

# flatMappy bird

Martin Carolan

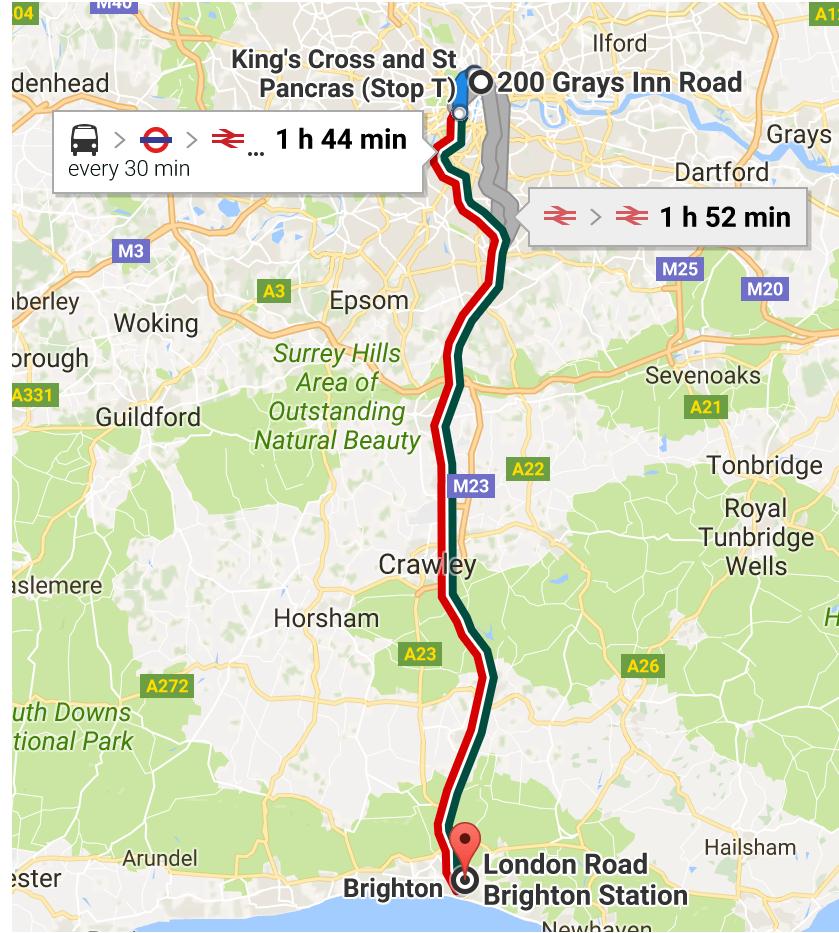
<https://github.com/mcarolan/flatmappy-bird>

@mcarolan88

[mail@mcarolan.net](mailto:mail@mcarolan.net)

# How did this all start?







Martin Carolan: flatMappy bird. Twitter: @mcarolan88



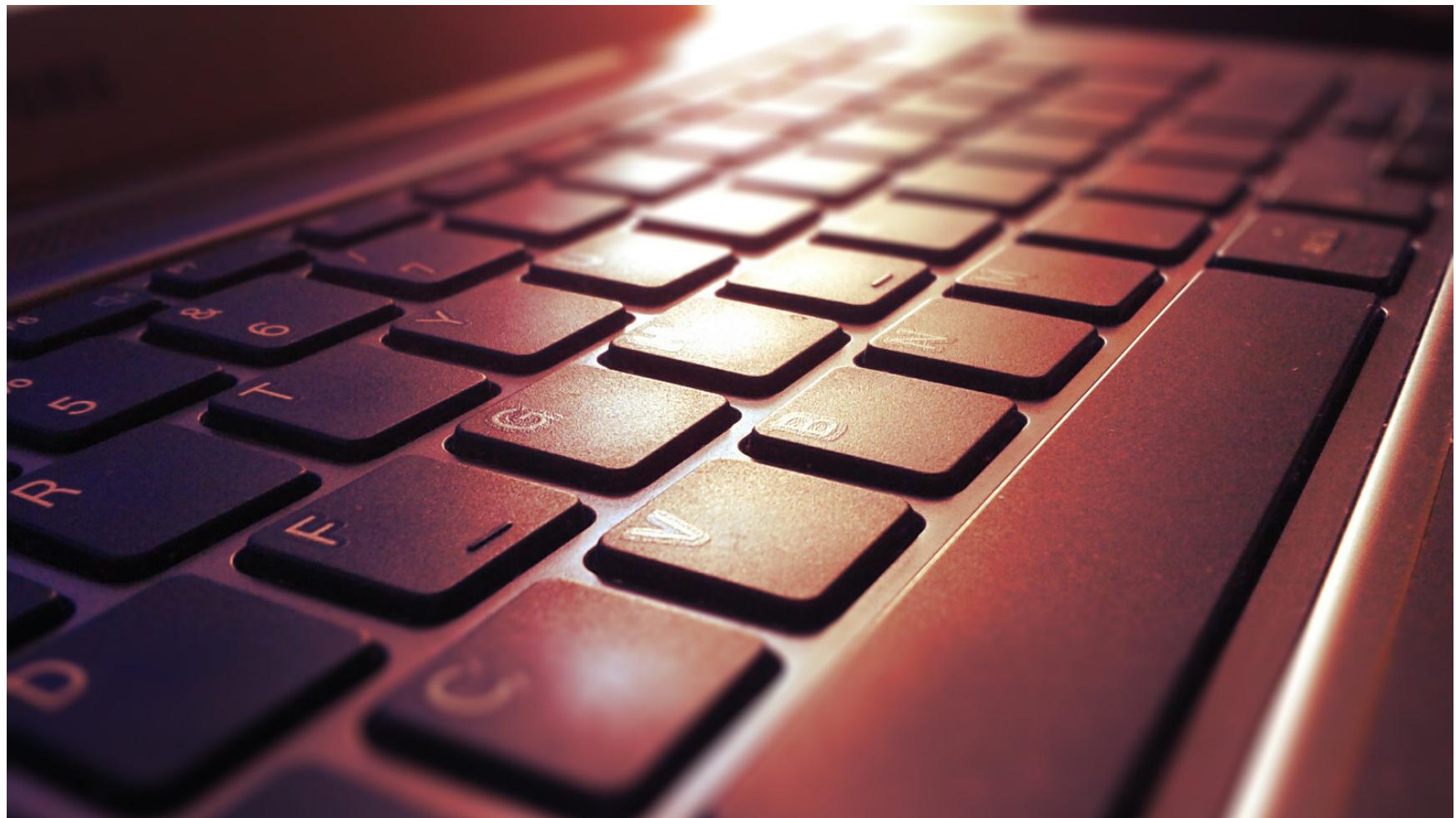
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Hands-on Scala.js

