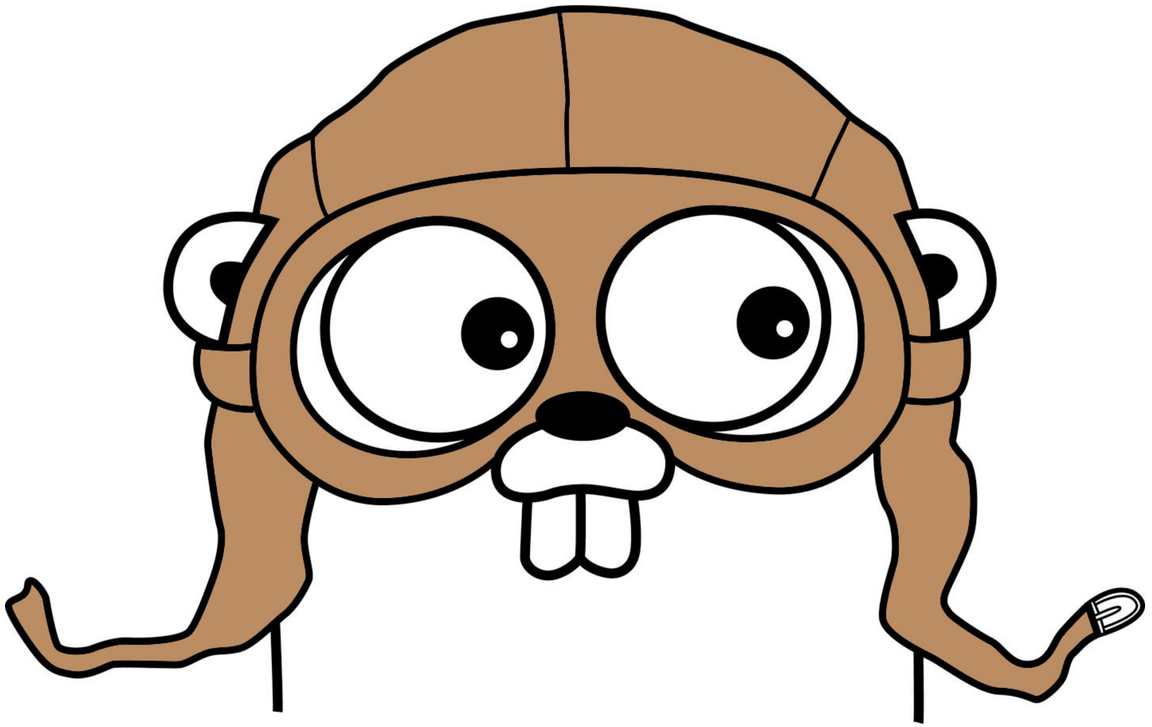
GET GO-ING WITH A NEW LANGUAGE



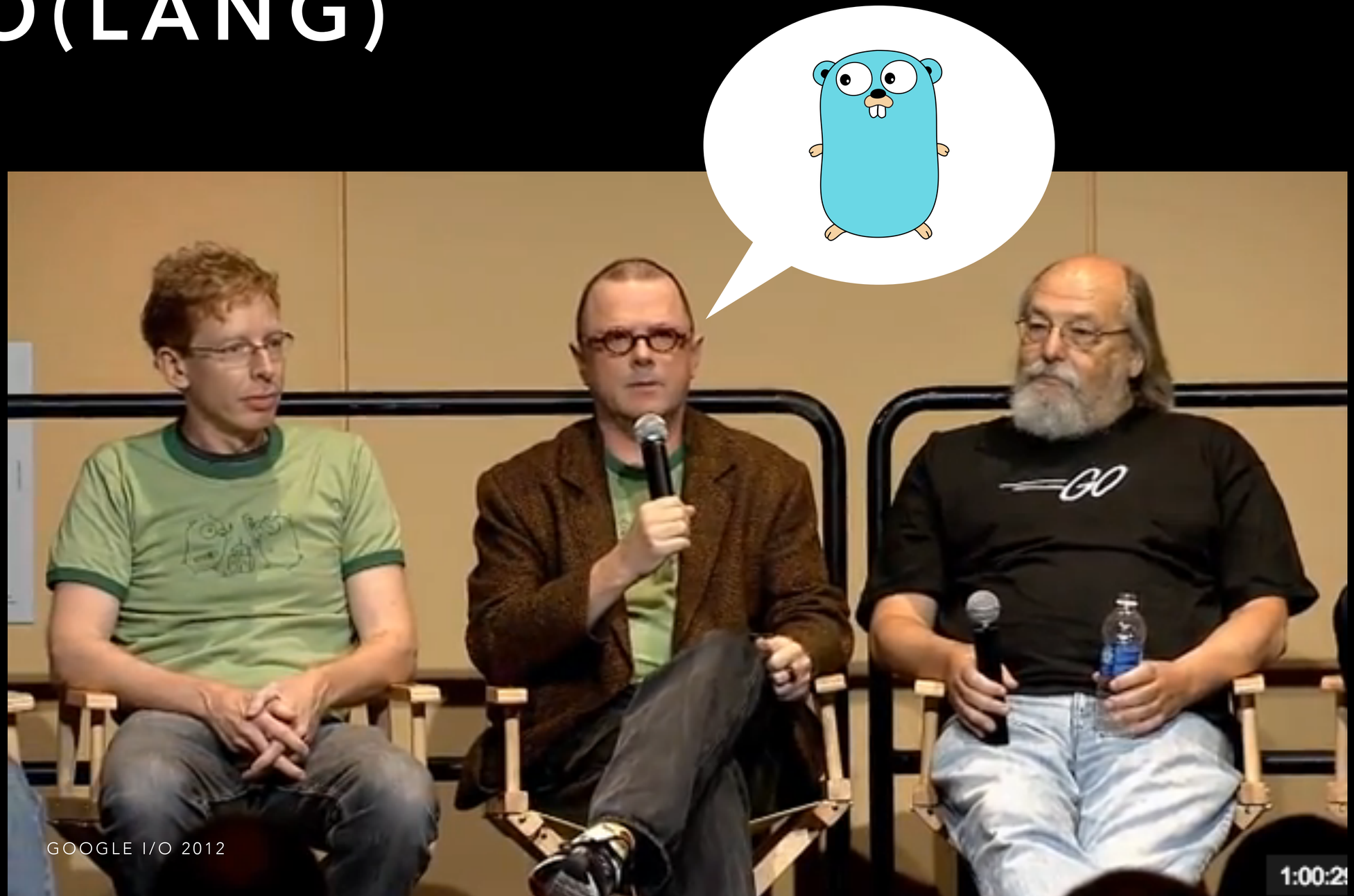
KAT ZIEŃ (@KASIAZIEN)

DUTCH PHP CONFERENCE 8 JUNE 2019

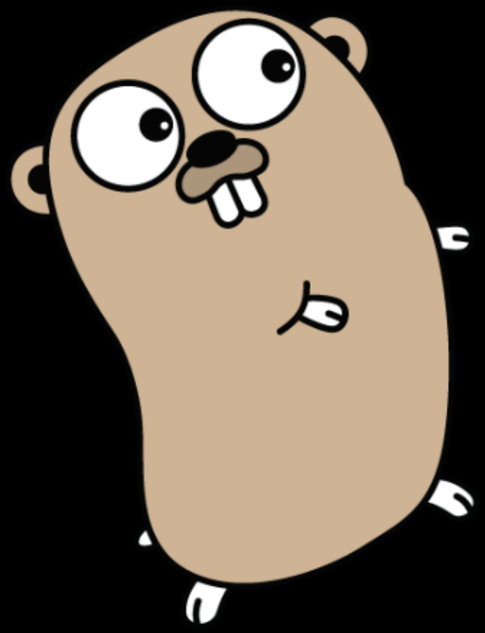
IMAGE BY ASHLEY MCNAMARA


php
MADE BY IAN BAKER

GO(LANG)



