

C# - .Net

TP

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Comment puis-j'obtenir 20 pts dans ce cours???

- La note sera constitué de deux composantes:
- 1 projet (+rapport), 1 soutenance
- Projet (rapport compte moins):
 - Il marche et le rapport est acceptable? 10 pts.
 - Il est super fantastique et on gagnera 2000000 d'euros avec, et le rapport est la nouvelle bible de programmation, alors: 20 pts.
- Soutenance:
 - Je sais expliquer mon programme bien: 10 pts.
 - Je sais répondre à toutes les questions et je montre que je sais encore plus que ce qui a été demandé (et plus que le prof): 20 pts.

- Note finale:

$$(\text{projet} + (0.5 + \text{Epsilon}) * \text{soutenance}) / 1.5$$

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Overview

- What is CSharp?
- CSharp basics
 - Types (int, float, decimal... enum) LOTS of basic classes (eg. System.Month)
 - Arrays (char [3][] ...)
 - Exceptions
 - Standard outputs
 - Structs/classes (constructors (overloading), destructors, static, static constructors, properties)

What is C#?

- simple, modern, general-purpose, object-oriented programming language.
- robustness, durability and programmer productivity:
 - strong type checking, array bounds checking, detection of attempts to use uninitialized variables, [source code portability](#), and automatic [garbage collection](#).
- Intended for [software components](#) creation (distributed environments)
- C and C++ are well-known so stay similar

What is C#?

- C# is intended to be suitable for writing applications for both hosted and [embedded systems](#), ranging from the very large that use sophisticated [operating systems](#), down to the very small having dedicated functions.
- The language was not intended to compete directly on performance and size with C or [assembly language](#).
- Support for [internationalization](#) is very important.

Why another language?

- C, C++, VB, Java, C#????
- C = really difficult, really fast
- C++ = difficult, really fast
- VB = very easy, very slow
- Java = easy, slow (more multi-platform)
- C# = easy, faster

Basic types

- Char
- Sbyte
- Byte
- Short
- Ushort
- Int32
- UInt
- Long
- Ulong

Float

Double

Decimal

- Enum
- String (!!!!!!!!!!!)

My first C# program:

```
class program
{
    public static void Main()
    {
    }
}
```

How do I compile?

- `csc` – compiler by Microsoft

```
csc myProgram.cs
```

results in an executable: `myProgram.exe`

BUT

- myProgram.exe is NOT a standard executable.
- intermediate code!
 - compiled on the fly when program starts
- This makes C# multi platform!

Is it really so easy?

- Not really...

Libraries that you use have to be present on the system! Fortunately, most will be...

Furthermore the same version number is needed!

PDA's have their own libraries

Wait a second...

- I am afraid of libraries!
- *That is this weird code other people write, that always breaks and I have trouble compiling it...*
- Yes, but C# has much more explanation on how to write libraries and people tend to stick to it. Like for Java.
- **All this link stuff and Makefiles are still in C#?**
- Thanks god: NO!!!
Linking is just a simple compiler option:

```
csc myProgram.cs /r: myLib.dll
```

No Makefiles necessary...

And because program is compiled later: no compiler option conflicts!

And inside the program?

```
using System.Text; //there is a file System.Text.dll
```

```
class program
```

```
{
```

```
    public static void Main()
```

```
    {
```

```
    }
```

```
}
```

I believe this particular program
executes quickly ...

- But can C# compete?
- Let's have a look!

That's it...

- It is time for some practice!

After the break...

Currency Exchange

- Convert to currency
- Print a line
- Read a line
- Convert string to double
- Exceptions