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Hands-on Scala.js

Intro to Scala.js

About Javascript

About Scala.js

Hands On

Getting Started

Making a Canvas App

Interactive Web Pages

The Command Line

Cross Publishing Libraries

Integrating Client-Server

In Depth

Advanced Techniques

# Hands-on Scala.js

Writing client-side web applications in Scala

`var x = 0.0`

`type Graph = (String, Double => Double)`

`val graphs = Seq[Graph](`

`("red", sin),`

`("green", x => abs(x % 4 - 2) - 1),`

`("blue", x => sin(x/12) * sin(x))`

`).zipWithIndex`

`dom.setInterval(() => {`

`x = (x + 1) % w; if (x == 0) clear()`

`for (((color, f), i) <- graphs) {`

`val offset = h / 3 * (i + 0.5)`

`val y = f(x / w * 75) * h / 30`

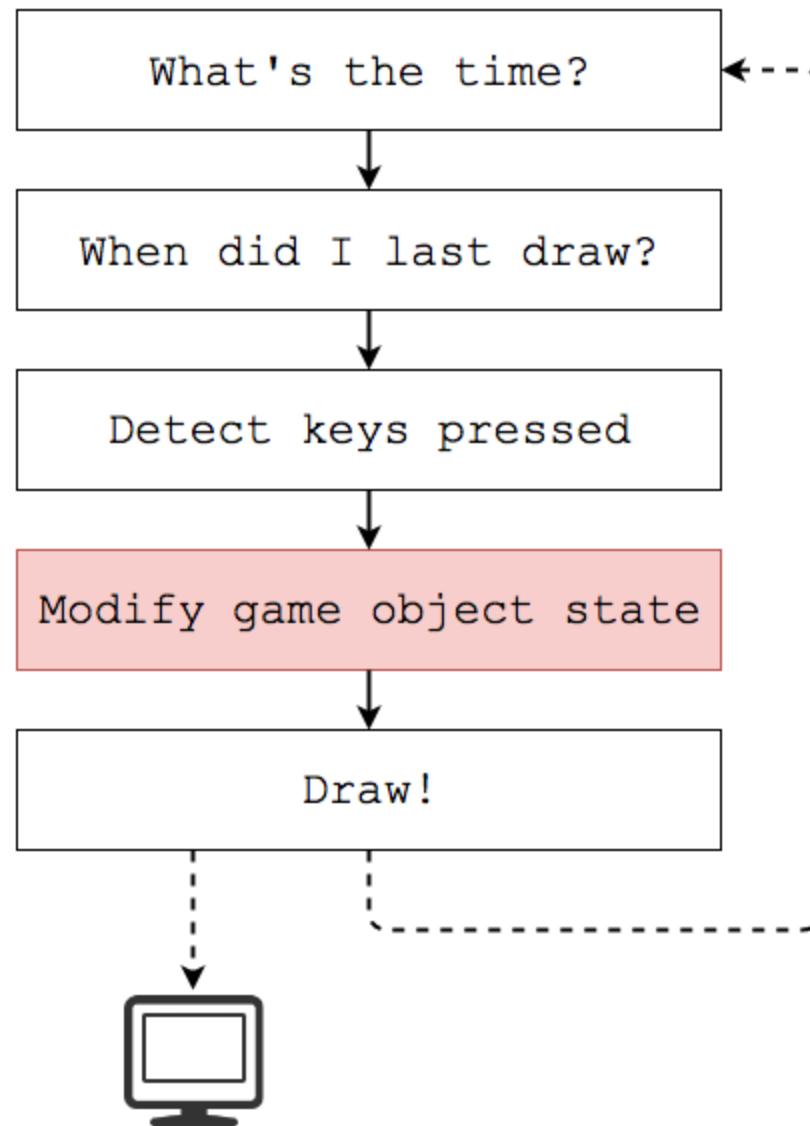
`brush.fillStyle = color`

`brush.fillRect(x, y + offset, 3, 3)`

`}`

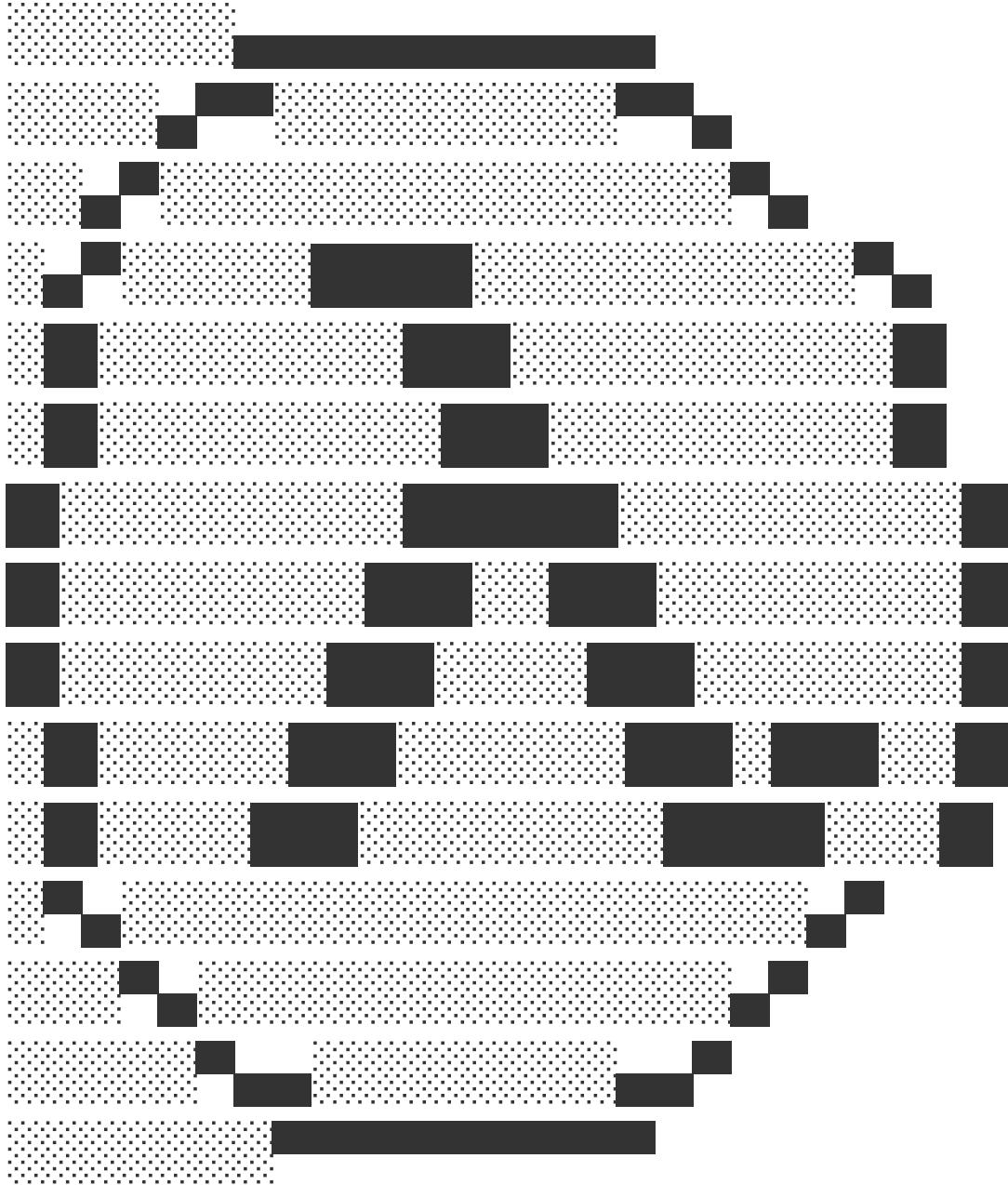


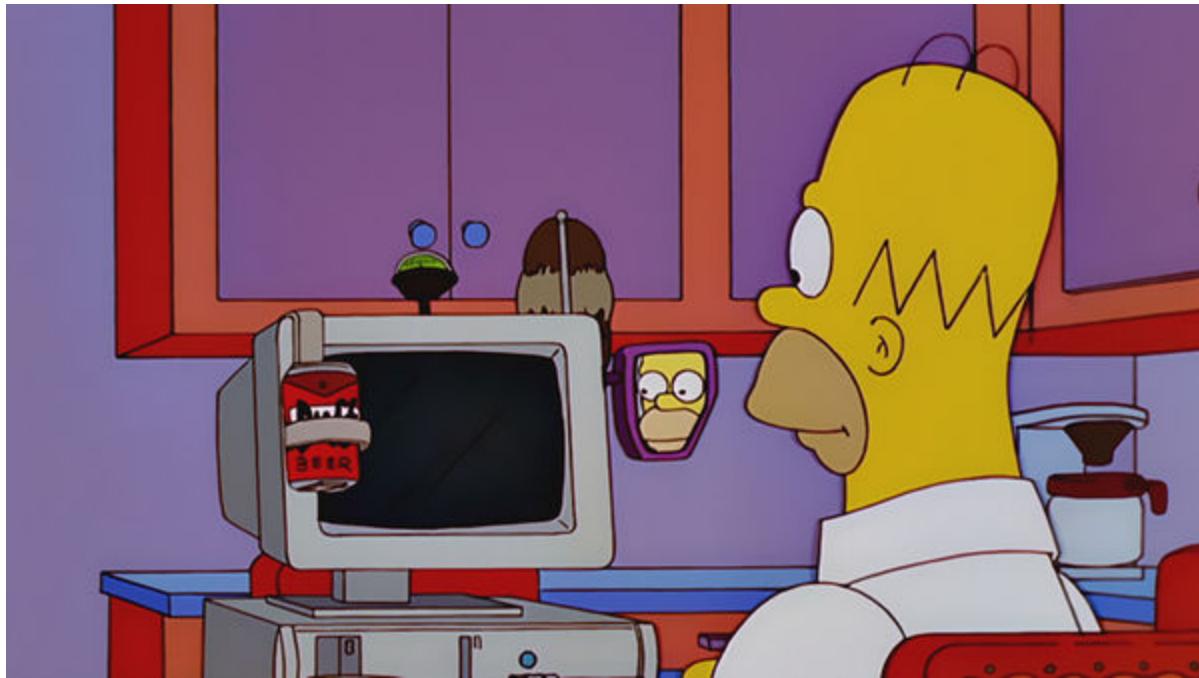
<http://www.lihaoyi.com/hands-on-scala-js/>





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Branch: master → codeblog / 2012 / 2012-01-17-declarative-game-logic-afrp.md Find file Copy path

blastrock Fixed typos ca581f2 on 1 Oct 2013

2 contributors

429 lines (301 sloc) 18.2 KB Raw Blame History

