

# The C# Language

Johan Franzén



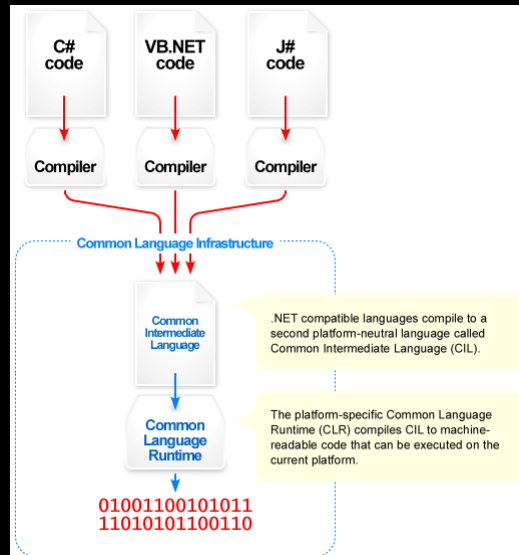
## C# – Overview

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- Object Oriented (similar to Java)
- Appeared in 2001
- .NET Platform (VB.NET, J#, Managed C++ and more)
- Microsoft Windows
- Linux and Mac OS X with the mono project



## C# – Common Language Infrastructure



## C# – Hello World

```
using System;

class Hello
{
    static void Main() {
        Console.WriteLine("Hello world");
    }
}
```

## C# – Data types

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```
int
float
string
byte
bool
.
.
.
```

```
float fValue = 2.0f;
double dValue = 2.0;
```

```
bool bValue = 5 (incorrect)
```

## C# – Value Types and Reference Types

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### ➤ Value Types

By Value (copy)

int, float, ... , Point, Vector2 (structs)

### Value Type

*Point is a Struct*

```
Point p1 = new Point();
```

```
Point p2 = p1;
```

*(p2 is a copy of p1)*

### ➤ Reference Types

By Reference (reference)

Classes

### Reference Type

*Person is a Class*

```
Person p1 = new Person();
```

```
Person p2 = p1;
```

*(p2 points to the same object as p1)*

## C# – Array & List

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### Array (fixed size)

```
int[] myArray = new int[10];  
myArray[2] = 3;
```

### List (can grow)

```
List<int> myList = new List<int>();  
myList.Add(3);  
int myValue = myList[0];
```

## C# – Iteration

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### Standard for loop

```
for(int i = 0; i < myList.Count; i++) {  
    Console.WriteLine(myList[i]);  
}
```

### foreach loop

```
foreach(int value in myList) {  
    Console.WriteLine(value);  
}
```

## C# – get/set methods

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### Java

```
-----  
class Person {  
    private int age;  
  
    public int getAge() { return age; }  
  
    public void setAge(int value) {  
        if(age >= 0)  
            age = value;  
    }  
}  
-----  
Person p = new Person();  
p.setAge(20);  
int age = p.getAge();
```

## C# – Properties

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### C#

```
-----  
class Person {  
    private int age;  
  
    public int Age {  
        get { return age; }  
        set {  
            if(age >= 0)  
                age = value;  
        }  
    }  
}  
-----  
Person p = new Person();  
p.Age = 20;  
int age = p.Age;
```

# ACTION