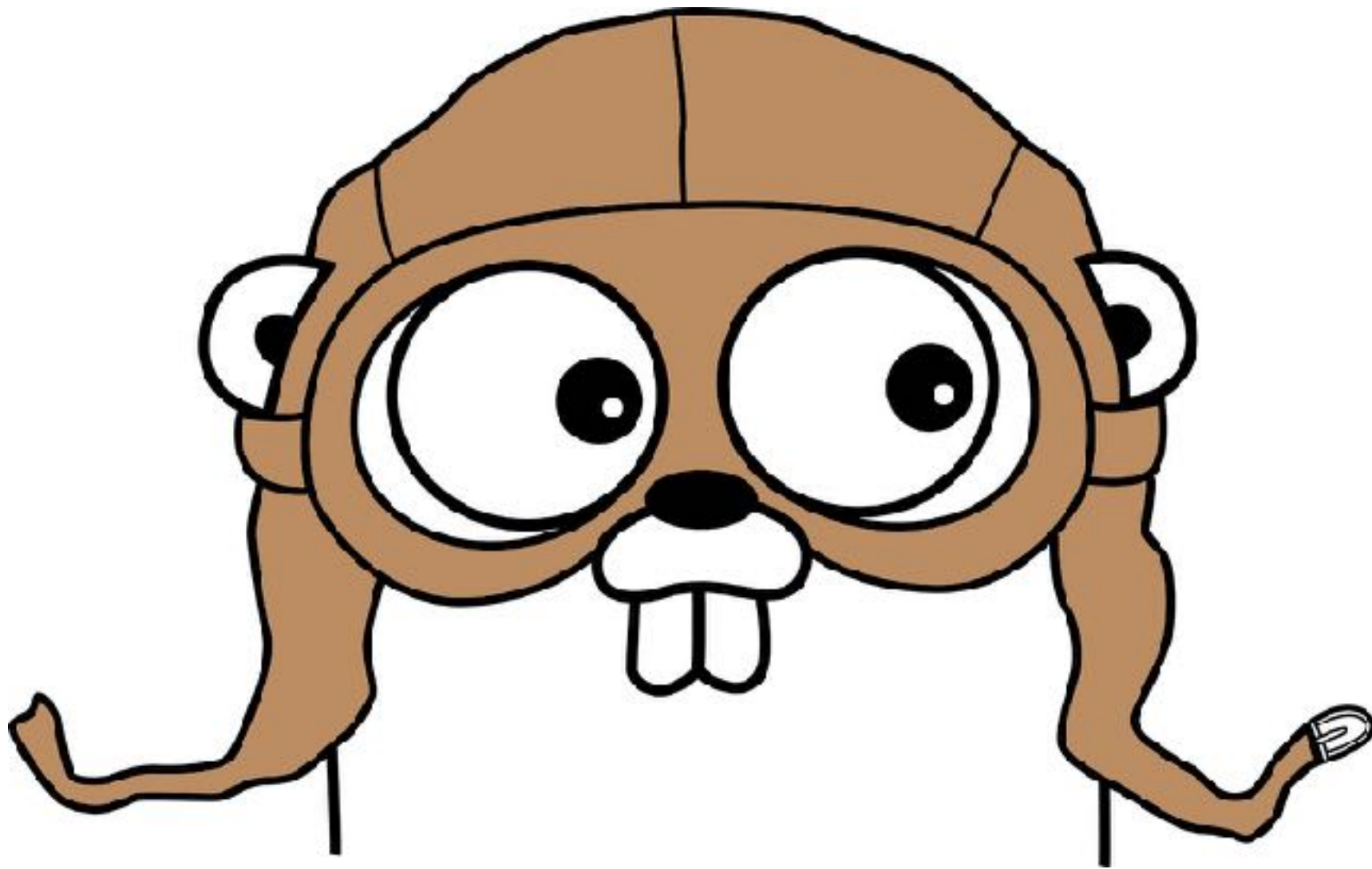# GET GO-ING
WITH A NEW LANGUAGE

@KASIAZIEN @PHPSW FEB 2017

HANG ON. ISN'T THIS A PHP MEETUP?

Yes.

