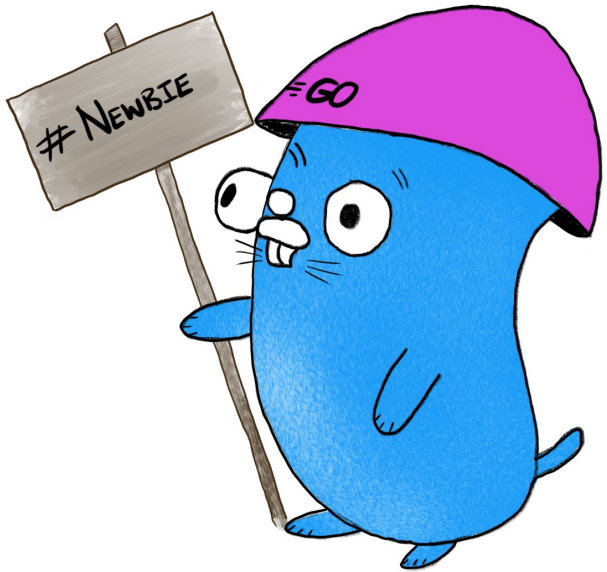
# Beyond the Tour

a disconnected journey




bill@billglover.co.uk

# So you've completed the tour

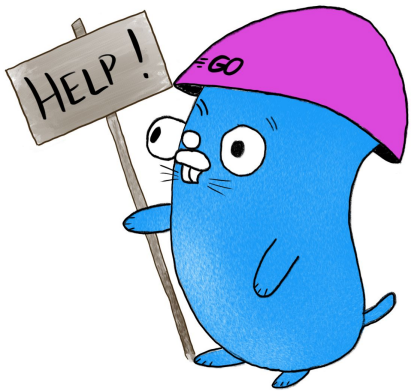
You have grasped the syntax and are aware of headline language features.

You have no immediate work problem or, if you do, you want to know why Go might be an appropriate choice.

You "know" Go, but you don't feel particularly confident with it.

You want to know where to turn next.

# Where next?




bill@billglover.co.uk

# So you've completed the tour

**gopher** APP 5:27 PM

Here are some resources you should check out if you are learning / new to Go:

> First you should take the language tour: https://tour.golang.org/
>
> Then, you should visit:
> - https://golang.org/doc/code.html to learn how to organize your Go workspace
> - https://golang.org/doc/effective_go.html be more effective at writing Go
> - https://golang.org/ref/spec learn more about the language itself
> - https://golang.org/doc/#articles a lot more reading material
>
> There are some awesome websites as well:
> Show more

# So you've completed the tour

**gopher** APP 5:27 PM

Here are some resources you should check out if you are learning / new to Go:

> First you should take the language tour: https://tour.golang.org/
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> - https://golang.org/doc/code.html to learn how to organize your Go workspace
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> - https://golang.org/ref/spec learn more about the language itself
> - https://golang.org/doc/#articles a lot more reading material
>
> There are some awesome websites as well:
> - https://blog.gopheracademy.com great resources for Gophers in general
> - http://gotime.fm awesome weekly podcast of Go awesomeness
> - https://gobyexample.com examples of how to do things in Go
> - http://go-database-sql.org how to use SQL databases in Go
> - https://dmitri.shuralyov.com/idiomatic-go tips on how to write more idiomatic Go code
> - https://divan.github.io/posts/avoid_gotchas will help you avoid gotchas in Go
> - https://golangbot.com tutorials to help you get started in Go
>
> There's also an exhaustive list of videos http://gophervids.appspot.com related to Go from various authors.
>
> If you prefer books, you can try these:
> - http://www.golangbootcamp.com/book
> - http://gopl.io/

# Bill Glover Technology/Systems Architect

Things I've enjoyed doing:

- Online retail - Black Friday scalability
- Digital banking - exposing the mainframe
- Sounding Board - because a career in tech is confusing

Focus areas:

- Cloud Native - architecture, operations, failures
- Systems Architecture - more than just code
- Go - because I've come this far

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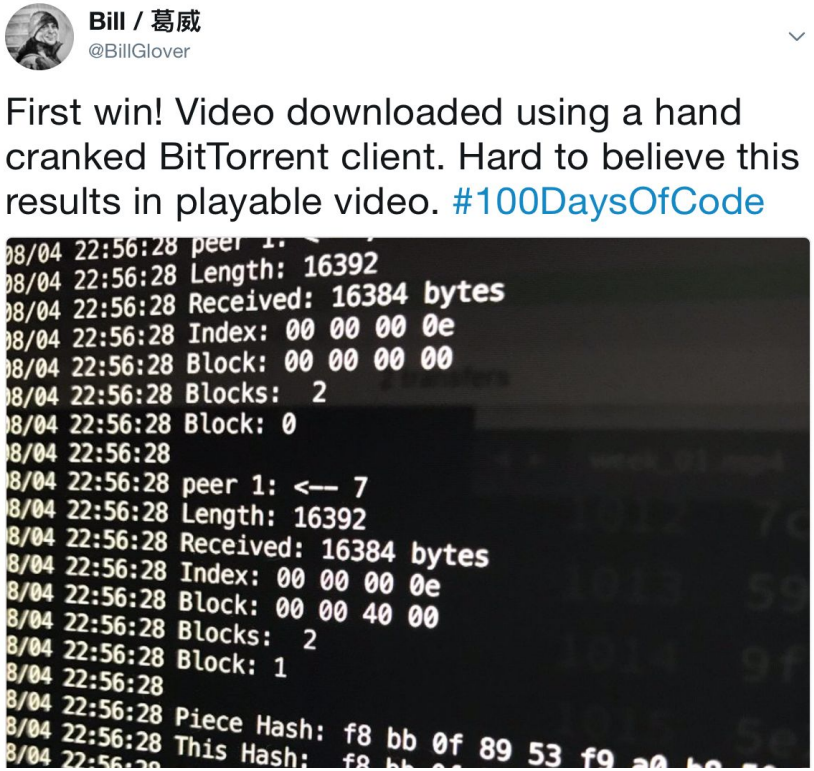
# Why am I here?

