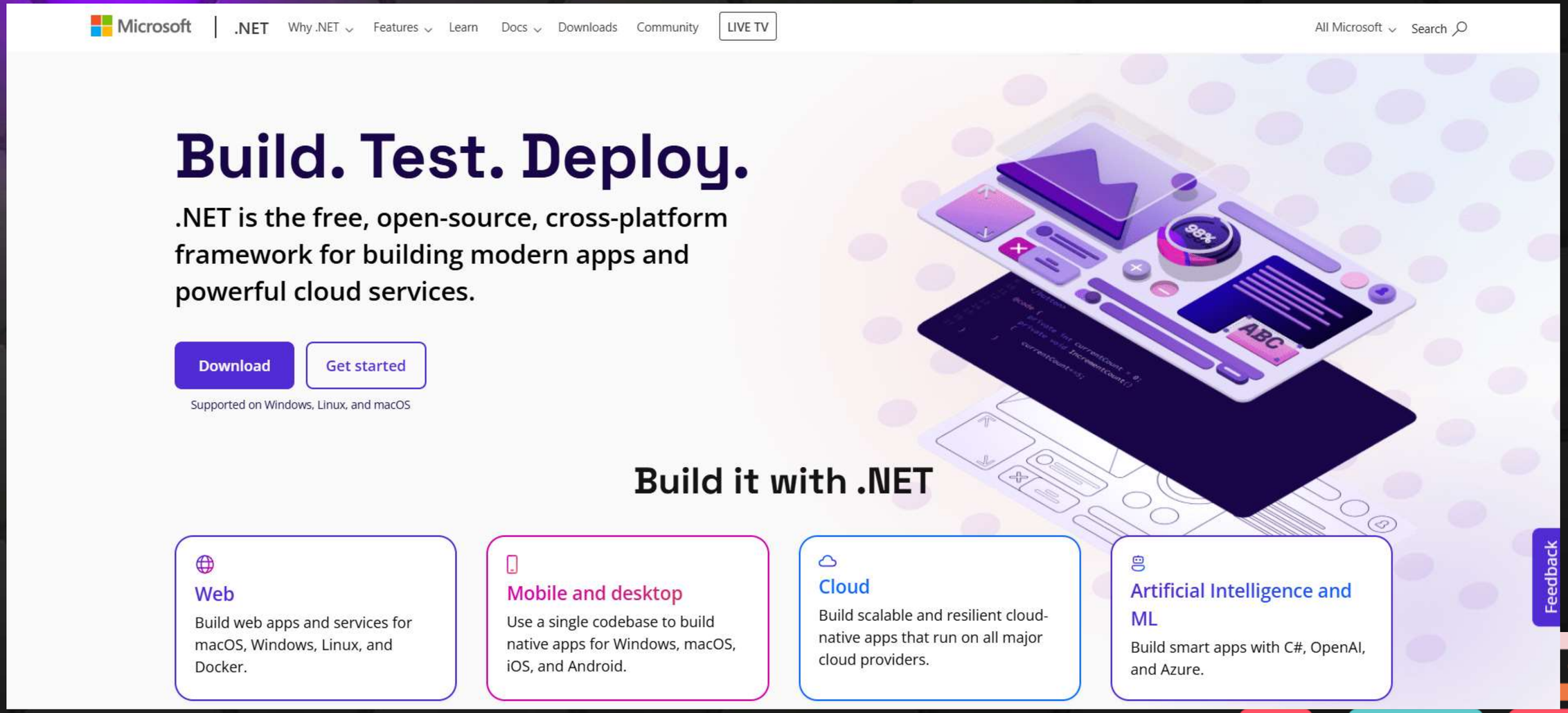
Quick Actions and Refactorings...	Ctrl+.
Rename...	Ctrl+R, Ctrl+R
Peek Definition	Alt+F12
Go To Definition	F12
Go To Base	Alt+Home
Go To Implementation	Ctrl+F12
Find All References	Shift+F12
View Call Hierarchy	Ctrl+K, Ctrl+T
Track Value Source	
Run Tests	Ctrl+R, T
Debug Tests	Ctrl+R, Ctrl+T
Show in Test Explorer	Ctrl+E, S
Breakpoint	▸
Execute in Interactive	Ctrl+E, Ctrl+E
Snippet	▸
Cut	Ctrl+X
Copy	Ctrl+C
Paste	Ctrl+V
Annotation	▸
Outlining	▸

```
PS C:\Users\abdul razak hussain\source\repos\consoleApp> dir


    Directory: C:\Users\abdul razak hussain\source\repos\consoleApp


Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
d-----         19/4/2025  10:53 AM                bin
d-----         19/4/2025  10:53 AM                obj
-a----         19/4/2025  10:47 AM            252 consoleApp.csproj
-a----         19/4/2025  11:28 AM            105 Program.cs
```



02 C# Console Application: Visual Studio

https://dotnet.microsoft.com/en-us/



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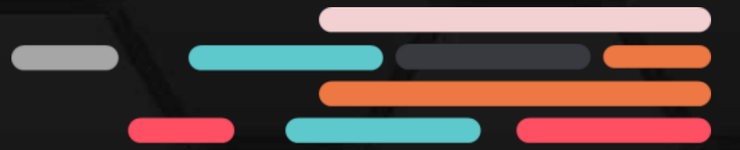

What do you want to learn?

