

# Learning Idris

**a programming language which is like Haskell  
but more so**

more precisely, a pure functional language  
that enables 'type driven development'

# Summary

- Why learn another language?
- What can I write in it?
- Why Idris?
- It's like Haskell but more so
- How do you learn a language?
- My First Idris Program

# Why learn yet another language?

- Inspired by "7 Languages in 7 Weeks"
- Learning a new language should not be hard
- It almost always makes you a better developer
- There are some interesting new languages out there

## What can I write in it?

- Bewl is my DSL for topos theory, a math-heavy project which I already ported from Java / Clojure to Scala
- Java's type system became too limiting
- Clojure's macros were great but I missed the strong typing
- Scala was a perfect fit.
- But, I use pretty much every inch of the playing surface (fancy features of the language)
- What else might be possible?

# Why Idris?

- I considered Haskell, but Idris was too tempting as a cutting-edge extension
- It has dependent types (very useful in Scala)
- Types are first class citizens. You can have functions returning types, and 'type providers' (as in Microsoft's F#)
- "Type driven development" sounds fun
- Also Idris has a proof checker built in, which even supports topos logic.

## Like Haskell but more so

- Uncompromisingly functional
- You have to know all about metamonoidal prefunctors (only not really)
- There are "plumbing" operators like `<>`, `|+|`, `>>=` which it's best not to pronounce at all
- Layout is like Python - non-free-form, indentation is significant
- Keeps punctuation to a minimum.  
Code can be lean and expressive (even cryptic)

## Like Haskell but more so (2)

- Not very mainstream
- Idris is the work of 1 person, Edwin Brady, a lecturer in Comp.Sci at St Andrews U
- He's not even working on it full time
- The documentation, tools and libraries are... not bad, considering
- Maybe not first choice for production systems

## Like Haskell but more so (3)

- Can you actually write Idris programs that do anything?
- Yes. Edwin Brady wrote a Space Invaders game in Idris
- It uses "Effects" (to do stateful things in a functionally pure way) and a 3rd party graphics library
- It took me most of a weekend to get this to build



## Like Haskell but more so (4)

- As a side benefit, I'm going to end up sort-of learning Haskell
- The syntax and libraries are very similar
- Already, the 'Scala / Cats' book suddenly makes sense
- Cats is a way to do Haskell/Idris stuff in Scala

# How do you learn a language?

- For Scala, I test-drove my exploration of language features
- The result: [github.com/fdilke/scala-exp](https://github.com/fdilke/scala-exp) which is at least a body of code to cut and paste from
- For Idris, this is daunting
- Brady's book "Type Driven Development with Idris" helps
- Also there is <http://exercism.io> (tutorials for many programming languages) which shows how to set up a project

# My First Idris Program

- Let's find all 3x3 acrostics

N	O	T
T	O	O
B	A	D

- a square of nine letters,  
only with each row and column a word

# **A Journey of Exploration**

It seems a childishly simple task but...

this has already led to many interesting  
discoveries which I can tell you about next time.

THANK YOU