You should try learning other languages though.
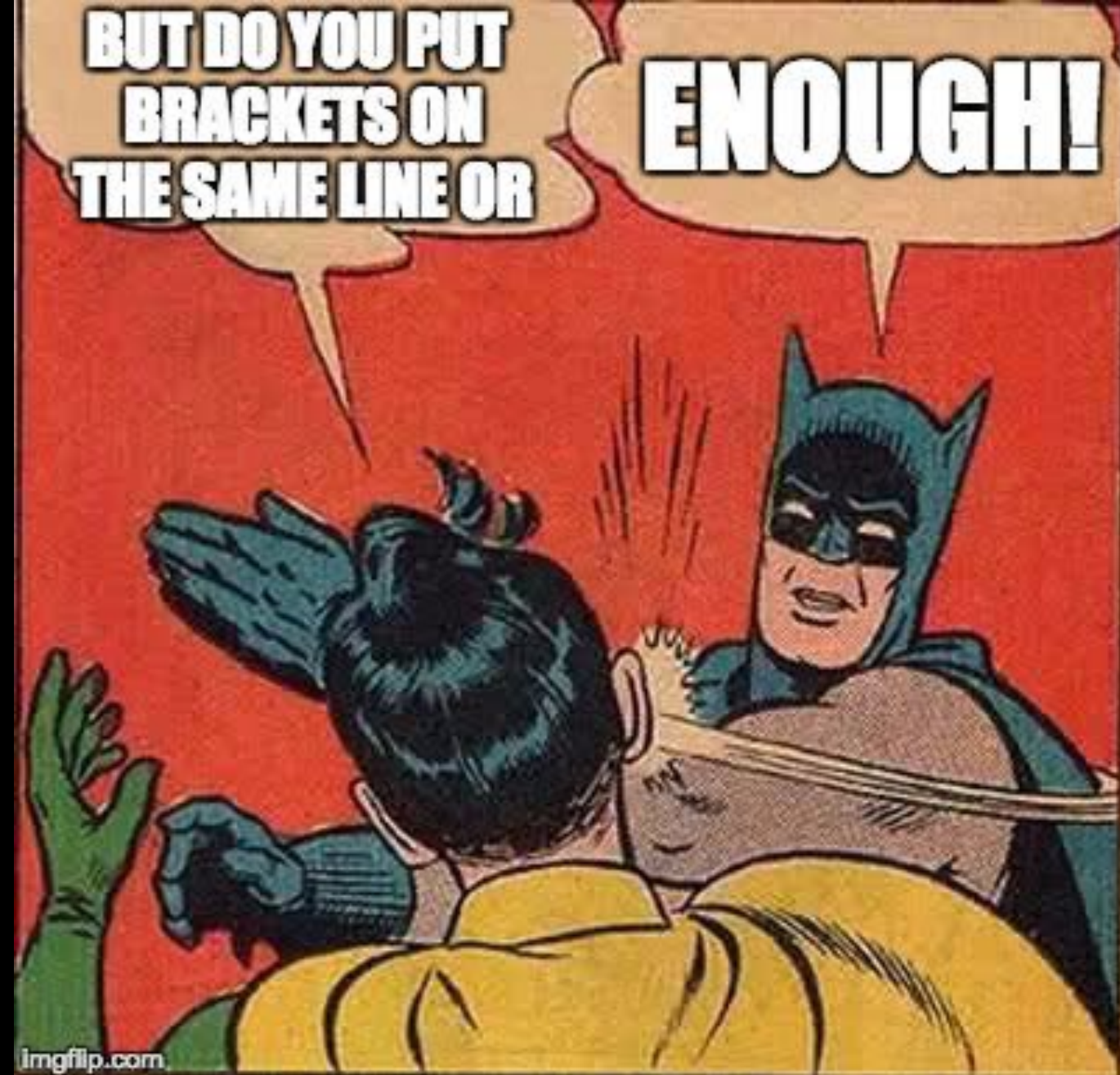
WHAT IS GO?

