Compiling Ruby with MLIR

MLIR tutorial

Alex Denisov, LLVM Social Berlin, August 2022

whoami

- Working at GitHub

- Blogging at https://lowlevelbits.org

- Tweeting at https://twitter.com/1101_debian

- Side projects (not affiliated with my day work in any way):

  - Practical mutation testing and fault injection for C and C++
    https://github.com/mull-project/mull

  - DragonRuby
    https://dragonruby.org

DragonRuby

RubyMotion

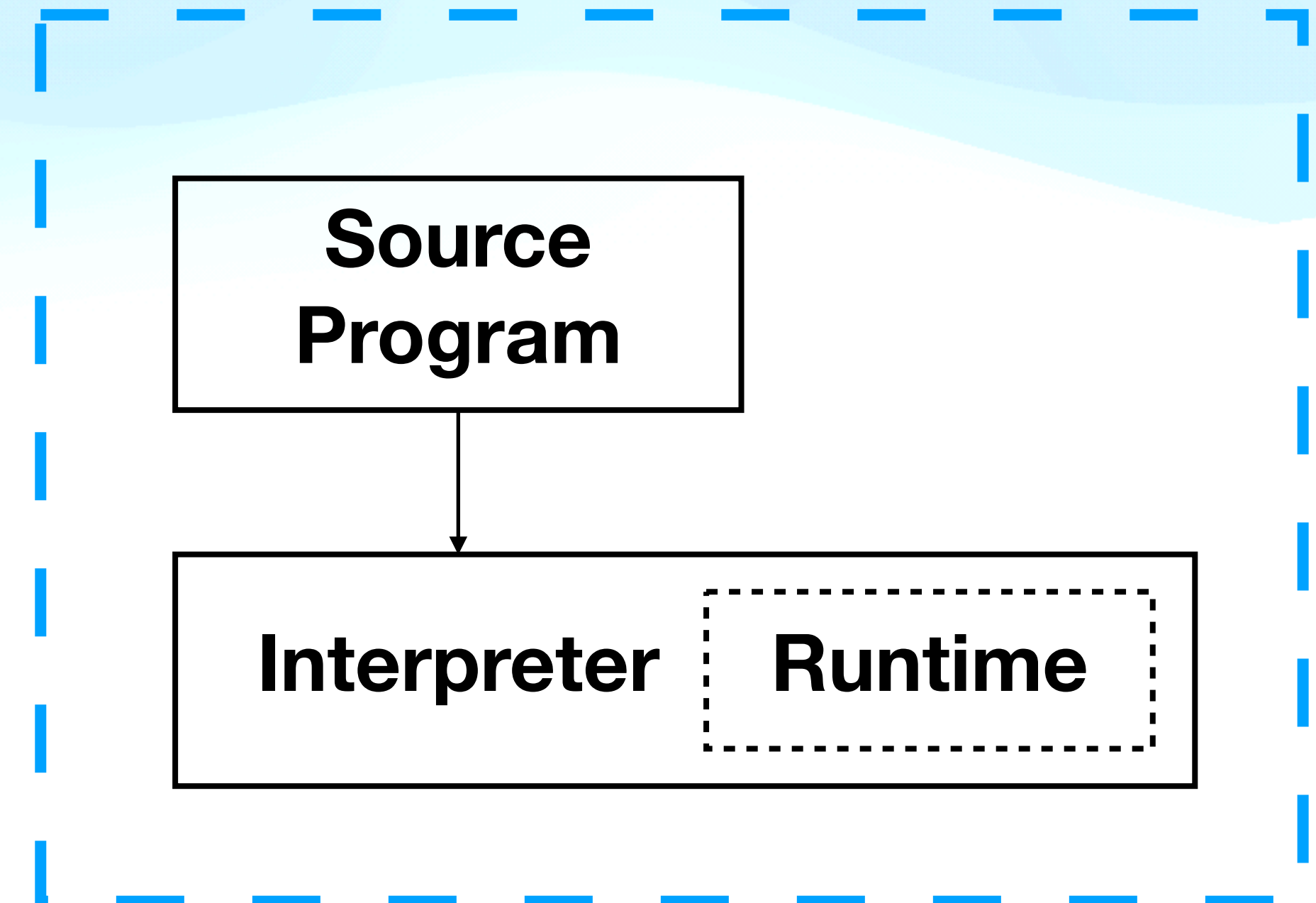**AOT compiler and runtime based on MRI Ruby.
Targeting macOS/iOS/Android.**