DIFFERENCES



DIFFERENCES

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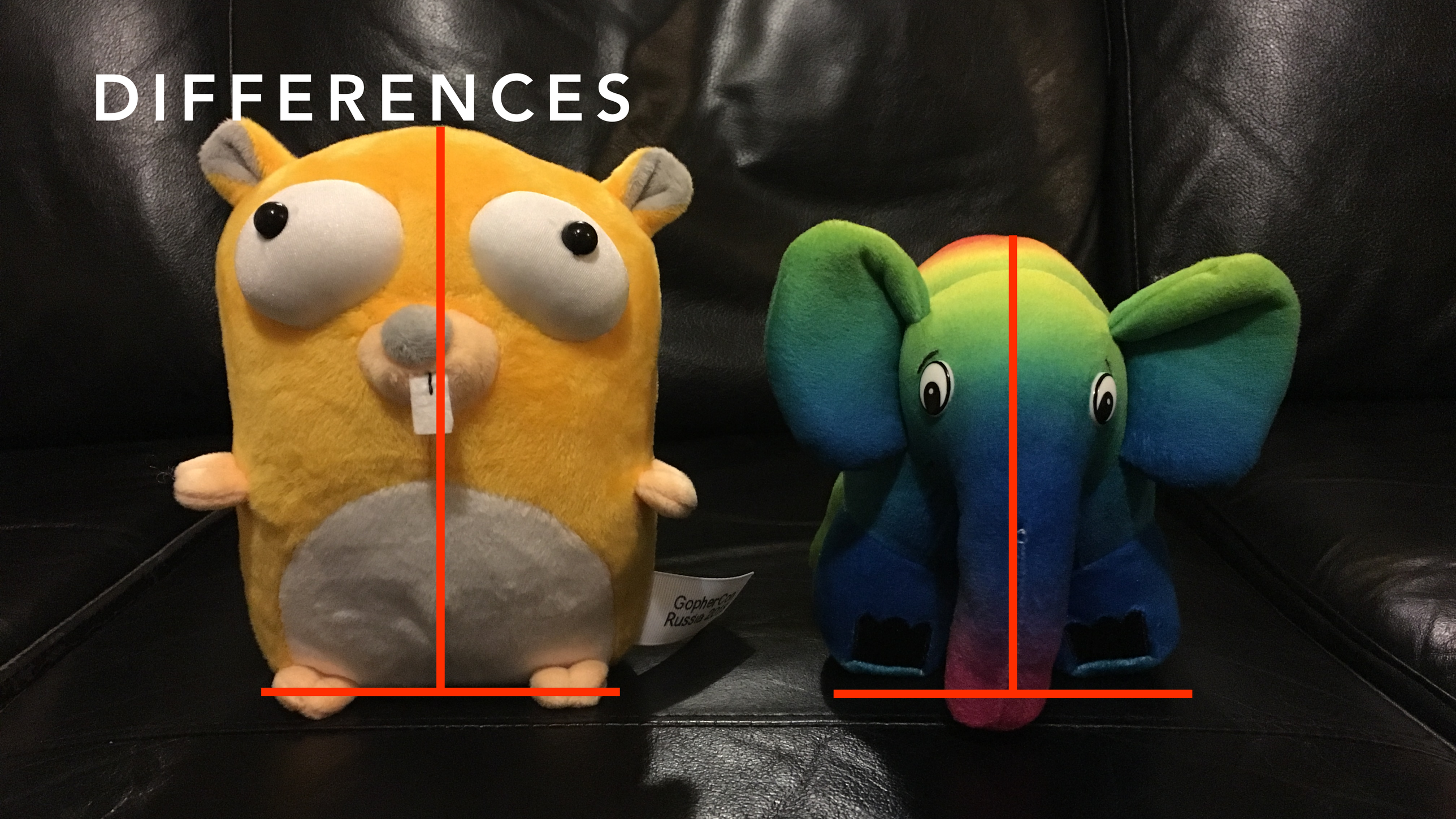
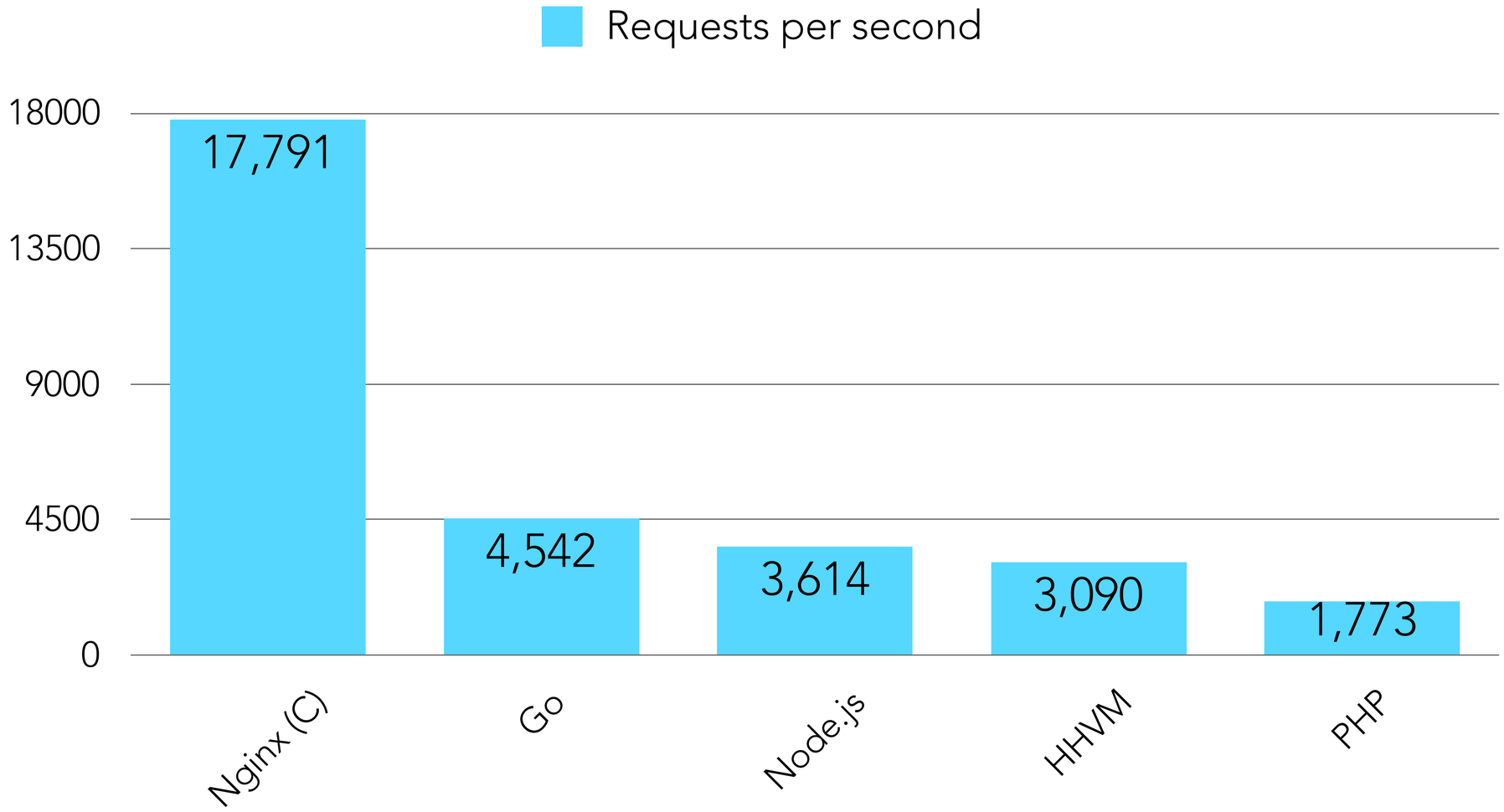