This is a wonder of mine: from all the things you can do you chose to make a bot for this shitty app.

From a thread in #personal-projects | Today at 11:36 AM

# The journey begins...

# Time for a project...


Bill / 葛威
@BillGlover
First win! Video downloaded using a hand cranked BitTorrent client. Hard to believe this results in playable video. #100DaysOfCode
08/04 22:56:28 Length: 16392
08/04 22:56:28 Received: 16384 bytes
08/04 22:56:28 Index: 00 00 00 0e
08/04 22:56:28 Block: 00 00 00 00
08/04 22:56:28 Blocks: 2
08/04 22:56:28 Block: 0
08/04 22:56:28
08/04 22:56:28 peer 1: <-- 7
08/04 22:56:28 Length: 16392
08/04 22:56:28 Received: 16384 bytes
08/04 22:56:28 Index: 00 00 00 0e
08/04 22:56:28 Block: 00 00 40 00
08/04 22:56:28 Blocks: 2
08/04 22:56:28 Block: 1
08/04 22:56:28
08/04 22:56:28 Piece Hash: f8 bb 0f 89 53 f9
08/04 22:56:28 This Hash:

# Use all the things

bufio

bytes

context

crypto/sha1

encoding/binary

flag

fmt

io

io/ioutil

log

net

net/http

os

os/signal

runtime

sync

syscall

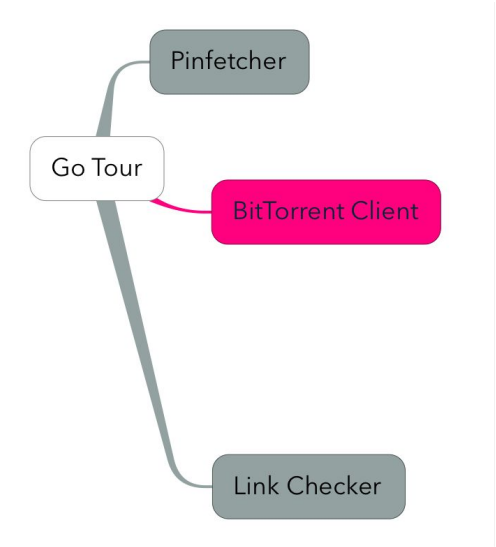
time

# Ouch!

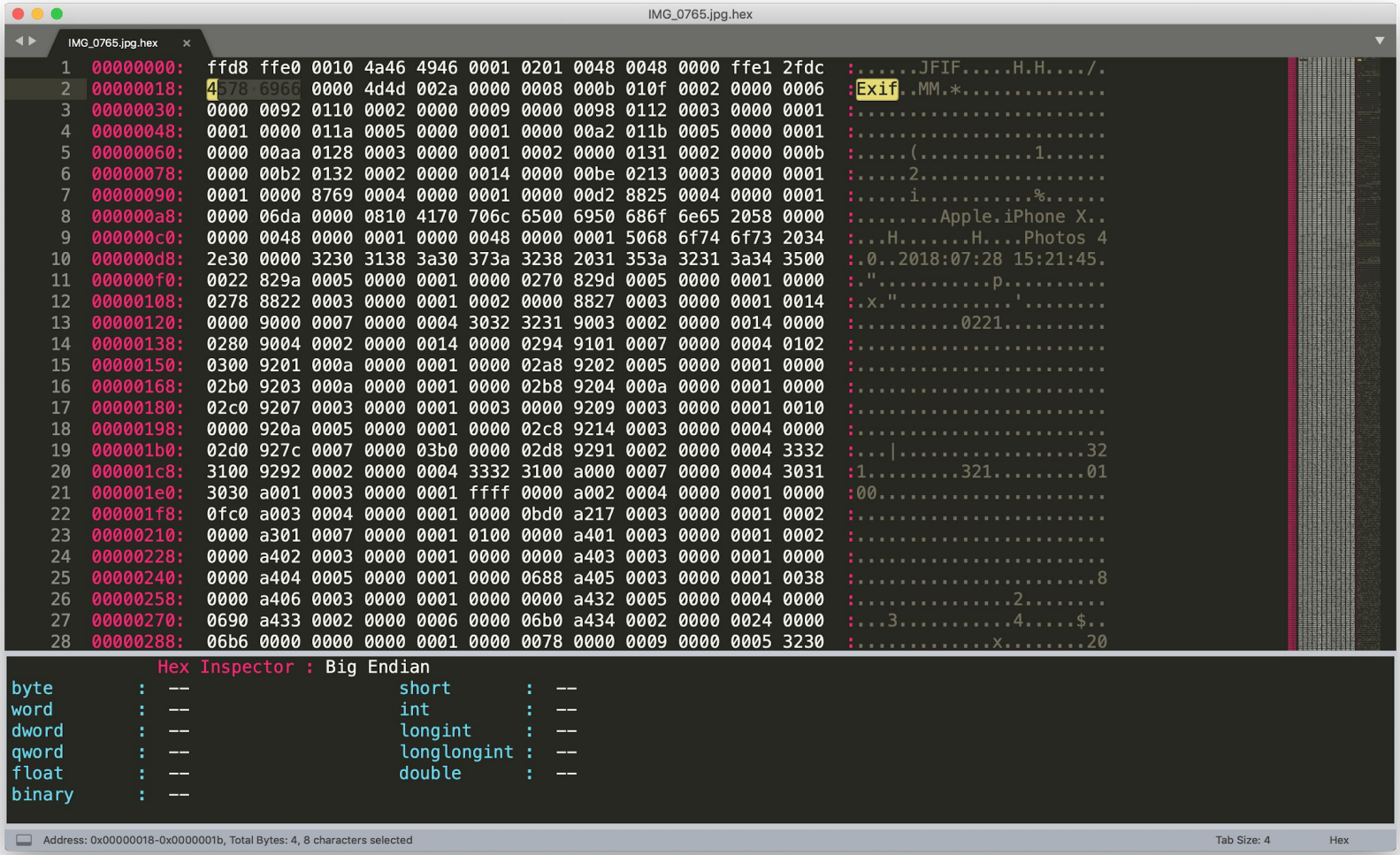
```
select {
case piece, more = <-pieceRequest:
default:
    runtime.Gosched()
    break
}
```