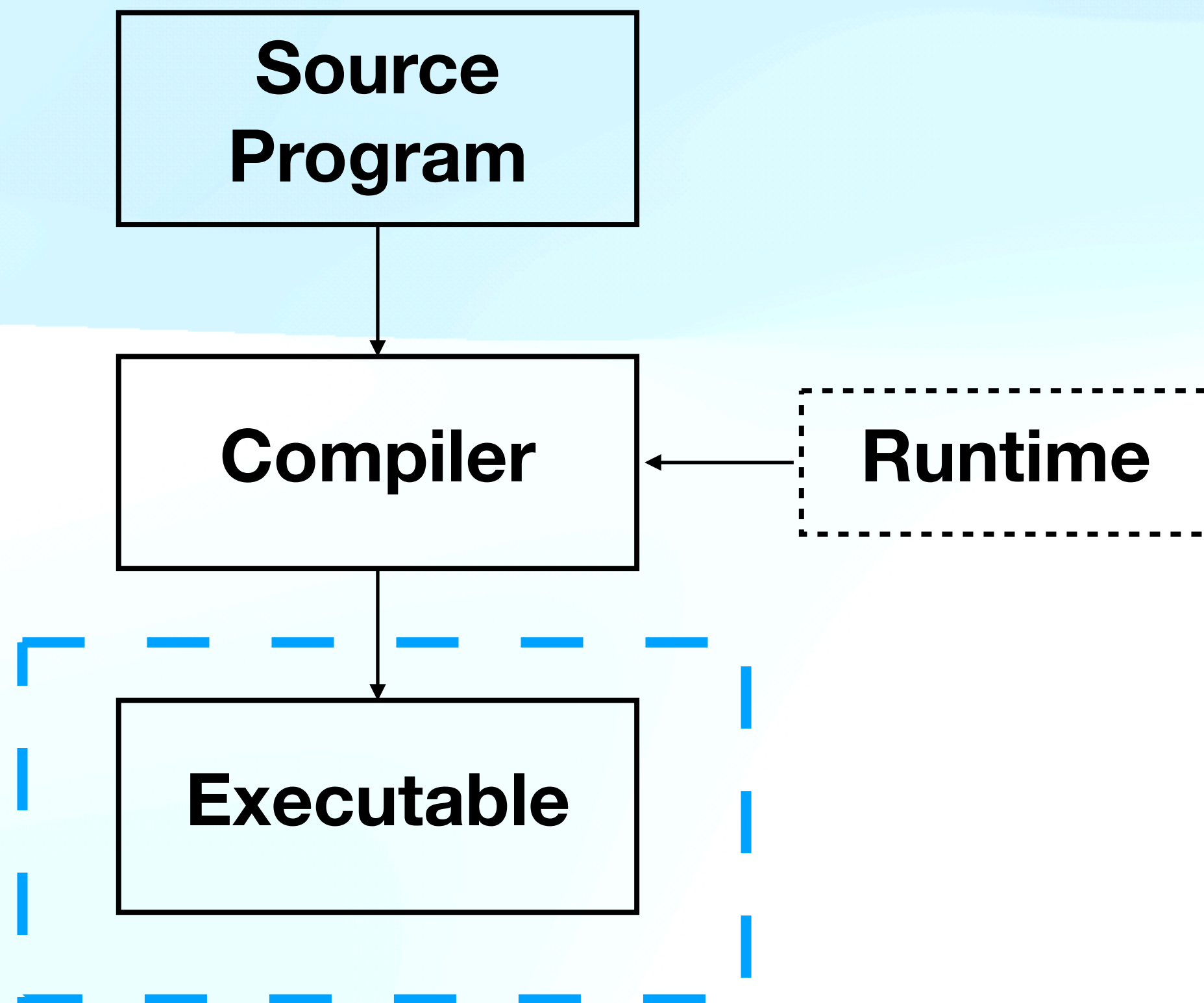## Game Toolkit (GTK)