MAIN DIFFERENCE

VS

MAIN DIFFERENCE

▸ syntax (obviously)

▸ built-in support for concurrency

▸ how you run the app

SYNTAX

- declaring type

- no semicolons

- strict formatting rules

```go
package main

import "fmt"

func main() {
    var greeting string = "Hello!"

    drink := "tea"

    fmt.Printf(
        "%s Is it %s you're looking for?",
        greeting, drink,
    )
}
```

```
Kat at MacBook-Pro in ~/Code/go-work/src/github.com/katzien/hello
$ go run lionel.go
Hello! Is it tea you're looking for?
Kat at MacBook-Pro in ~/Code/go-work/src/github.com/katzien/hello
$ go build lionel.go

Kat at MacBook-Pro in ~/Code/go-work/src/github.com/katzien/hello
$ ls
lionel     lionel.go

Kat at MacBook-Pro in ~/Code/go-work/src/github.com/katzien/hello
$ ./lionel
Hello! Is it tea you're looking for?
Kat at MacBook-Pro in ~/Code/go-work/src/github.com/katzien/hello
$
```
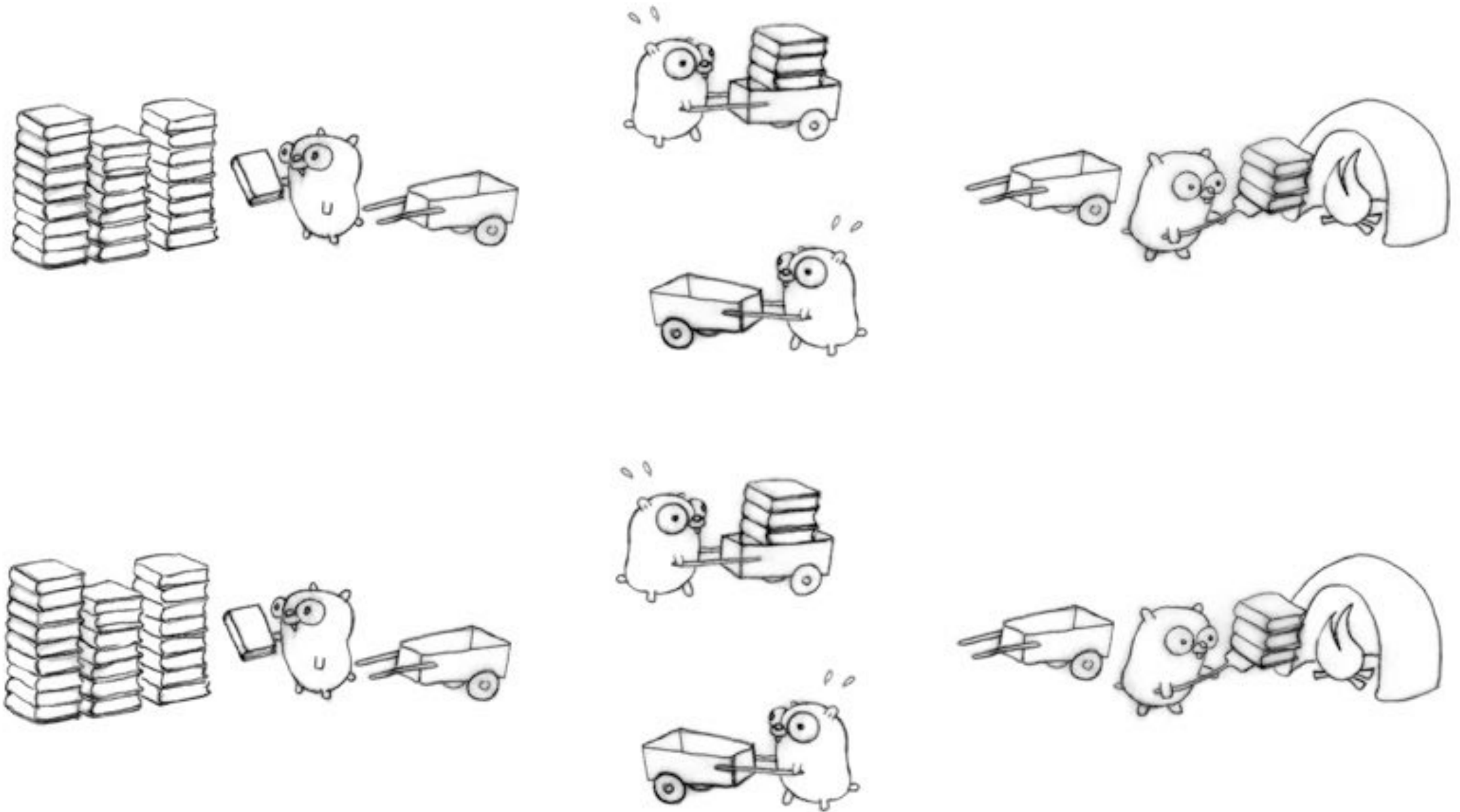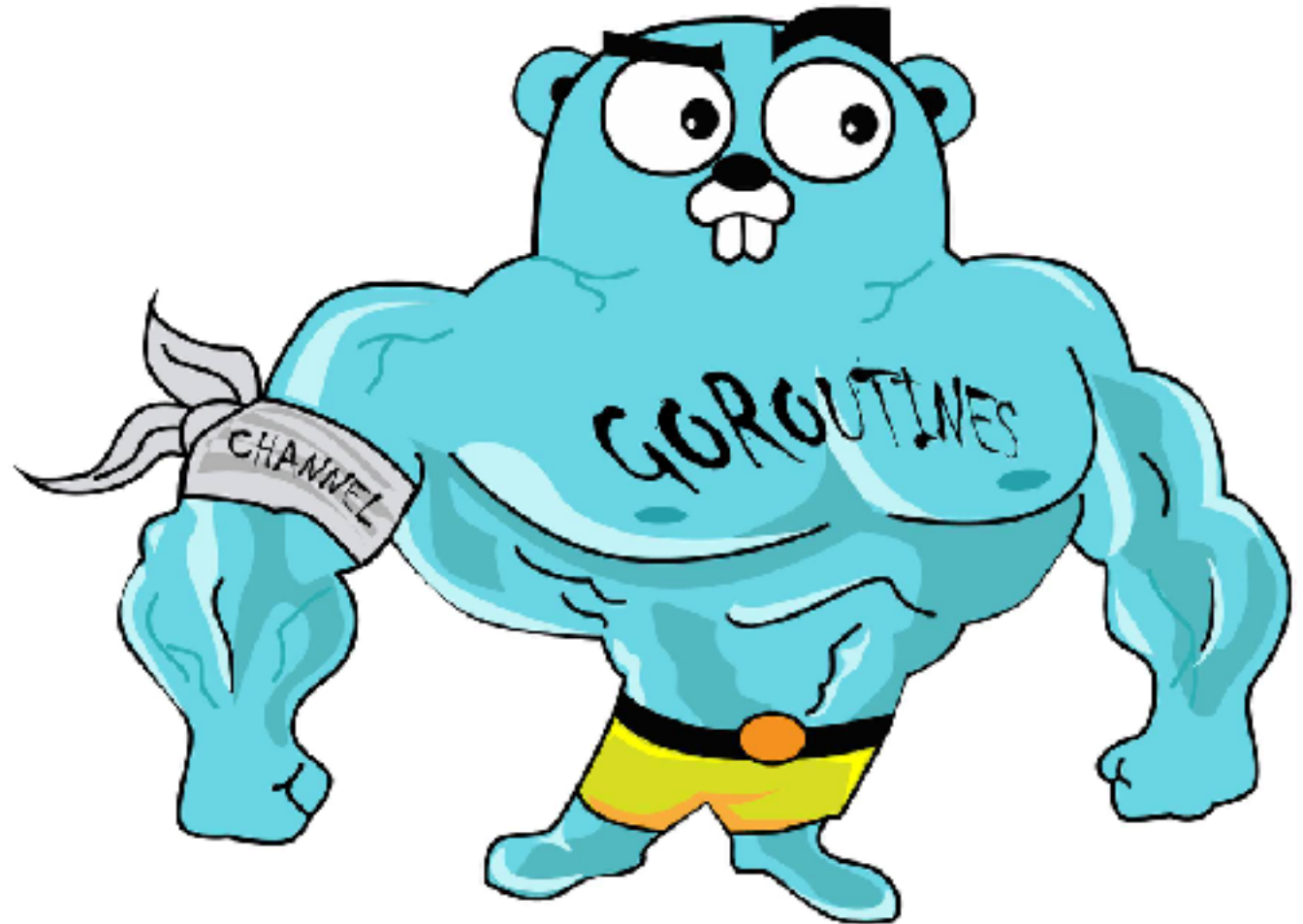
CONCURRENCY != PARALLELISM

