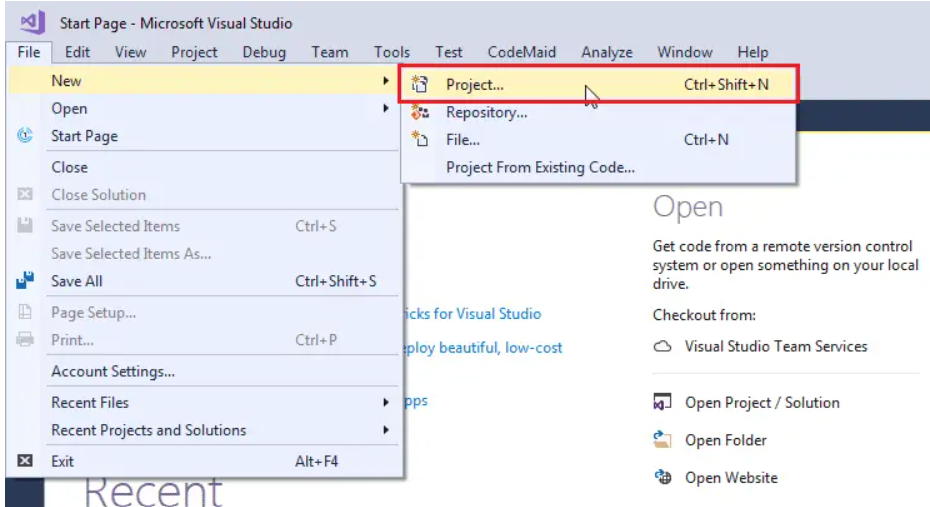
Lab # 4 C# Language Fundamentals:

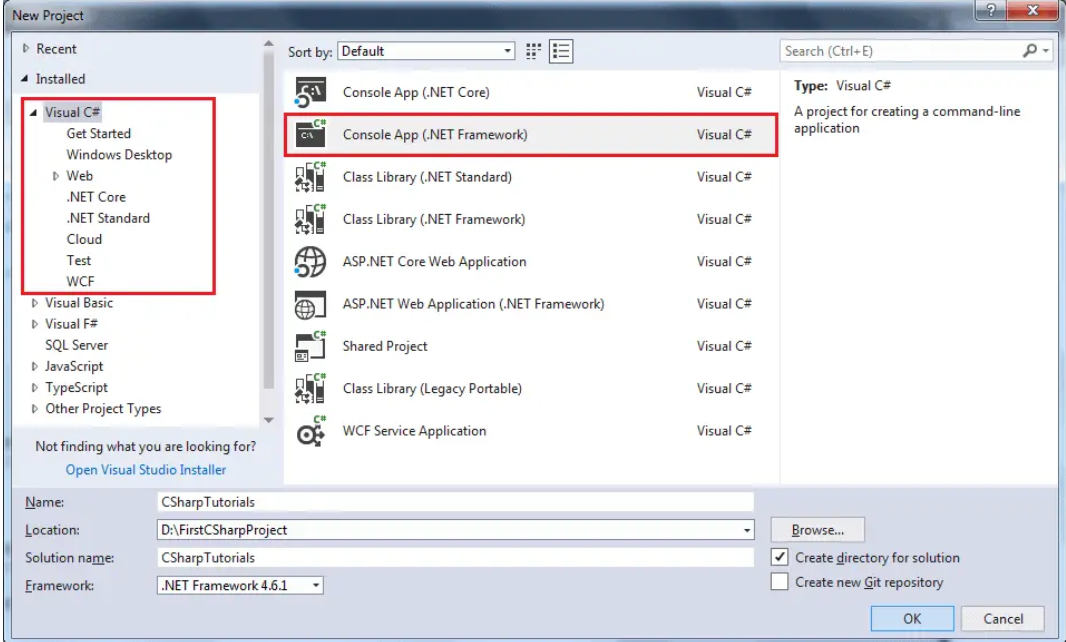
# Creating a Console Application:

C# can be used in a window-based, web-based, or console application. To start with, we will create a console application to work with C#.