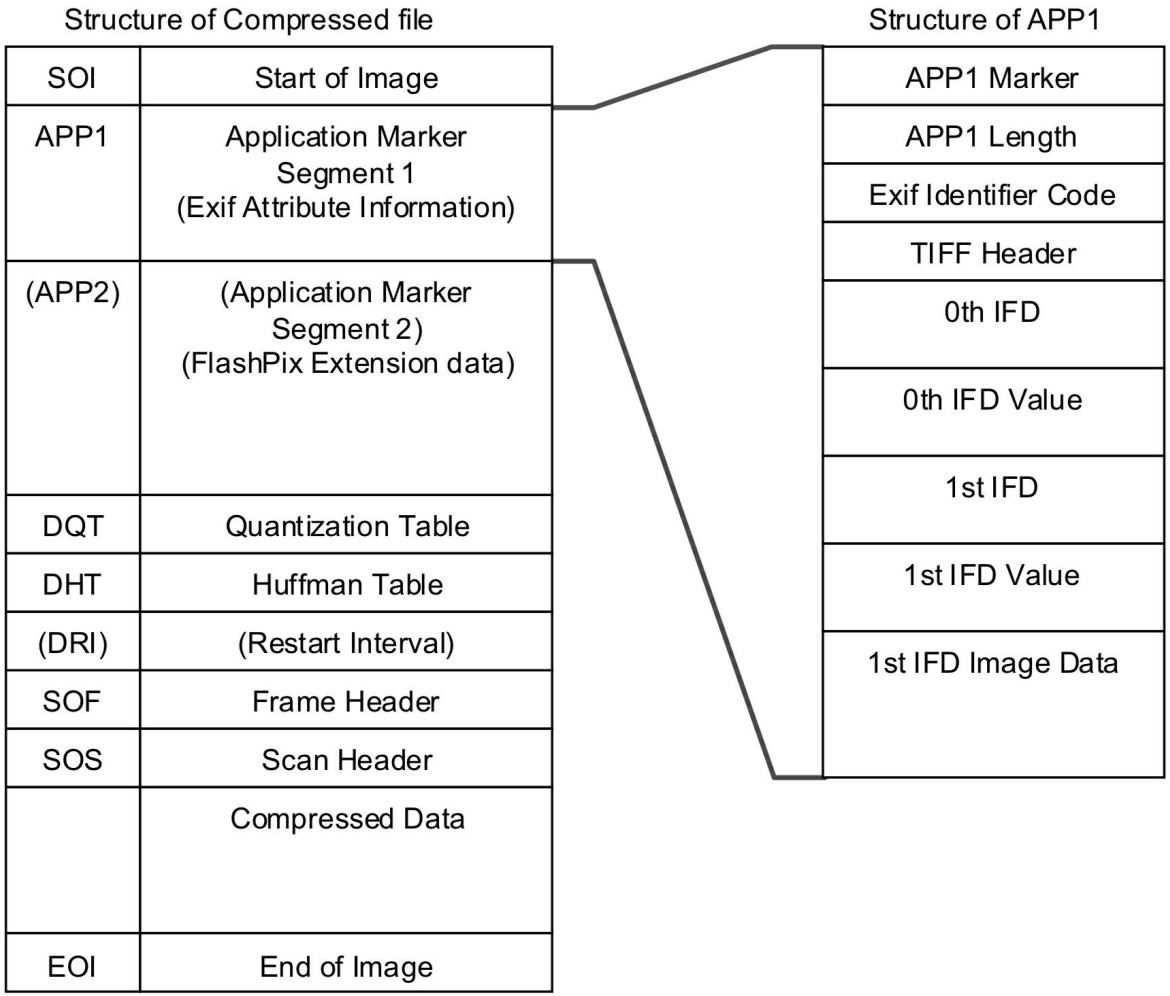
Less is more… you don’t need to use all features in all programs!