C#

Programming with C#

Learn the building blocks of programming using C#, .NET's open-source, cross-platform, object-oriented programming language.

</>

Front-end web

Use Blazor to build interactive web pages with HTML, CSS, and C#.

Back-end web

Start building powerful, versatile APIs with ASP.NET Core.

Cloud-ready apps

Build modern, distributed, and powerful apps for the cloud with .NET Aspire.

Mobile and desktop

Use a single codebase to build native mobile apps for iOS, Android, and more.

F#

Programming with F#

Write succinct, robust, and performant code.

Artificial Intelligence and ML

Build smart apps with C#, OpenAI, and Azure.

Game development

Develop 2D and 3D games for the most popular desktops, phones, and consoles.

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Web	Native Desktop & Mobile	Languages	More
ASP.NET Core	.NET Multi-platform App UI	C#	.NET
Web APIs	Windows Forms	F#	Cloud
Blazor	Windows Presentation Foundation	Visual Basic	Data
Razor Pages			Internet of Things
MVC			Machine learning
SignalR			

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Learn more on freeCodeCamp →

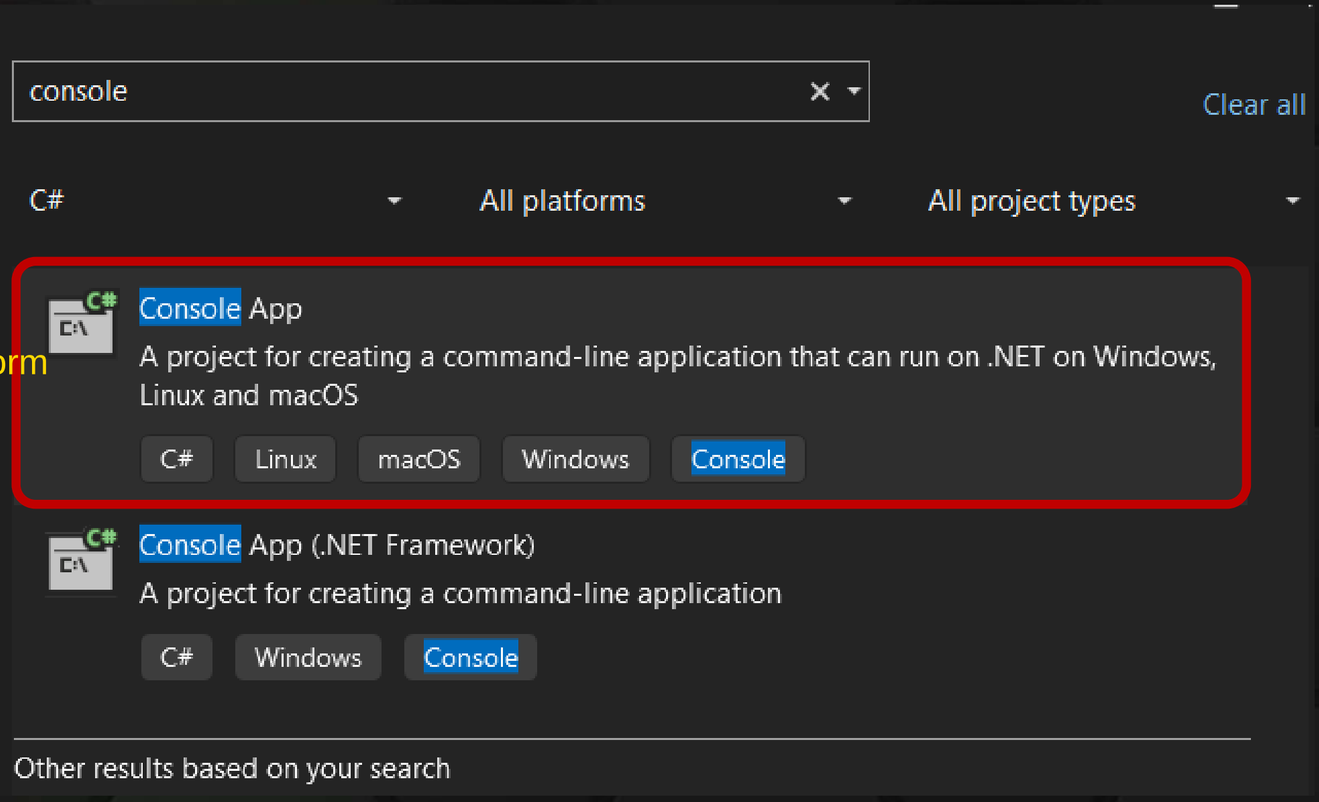
Create a new project

Recent project templates

A list of your recently accessed templates will be displayed here.

refers to a .NET application that is cross-platform and can run on Windows, macOS, and Linux.

refers to a .NET application that can only runs on Windows.



