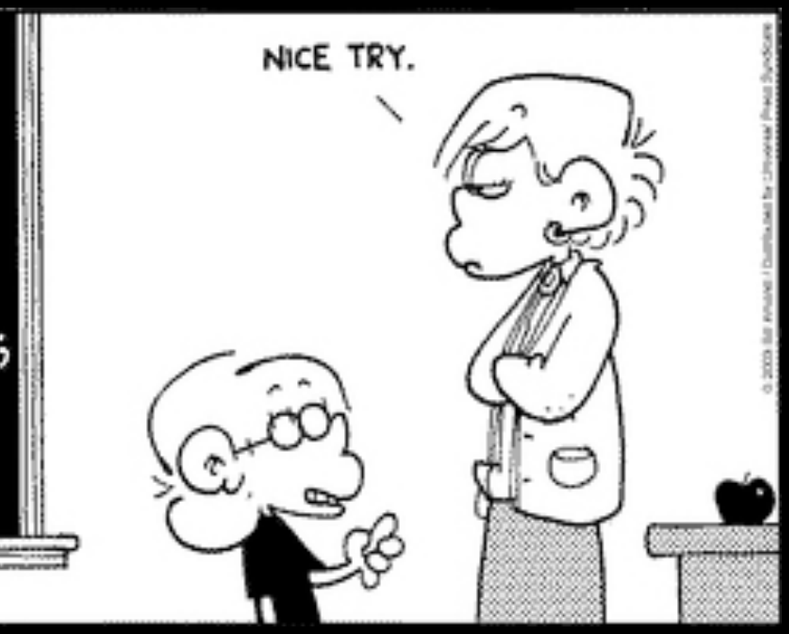
```
#include <stdio.h>
int main(void)
{
  int count;

  for (count = 1; count <= 500; count++)
     printf ("I will not throw paper airplanes in class.");
  return 0;
}
```



RoR Clients

—X→

→

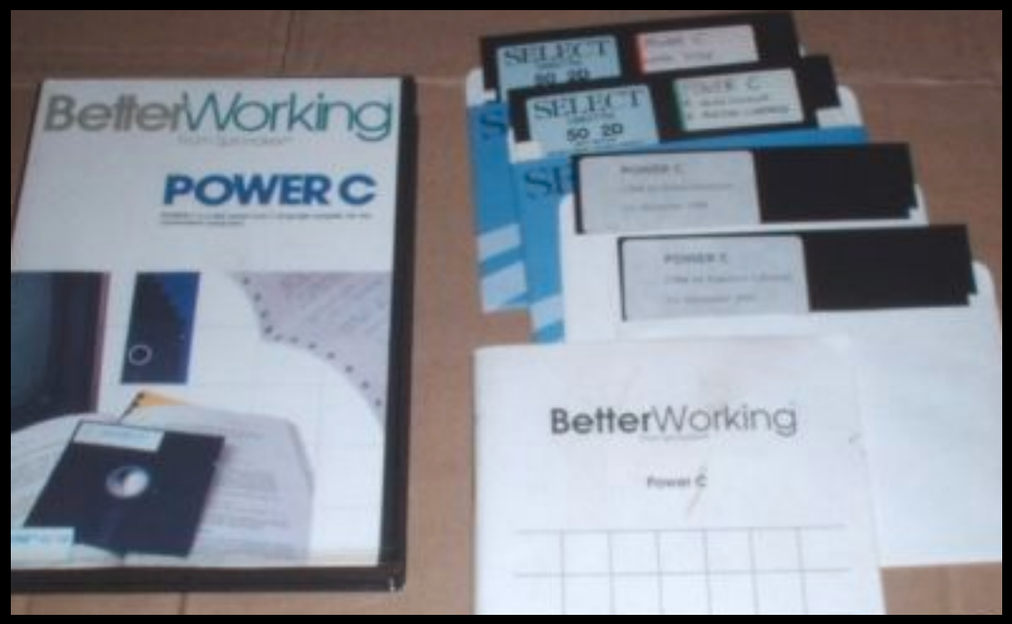
→

iPhone/iPad Clients

25 years later.

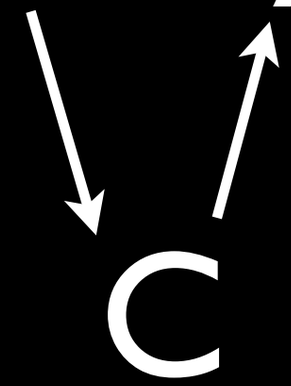
What's the same?

C


BetterWorking
POWER C
SELECT
SELECT
BetterWorking

SINGLE
commodore
1541

Ruby



C

Indications:

Performance

Indications:

wrap a C API

Other indications?