INTERPRETED VS COMPILED

IMAGE FROM COMPILERS - PRINCIPLES, TECHNIQUES AND TOOLS

BENCHMARKS



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

```go
package main

import (
    "fmt"
    "math/rand"
)

func main() {
    var greeting string = "Hello! Is it %s you're looking for?\n"

    words := [2]string{"me", "tea"}

    rand.Seed(42)

    for i := 0; i < 5; i++ {
        fmt.Printf(greeting, words[rand.Intn(len(words))])
    }
}
```

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    for i := 0; i < 5; i++ {
        fmt.Printf(greeting, words[rand.Intn(len(words))])
    }
}
```

```
$ go run lionel.go

Hello! Is it tea you're looking for?
Hello! Is it tea you're looking for?
Hello! Is it me you're looking for?
Hello! Is it me you're looking for?
Hello! Is it tea you're looking for?
```

```
$ go build lionel.go


$ ls

lionel    lionel.go

$ ./lionel

Hello! Is it tea you're looking for?
Hello! Is it tea you're looking for?
Hello! Is it me you're looking for?
Hello! Is it me you're looking for?
Hello! Is it tea you're looking for?
```

TOOLS

OUT OF THE BOX

- formatting
- linting
- testing
- documenting
- running
- profiling

IMAGE FROM LEGO.COM

GOPATH

```
$GOPATH src <vendor> <project-name>
```

e.g.