Additional information

Console App

C# Linux macOS Windows Console

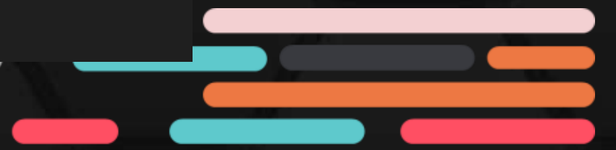
Framework

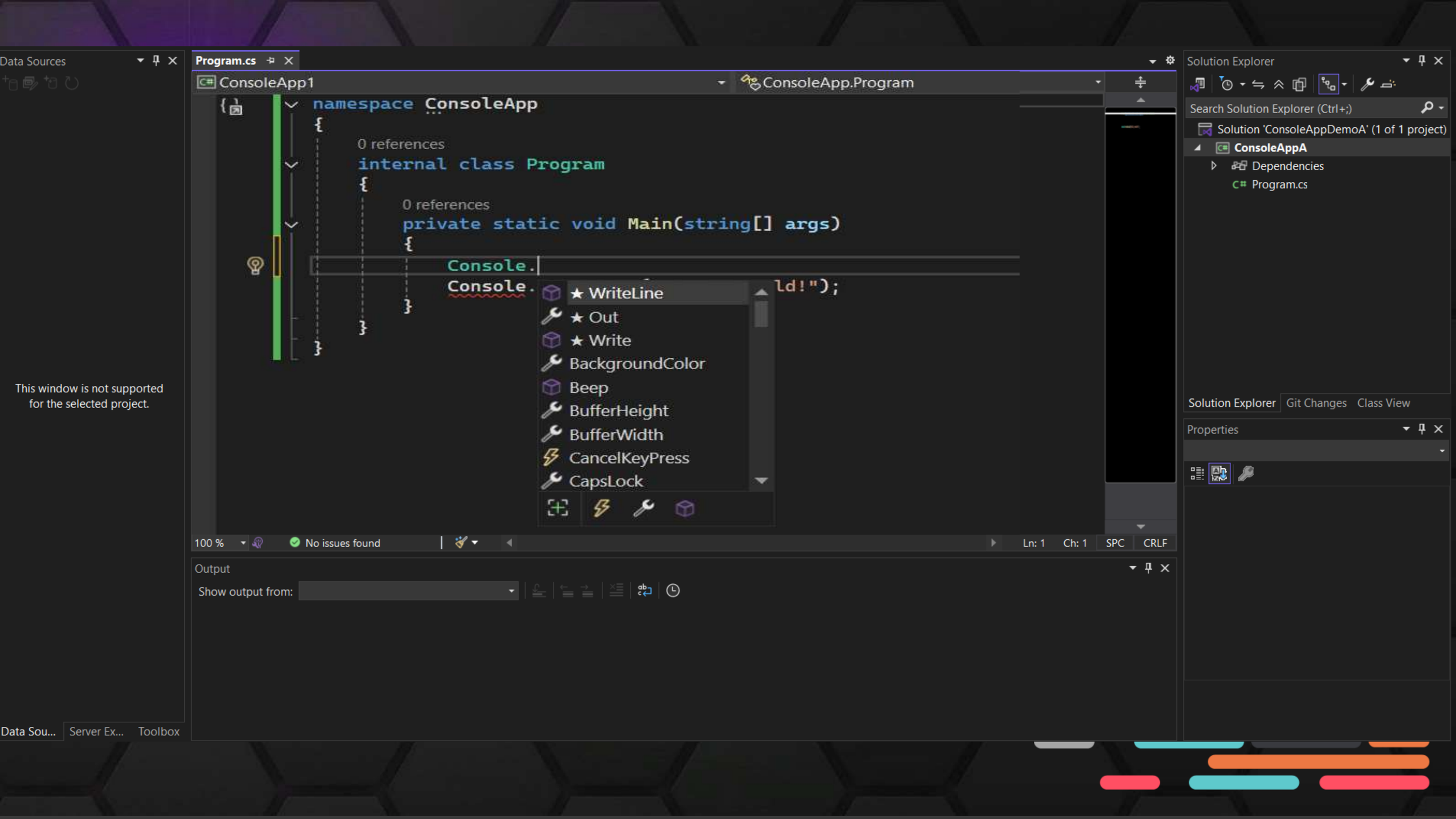
.NET 8.0 (Long Term Support)

- [ ] Do not use top-level statements
- [ ] Enable native AOT publish

- [ ] Place solution and project in the same directory

Project will be created in "C:\Users\abdul razak hussain\source\repos\ConsoleAppDemoA\ConsoleAppA
\"




Data Sources
This window is not supported for the selected project.
Data Sou...
Server Ex...
Toolbox
Program.cs
ConsoleApp1
ConsoleApp.Program
namespace ConsoleApp
{
0 references
internal class Program
{
0 references
private static void Main(string[] args)
{
Console.
Console.
ld!");
}
}
}
★ WriteLine
★ Out
★ Write
BackgroundColor
Beep
BufferHeight
BufferWidth
CancelKeyPress
CapsLock
100 %
No issues found
Ln: 1
Ch: 1
SPC
CRLF
Output
Show output from:
Solution Explorer
Search Solution Explorer (Ctrl+;)
Solution 'ConsoleAppDemoA' (1 of 1 project)
ConsoleAppA
Dependencies
Program.cs
Solution Explorer
Git Changes
Class View
Properties

C# Online Compiler

‹ Previous Next ›

C# Compiler (Editor)