# Purely Functional, Declarative Game Logic Using Reactive Programming

In the [previous article](#) I introduced the `Coroutine` data type. In this second part I will show how coroutines can be used to implement a fixed time-step reactive programming library and use that library for modeling a simple game. The code examples will require a [basic proficiency](#) in reading Haskell code.

<https://github.com/leonidas/codeblog/blob/master/2012/2012-01-08-streams-coroutines.md>

<https://github.com/leonidas/codeblog/blob/master/2012/2012-01-17-declarative-game-logic-afrp.md>

# CoRoutine



# CoRoutine

Transformers of time varying values, e.g:

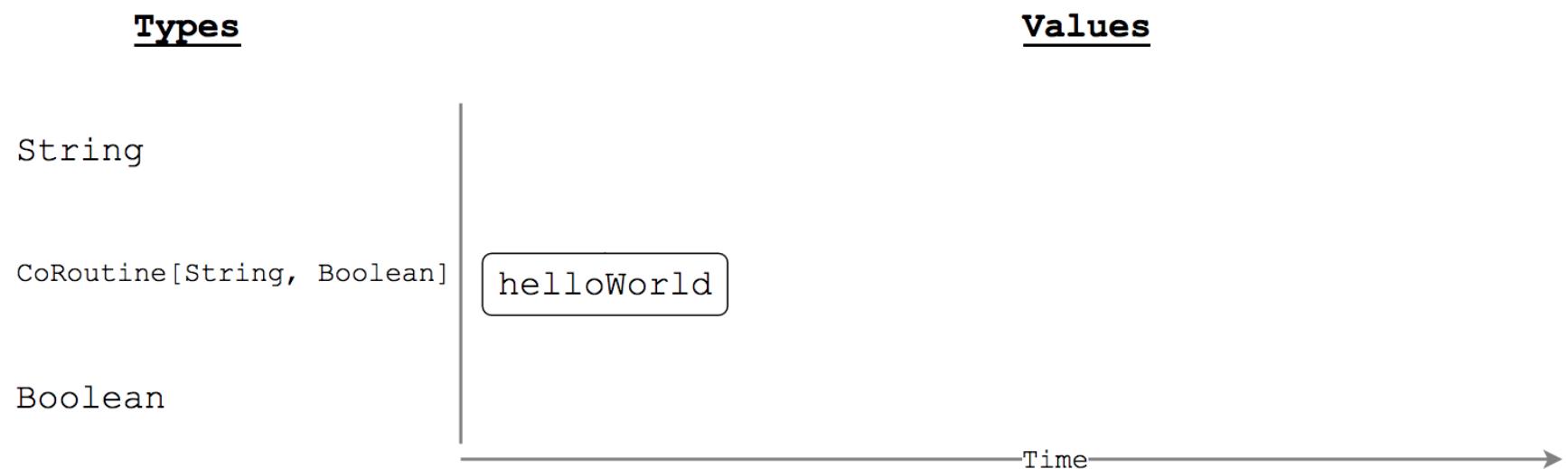
- Head of a queue
- Keyboard state
- Temperature