**Interpreter and runtime based on mRuby.
Targeting macOS/iOS/Linux/Android/Nintendo Switch/Play Station/
Xbox/Oculus Quest.**

https://lowlevelbits.org
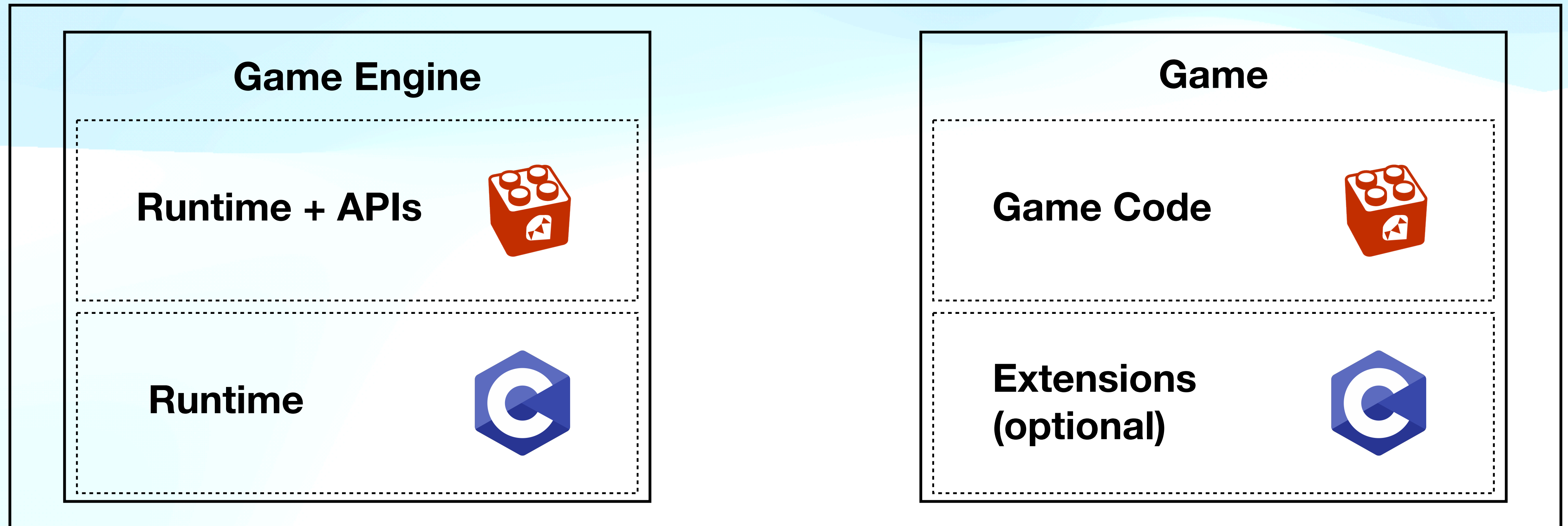
Compiler vs Interpreter
What do we deliver to the end users?

Game Toolkit
(Very much simplified)

Final product

Game Engine

Runtime + APIs

Runtime

Game

Game Code

Extensions
(optional)

https://lowlevelbits.org

How to optimize?