# The journey continues...



# Time to focus...


IMG_0765.jpg.hex
IMG_0765.jpg.hex
1 00000000: ffd8 ffe0 0010 4a46 4946 0001 0201 0048 0048 0000 ffe1 2fdc :......JFIF.....H.H..../.
2 00000018: 4578 6966 0000 4d4d 002a 0000 0008 000b 010f 0002 0000 0006 :Exif..MM.*.....
3 00000030: 0000 0092 0110 0002 0000 0009 0000 0098 0112 0003 0000 0001 :.....
4 00000048: 0001 0000 011a 0005 0000 0001 0000 00a2 011b 0005 0000 0001 :.....
5 00000060: 0000 00aa 0128 0003 0000 0001 0002 0000 0131 0002 0000 000b :.....(.....1.....
6 00000078: 0000 00b2 0132 0002 0000 0014 0000 00be 0213 0003 0000 0001 :.....2.....
7 00000090: 0001 0000 8769 0004 0000 0001 0000 00d2 8825 0004 0000 0001 :.....i.....%.....
8 000000a8: 0000 06da 0000 0810 4170 706c 6500 6950 686f 6e65 2058 0000 :.....Apple.iPhone X..
9 000000c0: 0000 0048 0000 0001 0000 0048 0000 0001 5068 6f74 6f73 2034 :...H.....H....Photos 4
10 000000d8: 2e30 0000 3230 3138 3a30 373a 3238 2031 353a 3231 3a34 3500 :.0..2018:07:28 15:21:45.
11 000000f0: 0022 829a 0005 0000 0001 0000 0270 829d 0005 0000 0001 0000 :."..........p.....
12 00000108: 0278 8822 0003 0000 0001 0002 0000 8827 0003 0000 0001 0014 :.x."..........'.....
13 00000120: 0000 9000 0007 0000 0004 3032 3231 9003 0002 0000 0014 0000 :.....0221.....
14 00000138: 0280 9004 0002 0000 0014 0000 0294 9101 0007 0000 0004 0102 :.....
15 00000150: 0300 9201 000a 0000 0001 0000 02a8 9202 0005 0000 0001 0000 :.....
16 00000168: 02b0 9203 000a 0000 0001 0000 02b8 9204 000a 0000 0001 0000 :.....
17 00000180: 02c0 9207 0003 0000 0001 0003 0000 9209 0003 0000 0001 0010 :.....
18 00000198: 0000 920a 0005 0000 0001 0000 02c8 9214 0003 0000 0004 0000 :.....
19 000001b0: 02d0 927c 0007 0000 03b0 0000 02d8 9291 0002 0000 0004 3332 :...|.....32
20 000001c8: 3100 9292 0002 0000 0004 3332 3100 a000 0007 0000 0004 3031 :1.....321.....01
21 000001e0: 3030 a001 0003 0000 0001 ffff 0000 a002 0004 0000 0001 0000 :00.....
22 000001f8: 0fc0 a003 0004 0000 0001 0000 0bd0 a217 0003 0000 0001 0002 :.....
23 00000210: 0000 a301 0007 0000 0001 0100 0000 a401 0003 0000 0001 0002 :.....
24 00000228: 0000 a402 0003 0000 0001 0000 0000 a403 0003 0000 0001 0000 :.....
25 00000240: 0000 a404 0005 0000 0001 0000 0688 a405 0003 0000 0001 0038 :.....8
26 00000258: 0000 a406 0003 0000 0001 0000 0000 a432 0005 0000 0004 0000 :.....2.....
27 00000270: 0690 a433 0002 0000 0006 0000 06b0 a434 0002 0000 0024 0000 :...3.....4.....$..
28 00000288: 06b6 0000 0000 0000 0001 0000 0078 0000 0009 0000 0005 3230 :.....x.....20
Hex Inspector : Big Endian
byte : --
word : --
dword : --
qword : --
float : --
binary : --
short : --
int : --
longint : --
longlonginit : --
double : --
Address: 0x00000018-0x0000001b, Total Bytes: 4, 8 characters selected
Tab Size: 4
Hex

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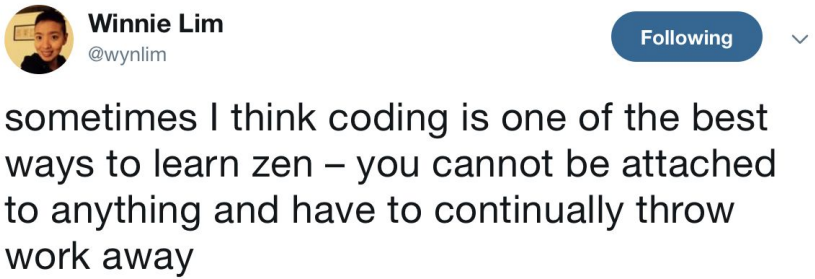
# Byte by byte...

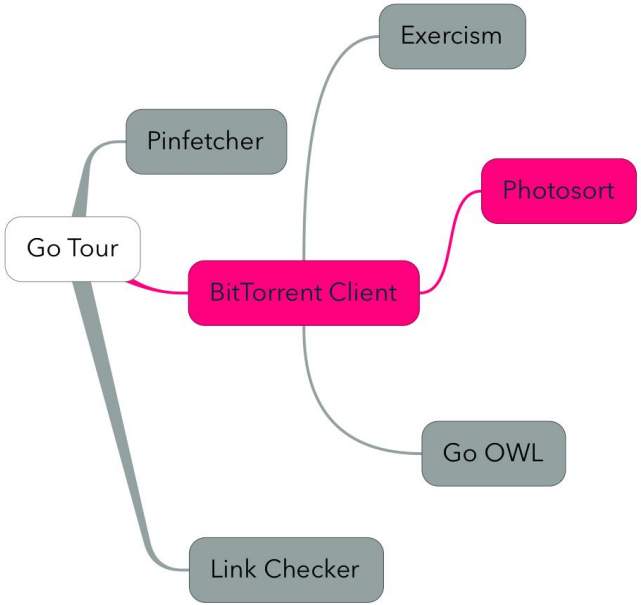
```
// look for the APP1 marker which signifies the start of the EXIF data area
b := make([]byte, 2)
for string(b) != App1Header {
    _, err := r.Read(b)
    if err != nil {
        return m, fmt.Errorf("unable to locate the APP1 header: %s", err)
    }
}

// the next four bytes indicate the size of the APP1 data area
size := make([]byte, 2)
_, err = r.Read(size)
if err != nil {
    return m, fmt.Errorf("unable to determine size of APP1: %s", err)
}
```