```
/Users/Kat/go-code src gitlab.com/katzien hello

/Users/Kat/go-code src github.com/golang go
```

MODULES

- Go 1.11+
- no $GOPATH
- projects (modules) can live anywhere on disk
- package management integrated directly into the Go toolchain
- requires semver
- converts from dep Gopkg.lock file or 9 other dependency formats

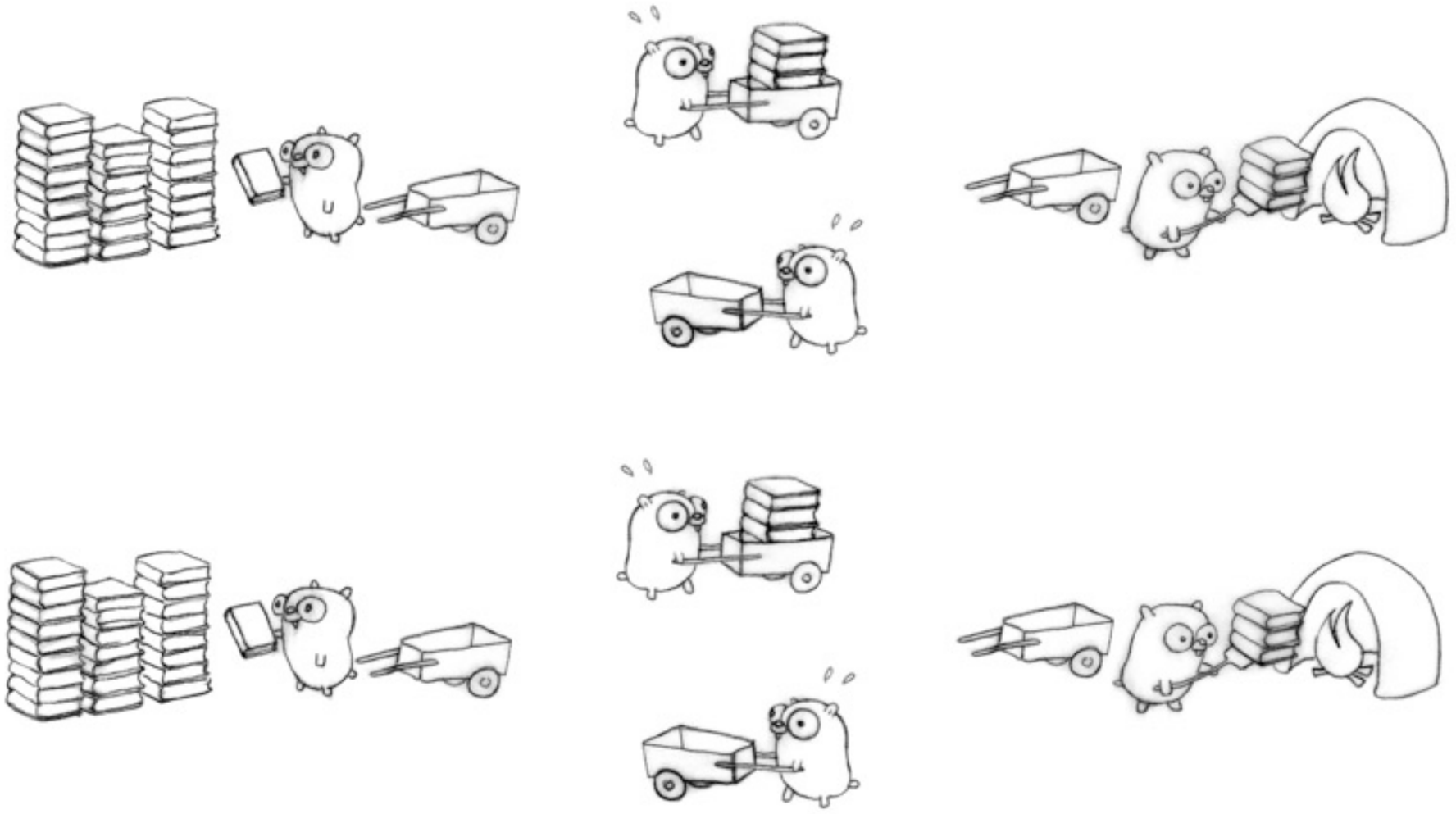
IMAGE FROM LEGO.COM

CONCURRENCY VS PARALLELISM

Concurrency: two threads are making progress

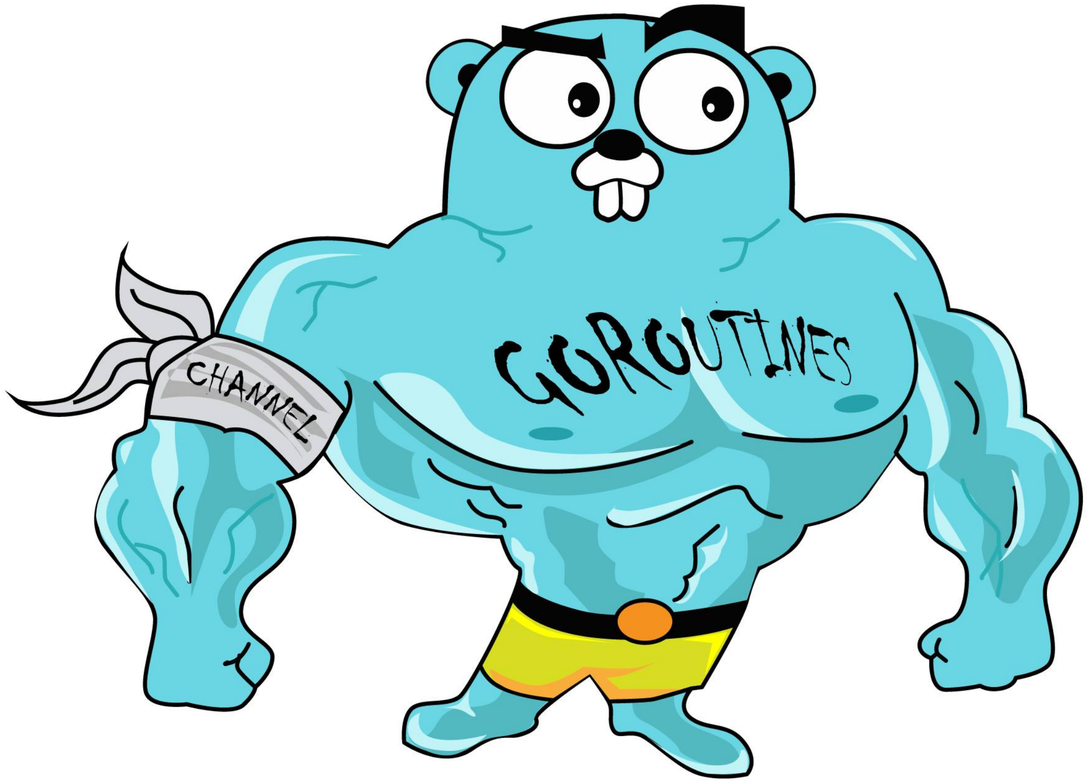
Parallelism: two threads are executing simultaneously

CONCURRENCY != PARALLELISM



SOURCE: HTTPS://TALKS.GOLANG.ORG/2012/WAZA.SLIDE#22

BUILT-IN CONCURRENCY



