

Functional Programming

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My Functional Programming Timeline

- Learned Haskell at University.
- Forgot it.
- Something strange happened...

Functional Programming Renaissance

1. What is it?
2. Why learn Functional Programming?
3. What is it good for?
4. Who is using it?

What is Functional Programming? 1

Not Imperative Programming.

What is Functional Programming? 2

- A language with first-class functions.
- This culminates in the use of higher-order functions such as map and reduce.

What is Functional Programming? 3

- Functional programming involves writing code that does not change state.
- Successive calls to a function will yield the same result.
- Minimises and controls side effects including mutation.

What is Functional Programming? 4

Functional programming is like describing your problem to a mathematician.

Imperative programming is like giving instructions to an idiot.

<http://community.schemewiki.org/?scheme-fortune-cookies>

Technically Functional Programming!

- Excel Formulas
- SQL
- Logo

Why learn Functional Programming?

- “You should learn a new language each year.” [The Pragmatic Programmer](#)
- New paradigm so gives you different ways to solve problems.
- The new [“Python paradox”](#)

What is Functional Programming good for?

Characteristics:

1. Immutability leads to "No side effects".
2. Concise elegant code.
3. Concurrency.
4. Parallelism. [Working hard to keep things simple](#)

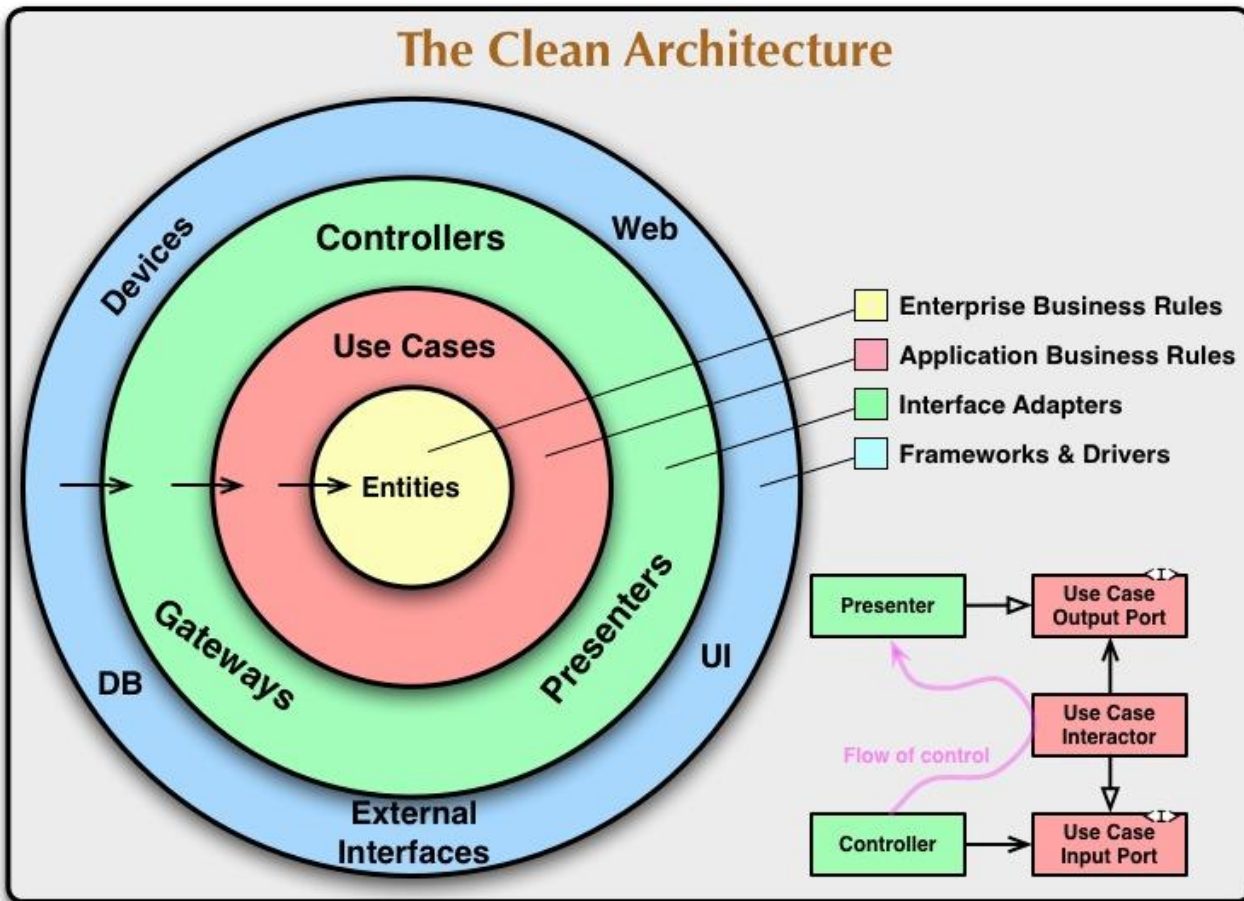
Who is using Functional Programming?

- Twitter: Scala
- The Guardian: Scala
- Amazon: Clojure
- Facebook: Haskell
- WhatsApp: Erlang

Where is FP used in the stack?

- Passed from traditional backend code via task queue.
- See [The clean architecture](#) for more info.
- “Imperative shell that wraps and uses your functional core”

The Clean Architecture



Pure Functional Languages

- Haskell
- [A load of others I've never heard of](#)

Multi-paradigm Languages

- Scala
- Clojure
- Erlang
- LISP
- JavaScript?
- Python?
- Java?

Finally some code! Sum of 1 to 9

Python Imperative

```
total = 0
for i in range(1, 10):
    total += i
```

Python Functional

```
sum(range(1, 10))
```

Haskell Functional

```
sum [1..10]
```


How to learn Functional Programming

[Coursera Functional](#)

learnyouahaskell.com

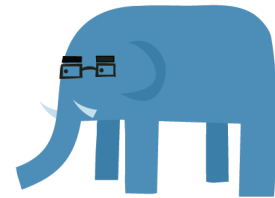
[Programming Principles in](#)

[Scala](#)



**Learn You a
Haskell for
Great Good!**

A Beginner's Guide



Miran Lipovača