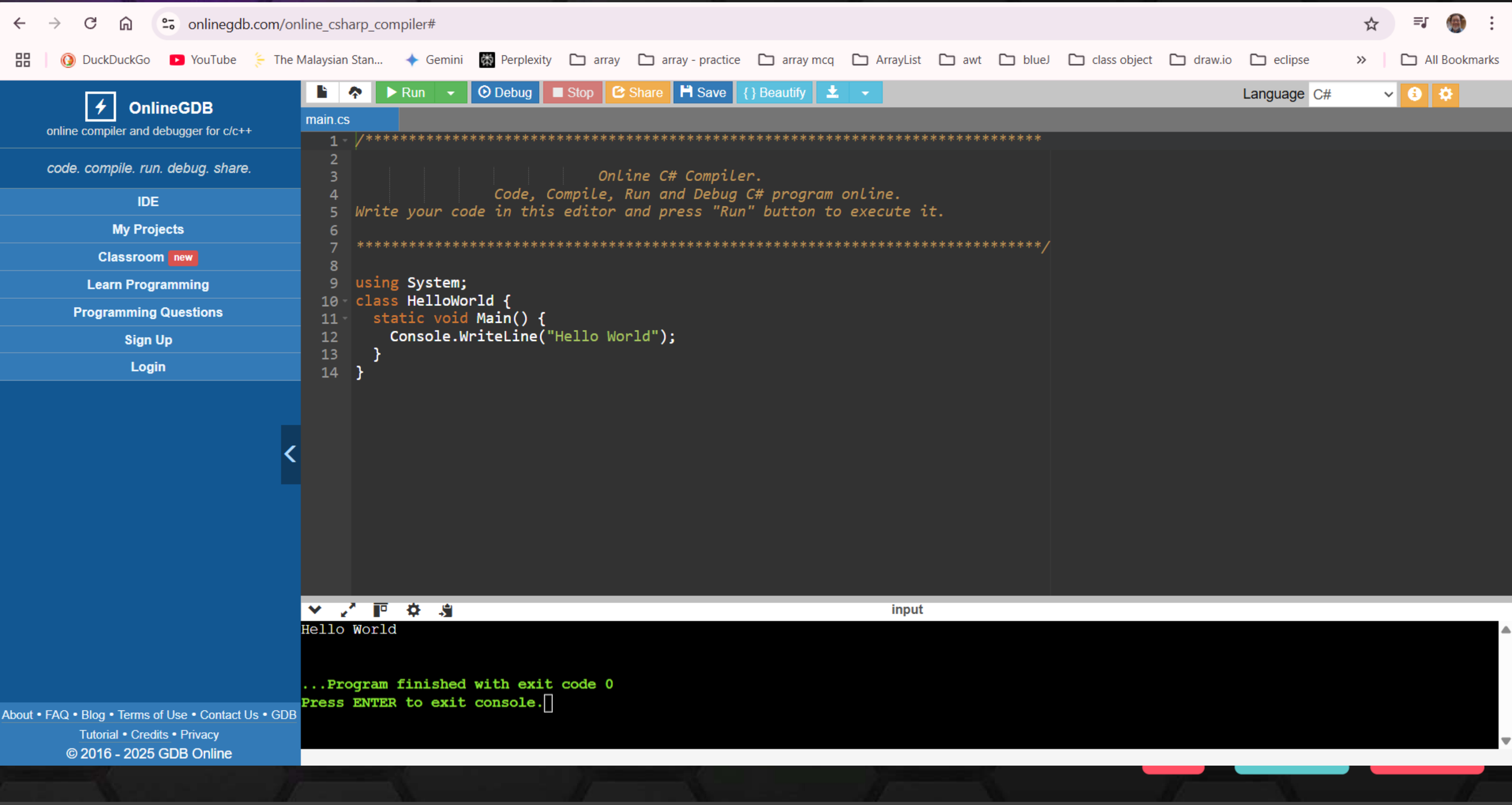
With our online C# compiler, you can edit C# code, and view the result in your browser.

Run »

```
using System;

namespace HelloWorld
{
  class Program
  {
    static void Main(string[] args)
    {
      Console.WriteLine("Hello World!");
    }
  }
}
```

```
Hello World!
```


onlinegdb.com/online_csharp_compiler#
DuckDuckGo
YouTube
The Malaysian Stan...
Gemini
Perplexity
array
array - practice
array mcq
ArrayList
awt
blueJ
class object
draw.io
eclipse
All Bookmarks
OnlineGDB
online compiler and debugger for c/c++
code. compile. run. debug. share.
IDE
My Projects
Classroom new
Learn Programming
Programming Questions
Sign Up
Login
Run
Debug
Stop
Share
Save
{ } Beautify
Language C#
main.cs
/**
Online C# Compiler.
Code, Compile, Run and Debug C# program online.
Write your code in this editor and press "Run" button to execute it.
**/
using System;
class HelloWorld {
static void Main() {
Console.WriteLine("Hello World");
}
}
input
Hello World
...Program finished with exit code 0
Press ENTER to exit console.
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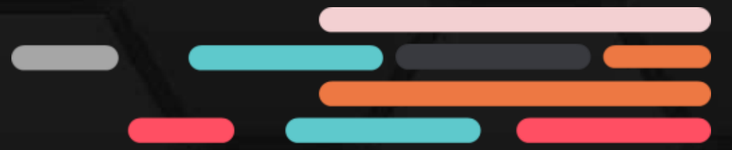
03 On string ...

