F# |> I ♥

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About F#

- Functional-first programming language
  - Also supports object-oriented and imperative programming

- Full citizen .NET language
  - Can be comiled to i.e. JavaScript

- Strongly typed with type inference

About F# 2

- For application development and scripting (tools)

- Support exists for
  - Visual Studio, Visual Studio Code,
  - Xamarin Studio / MonoDevelop
  - Atom, vim, emacs…
  - LINQPad, DotNetFiddle

- Open-sourced ab ovo: Microsoft's first OSS project

History

- From engineering side (Turing-machine)

    Machine Code → Assembly → C → C++ → Java → C#

- From scientific side (λ-calculus, Alonzo Church, 1930s)

    IPL → LISP → ML → SML → Caml → OCaml → F#

Functional programming

- Functions are first-class citizens
- Data is immutable by default
- The application evaluates expressions, functions and returns the result
  - Transforms the immutable state to a new state
  - Functions don't have any side effects
- Information can come from data sources or event sources

- Ideal for scientific and GPU computations

Don Syme's recommendation

- If you don't need mutable values (state), use FP

- If you need to store mutable values, use OOP

Demo