



Module 2

Hello, World



Basic Structure

- A C# application can consist of many files, usually .cs-files
- A C# program consists of classes, structures, and other types
- The '{' and '}' characters are the foundational block delimiters
- The ';' character separates statements of the language, if needed
- A class is a unit of data members and “methods”
- *Classes will be treated in much more details later*



The Console template

```
using System;

namespace Module02
{
    class Program
    {
        static void Main(string[] args)
        {
            Console.WriteLine("Hello world");
        }
    }
}
```



The Main() Method

- The Main() method has a special meaning
 - When the program starts, Main() is executed
 - When Main() finishes execution, the program terminates
- Multiple classes can each have a Main() method
 - Designate a unique Main() as the entry point
- Declare Main() to be static void Main
- Note that C# is
 - Case-sensitive!
 - Whitespace-insensitive!



Namespaces and using

- .NET comes equipped with thousands of classes organized into namespaces
 - System is the main namespace with core functionality
- Classes are referred to by their namespace
- Using statements brings classes into scope
- Using with static members

```
using System;
using static System.Console;
namespace Module02
{
    class Program
    {
        static void Main(string[] args)
        {
            System.Console.WriteLine("Hello world");
            Console.WriteLine("Hello world");
            WriteLine("Hello world");
        }
    }
}
```



The System.Console Class

- Appropriate for “Console Applications”
- Write output to the screen by
 - Console.Write()
 - Console.WriteLine()
- These methods are static and overloaded
- Read from the keyboard via
 - Console.Read()
 - Console.ReadLine()
- Console in fact supports colors!



Comments

- Remember to write your comments when you write your code!
- Single-line comments
- Multi-line comments

```
// Input the user's name
Console.WriteLine("Please input your name: ");
string name = Console.ReadLine();

/* In the section below, we iterate through the
   list of all the elements. We then compute
   their values one-by-one before returning
   the overall value */
DoStuff();
```



XML Documentation

- Use `///` to generate XML comments

```
/// <summary>
/// This is an example program for use with
/// the "Grundlæggende C# 6.0" course.
/// </summary>
0 references
class Program
{
    /// <summary>
    /// This is the entry point of the application.
    /// </summary>
    /// <param name="args">Command-line arguments
    /// supplied to the application</param>
    0 references
    static void Main(string[] args)
    {
        Console.WriteLine("...");
    }
}
```




Debugging

- Set breakpoints in code
- Step through program execution
- Use the visualizing tools in the Debugger (mouse-over)
- Set watches
- Stop, modify a run-time value, continue execution
- Make exception!

```
Program.cs
Wincubate.Module02.Slide16.Program
Main(string[] args)

1 using System;
2 using System.Collections.Generic;
3 using System.Linq;
4 using System.Text;
5 using System.Threading.Tasks;
6
7 namespace Wincubate.Module02.Slide16
8 {
9     class Program
10    {
11        static void Main( string[] args )
12        {
13            string name;
14            Console.WriteLine( "Please enter your name: " );
15            name = Console.ReadLine();
16            Console.WriteLine( "Hello, {0}", name );
17        }
18    }
19 }
20
```



Creating a C# Project in Visual Studio

- Projects and Solutions in Visual Studio
 - Solution Explorer
 - Solutions
 - Projects
 - Files
- A brief overview of Visual Studio features and contents
 - Common development environment for
 - Programming languages
 - Project types
 - Data sources
 - ...
- Compiling a simple C# program
- Locating errors
- Running programs with or without the Visual Studio debugger



Customizing Visual Studio

- Tools -> Options
- Millions of commands and shortcuts
 - Shortcuts can be (re)defined at will
- Customizations
- Code Snippets
- Extensions and Updates

- Old, but still very good: "Sara Ford's Tips 'n Tricks"
 - <http://channel9.msdn.com/Blogs/NicFill/Sara-Fords-101-Visual-Studio-Tips-in-55-Minutes-Challenge>

- Reset everything(!) either via the UI or using
 - devenv /ResetSettings