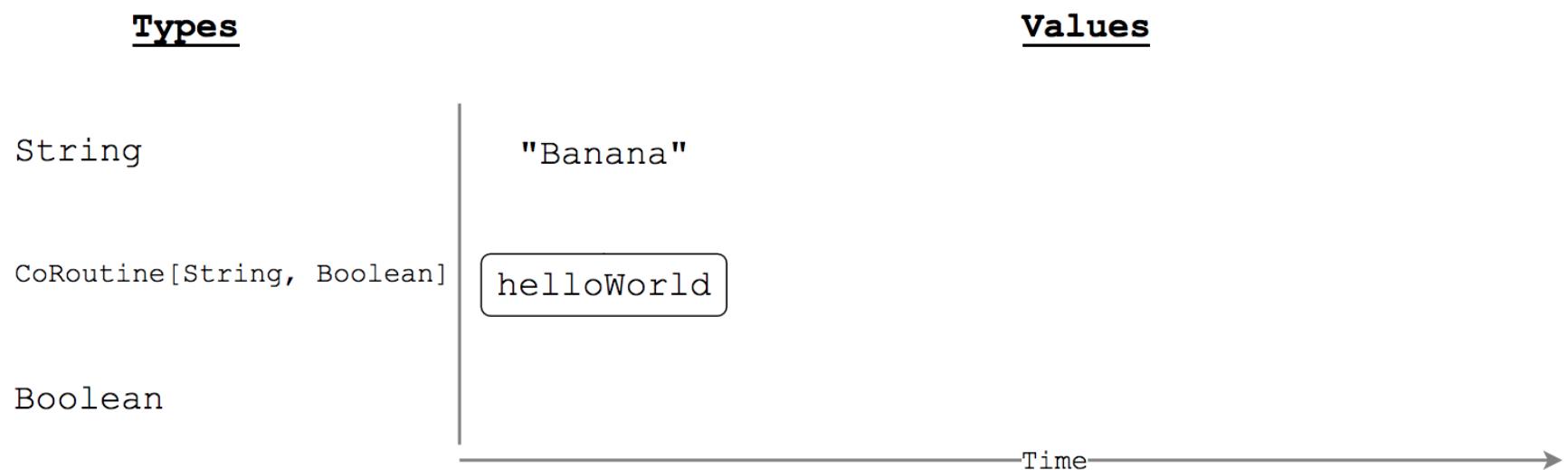
# Problem

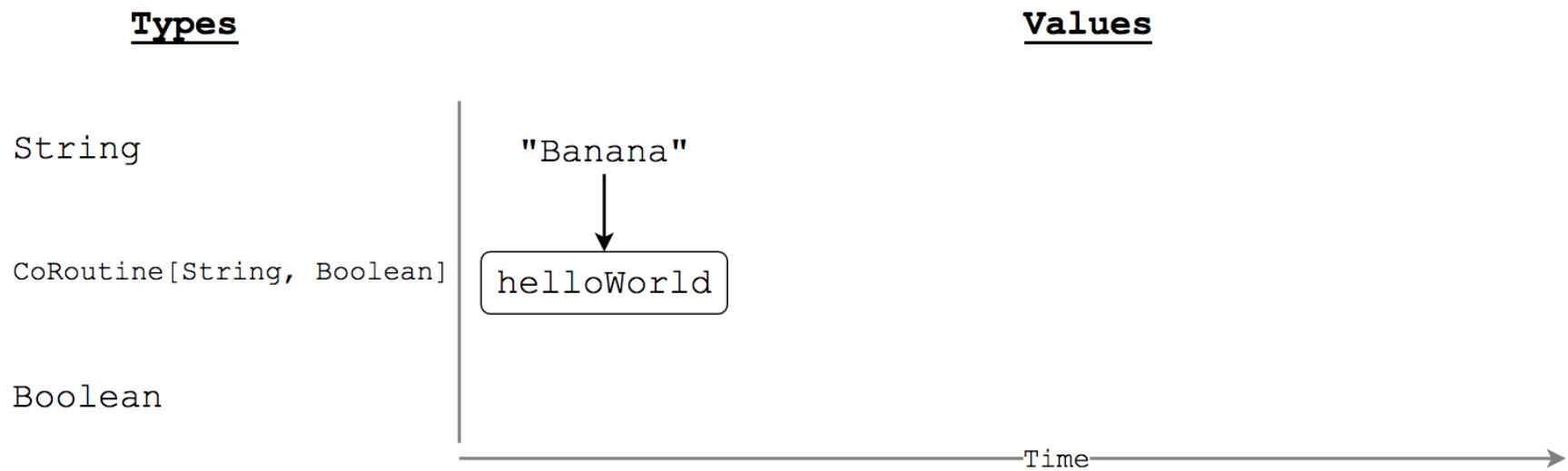
There is a time varying `String` value that we can sample.

