



The X-Sharp Project

What is it and why should VFP developers care?





X#: a new incarnation of an old development language



Agenda

- A bit of history
- Why X#
- What is X#
- X# and Visual FoxPro
- New Features
- Where can I get it



xBase languages, a bit of History -1

- Started at JPL with a project called Vulcan, by Wayne Ratliff (PTDOS, Later CP/M) (1978)
- Ashton Tate bought it and released it under the name dBASE II for Apple II and DOS (1980)
- An improved version dBASE III in 1984
- In the 80's several competitors appeared on the market: Clipper, FoxBASE, DBXL, QuickSilver, Arago, Force, FlagShip and many more. Together these products were called "xBase". They share the programming language and many functions and working with DBF files
- Some were faster, others allowed to sell royalty free compiled versions of apps
- Then Microsoft launched Windows in 1990



xBase languages, a bit of History -2

- The move to Windows resulted in several product changes, also products were sold and resold:
- dBase (AT) -> (Borland, Inprise, Borland)
- QuickSilver -> Borland, then vanished
- FlagShip -> MultiSoft (Various Unix versions, Windows)
- Clipper (Nantucket)-> Visual Objects (Computer Associates)
- FoxBASE (Fox Software) -> FoxPro (Microsoft)
- Some products “died”
- New products appeared, especially as successors of Clipper
 - (x) Harbour (open source, also for unix)
 - Xbase++



xBase languages, a bit of History -3

- Now in the 2010's most of these products are 'dead', no longer developed for various reasons.
- dBase is now dBase LLC but there is little development
- Visual Objects was sold to GrafX Software, they developed Vulcan.Net, but that company has closed shop in 2018
- Microsoft stopped developing Visual FoxPro in 2009
- New challenges for programs have appeared: Cloud, .Net Framework, .Net Core, Multi platform support
- The xBase languages are a bit left behind



Then came X#

- Started in 2015 by a group of customers and former devteam members of GrafX that worked on Visual Objects and Vulcan.Net in the past.
- Microsoft had just released the source code to the C# and VB compilers as open source (Roslyn)
- This made it “relatively easy” to build a product that produces .Net assemblies
- Since Roslyn is open source, we decided that X# should also be open source, so it can be developed and maintained by the community
- The team is: Fabrice Foray (France), Chris Pyrgas (Greece), Nikos Kokkalis (Greece) and Robert van der Hulst (The Netherlands)



What was the plan

- Create a compiler on top of the Roslyn code
- Make the compiler flexible, so it will compile several dialects of XBase
- Deliver a runtime that can provide support for the common functionality of all XBase languages and extensions for specific language.