# But what about camera DX456, Mk IId?

# Code is disposable…



# The journey continues...



# Time for something different...

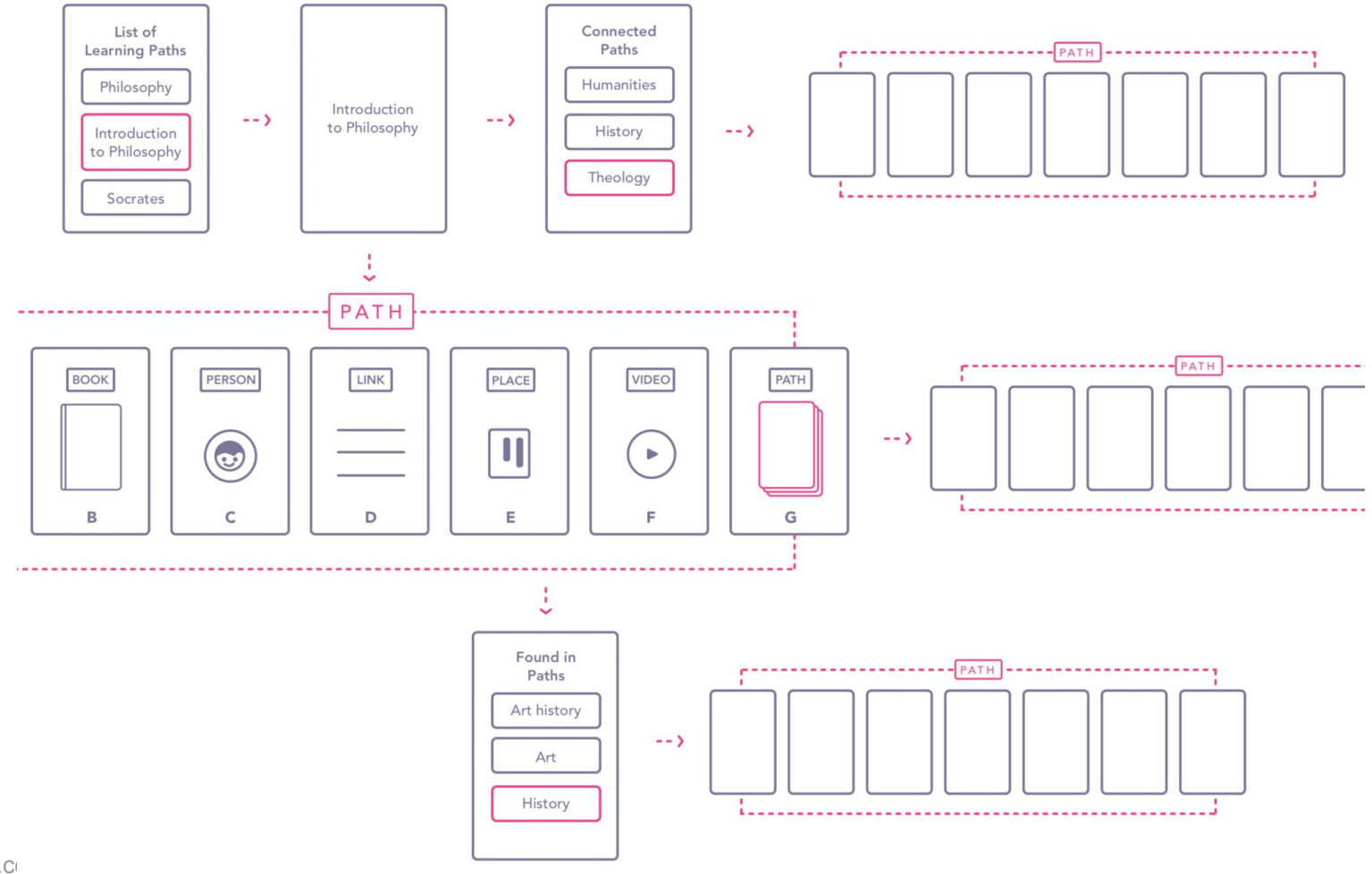
# Designing a self-directed learning network v0.3