```
go myFunction()
```

```go
func say(word string) {
    for i := 0; i < 5; i++ {
        time.Sleep(10 * time.Millisecond)
        fmt.Println(word)
    }
}


func main() {
    go say("world")
    say("hello")
}
```

```
func say(word string) {
    for i := 0; i < 5; i++ {
        time.Sleep(10 * time.Millisecond)
        fmt.Println(word)
    }
}
```

```
func main() {
    go say("world")
    say("hello")
}
```

```
func say(word string) {
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        time.Sleep(10 * time.Millisecond)
        fmt.Println(word)
    }
}


func main() {
    go say("world")
    say("hello")
}
```

```
$ go run goroutines.go

world
hello
world
hello
hello
world
world
hello
world
hello
```

```
$ go run goroutines.go

world    world    hello    world
hello    hello    world    hello
world    hello    hello    world
hello    world    world    hello
hello    hello    world    world
world    world    hello    hello
world    hello    hello    hello
hello    world    world    world
world    world    hello    world
hello    hello    world    hello
```

```
$ go run goroutines.go

world    world    hello    world
hello    hello    world    hello
world    hello    hello    world
hello    world    world    hello
hello    hello    world    world
world    world    hello    hello
world    hello    hello    hello
hello    world    world    world
world    world    hello    world
hello    hello    world    hello
```

```
func main() {
    wg := sync.WaitGroup{}
    wg.Add(1)

    go func() {
        defer wg.Done()
        say("world")
    }()

    say(“hello")

    wg.Wait()
    fmt.Println("Done!")
}
```

```
func main() {
    wg := sync.WaitGroup{}
    wg.Add(1)

    go func() {
        defer wg.Done()
        say("world")
    }()

    say(“hello")

    wg.Wait()
    fmt.Println("Done!")
}
```

```
func main() {
    wg := sync.WaitGroup{}
    wg.Add(1)

    go func() {
        defer wg.Done()
        say("world")
    }()

    say(“hello")

    wg.Wait()
    fmt.Println("Done!")
}
```

CHANNELS

IMAGE FROM HTTP://I1.PICDN.NET/SHUTTERSTOCK/VIDEOS/6217781/THUMB/12.JPG

```go
var messenger chan string
messenger = make(chan string)


// Send value to channel
messenger <- "Ohai!"


// Receive from channel and assign to variable
message := <-messenger
```

```
jobs := make(chan Task)
```

```
for n := limit; n > 0; n-- {
    go func() {
        for task := range jobs {
            do(task)
        }
    }()
}
```