BUILT-IN CONCURRENCY

- PHP: pthreads (extension)

- Go: built-in *go* keyword, goroutines and channels

```go
func f(from string) {
    for i := 0; i < 3; i++ {
        fmt.Println(from, ":", i)
        time.Sleep(time.Second)
    }
}

func main() {

    f("direct")

    go f("goroutine 1")

    go func(msg string) {
        fmt.Printf("%s about to sleep\n", msg)
        time.Sleep(time.Second * 2)
        fmt.Printf("%s done sleeping\n", msg)
    }("goroutine 2")

    var input string
    fmt.Scanln(&input)
    fmt.Println("done")
}
```

```
Kat at MacBook-Pro in ~/Code/go-work,
$ go run goroutines.go
direct : 0
direct : 1
direct : 2
goroutine 1 : 0
goroutine 2 about to sleep
goroutine 1 : 1
goroutine 1 : 2
goroutine 2 done sleeping

done
```

GOROUTINES

```go
package main
import (
    "fmt"
    "time"
)

func worker(done chan bool) {
    fmt.Print("working...")
    time.Sleep(time.Second)
    fmt.Println("done")

    done <- true
}

func main() {
    done := make(chan bool, 1)
    go worker(done)

    <-done
}
```

CHANNELS

WE CAN SPEED THINGS UP

PHP: INTERPRETED LANGUAGE

‣ need an interpreter (commonly a web server module, can also be a CLI)

‣ the root directory of your app can be anywhere on disk*

* assuming permissions are all sorted etc.

GO: COMPILED LANGUAGE

‣ compile for your architecture, run as a binary with a CLI

‣ needs* to live under

$GOPATH/src/<vendor>/<project-name>, e.g.

/Users/Kat/Code/go-work/src/github.com/katzien/advent-of-code

* this is the "official" way, but some people don't like being forced to keep all their projects under one big directory, so they repoint their $GOPATH for every project

INFRASTRUCTURE

PHP

▸ Must have PHP installed

▸ If web app, must have a server set up

Go

▸ Just make sure the binary is compiled for your architecture

@MattKetmo

APPLICATIONS AND USE CASES

PHP

‣ web pages or APIs

‣ CLI apps

‣ "bash scripts"