## enabling infinite rabbit holes of learning: documenting the process and lessons

Winnie Lim Follow
Oct 6, 2017 · 11 min read

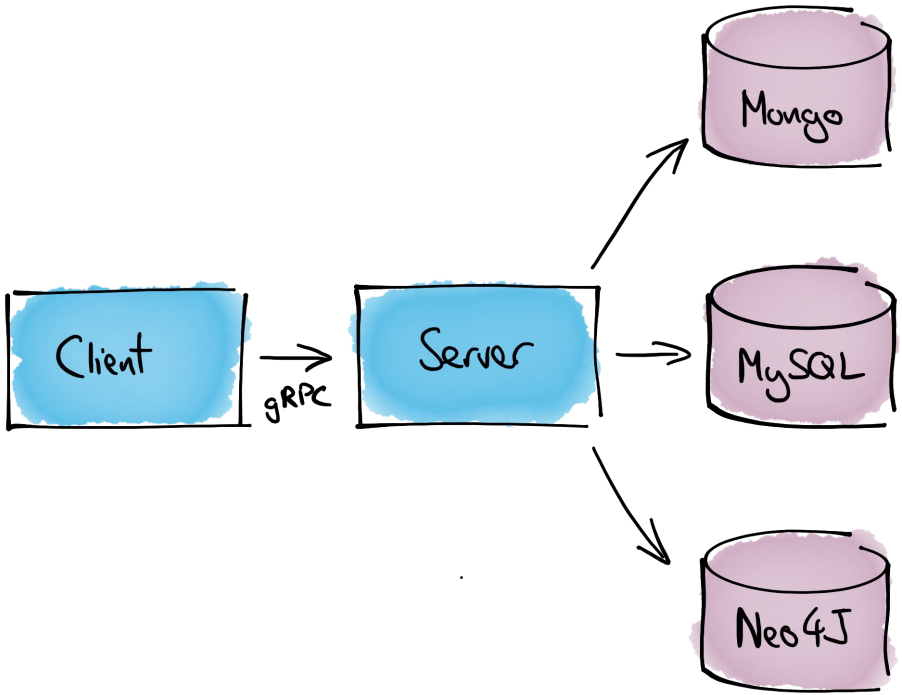
I published v0.2 a year after v0.1 (read this if you need context to this post), and now I am publishing v0.3 six months after, so I'm hoping there's some form of Moore's law occurring here. The delay isn't so much the lack of motivation, but the lack of stable health. When I started this experimental journey, I envisioned a lot of time working on these projects, but in truth more time has gone to recovery and coping. But knowing similar stories is helping me to cope:

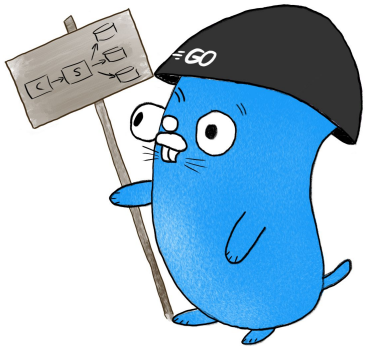
> *"Darwin had spent most of the past three decades—during which time he'd struggled heroically to write On the Origin of Species housebound by general invalidism. Based on his diaries and letters, it's fair to say he spent a full third of his daytime hours since the age of twenty-eight either vomiting or lying in bed."*
> —*source*




bill@billglover.c

# Client, Server, DB

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# One project… three implementations

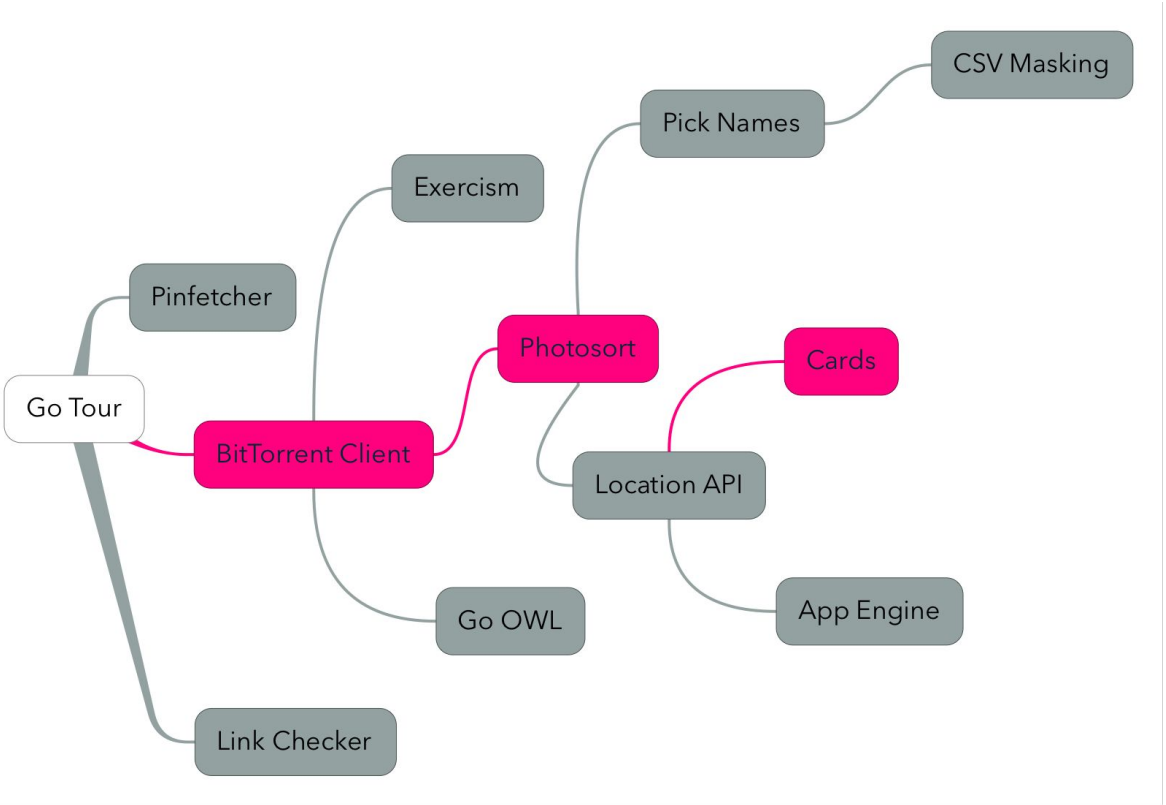
```
import (
    //...
    mysql "github.com/billglover/cards/cards-mysql"
    //neo "github.com/billglover/cards/cards-neo"
    //mgo "github.com/billglover/cards/cards-mgo"
    cs "github.com/billglover/cards/cards-service"

    "google.golang.org/grpc"
)

// csServer represents a cards service server. It holds references to the
// databases used to store cards and decks.
// TODO: use an interface here?
type csServer struct {
    db *mysql.DB
}
```