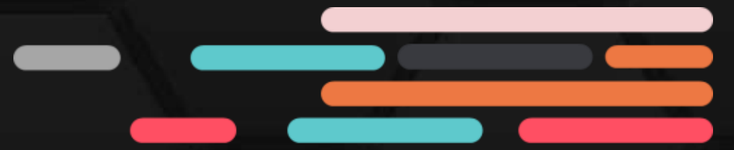
Methods	Description
`Format()`	returns a formatted string
`Split()`	splits the string into substring
`Substring()`	returns substring of a string
`Compare()`	compares string objects
`Replace()`	replaces the specified old character with the specified new character
`Contains()`	checks whether the string contains a substring
`Join()`	joins the given strings using the specified separator
`Trim()`	removes any leading and trailing whitespaces
`EndsWith()`	checks if the string ends with the given string
`IndexOf()`	returns the position of the specified character in the string
`Remove()`	returns characters from a string

`ToUpper()`	converts the string to uppercase
`ToLower()`	converts the string to lowercase
`PadLeft()`	returns string padded with spaces or with a specified Unicode character on the left
`PadRight()`	returns string padded with spaces or with a specified Unicode character on the right
`StartsWith()`	checks if the string begins with the given string
`ToCharArray()`	converts the string to a `char` array
`LastIndexOf()`	returns index of the last occurrence of a specified string



```
// Write(), WriteLine()
Console.Write("Visual Studio welcomes you, ");
Console.WriteLine("Razak");

Console.Write("Congratulations!");
Console.Write(" ");
Console.Write("You wrote your first lines of code.\n");
```

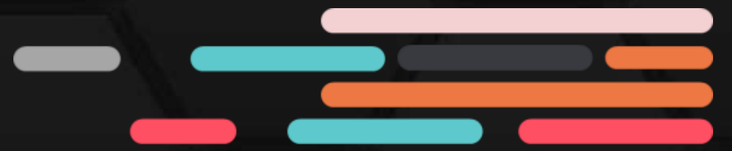
```
Visual Studio welcomes you, Razak
Congratulations! You wrote your first lines of code.
```



```
// GETING INPUT FROM USER: ReadLine()

// Type your username and press enter
Console.Write("\nEnter username:");

// Create a string variable and get user input from the keyboard and store it in the variable
string userName = Console.ReadLine();

// Print the value of the variable (userName), which will display the input value
Console.WriteLine("Username is: " + userName);

//===

Console.Write("\nEnter your age: ");
int age = Convert.ToInt32(Console.ReadLine());

Console.WriteLine("Your age is: " + age);
```

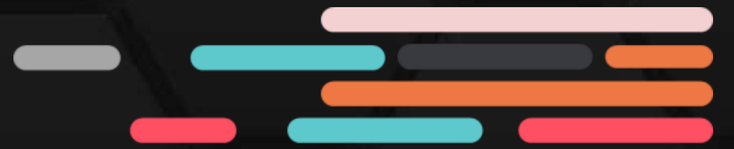
In C#, the string keyword is an alias for String; therefore, String and string are equivalent

```
Enter username:kiki
Username is: kiki

Enter your age: 26
Your age is: 26
```



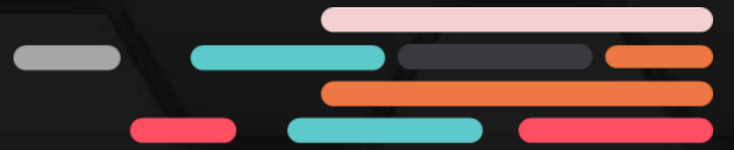
```
// CHECKING IF A STRING REPRESENTS NUMERIC VALUE

string numString = "1287543"; //"1287543.0" will return false for a long
long number1 = 0;
bool canConvert = long.TryParse(numString, out number1);
if (canConvert == true)
    Console.WriteLine($"number1 now = {number1}");
else
    Console.WriteLine("numString is not a valid long");
```

```
number1 now = 1287543
```



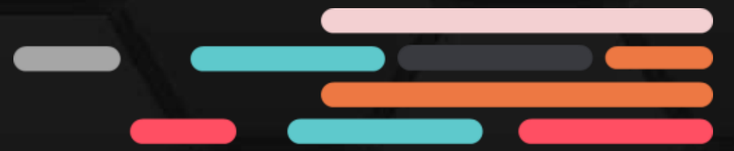
```
byte number2 = 0;
numString = "256"; // A value of 256 will return false
canConvert = byte.TryParse(numString, out number2);
if (canConvert == true)
    Console.WriteLine($"number2 now = {number2}");
else
    Console.WriteLine("numString is not a valid byte");
```

```
numString is not a valid byte
```



```
decimal number3 = 0;
numString = "27.3"; //"27" is also a valid decimal
canConvert = decimal.TryParse(numString, out number3);
if (canConvert == true)
    Console.WriteLine($"number3 now = {number3}");
else
    Console.WriteLine("number3 is not a valid decimal");
```

```
number3 now = 27.3
```