Open Visual Studio installed on your local machine. **Click** **on File -> New Project**... from the top menu, asshown below.

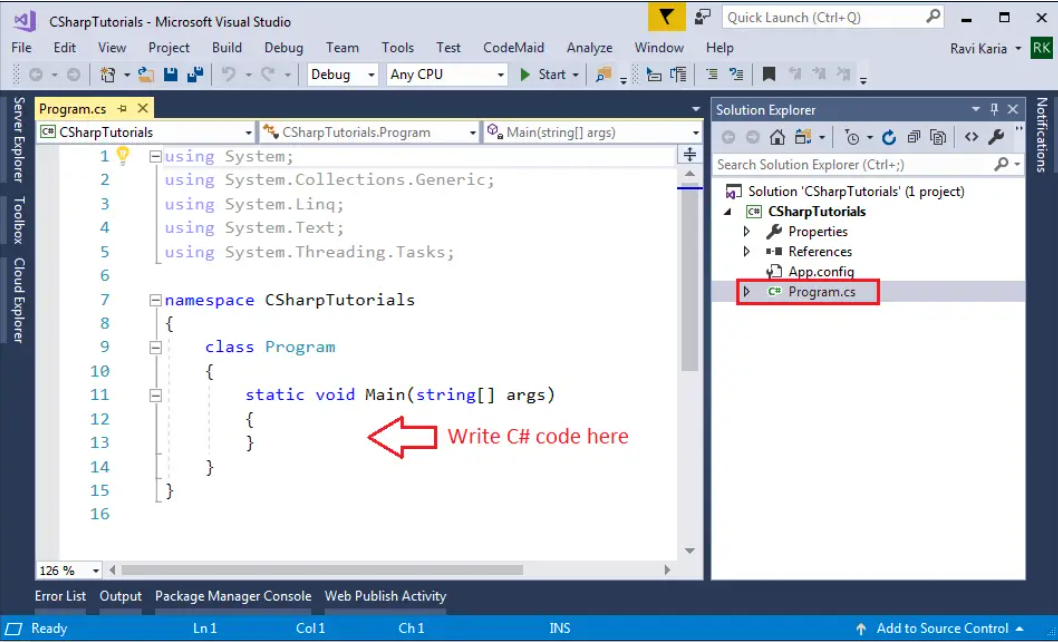


From the **New Project** popup, shown below, select Visual C# in the left side panel and select the Console App in the right-side panel.



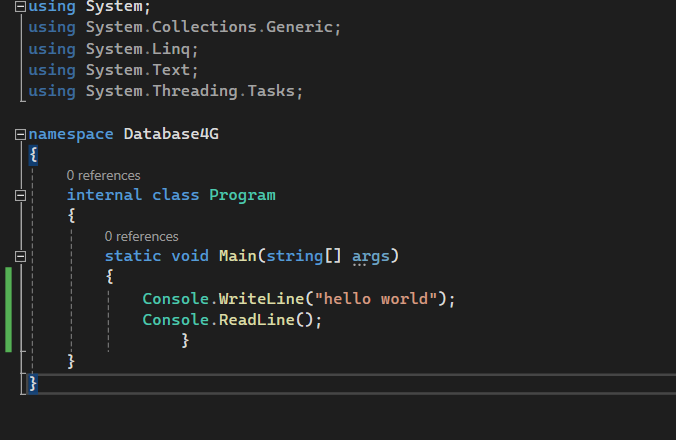
In the name section, give any appropriate project name, a location where you want to create all the project files, and the name of the project solution.

Click OK to create the console project. **Program.cs** will be created as default a C# file in Visual Studio where you can write your C# code in Program class, as shown below. (The .cs is a file extension for C# file.)



