HelloWorld and HelloUser Programs
Getting to know the IDE and writing your first program!

Start Microsoft Visual C# 2010 Express

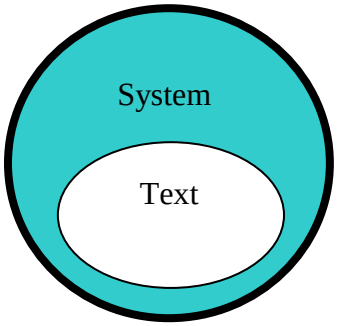
Create a new project

Project types: Visual C# > Console Application

Name: HelloWorld (no spaces)

Notice:

- There is already a bunch of code there…
  - The IDE has written a bunch of code for you.
  - This is code that will always be needed and the IDE just does it for you.
  - Often called "boilerplate" code
- 1st line: "using System;"
  - What is "System"?
    - It is a ***namespace***
    - Remember that namespace is the outermost layer of the .NET onion
- We will ignore the 2nd & 3rd lines for now…
- 4th line: "using System.Text;"
  - It is a namespace inside a namespace



- 6th line: "namespace HelloWorld"
  - It is the namespace for our program … it is our little playground. ☺
  - The IDE has created it for us
- 7th line: "{"
  - There is a left curly brace immediately below the namespace declaration
  - Also notice that on the last line is a right-curly-brace
  - Place the cursor just to the right of the right-curly-brace on the last line

- Did you notice that it and the left-curly-brace on line 7 were highlighted?
  - This is showing you that those two braces go together…
    - Together they "wrap" everything in our namespace
  - Notice that everything between them is indented…
    - This is helping us see what code is part of the namespace
- Try this with other sets of curly-braces to see what code they "wrap"
- Every set of code that needs to be considered a unique ***block*** is wrapped with curly-braces and indented

- 8th line: "class Program"
  - Remember the onion layers of .NET?
  - The layer inside the namespace layer is ***class***.
  - Another name for class is ***object***…a thing that can do something
  - This class is our program
  - You can rename this class if you like
  - Rename it to "MyFirstProgram"
- 10th line: "static void Main(string[] args)"
  - For now ignore "static" and "void"
  - Also for now, ignore what is in the parentheses: "string[] args"
  - "Main" is a ***method*** in our class
    - The layer inside the class layer is method
    - A method does something for our class
    - ***It contains code***
    - "Main" is the name our class' method
    - Our class only has one method
    - This is where all our code for this program will go

Let's write some code!

- Create a new line inside the curly-braces of our Main method.
  - Notice how the cursor auto-magically indented from the curly-braces?
- Type the capital letter C
  - Notice how a window pops up with a bunch of options in it?

- These are the possible commands that start with C.

- Type the lower case letter o
  - Notice how the options in the pop-up window changes?
  - Also notice the third option down is Console?
  - Double-click on it…the IDE fills it in for you
- Wait a second … notice there are now red up tic marks? ^^
  - These are telling you that you need to type more to complete the command
- Type a period
  - Notice the pop-up window appeared again?
  - It is giving you the options for subcommands of the Console object
- Type the capital letter W
- Double-click on WriteLine
  - You can also just hit Enter if it is selected
  - The IDE fills in the next part of the command for you
  - Again notice the ^^… there is more we need to type
- Type a left parenthesis
  - Another pop-up window appears … it says

    1 of 19 void **Console.WriteLine()**
    Writes the current line terminator to the standard output stream
  - This is telling us there are 19 different ways we can use the WriteLine method
  - If you click the down arrow after the "19" you can cycle through the options
  - The one we want to use is actually the 11th … the one that takes a string
  - You don't have to scroll through them unless you need a reminder which one to use
- Type the following including the double-quotes, right-parenthesis and semi-colon:

  "Hello World!");
- Congratulations! You have now written your first program!

It is now time to compile and run your program.

- Find the green "arrow" icon button at the top of the IDE.
  - If you hold your cursor over it, it says:

Start Debugging (F5)

- When you click this button (or hit the F5 button) the IDE will compile **and** run your program
- If you have made a typo, the compiler will likely detect it and tell you about it. You will have to correct all typos before it can run the program.

- Hit the Start Debugging button
  - What happened?
  - Assuming you had no compile errors, all you saw was the flash of a black window which immediately disappeared and returned you to the IDE
  - Did anything really happen? What was that black window?
  - It was your program running!
  - It ran:
    1. created the console window
    2. made it appear
    3. sent the message "Hello World!" to it
    4. and finished
- Hmm, that isn't quite what we wanted is it?
  - What we'd really like is for the console window to stay around until we've been able to read it.
  - Let's add something to our program.
- Place the cursor at the end of the Console.WriteLine line and hit enter
- Type the following:

  Console.ReadLine();
- Now compile and run the program again (click the Start Debugging button)
  - Whoohoo! It worked! It is just sitting there so we can read it.
  - Now hit Enter and our console window will go away
  - In other words our program completes/exits and returns us to the IDE
- The ReadLine method of the Console object collects all keyboard input until the Enter key is hit.

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The next step

- Now that we know how to collect keyboard input, let's put it to use.
- I'm going to give you a hint then turn you loose to see if you can figure the rest out.
- Keyboard input is letters, numbers, punctuation, etc.
- Individually, each letter, number, etc. is considered a "character" and can be stored in a "char" variable. One character in a char variable at a time.
- Multiple characters (a sentence or name for instance) are considered a "string" and are stored/saved in a "string" variable.
- To create a variable, you tell the compiler the type of information the variable will hold and give it a name.
- So if we are going to ask the user for their name we could create a variable to store/save it like this:

```
string userName;
```

First task

- Using what you have and what I just told you about creating a string variable, create a new project named HelloUser that asks the user for their name and then tells them hello using their name.

Second task

- What are some boundary conditions this program has?
- Is your program sensitive to them?
- What can you do to help it deal with those boundary conditions?

Third task

- Play with your HelloUser program to make it more interesting:
    - Are there fun things you can do with the output?
    - Are there other questions you want to ask the user?
    - Access the .NET documentation about the System.Console class
        - Mouse-click so that the cursor in the middle of the word "Console" in your code.

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- Hit the ***F1*** button … this is the "Help" button.
- IE will appear and navigate to the Microsoft .NET help page for the System.Console class.
- It is showing all the capabilities of the System.Console class.
- Explore what class members are available to you
- Can you "spruce-up" your console window?
- Can you change its behavior in a fun way?