```
for _, task := range workSlice {
    jobs <- task
}
```

WE CAN SPEED THINGS UP

IMAGE FROM HTTP://ENGLISH.SINA.COM/SPORTS/P/2011/0519/374212.HTML

NEITHER IS BETTER OR WORSE: THEY'RE JUST DIFFERENT

IMAGE FROM HTTP://COGDOGBLOG.COM/2014/11/US-N-MACHINES

ALTHOUGH...

swoole

JIT in PHP 8?

PHP

- quick to get things done
- mature frameworks and libraries
- community and support
- PHP 7+ is modern and fast
- types 🎉

GO

- strong types
- keeping things simple
- error checking policy
- multiple return values
- concurrency
- built-in tools
- easy to run
- wide range of applications
- speed 💨

COMMUNITY

IMAGE FROM @JMIKOLA

PHP

- inconsistency
- type juggling
- no dead code checking
- bit verbose?

GO

- less mature ecosystem
- dependency management
- “Ugh, do I really have to write it from scratch?”

FROM PHP TO GO AND BACK:

DID ANYTHING CHANGE?

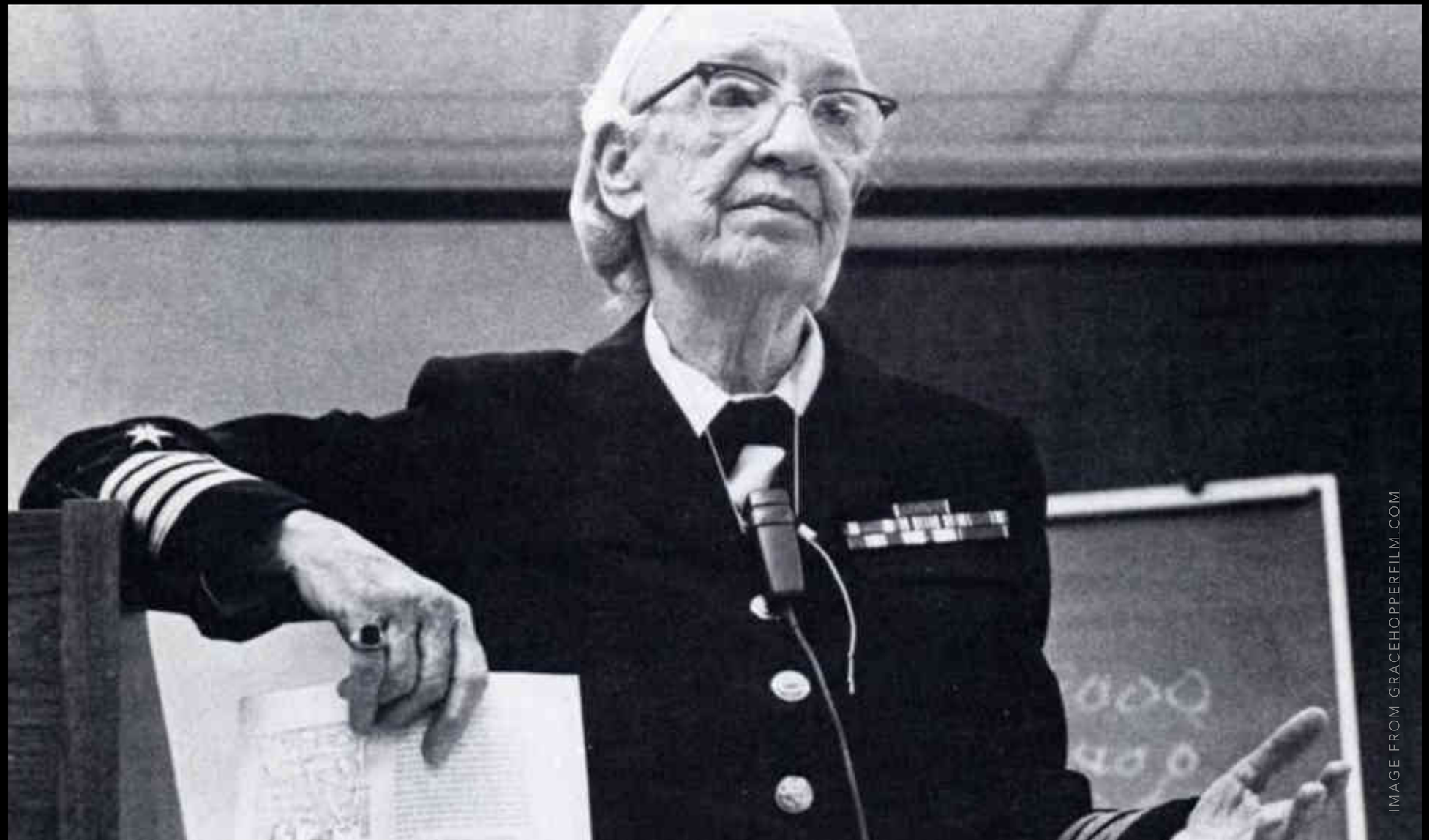


IMAGE FROM GRACEHOPPERFILM.COM

STRICT TYPES