## Output

To output values or print text in C#, you can use the WriteLine() or Write()  method:

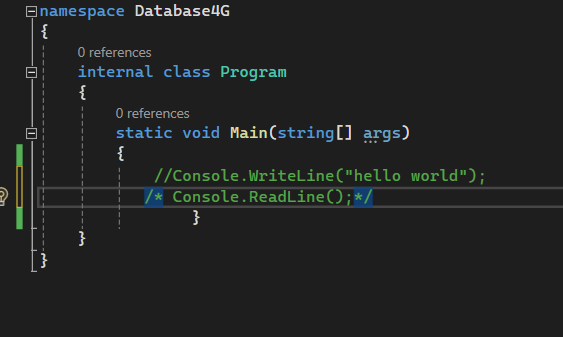


## Single-line Comments

Single-line comments start with two forward slashes (//).

## C# Multi-line Comments

Multi-line comments start with /\* and ends with \*/.



## Data Type:

In C#, there are different **types** of variables (defined with different keywords), for example:

int - stores integers (whole numbers), without decimals, such as 123 or -123

double - stores floating point numbers, with decimals, such as 19.99 or -19.99

char - stores single characters, such as 'a' or 'B'. Char values are surrounded by single quotes

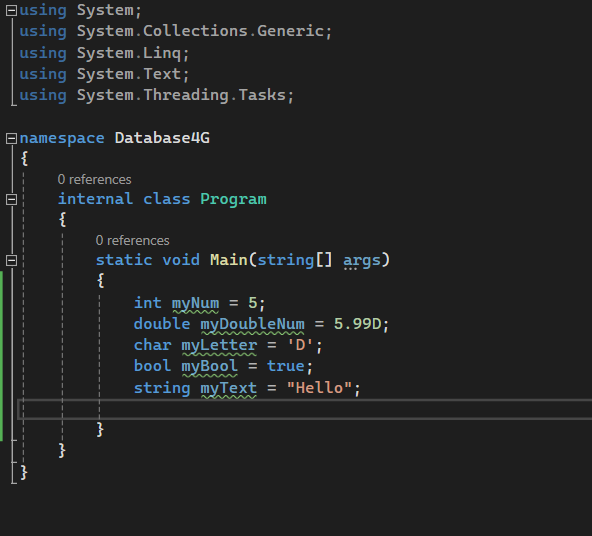
string - stores text, such as "Hello World". String values are surrounded by double quotes

bool - stores values with two states: true or false

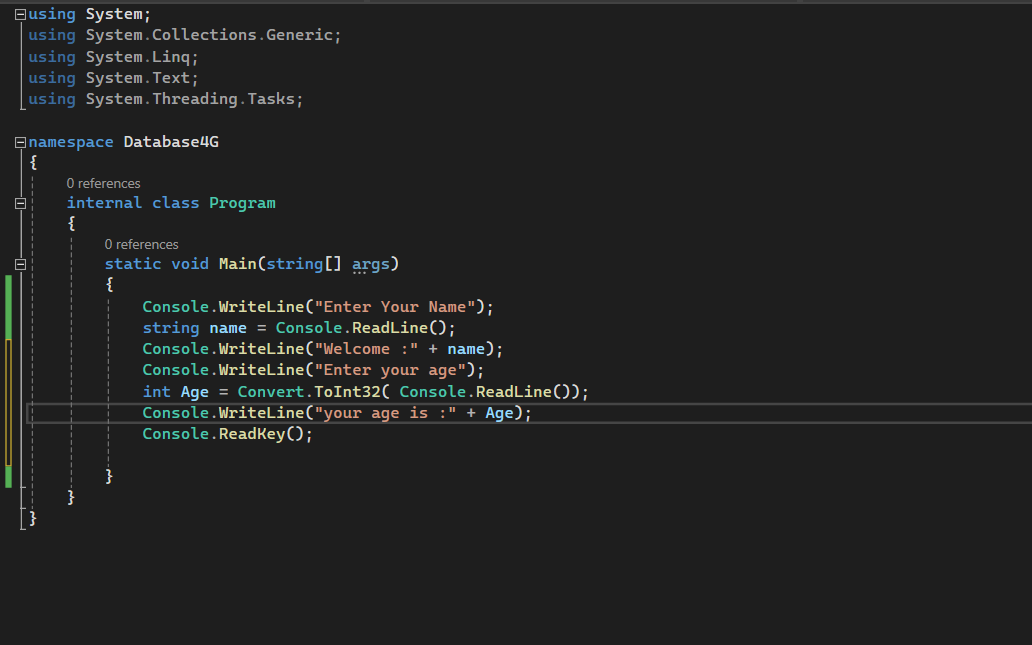
## Variable:

To create a variable, you must specify the type and assign it a value:

Type name\_of\_variable = data;



## User input:



## Operators:

* C# supports various operators such as arithmetic operators (**+**, **-**, **\***, **/,++**), assignment operators (**=**, **+=**, **-=**), comparison operators (**==**, **!=**, **<**, **>**), logical operators (**&&**, **||**, **!**), etc.
* Operators perform specific operations on operands.

*int a = 10;*

*int b = 5;*

*int result = a + b; // Addition*

*result = a \* b; // Multiplication*

*result = a > b ? a : b; // Conditional Operator*

## Control Structures:

* Control structures determine the flow of execution in a program.
* Common control structures include if statements, switch statements, loops (for, while, do-while), and jump statements (**break**, **continue**, **return**).
* These structures help in making decisions and looping over code blocks.

**If Statement**

if (condition)

{

// block of code to be executed if the condition is True

}

**Else Statement**

if (condition)

{

// block of code to be executed if the condition is True

}

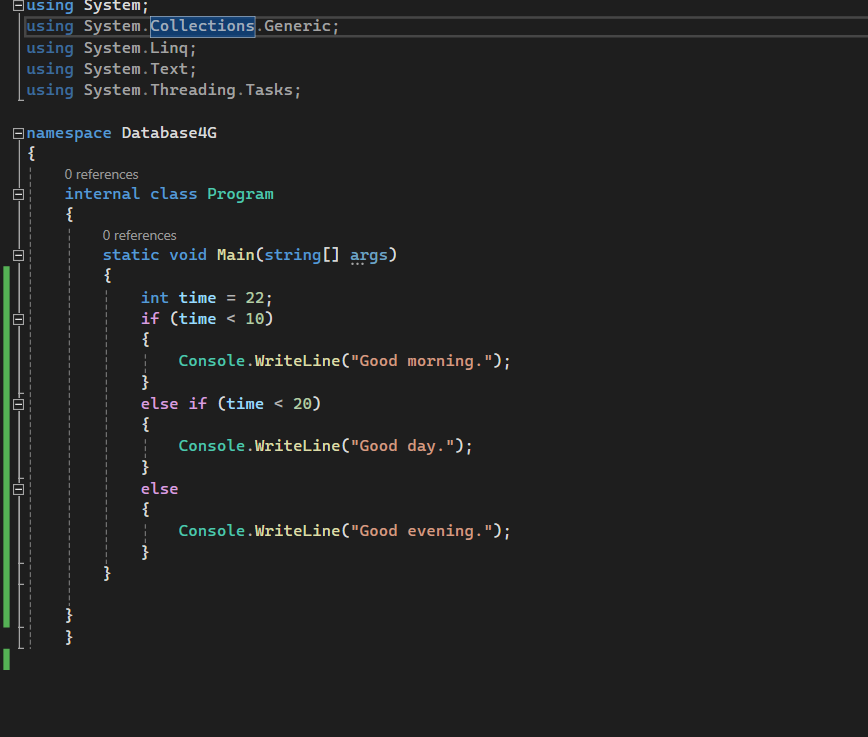
else

{

// block of code to be executed if the condition is False

}

**Else If Statement:**

****

**Switch Statement:**

switch(*expression*)

{

case x:

*// code block*

break;

case y:

*// code block*

break;

default:

*// code block*

break;

}

**Loops**

* **For Loop:**

for (statement 1; statement 2; statement 3)

{

// code block to be executed

}

* **While Loop:**

while (condition)