Final product

Game Engine

Runtime + APIs

Runtime

Game

Game Code

Extensions (optional)

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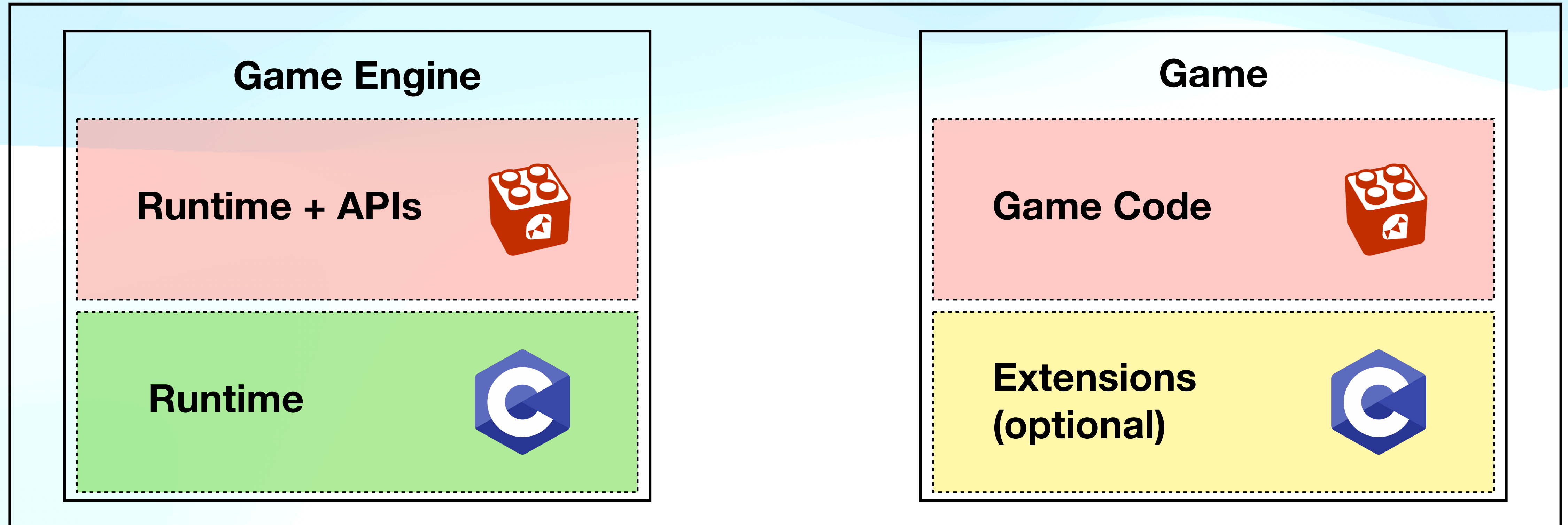
Write a compiler!

Write a compiler!

https://lowlevelbits.org
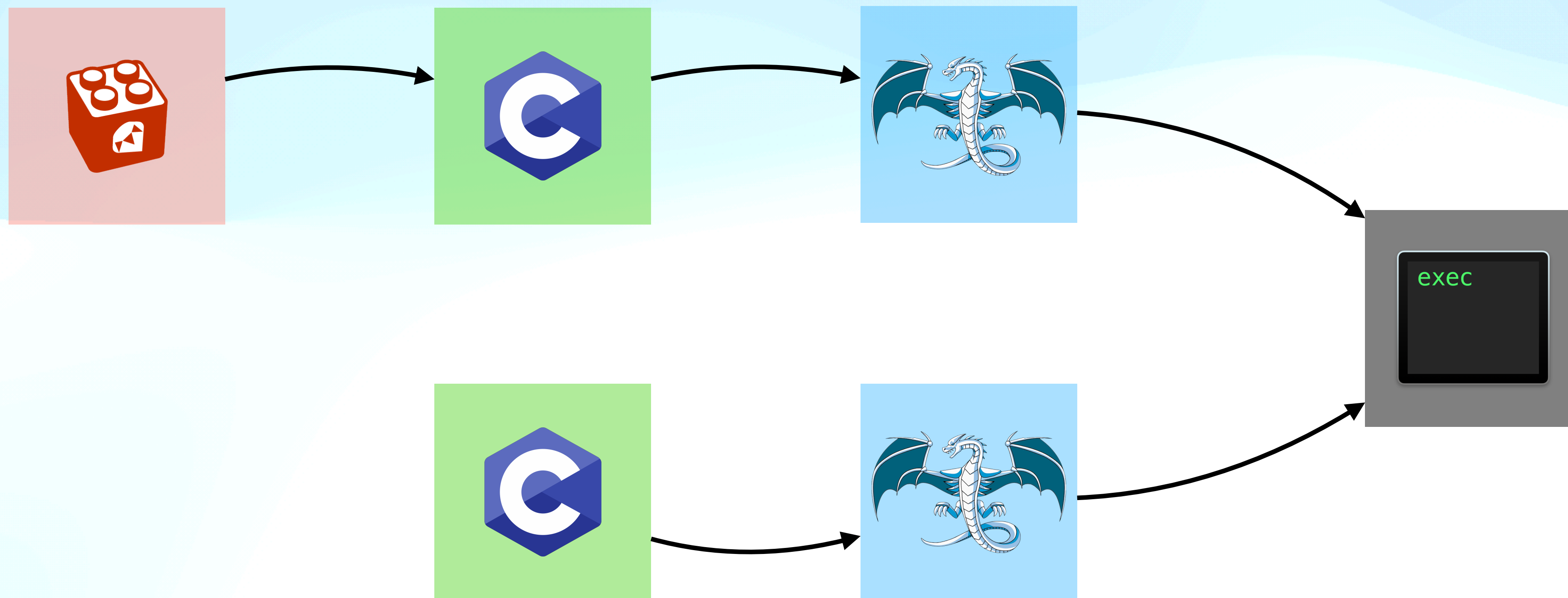
Write a better compiler!