```php
declare(strict_types=1);
```

SHORTER, SENSIBLE NAMES

```
namespace Controllers;

class HomePage~~Controller~~ { ... }
```

Noise

```
public static <I, O> ListenableFuture<O> chain
(ListenableFuture<I> input, Function<? super I, ?
extends ListenableFuture<? extends O>> function)
```

dear god make it stop

- a recently observed chat status

OSCON 2010: Rob Pike, "Public Static Void"

OBJECT CALISTHENICS

HANDLE ERRORS FIRST

```php
if (!empty($name)) {

    if ( is_string($name)) {
        return false;
    }

    return true;

} else {

    return false;
}
```

```php
if (empty($name)) {
    return false;
}

if (!is_string($name)) {
    return false;
}

return true;
```

INTERFACES

Go's implicit interfaces:

has a, rather than *is a*

If a struct **has** methods A, B, C, then it implements interface X.

If an object **is** of type X, then it has methods A, B, C.

INTERFACES

GO

```
type Shape interface {
    Area() float64
}
```

INTERFACES

GO

```
type Shape interface {
    Area() float64
}
type Circle struct {
    radius float64
}

func (c Circle) Area() float64 {
    return math.Pi * c.radius * c.radius
}
```

INTERFACES

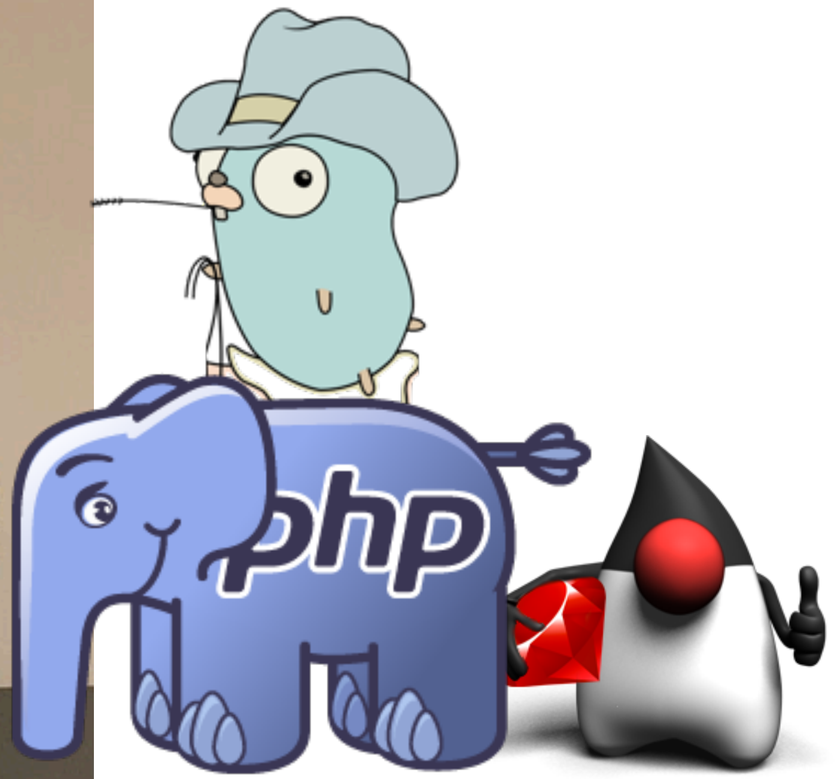
GO

```go
type Shape interface {
    Area() float64
}
type Circle struct {
    radius float64
}

func (c Circle) Area() float64 {
    return math.Pi * c.radius * c.radius
}
```

PHP

```php
class Circle implements Shape { ... }
```


php

LINKS

https://golang.org/

https://play.golang.org/

https://tour.golang.org/

https://blog.golang.org/

https://gobyexample.com

TALKS

Concurrency is not parallelism

https://blog.golang.org/concurrency-is-not-parallelism

Simplicity is complicated

https://www.youtube.com/watch?v=rFejpH_tAHM

Building containers in Go

https://www.youtube.com/watch?v=HPuvDm8IC-4

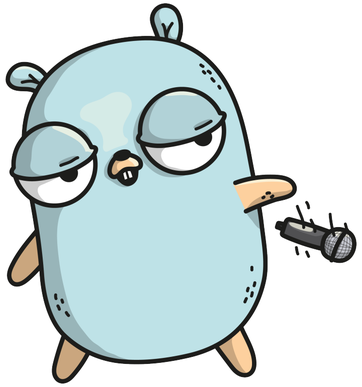
Debuggers From Scratch

https://www.youtube.com/watch?v=ZrpkrMKYvqQ

@kasiazien

THANK YOU!

https://joind.in/talk/4b310



DUTCH PHP conference

@kasiazien

GOPHER IMAGE BY SVITLANA AGUDOVA

ITALIAN ICECREAM