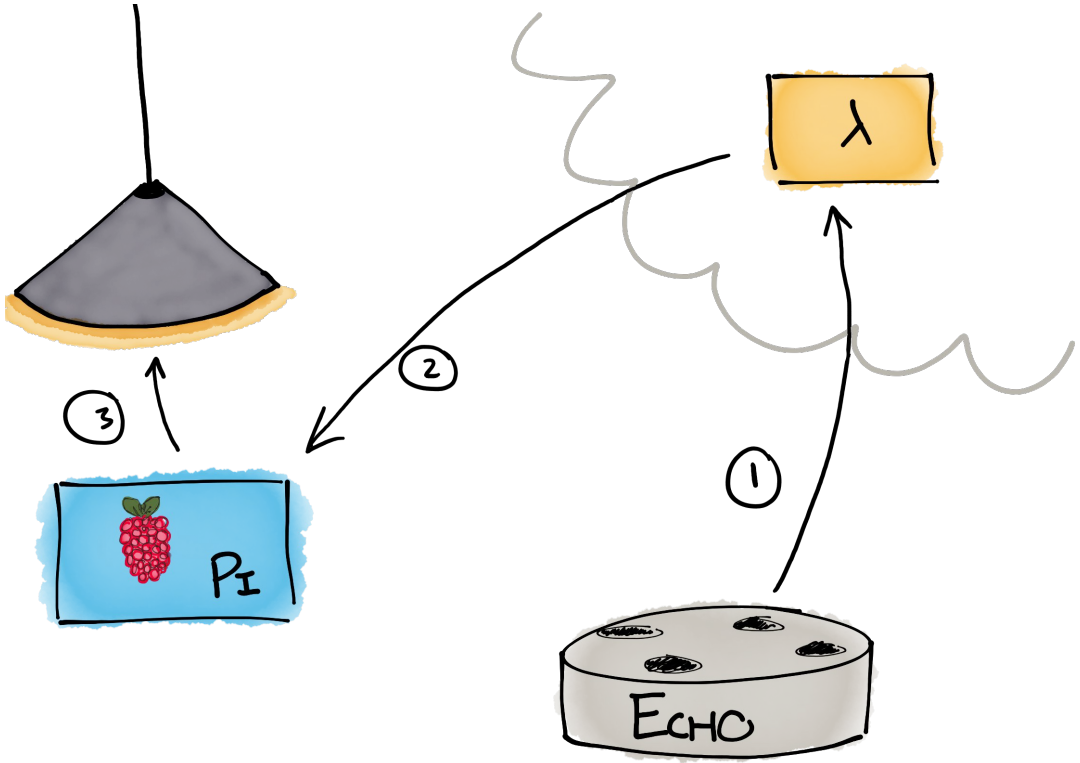
Repetition is not a crime… repeat yourself and repeat yourself often!

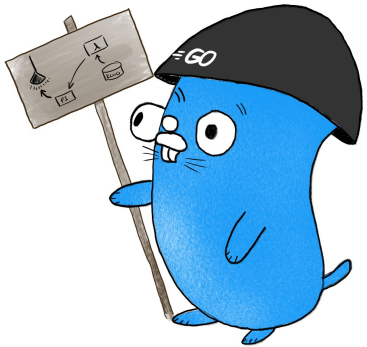
# The journey continues...



# Time for a distraction...

# Home automation

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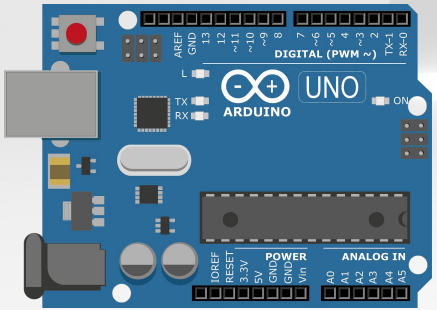



23:46
◀ Search
4G

Back | Peripheral | Clone

# Stringlight 000002

UUID: 255056D7-F75E-4AFC-A4F5-F2897FDE54BF

Connected

## ADVERTISEMENT DATA — Hide

Yes
Device Is Connectable

Stringlight 000002
Local Name

0DCECF0C-AD06-11E3-81E4-425861B86AB6
Service UUIDs

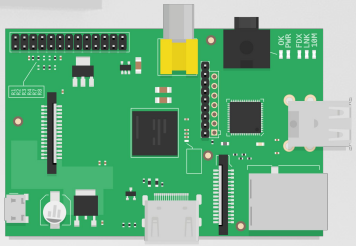
## UUID: 0DCECF0C-AD06-11E3-81E4-425861B86AB6

Dimmer Control
Properties: Read Write Indicate
UUID: 335C1504-AD06-11E3-81E4-425861B86AB6

Dimmer Level Memory
Properties: Read Write Indicate
UUID: 1B74EA4E-B010-11E3-88FE-425861B86AB6