https://lowlevelbits.org
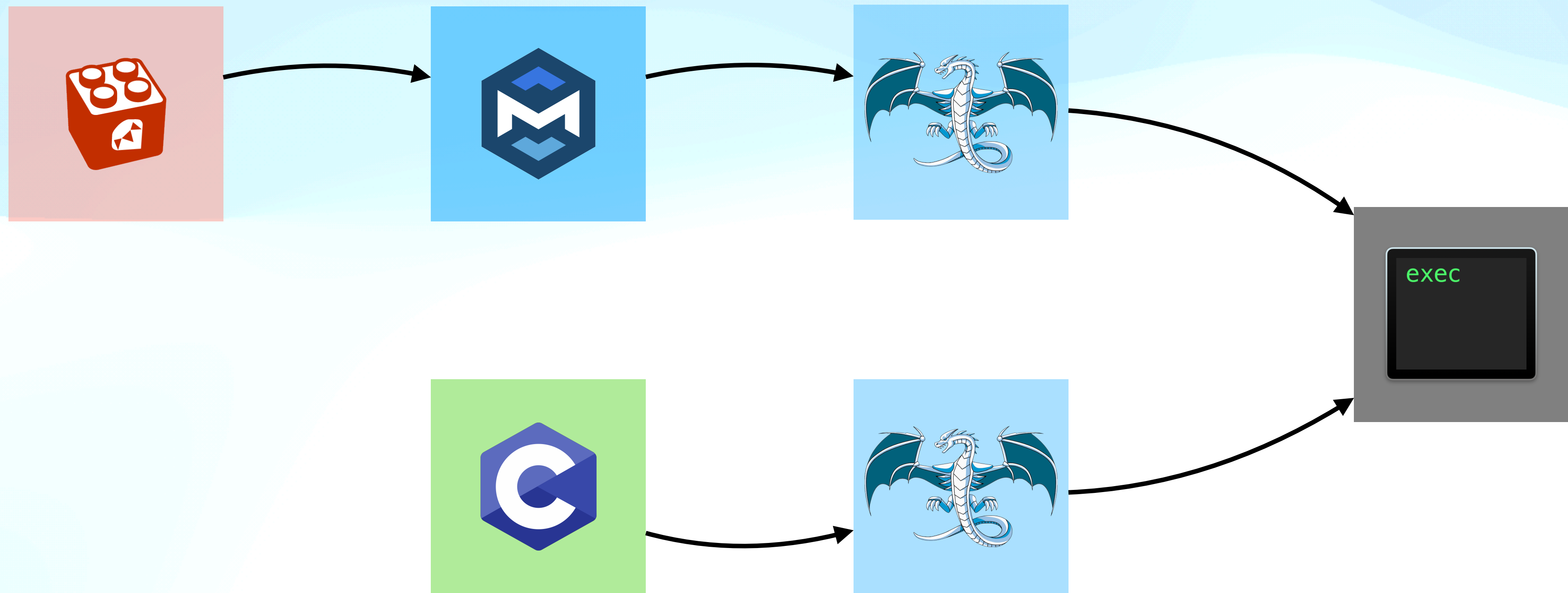
What is MLIR?
Multi-Level Intermediate Representation!
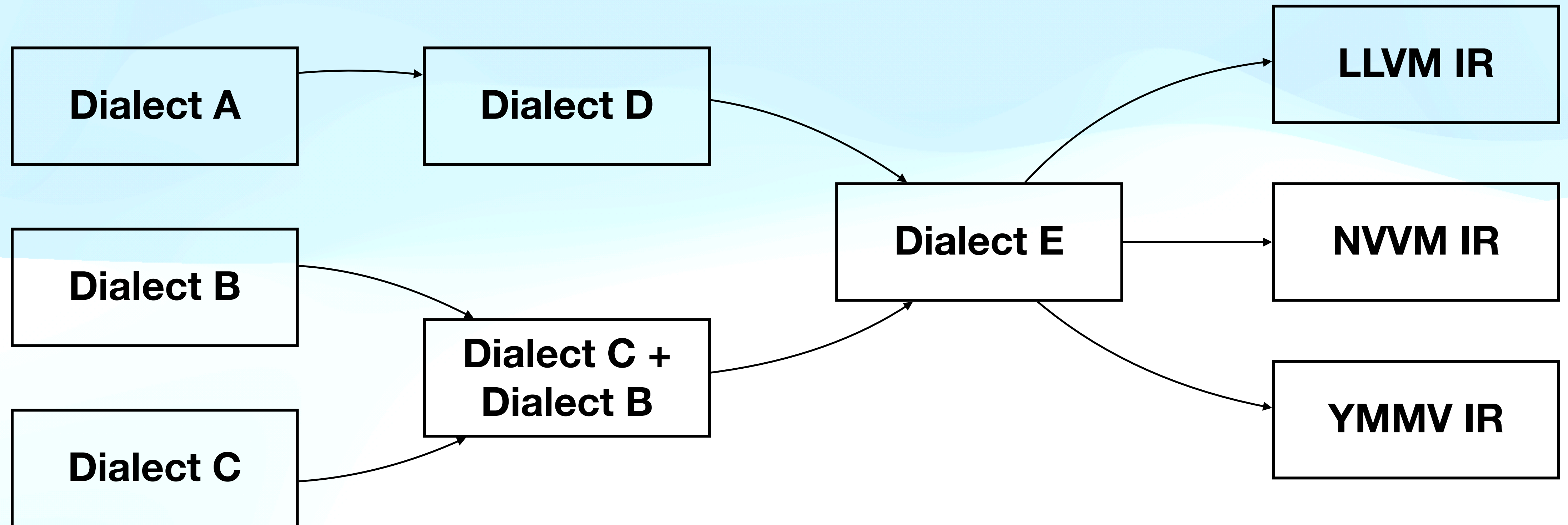
Live coding

How to draw an owl

1.

2.

1. Draw some circles   2. Draw the rest of the fucking owl

https://lowlevelbits.org

Resources

- Talks, tutorials, design meetings
  https://mlir.llvm.org/talks/

- Tutorials
  https://mlir.llvm.org/docs/Tutorials/

- How to build a compiler with LLVM and MLIR
  https://www.youtube.com/playlist?list=PLlONLmJCfHTo9WYfsoQvwjsa5ZB6hjOG5

- Code from the live-coding
  https://github.com/AlexDenisov/mlir-tutorial

https://lowlevelbits.org

Connect

- alex@lowlevelbits.org

- https://twitter.com/1101_debian

- https://lowlevelbits.org

- https://dragonruby.org

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