Let’s Do It

4 Examples

- Hello raleigh.rb
- Random # Generator
- Passing values back and forth
- Factorial Speed Test

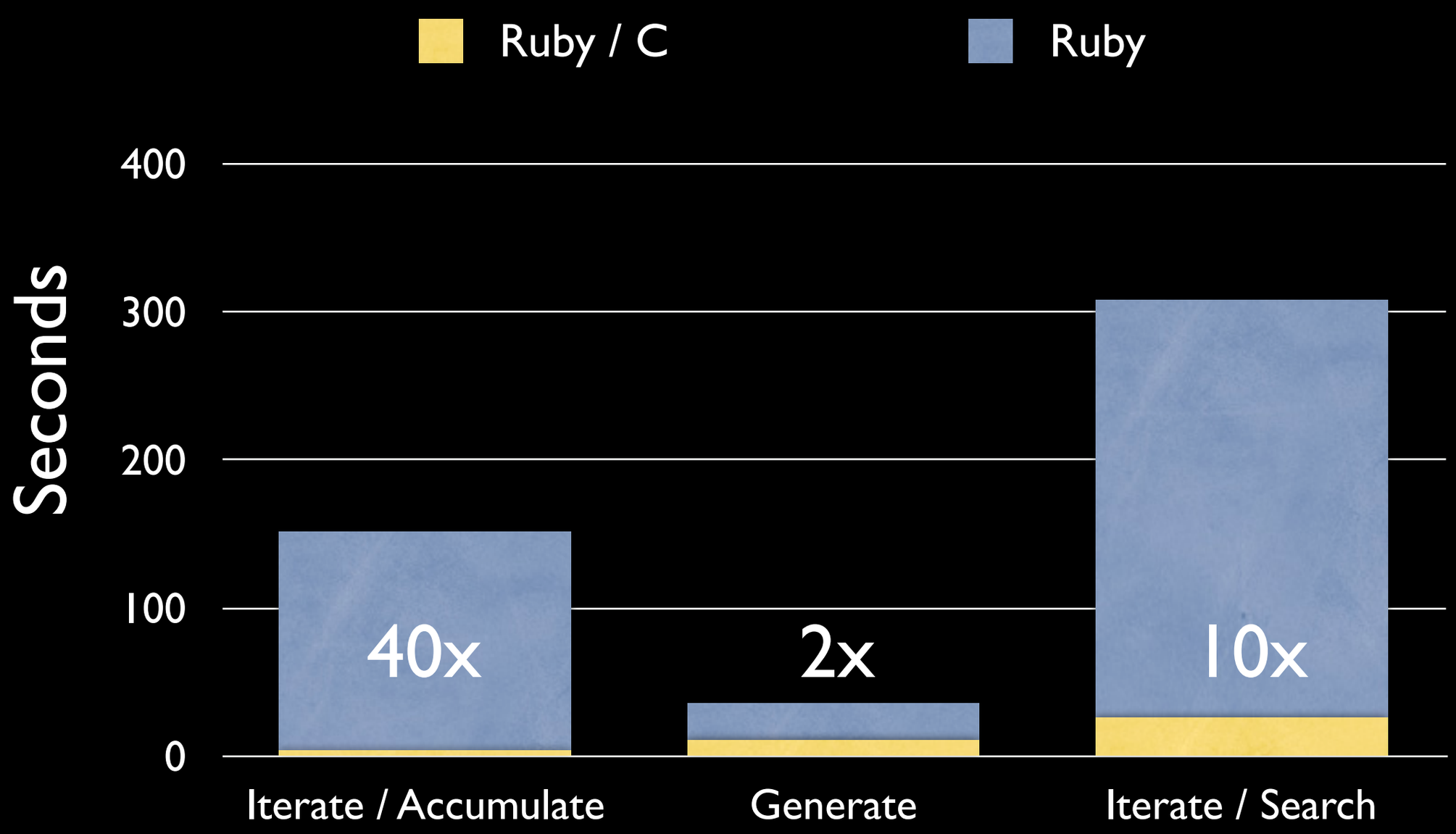
The Pattern

- ruby.rb - include the module defined in C, call like it's Ruby
- c_file.c - #include <ruby.h>, Init_module_name() {declare module, class and methods}
- ruby extconf.rb
- make

Data Types

- Qnil
- Qtrue and Qfalse
- RBignum, RFloat, RClass, RArray, RHash, RFile
- VALUE - catch all!

Hexawise.com: Real World RoR App



Real World Experiences?

Counter Indications?

Alternatives (better): Fast Ruby in 5 Steps

1. stop, isolate (require 'benchmark') & think
2. don't do it
3. keyboard → whiteboard
4. do it "right" (Google, Knuth)
5. optimize: know how to profile

Alternatives (small): RubyInline

- You got C in my Ruby!

```
inline do |builder|
  builder.c "
    void hello_c() {
     printf(\"Hello from C!\");
    }"
end
```

- Obviously won't scale for bigger jobs
- http://www.zenspider.com/ZSS/Products/RubyInline/

Alternatives (large): C++

- C superset, C/C++ interoperability
- SWIG: http://swig.org/
- Rice: http://rice.rubyforge.org/main.html
- Experience?

Alternatives (GC'd): JRuby / Java

- Dropping to Java faster than Ruby?
- For what kinds of things?
- Your experiences?

Alternatives (functional): Haskell

- Who knows Haskell?
- But part of the new hip crowd
- Functional programming language
- Blazing fast if you know what's what
- Hubris: http://github.com/mwotton/Hubris

Alternatives (gratuitous?): D

- Who knows D?
- But cooly esoteric
- RuDy: http://github.com/tomash/rudy
  - Not actively developed (Early 2009)

Other alternatives?

Resources

- Ruby C Extensions: www.ociweb.com/mark/NFJS/RubyCExtensions.pdf
- Ruby extension in C in under 5 minutes: www.rubyinside.com/how-to-create-a-ruby-extension-in-c-in-under-5-minutes-100.html
- ANSI C Tutorial: www.java2s.com/Tutorial/C/CatalogC.htm
- ANSI C Examples by Topic: www.java2s.com/Code/C/CatalogC.htm

Next Steps

- That's just about it!
- Objects
- Using native extensions in RoR
- Using native extensions in Gems