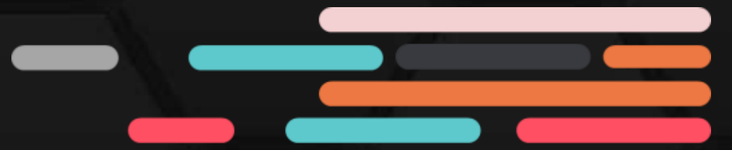
```
// GET THE LENGTH OF STRING
// create string
string str = "Melaka pernah jatuh ke tangan Portugis, Belanda, Inggeris, Jepun ...";
Console.WriteLine("\nstring: \n" + str);

// get length of str
int length = str.Length;
Console.WriteLine("Length: " + length + "\n");

string str2 = "Di mana bumi kupijak\r\nDi situ langit kujunjung\r\nAlang-alang menyeluk pekasam\r
length = str2.Length;
Console.WriteLine("string: \n" + str2);
Console.WriteLine("Length: " + length);
```

```
string:
Melaka pernah jatuh ke tangan Portugis, Belanda, Inggeris, Jepun ...
Length: 68

string:
Di mana bumi kupijak
Di situ langit kujunjung
Alang-alang menyeluk pekasam
Biar sampai ke pangkal lengan
Length: 107
```

```
// STRING JOINING (CONCATENTATION)

string str1 = "Nasi Lemak ";
Console.WriteLine("string str1: " + str1);

string str2 = "Istimewa Kg Morten";
Console.WriteLine("string str2: " + str2);

// join two strings
string joinedString = string.Concat(str1, str2);
Console.WriteLine("Joined string: " + joinedString);
```

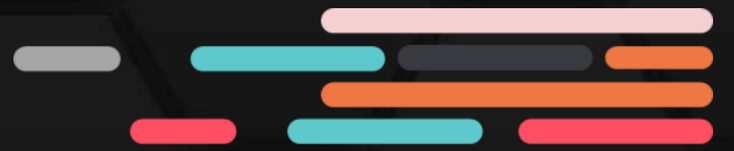
```
string str1: Nasi Lemak
string str2: Istimewa Kg Morten
Joined string: Nasi Lemak Istimewa Kg Morten
```

```
Console.WriteLine($"{str1.Trim()} {str2.Trim()}");
```



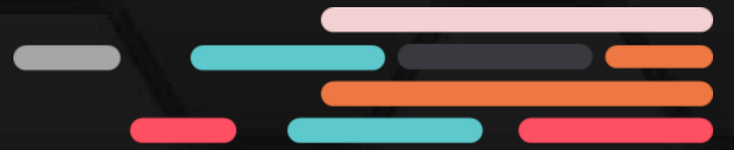
```
// STRING METHOD: TRIM()
string str1 =


    "         Nasi Lemak      ";
Console.WriteLine("string str1: " + str1);

string str2 = "Istimewa Kg Morten



    ;
Console.WriteLine("string str2: " + str2);
```

```
string str1:          Nasi Lemak
string str2: Istimewa Kg Morten                    .
Nasi Lemak Istimewa Kg Morten                       .
```



```
// STRING INTERPOLATION
// to insert values into a single string
// to control text formatting
string bookTitle1 = "Thinking, Fast and Slow";
string bookTitle2 = "Freakonomics";

Console.WriteLine("I\'m reading " + bookTitle1 + " and " + bookTitle2);
```

```
I'm reading Thinking, Fast and Slow and Freakonomics
I'm reading Thinking, Fast and Slow and Freakonomics
```



```
// STRING INTERPOLATION
// to insert values into a single string
// to control text formatting
var name = "Aisyah";
Console.WriteLine($"Hello, {name}. It's a pleasure to meet you!");

var item = (Name: "Nasi Lemak Cun", Price: 1.99m, perPackage: 3); // m = money!
var date = DateTime.Now;
Console.WriteLine($"On {date}, the price of {item.Name} was RM {item.Price} per {item.perPackage} items.");
```

```
Hello, Aisyah. It's a pleasure to meet you!
On 20/4/2025 12:17:48 PM, the price of Nasi Lemak Cun was RM 1.99 per 3 items.
```

```
Console.WriteLine($"On {date:d}, the price of {item.Name} was {item.Price:C2} per {item.perPackage} items");
```

```
Hello, Aisy
On 20/4/202
```

```
rd date and
ay the short
ay the year
splay the ye
umeric value
umeric value
```

```
figuration: Debug Any
an execute 'Build' or
```

d	short date
d	day of the month (1-2 digits)
D	long date
dd	day of the month (2 digits)
ddd	day of the week (abbreviated)
dddd	day of the week (full)
f	full short date/time
F	full long date/time
g	general short date/time

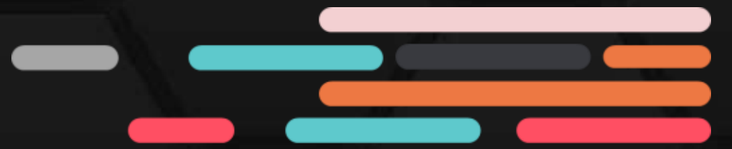
Examples:
d (en-MY) → 15/6/2009
d (en-US) → 6/15/2009

The "d" standard format specifier represents a custom date and time format string
defined by a specific culture's DateTimeFormatInfo.ShortDatePattern property. For
example, the custom format string that is returned by the ShortDatePattern proper
the invariant culture is "MM/dd/yyyy".

string methods

Methods	Description
`Format()`	returns a formatted string
`Split()`	splits the string into substring
`Substring()`	returns substring of a string
`Compare()`	compares string objects
`Replace()`	replaces the specified old character with the specified new character
`Contains()`	checks whether the string contains a substring
`Join()`	joins the given strings using the specified separator
`Trim()`	removes any leading and trailing whitespaces
`EndsWith()`	checks if the string ends with the given string
`IndexOf()`	returns the position of the specified character in the string
`Remove()`	returns characters from a string