Where are we now

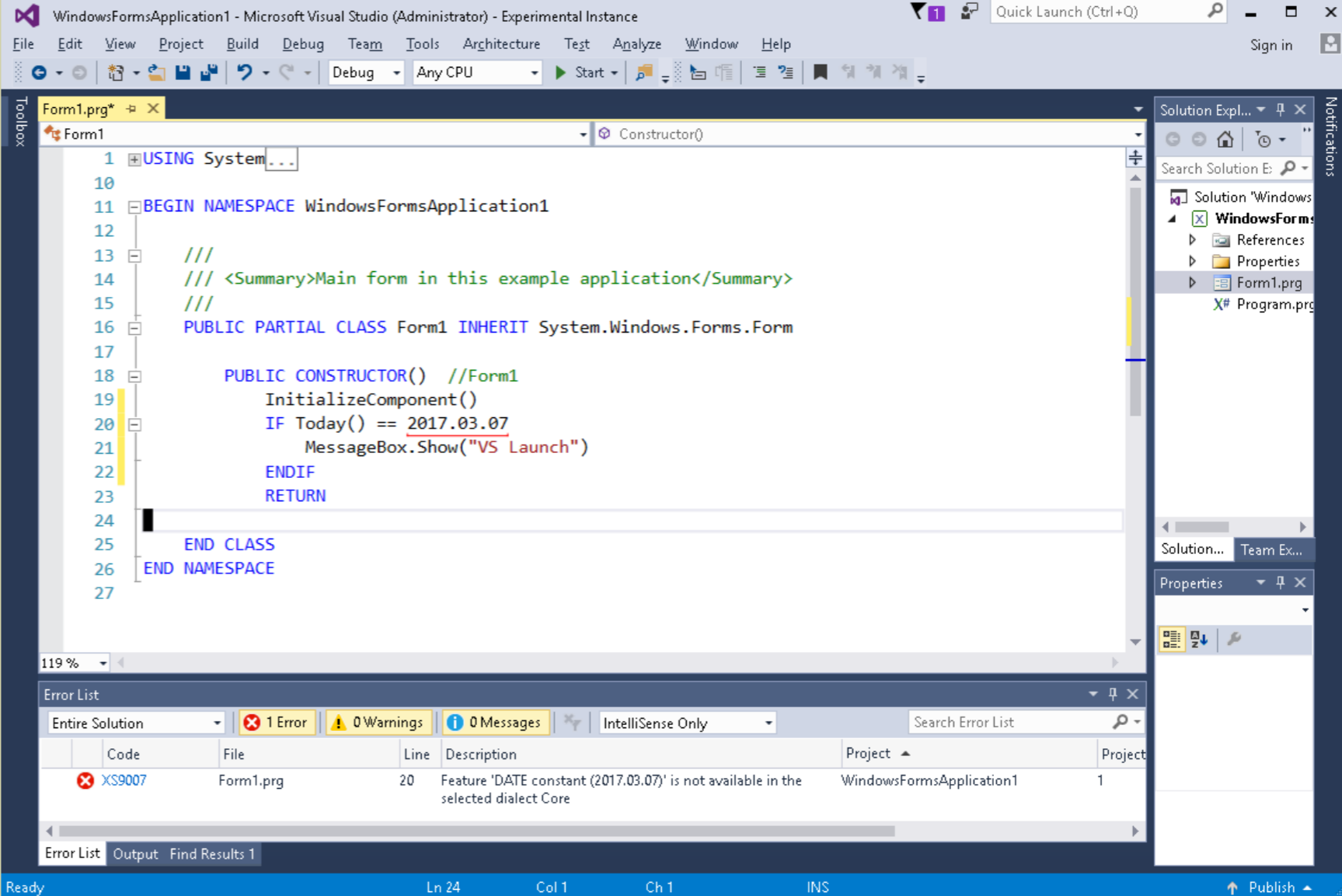
We have a working product

- Compiler
- Runtime
- VS Integration & Tools
- Documentation
- Online forums
- Support Contract



Visual Studio Integration (2015, 2017 & 2019)

- Project system
- Language service
- Intellisense
- Code generation for
 - Resource Editor
 - Settings Editor
 - WinForms designer
 - WPF designer
- Customer designers



The screenshot shows the Visual Studio 2019 IDE. The main editor displays a C# code file named Form1.prg. The code is as follows:

```
1 USING System...
10
11 BEGIN NAMESPACE WindowsFormsApplication1
12
13     ///
14     /// <Summary>Main form in this example application</Summary>
15     ///
16     PUBLIC PARTIAL CLASS Form1 INHERIT System.Windows.Forms.Form
17
18         PUBLIC CONSTRUCTOR() //Form1
19             InitializeComponent()
20             IF Today() == 2017.03.07
21                 MessageBox.Show("VS Launch")
22             ENDIF
23             RETURN
24
25     END CLASS
26 END NAMESPACE
27
```

The Error List at the bottom shows one error:

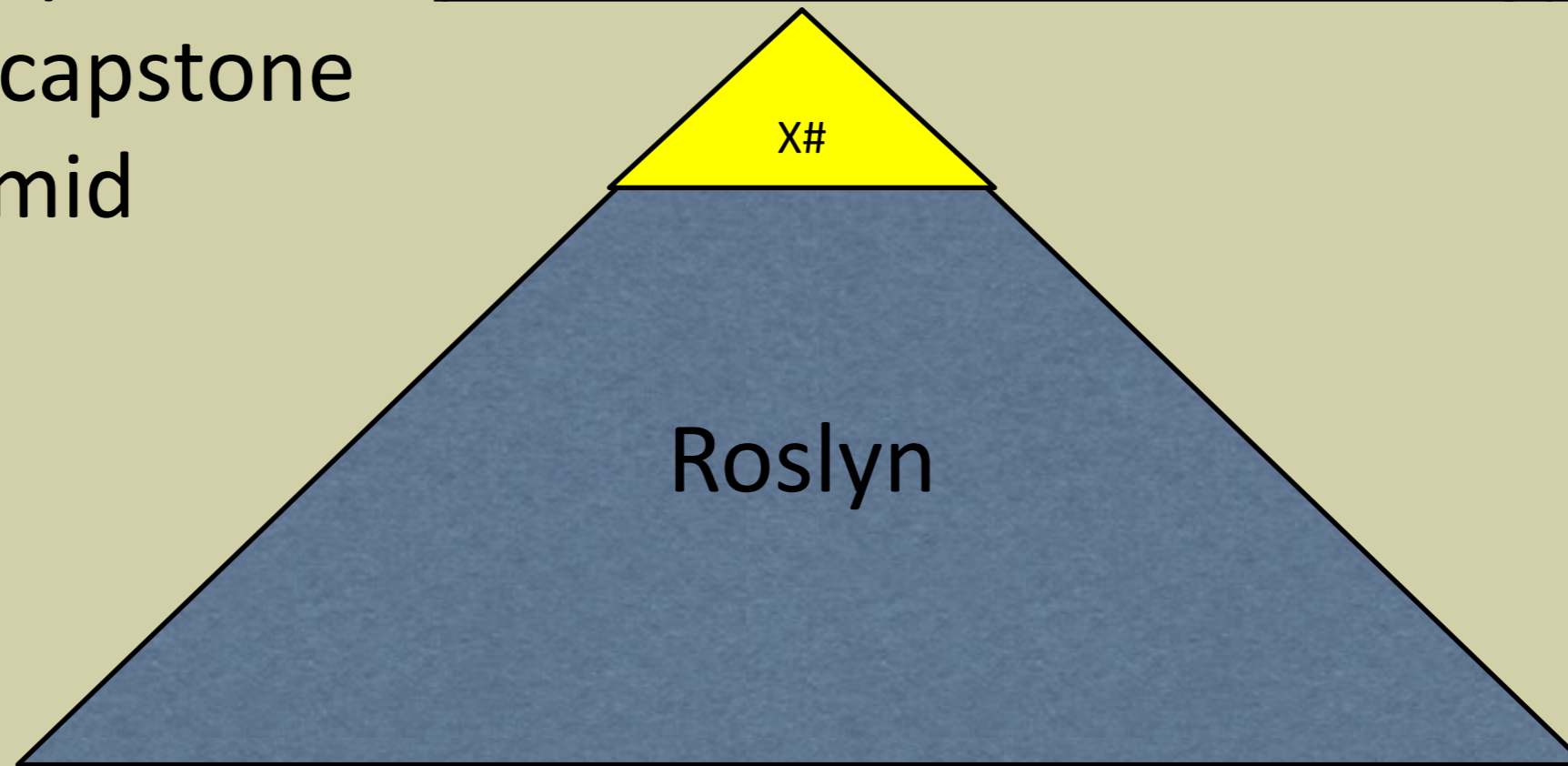
Code	File	Line	Description	Project
XS9007	Form1.prg	20	Feature 'DATE constant (2017.03.07)' is not available in the selected dialect Core	WindowsFormsApplication1