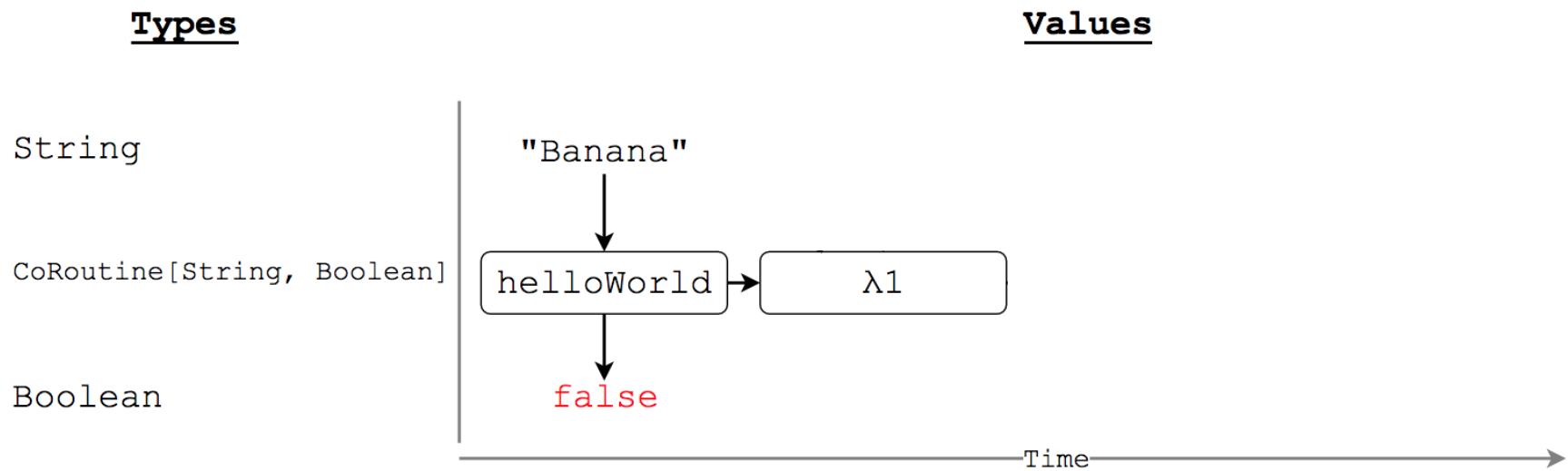
We want to transform it to a time varying `Boolean`:

- The latest value of the `String` is "World"  
AND
- The previous value of the `String` was "Hello"









## Types

String

CoRoutine[String, Boolean]

Boolean

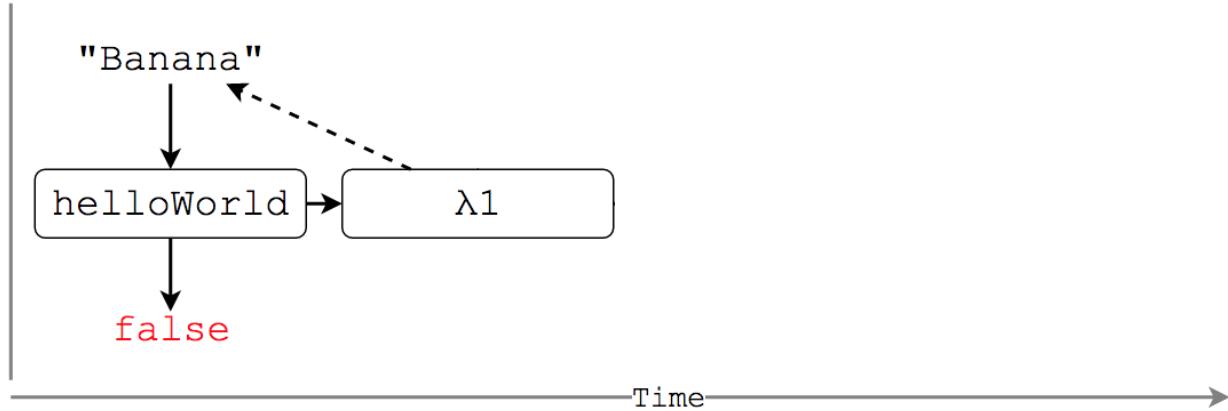
## Values

"Banana"

helloWorld → λ1

false

Time



## Types

## Values

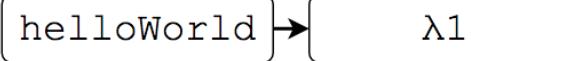
String

CoRoutine[String, Boolean]

Boolean

"Banana"

"Hello"



Time

## Types

## Values

String

CoRoutine[String, Boolean]