Go

‣ web pages or APIs

‣ CLI apps

‣ anything under the sun: backend components (e.g. microservices), infrastructure components (e.g. servers, proxies), …
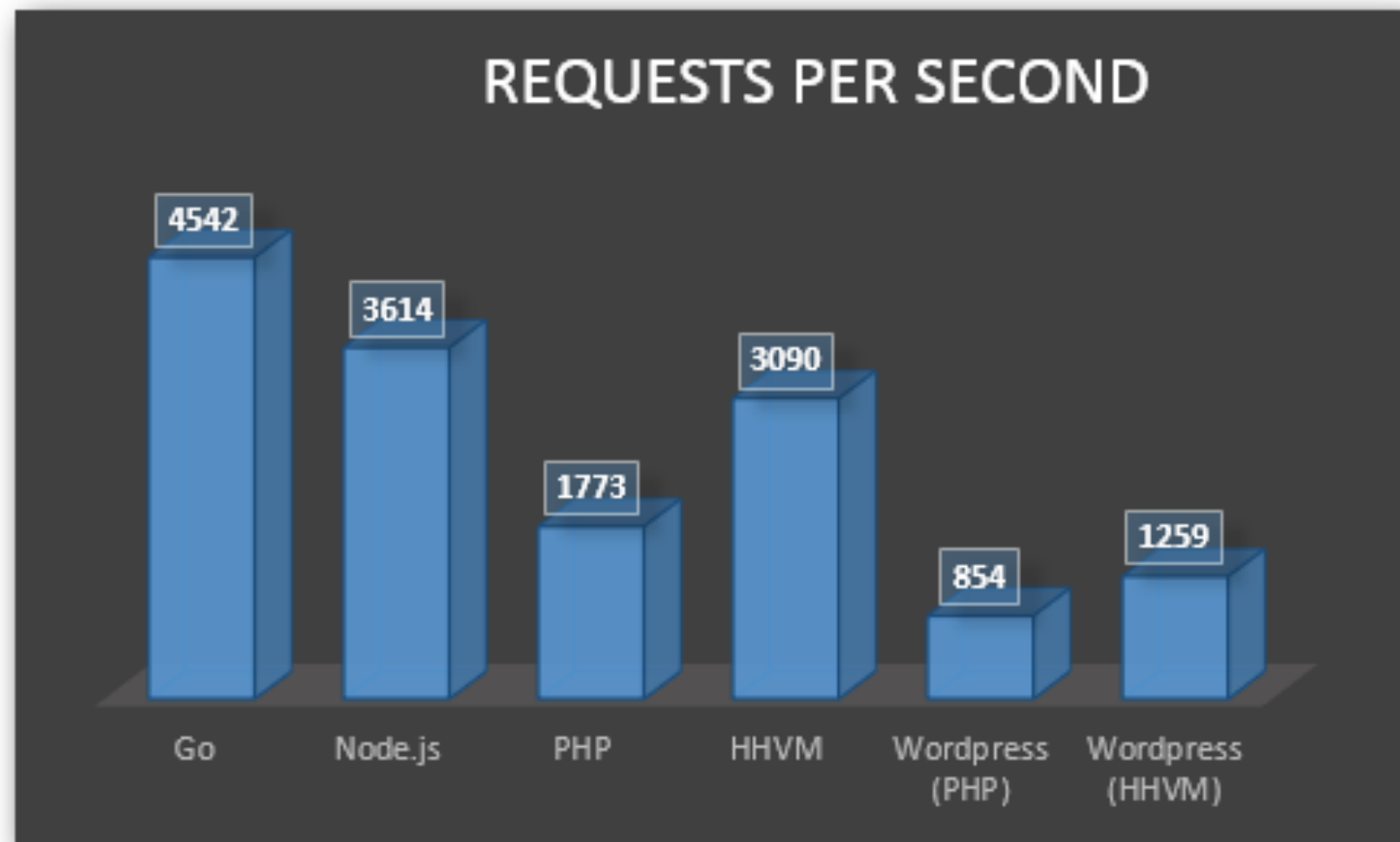
MAYBE WE COULD...

SERVE PHP WITH GO??

SIMPLE "HELLO, WORLD!" TESTS

REQUESTS PER SECOND

Go	Node.js	PHP	HHVM	Wordpress (PHP)	Wordpress (HHVM)
4542	3614	1773	3090	854	1259

‣ Nginx came at 17,791 rps serving a static file

SOURCE: HTTPS://DAN.HERSAM.COM/2015/02/25/GO-VS-NODE-VS-PHP-VS-HHVM-AND-WORDPRESS-BENCHMARKS/

TOOLING

Go comes with everything out of the box:

‣ formatter

‣ testing framework (unit and benchmark tests)

‣ compiler

‣ a whole bunch more…

COMMUNITY

IN SUMMARY

NEITHER LANGUAGE IS BETTER OR WORSE: THEY'RE JUST DIFFERENT

FAVOURITE THINGS

PHP

- low entry level
- can bang stuff out quickly
- widespread
- matured frameworks and libraries
- great community
- composer
- PHP 7 is making us proud

Go

- strong types
- rules which encourage you to keep things simple*
- error checking policy
- multiple return values
- tooling
- easy to run
- concurrency
- speed
- wide range of applications
- strong leadership

WHAT COULD BE BETTER

PHP (as opposed to Go)

▸ inconsistency

▸ allows you to do stupid things and leave dead code around

▸ verbose

▸ multiple return values

Go (as opposed to PHP)

▸ no can do polymorphism

▸ "Is there anything at least v1.0?"

▸ "Oh gawd do I really have to write it myself?"