The X# Compiler

- The compiler frontend is coded with Antlr (www.antlr.org)
The compiler backend is based on the C# and VB Compiler (Roslyn, an open source project from Ms, github.com/dotnet/roslyn)
- So most of the compiler uses proven Microsoft technology
- We are like a new capstone of the Roslyn pyramid

More info
Come to our
“booth”



Dialects - 1

- The **Core** dialect can be seen as a C# compiler with XBase syntax.
It does NOT need a special runtime
- The **other** dialects have additional datatypes, allow undeclared and untyped variables and adds language elements that are XBase specific.
This is implemented in the X# Runtime
 - ARRAY, DATE etc.
 - FUNCTION, PROCEDURE
 - (Dynamic) MEMVAR, FIELD
 - GLOBAL
 - RDDs (Database drivers for DBFs)



Dialects - 2

Dialect	State
Core	Ready
VO & Vulcan	Ready
Xbase++	Compiler ready, not all functions and classes
Visual FoxPro	Compiler mostly ready, not all functions and classes
Harbour	WIP



What about Visual FoxPro support

- Almost everything in the VFP language is already working
- Most XBase languages are “function based”. VFP is more “command based”. X# comes with a powerful preprocessor that translates the commands to functions.
- We use the Visual Studio IDE for development, so not a dedicated IDE
- We need YOUR input to decide how to migrate typical VFP components such as
 - Forms and Controls
 - Reports
 - The object layers behind these components
 - Come to our workshop !



What about speed

- X# uses the C# compiler backend and this produces VERY efficient code.
- X# allows untyped and undeclared variables, this works but the more you declare the better code the compiler will produce.

See prime example



New Features

The X# language will come with many new features that are available in C# and VB but not in other Xbase Languages:

- Fully Unicode and AnyCPU
- Creating Generic Types
- LINQ
- ASYNC .. AWAIT
- CHECKED and UNCHECKED
- Conditional Access Expression
- BEGIN UNSAFE .. END
- BEGIN USING
- USING STATIC
- <Expression> IS Type
- SWITCH statement
- VAR for locals
- YIELD

Fabrice will now show some new features!



The X# IDE solution

- X# comes with Visual Studio IDE integration.
- Some people do not like Visual Studio
- **Chris Pyrgas** has also created an IDE for X# (XIDE) with X#



X# what does it cost



- The binaries are available for **free**
- The source is available for **free**
- We also provide a **free** online forum system where (registered) developers can support each-other (peer to peer support)
- To fund the development we also have a **subscription system** where customers can get priority support from the development team and will have access to the source code of the compiler.
- The price for the **FOX** (Friends Of XSharp) program is € 999 per developer
- If you use the discount code “XXXXXXXXX” you will get 50% discount on the first year of the FOX subscription. Valid until November 30, 2019



Where do you find X# ?

The official website for XSharp is

www.xsharp.info

Facebook: www.facebook.com/xBaseNet

Twitter: @xBaseNet