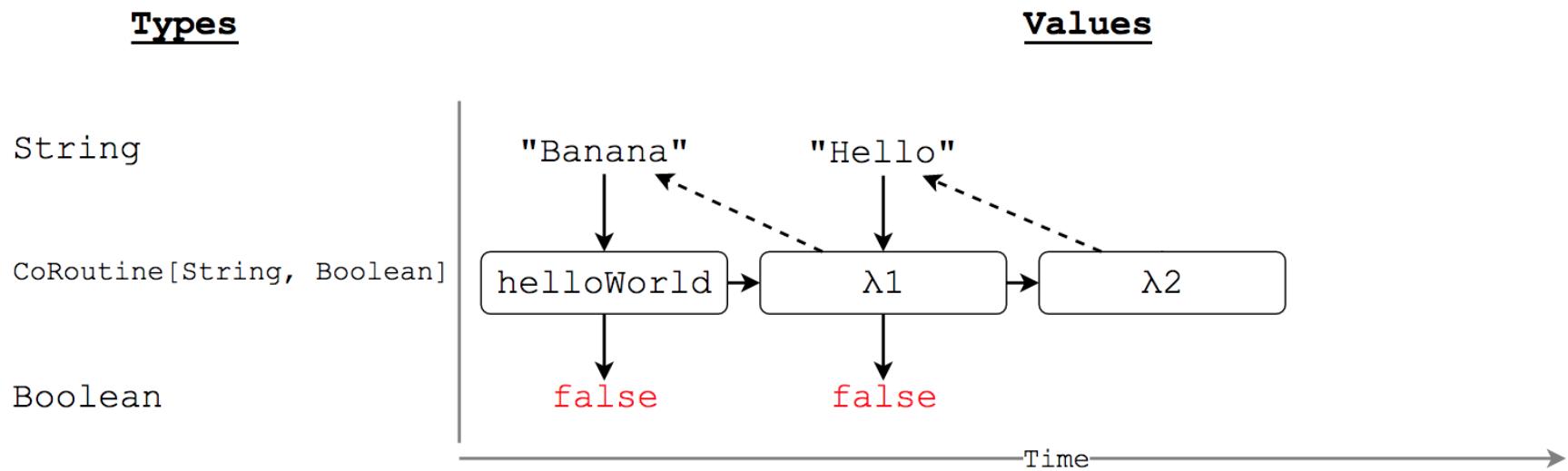
Boolean

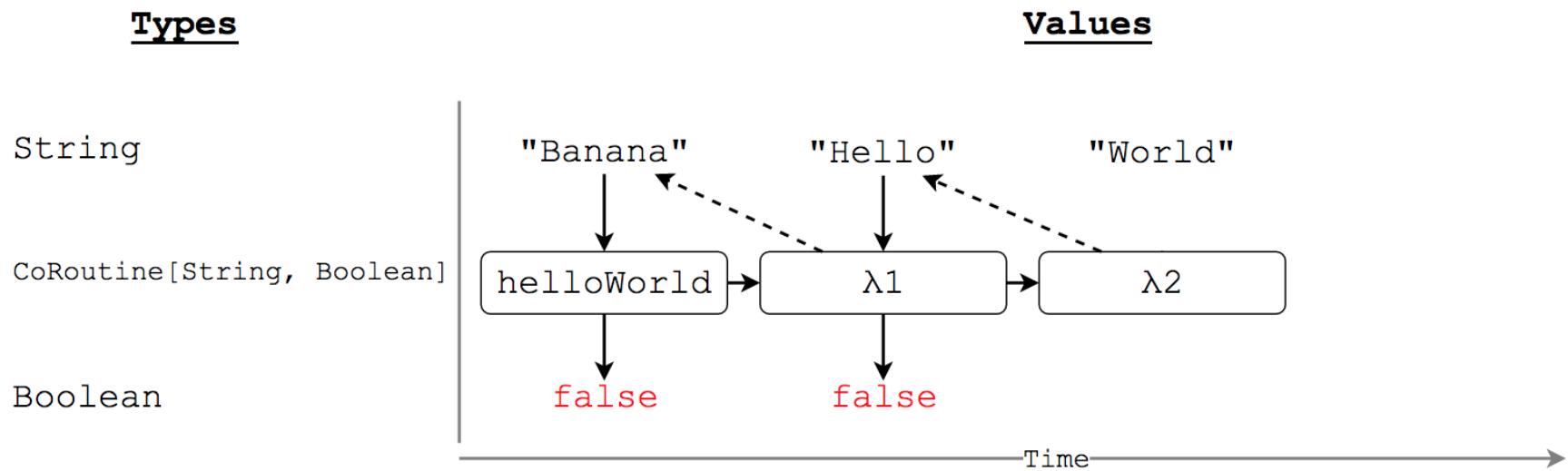
"Banana"