`ToUpper()`	converts the string to uppercase
`ToLower()`	converts the string to lowercase
`PadLeft()`	returns string padded with spaces or with a specified Unicode character on the left
`PadRight()`	returns string padded with spaces or with a specified Unicode character on the right
`StartsWith()`	checks if the string begins with the given string
`ToCharArray()`	converts the string to a `char` array
`LastIndexOf()`	returns index of the last occurrence of a specified string

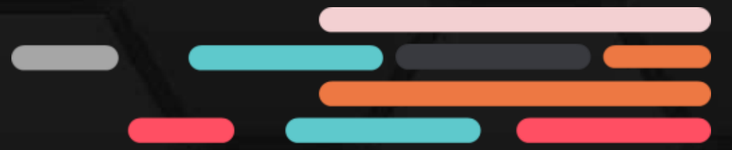


```
//STRING INTERPOLATION - FIELD WIDTH & ALIGNMENT
var inventory = new Dictionary<string, int>()
{
    ["hammer, ball pein"] = 18,
    ["hammer, cross pein"] = 5,
    ["screwdriver, Phillips #2"] = 14
};

Console.WriteLine($"Inventory on {DateTime.Now:d}");
Console.WriteLine(" ");
Console.WriteLine("+-----------------------------------+");
Console.WriteLine($"|{"Item",-25}|{"Quantity",10}|");
Console.WriteLine("+-----------------------------------+");
foreach (var item in inventory)
    Console.WriteLine($"|{item.Key,-25}|{item.Value,10}|");
Console.WriteLine("+-----------------------------------+");
```

```
Inventory on 20/4/2025

+-----------------------------------+
|Item                       |  Quantity|
+-----------------------------------+
|hammer, ball pein          |        18|
|hammer, cross pein         |         5|
|screwdriver, Phillips #2   |        14|
+-----------------------------------+
```

```
byte number = 2;
int count = 10;
float totalPrice = 145_890.00f;
char gender = 'M';
string address = "Olak Lempit, Selangor";
bool isDelivered = false;

Console.WriteLine("number is " + number);
Console.WriteLine("count is " + count);
Console.WriteLine("totalPrice is " + totalPrice);
Console.WriteLine("gender is " + gender);
Console.WriteLine("address is " + address);
Console.WriteLine("isDelivered is " + isDelivered);
```

```
number is 2
count is 10
totalPrice is 145890
gender is M
address is Olak Lempit, Selangor
isDelivered is False
```



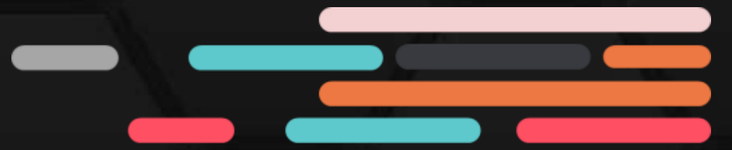
```
var number = 2;
var count = 10;
var totalPrice = 145_890.00f;
var gender = 'M';
va                                    ;
va
```

readonly struct System.Char

Represents a character as a UTF-16 code unit.

```
Console.WriteLine("number is " + number);
Console.WriteLine("count is " + count);
Console.WriteLine("totalPrice is " + totalPrice);
Console.WriteLine("gender is " + gender);
Console.WriteLine("address is " + address);
Console.WriteLine("isDelivered is " + isDelivered);
```

```
number is 2
count is 10
totalPrice is 145890
gender is M
address is Olak Lempit, Selangor
isDelivered is False
```



04 On numbers...

- Implicit type conversion

```
byte b = 1;

int i = b;
```

```
int i = 1;

float f = i;
```

- Explicit type conversion (casting)

```
int i = 1;

byte b = (byte)i;
```

```
string s = "1";

int i = (int)s;
```

```
float f = 1.0f;

int i = (int)f;
```

- Conversion between non-compatible types

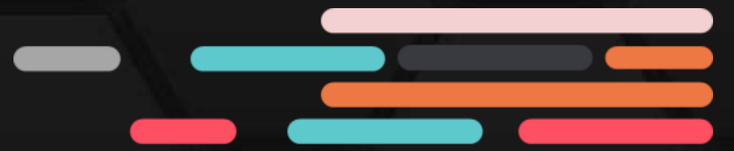
```
string s = "1";

int i = Convert.ToInt32(s);

int j = int.Parse(s);
```

```
int anInteger = 300;
int anInteger2 = 255;

byte aByte = (byte)anInteger;
Console.WriteLine($"integer: {anInteger}, byte : {aByte}");
aByte = (byte)anInteger2;
Console.WriteLine($"integer: {anInteger2}, byte : {aByte}");
```

```
integer: 300, byte : 44
integer: 255, byte : 255
```

```
float aFloat = 34.897f;
int anInteger3 = (int)aFloat;
Console.WriteLine($"float: {aFloat}, integer: {anInteger3}");
```

```
float: 34.897, integer: 34
```

