Crystal Compiled, Ruby-like language

CONCEPTS

Crystal is compiled (via LLVM) with Ruby-like syntax and static types that are mostly inferred. There is no interpreter: run compiles to a cached temp binary each time.

Write src/app.cr
↓ shards install
Deps lib/ + shard.lock
↓ crystal build
Build bin/app
↓ crystal spec
Test spec/*_spec.cr

Plain build is fast but unoptimized (-O0). Benchmark and ship with --release; it is much slower to compile.

RUN AND BUILD

crystal run *<file.cr>*
Compile and run a file

crystal run *<file.cr>* **--** *<args>*
Pass arguments to the program

crystal *<file.cr>*
Shorthand for run

crystal build *<file.cr>*
Build a binary in the current dir

crystal build --release *<file.cr>*
Optimized build (-O3, single module)

crystal build -o *<path>* *<file.cr>*
Choose the output path

crystal build --no-debug *<file.cr>*
Omit debug symbols

crystal build --static *<file.cr>*
Link statically

EVAL AND PLAYGROUND

crystal eval '*<code>***'**
Compile and run a code string

echo '*<code>***' | crystal eval**
Read code from stdin

crystal play
Start the browser playground

EVAL AND PLAYGROUND (cont.)

crystal version
Print Crystal, LLVM and target triple

PROJECTS

crystal init app *<name>*
Scaffold an application

crystal init lib *<name>*
Scaffold a library

init creates src/, spec/ and shard.yml. Commit shard.lock for applications, leave it out for libraries.

shards init
Create a shard.yml

SPECS

crystal spec
Run all specs in spec/

crystal spec *<file>*
Run one spec file

crystal spec *<file>*:*<line>*
Run the example at a line

crystal spec -e '*<name>***'**
Run examples matching a name

crystal spec --fail-fast
Stop at the first failure

crystal spec --order random
Randomize example order

FORMAT AND TOOLS

crystal tool format
Format all files in place

crystal tool format *<path>*
Format a file or folder

crystal tool format --check
Fail if anything is unformatted (CI)

crystal docs
Generate API docs into ./docs

SHARDS

shards install
Install deps into lib/ per the lock

shards update
Re-resolve all deps, rewrite shard.lock

SHARDS (cont.)

shards build
Install deps, build into bin/

shards install --production
Locked only, no dev deps, fail if out of sync

shard.yml

```
name: myapp
version: 0.1.0
targets:
  myapp:
    main: src/myapp.cr
dependencies:
  kemal:
    github: kemalcr/kemal
    version: ~> 1.6
development_dependencies:
  ameba:
    github: crystal-ameba/ameba
```

Add a dependency to shard.yml by hand, then run shards install; there is no shards add command. Then require it by shard name.

LANGUAGE BASICS

Types and methods

```
name = "Ada"
age : Int32 = 36
def greet(who : String) : String
  "Hi, #{who}"
end
puts greet(name)
```

Classes and structs

```
class User
  property name : String
  getter id : Int32
  def initialize(@name, @id); end
end
struct Point
  getter x : Int32, y : Int32
  def initialize(@x, @y); end
end
```

Nil safety

```
# x is String?
x = ENV["HOME"]?
if x
  puts x.size
end
x.try &.size
x.not_nil!
```

require "./file" / require "json"
Load a relative file or stdlib module

Type? means Type | Nil. The compiler rejects calls on a possible nil; narrow with if, try, or not_nil! (raises at runtime).