DID ANYTHING CHANGE?

▸ shorter, sensible names:

```
namespace Controllers; class HomePageController
```

```
namespace Controllers; class HomePage
```
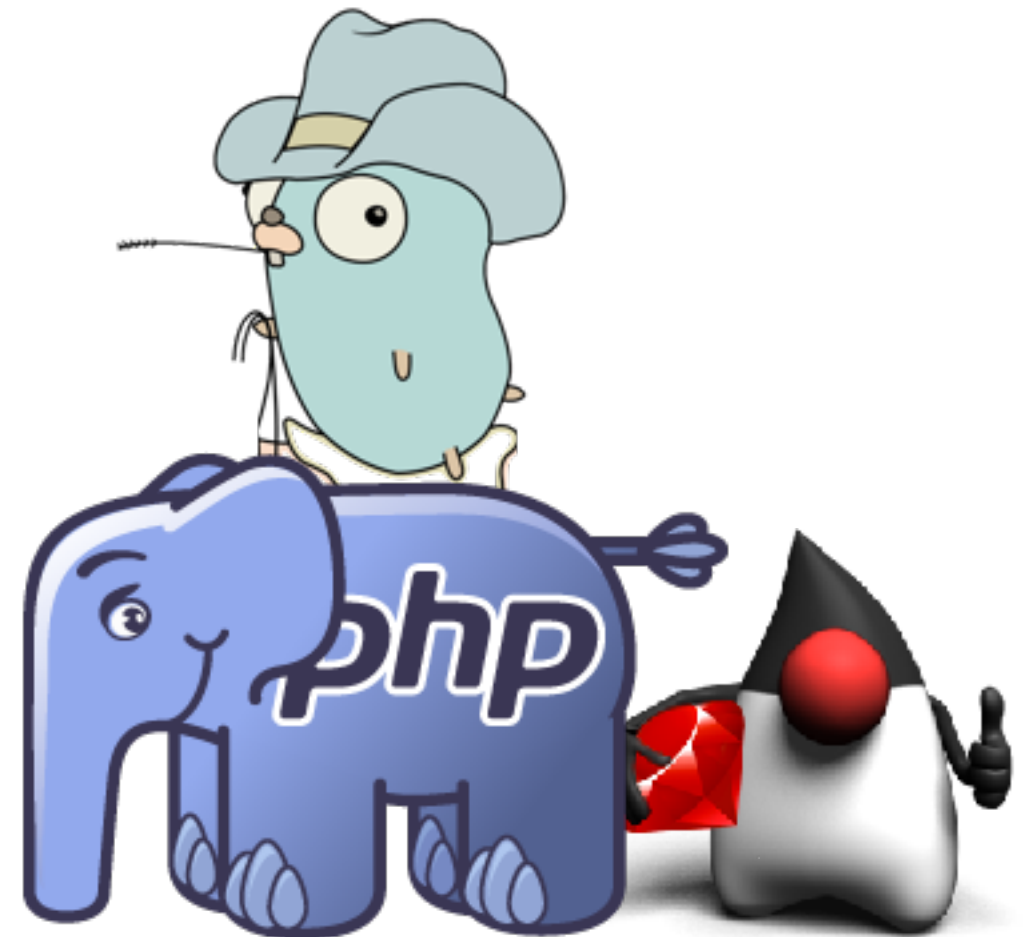
▸ error checking (check for errors first)

▸ using interfaces more

▸ keeping things simple and clean

CONCLUSION

Learning Go has made me a better PHP programmer.

Knowing more than one programming language:

▸ more than one world view

▸ share ideas across languages

▸ better employability

▸ another tool under your belt

RESOURCES

My favourite Go-related talks (which you may find interesting even if you don't know Go):

▸ Concurrency is not parallelism

▸ Simplicity is complicated

▸ Building containers in Go

Want to give Go a go? Puntastic! #sorrynotsorry #dadjoke #hashtageverything #whocares

▸ https://golang.org/

▸ https://tour.golang.org/

▸ https://blog.golang.org/

▸ https://gobyexample.com

THANKS FOR LISTENING!

@KASIAZIEN
HTTPS://JOIND.IN/TALK/C3880