BridgeCode

# Language Specification

## Type System

### Base types

* Numeric types: byte, short, int, long, float, double; no unsigned numeric types support?
* Text types: char, string
* Boolean: bool 🡪 true / false

### Composite types

Should we define a syntax for array / list definition? Similarly to what exists in perl/ruby?

E.g. [a, b, c] would be an array, {a, b, c} a tuple…

Arrays / Lists

### Variables declaration

Support for type inference; two keywords:

* “var” for mutable variables.
* “val” for immutable values.

## Structures

### Modules

Similar to C#’s static class. No need for the “static” keyword before methods (everything is static in a module).

Maybe members of a module can be used without explicitly prefixing with the module name if imported in the current source unit (similar to VB.NET modules).

### Classes

V.next?

# Annexes

## Tips

Very important, in order for the ANTLR4 custom build tool to generate base visitor and listener, the C# project must be modified by hand (from <https://github.com/tunnelvisionlabs/antlr4cs>):

* Right click the project in Solution Explorer and select Unload Project
* Right click the project in Solution Explorer and select Edit ProjectName.csproj
* Locate the XML element for the ANTLR grammar project item, which should look like the following:

<Antlr4 Include="CustomLanguage.g4">

<Generator>MSBuild:Compile</Generator>

<CustomToolNamespace>MyProject.Folder</CustomToolNamespace>

</Antlr4>

* Locate an existing XML element according to the **MSBuild Property** column in the table above, or add one if it does not already exist. For example, to generate both the parse tree listener and visitor interfaces and base classes for your parser, update the project item to resemble the following.

<Antlr4 Include="CustomLanguage.g4">

<Generator>MSBuild:Compile</Generator>

<CustomToolNamespace>MyProject.Folder</CustomToolNamespace>

<Listener>True</Listener>

<Visitor>True</Visitor>

</Antlr4>

* Save and close the project file
* Right click the project in **Solution Explorer** and select **Reload Project**.

## Links

* Create a Language Compiler for the .NET Framework:
  + <https://msdn.microsoft.com/en-us/magazine/cc136756.aspx>
* Creating a simple parser with ANTLR:
  + <http://ivanyu.me/blog/2014/09/13/creating-a-simple-parser-with-antlr/>
* Creating your own programming language with ANTLR (Blog series):
  + <http://bkiers.blogspot.fr/2011/03/creating-your-own-programming-language.html>
* ANTLR 4 Parser Helpers:
  + <https://www.nuget.org/packages/ANTLR4.ParserHelpers/1.0.4.39873>
  + <https://github.com/philiplaureano/ANTLR4.ParserHelpers>
* ANTLR (2) Tree Parsers:
  + <http://www.antlr2.org/doc/sor.html>
  + <http://web.mit.edu/dmaze/school/6.824/antlr-2.7.0/doc/sor.html>
* ANTLR 4 C# Runtime:
  + <https://github.com/sharwell/antlr4cs>

## Javascript

* Typescript: <http://www.typescriptlang.org/> + <https://github.com/Microsoft/TypeScript>
* AtScript (Angular)
  + <https://docs.google.com/document/d/11YUzC-1d0V1-Q3V0fQ7KSit97HnZoKVygDxpWzEYW0U/edit>
  + Traceur: <https://github.com/google/traceur-compiler>
  + Assert.js: <http://angular.github.io/assert/>