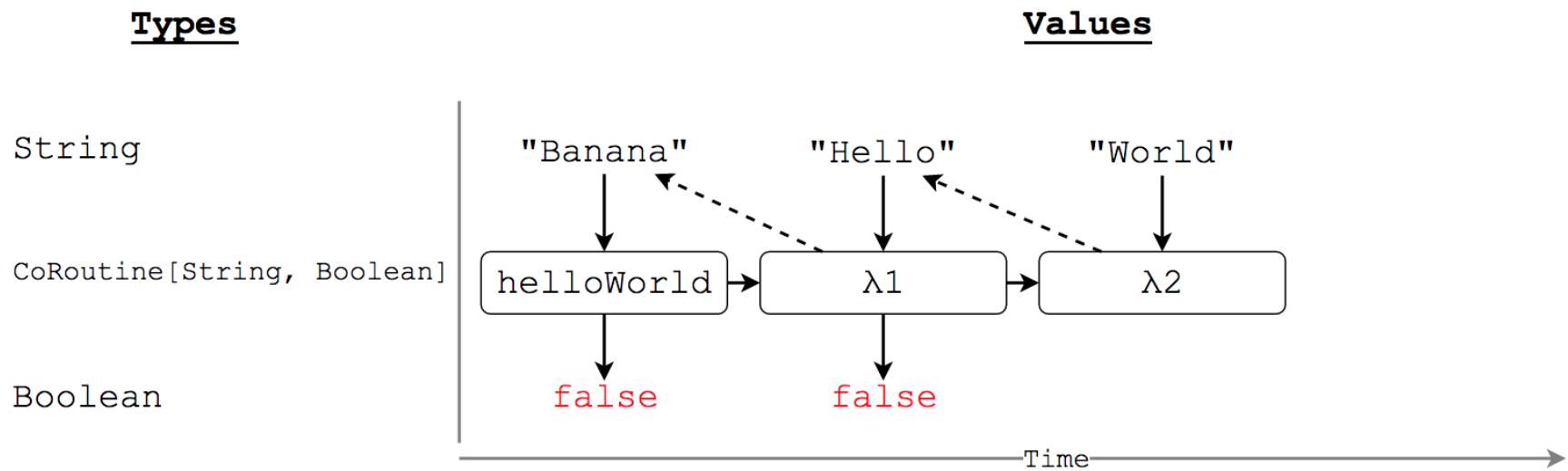
"Hello"

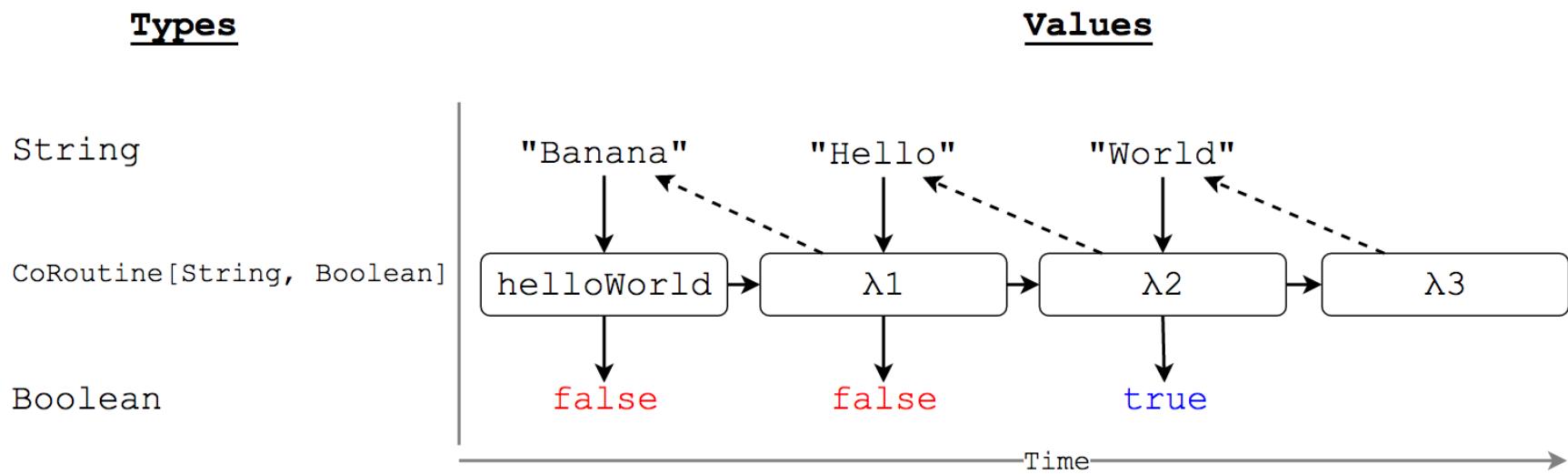


Time →









# CoRoutine as a game loop

## Types

String

CoRoutine[String, Boolean]

Boolean

## Values

"Banana"

"Hello"

"World"

helloWorld

λ1

λ2

λ3

false

false

true

Time



## Types

(Set[Key], Time)

CoRoutine[(Set[Key], Time), GameState]

GameState

## Values



game

λ1

λ2

λ3



Time





# Where's the game?

# Thank you!

I hope you have taken away:

- A feeling for how FRP, and Coroutines work
- Pride in functional programming
- A couple of hints about what to look at if it peaked your interest
- Scala Coroutines library:
  - <http://storm-enroute.com/coroutines/>
- Try to implement Coroutines yourself:
  - <https://github.com/leonidas/codeblog/blob/master/2012/2012-01-08-streams-coroutines.md>
- Project: <https://github.com/mcarolan/flatmappy-bird>

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<http://www.deviantart.com/art/Gaming-Icons-179546229>

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