Learning Swift Through Web Development

A talk by Luis Padron.

luispadron

@BeepLuis

Swift Crash Course

- Swift is all about type-safety.

- Functions and closures are first class types.

- Beautiful pattern matching with custom enum types and switch cases.

- Generics.

- Extensions to existing classes without subclassing.

The Basics

```swift
// Create a variable
var num = 3
// Create a variable with explicit type
var num2: Int = 3


// Create a constant (always do this if possible)
let name = "Luis"


// Swift loves immutability
let numbers = [10, 20, 30]
numbers.append(40) // Error: 'numbers' is 'let' constant
```

The Basics - Functions

```swift
// Functions, control flow, and optionals
func findNumber(_ num: Int, in numbers: [Int]) -> Int? {
    for (index, curr) in numbers.enumerated() {
        if curr == num {
            return index
        }
    }

    return nil
}


findNumber(20, in: [10, 20, 30]) // -> 1
```

The Swift-ier Things: Optionals

```swift
// The three "types" in Swift
var name: String  = "Luis"
var name: String! = "Luis"

var name: String? = "Luis"
// or
var name: String? = nil


// In C++
if (node == nullptr) {
    // Uh oh, don't access members.
} else {
    // Ok.. we're good!
    node->left = new node();
}


// In Swift
node?.left = new Node();
```

The Swift-ier Things: Value Semantics

```swift
// Swift passes structs by value.
struct ImmutableType {
    let name: String

    init (name: String) {
        self.name = name
    }
}



// Swift passes class types by reference.
class MutableReferenceType {
    var name: String

    init (name: String) {
        self.name = name
    }
}
```

Why Swift?

- Swift has awesome syntax.

- Swift is type-safe.

- Swift is really fast.

- Swift is modern.

- Swift is cool?
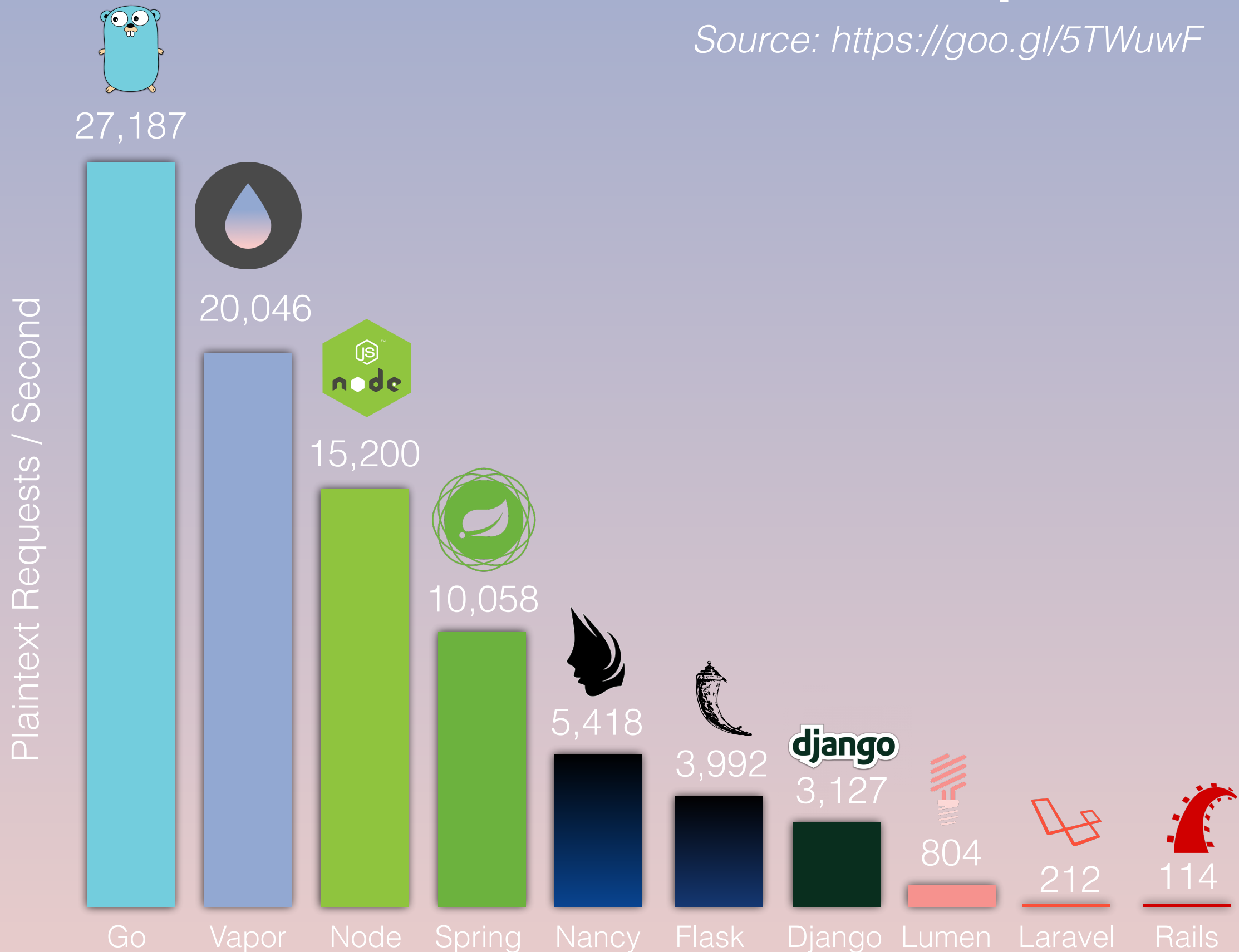
Web Development Frameworks