{

// code block to be executed

}

* **Do while Loop:**

do

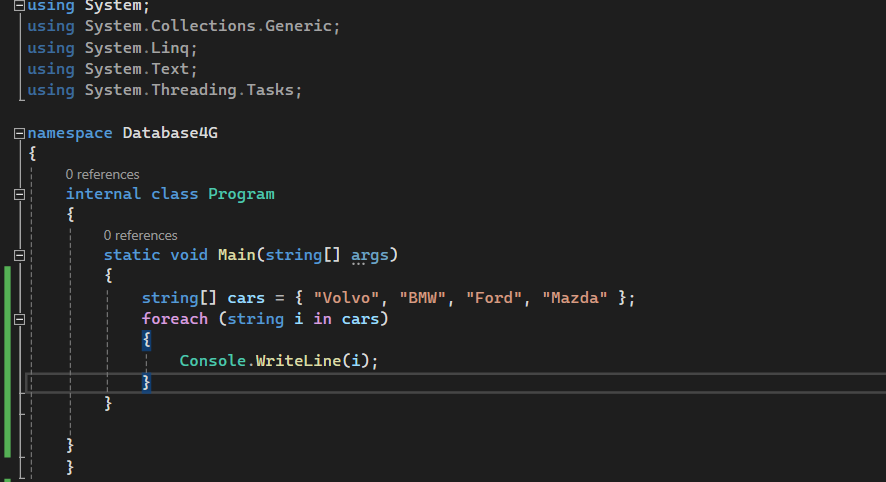
{

// code block to be executed

}

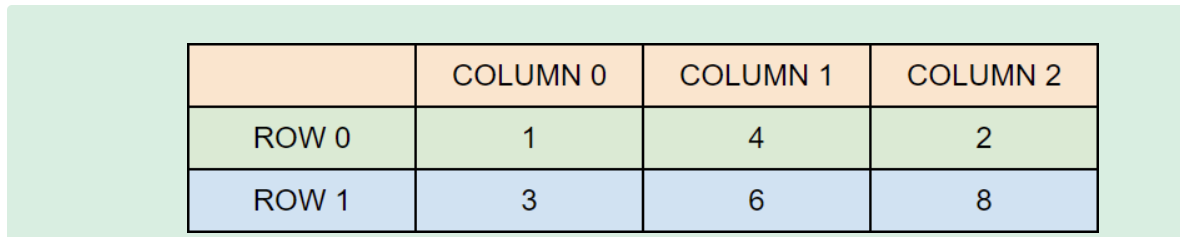
while (condition);

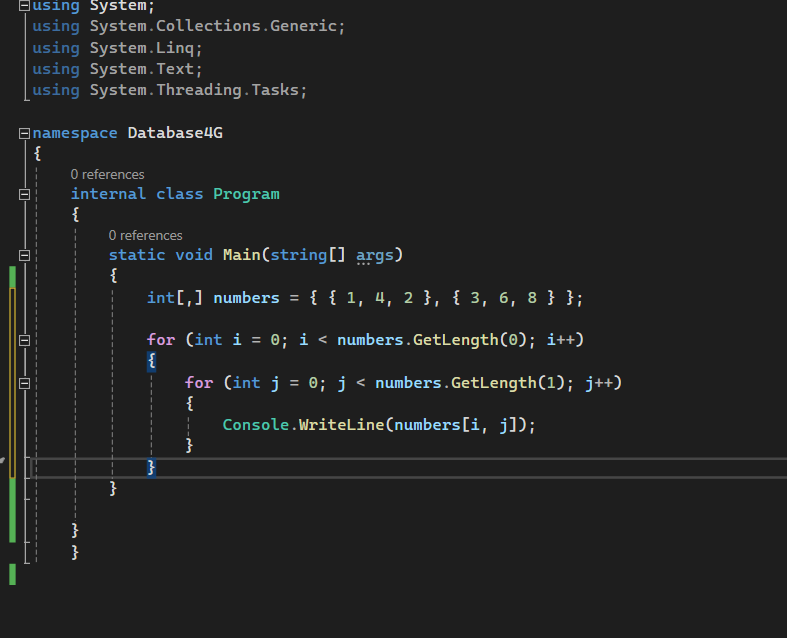
* **Foreach Loop:**

****

## Multidimensional Arrays

int[,] numbers = { {1, 4, 2}, {3, 6, 8} };



****