FOUNDATION

Introduction

Goals

1. Get familiar with Typed FP building blocks

Pure function, Recursion, Lazyness

Algebraic Data Type (ADT), Parametricity

Either, Option, Validated

Reader, State, IO

Typeclasses, Monoid, Functor, Applicative, Traverse

2. Develop your FP intuition

How do you reverse a String?

```scala
def reverseString(x: String): String = {
  val charArray   = x.toCharArray
  val lastIndex   = x.length - 1
  val middleIndex = x.length / 2

  for (i <- 0 until middleIndex) {
    val tmp = charArray(i)
    charArray(i) = charArray(lastIndex - i)
    charArray(lastIndex - i) = tmp
  }

  String.valueOf(charArray)
}
```

2. Develop your FP intuition

How do you reverse a String?

```scala
def reverseString(x: String): String =
  x.foldLeft(List.empty[Char])((acc, c) => c :: acc).mkString // or with StringBuffer
```

3. Why FP matters to you, your colleagues and your business

Out of scope

How to build complete FP application
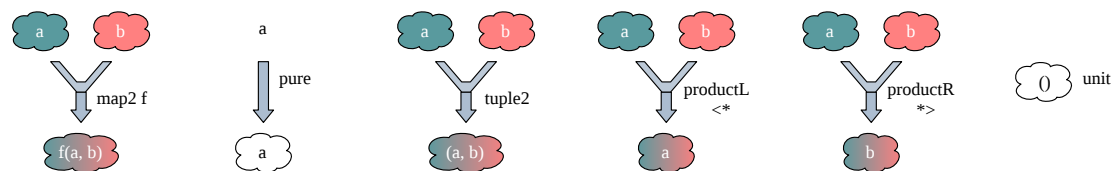
- Monad Transformer
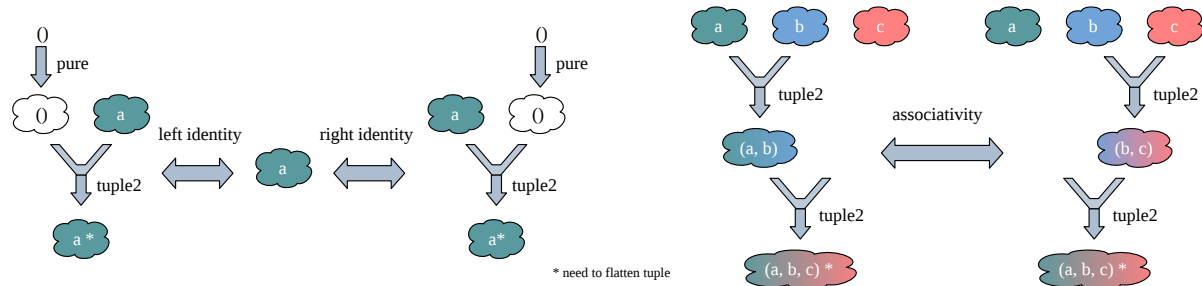- Free Monad
- Final Tagless
- Eff
- ...

Scala low level details

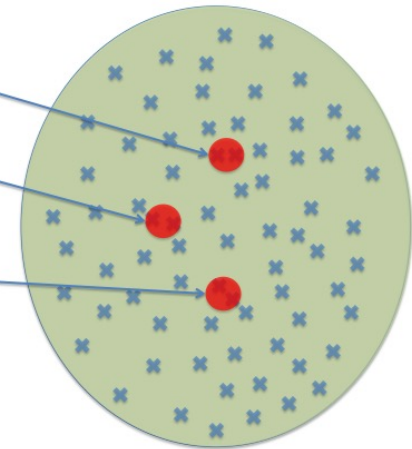# Course main features

Original diagrams

Course main features

Original diagrams

Lots of exercises (200+) with tests and answers

```
[info] - Id.Traverse.identity
[info] - Id.Traverse.map coherence
[info] - Const.Traverse.compose
[info] - Const.Traverse.foldMap coherence
[info] - Const.Traverse.identity
[info] - Const.Traverse.map coherence
[info] - foldLeft same as List
[info] - traverse_
[info] - foldMapM
[info] - parseNumber
[info] - checkAllUsersAdult
[info] ScalaTest
[info] Run completed in 2 seconds, 312 milliseconds.
[info] Total number of tests run: 313
[info] Suites: completed 8, aborted 0
[info] Tests: succeeded 313, failed 0, canceled 0, ignored 0, pending 0
[info] All tests passed.
[info] Passed: Total 313, Failed 0, Errors 0, Passed 313
[success] Total time: 3 s, completed 14-Jun-2019 14:05:32
sbt:fp-foundation> █
```

Course main features

Original diagrams

Lots of exercises (200+) with tests and answers

An active online community ready to answer your questions (gitter)

Expert trainers with experience teaching FP at all level

Contact

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Module 1: Function