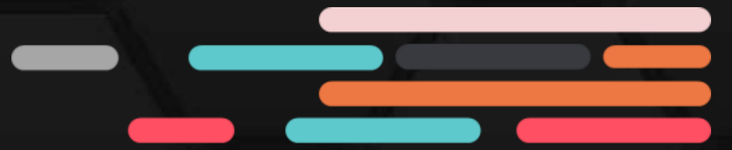


```
string aString = "23";
int anInteger4 = Convert.ToInt32(aString);
int anInteger5 = int.Parse(aString);
Console.WriteLine($"string: {aString}, integer: {anInteger4}");
Console.WriteLine($"string: {aString}, integer: {anInteger5}");
```

```
string: 23, integer: 23
string: 23, integer: 23
```

```
int number5;
numString = "5627.1";
decimal aDecimal = Convert.ToDecimal(numString);
number5 = (int)aDecimal;
Console.WriteLine($"number5 is now {number5}");
```

```
number5 is now 5627
```



```
int a = 2100000000;
int b = 2100000000;
int c = a + b;
Console.WriteLine(c);
```

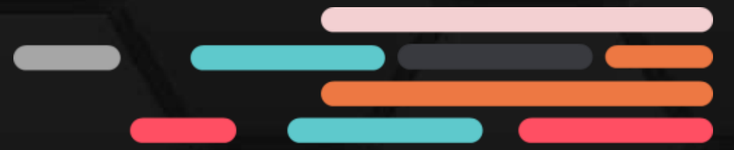
```
-94967296
```

```
int a = 2100000000;
int b = 2100000000;
long c = a + b;
Console.WriteLine(c);
```

```
-94967296
```

```
int a = 2100000000;
int b = 2100000000;
long c = (long)a + (long)b;
Console.WriteLine(c);
```

```
4200000000
```

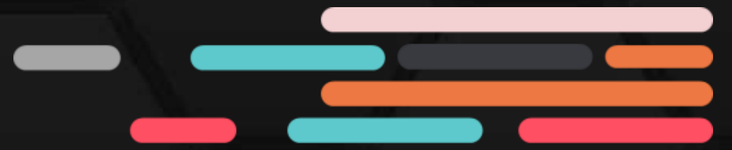


```
int a = 2100000000;
int b = 2100000000;
long c = checked(a + b);
Console.WriteLine(c);
```

```
Unhandled exception. System.OverflowException: Arithmetic operation resulted in an overflow.
   at ConsoleApp.Program.Main(String[] args) in C:\Users\hp\source\repos\ConsoleApp\ConsoleApp
```

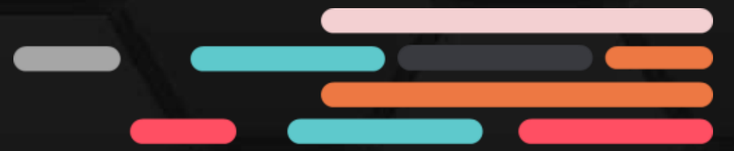
```
int a = 78.3;
int b = 21.7;
long c = checked(a + b);
Console.WriteLine(c);
```

```
double a = 78.3;
float b = 21.7;
long c = checked(a + b);
Console.WriteLine(c);
```



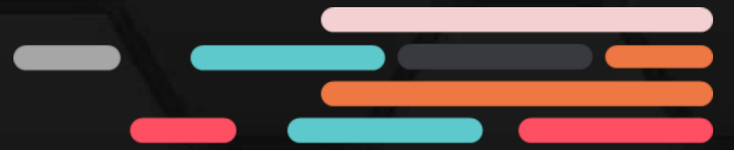
```
decimal a = 78.3m;
decimal b = 21.7m;
decimal c = a + b;
Console.WriteLine($"{a} + {b} equals to {c}");
```

```
78.3 + 21.7 equals to 100.0
```



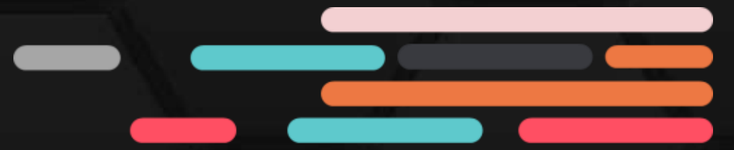
05 Data Collection with List<T>

```
var names = new List<string>() {"Tuah", "Jebat", "Lekir","Le Que","Kasturi" };
names.Add("Kiki");
names.Add("Kaka");      //.Remove
names.Add("Kuku");

foreach (var name in names)
{
    Console.WriteLine($"Hello {name.ToUpper()}");
}

Console.WriteLine(names[0]);
```

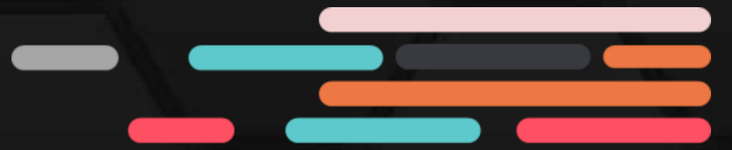


```
var salesMonthly = new List<decimal>() { 230_900.906m, 300_215.459m  };


foreach (var sales in salesMonthly)
{
    Console.WriteLine($" {sales.ToString("N2")}");
}
```

```
230,900.91
300,215.46
```



```
public class Customer
{
    2 references
    public string name { get; set; }
    2 references
    public int custId { get; set; }
}

var customer = new List<Customer>();

customer.Add(new Customer { name = "Alfred, Hitchcock", custId = 207 } );

foreach (var cust in customer)
{
    //Console.WriteLine($"{customer}");
    Console.WriteLine($"Name: {cust.name}, Customer ID: {cust.custId}");
}
```



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