Perfect

Vapor

Kitura

Vapor

- Open-source.

- Fast.

- Modern.

- All the benefits of using Swift.

How Fast is Vapor?

Plaintext Requests / Second

27,187	20,046	15,200	10,058	5,418	3,992	3,127	804	212	114
Go	Vapor	Node	Spring	Nancy	Flask	Django	Lumen	Laravel	Rails

Let's Get Started!

Go here and clone this repository as a starting point
https://goo.gl/oQuAKn

While we wait… Closures!

```swift
func lessThan(num1: Int, num2: Int, equals: (Int, Int) -> Bool) -> Bool {
    return equals(num1, num2)
}

// Implementation #1
func eq(n1: Int, n2: Int) -> Bool {
    return n1 < n2
}

lessThan(num1: 10, num2: 20, equals: eq) // -> True


// Implementation #2
lessThan(num1: 10, num2: 20, equals: { (n1, n2) in
    return n1 < n2
}) // -> True


// Implementation #3
lessThan(num1: 10, num2: 20) { $0 < $1 } // -> True
```

https://goo.gl/oQuAKn

While we wait... Other stuff!

```swift
// Let's clean up the last example...
// Create a typealias!
typealias EqualsFunc = (Int, Int) -> Bool

// We can now use our typealias throughout our code
func lessThan(num1: Int, num2: Int, equals: EqualsFunc) -> Bool {
    return equals(num1, num2)
}

// Using guard and defer
func readFile(file: File?) -> Bool {
    guard let f = file else { return false }
    // Do this work at the end of this functions life time.
    defer { f.close() }
    // Read the file, it's safe!
    //...
    return true
}
```
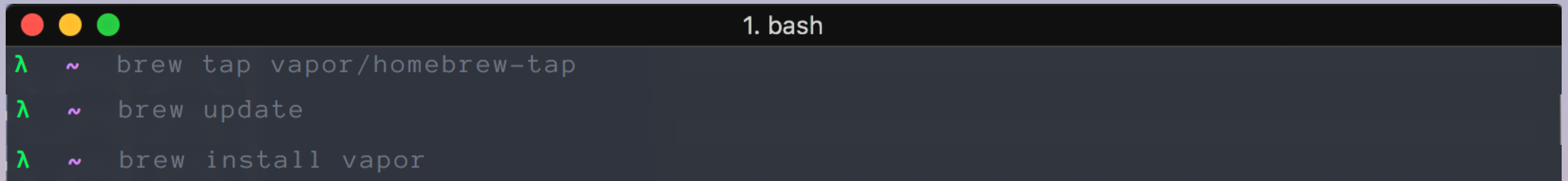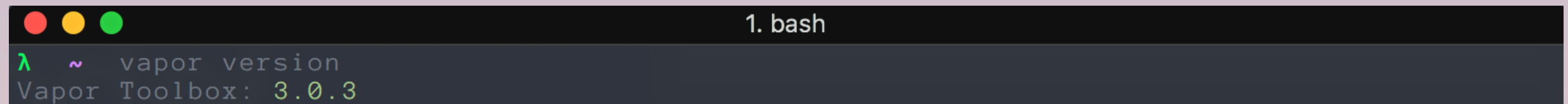
https://goo.gl/oQuAKn

Learn More!

https://developer.apple.com/swift

It's time to code!

Download and install Vapor

```
                                    1. bash
λ   ~   brew tap vapor/homebrew-tap

λ   ~   brew update

λ   ~   brew install vapor
```

Test your install

```
                                    1. bash
λ   ~   vapor version
Vapor Toolbox: 3.0.3
```

https://goo.gl/Wz9nc2

Follow along

```
                        **
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   \_/ /_-_\| P  ( ( )  |_R)
      a web framework for Swift
```

https://goo.gl/Wz9nc2

Thanks!

Learn more:

https://vapor.codes

Follow me:

luispadron

@BeepLuis