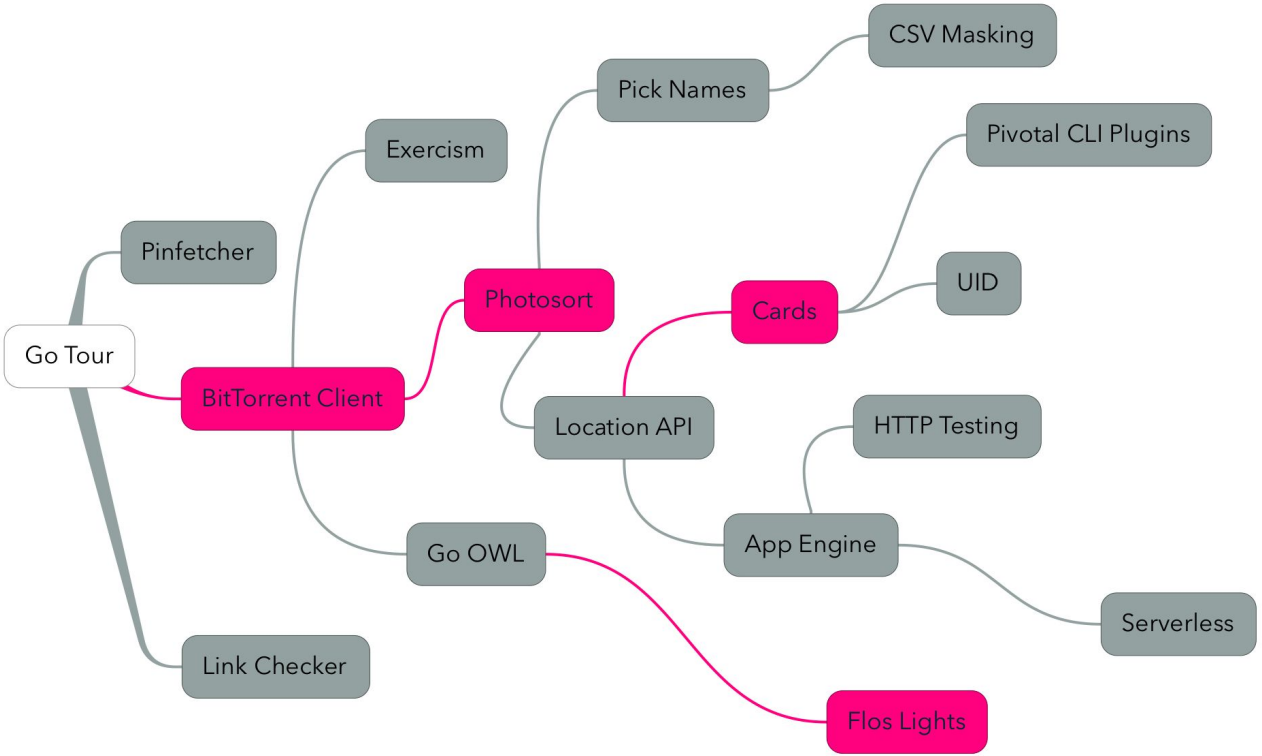
Dimmer CustomName
Properties: Read Write Indicate
UUID: 5BE8EF0A-B3D3-11E3-8ED5-425861B86AB6

Info | Log



Go isn’t always the right tool for the job…
but don’t let that stop you!

# The journey continues...

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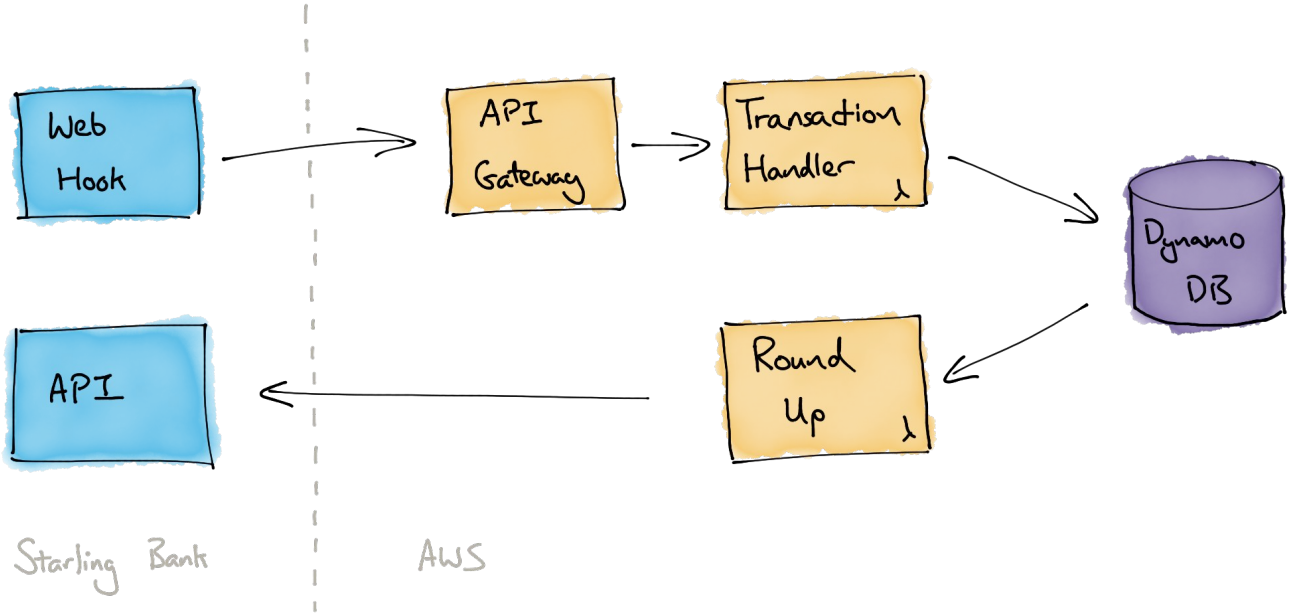
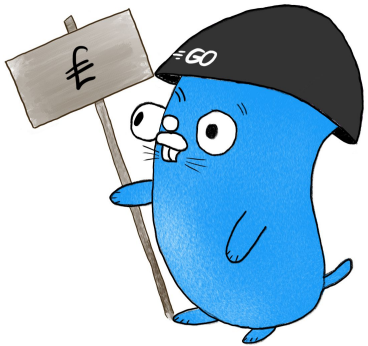
# Time something useful...

# Digital Coin Jar

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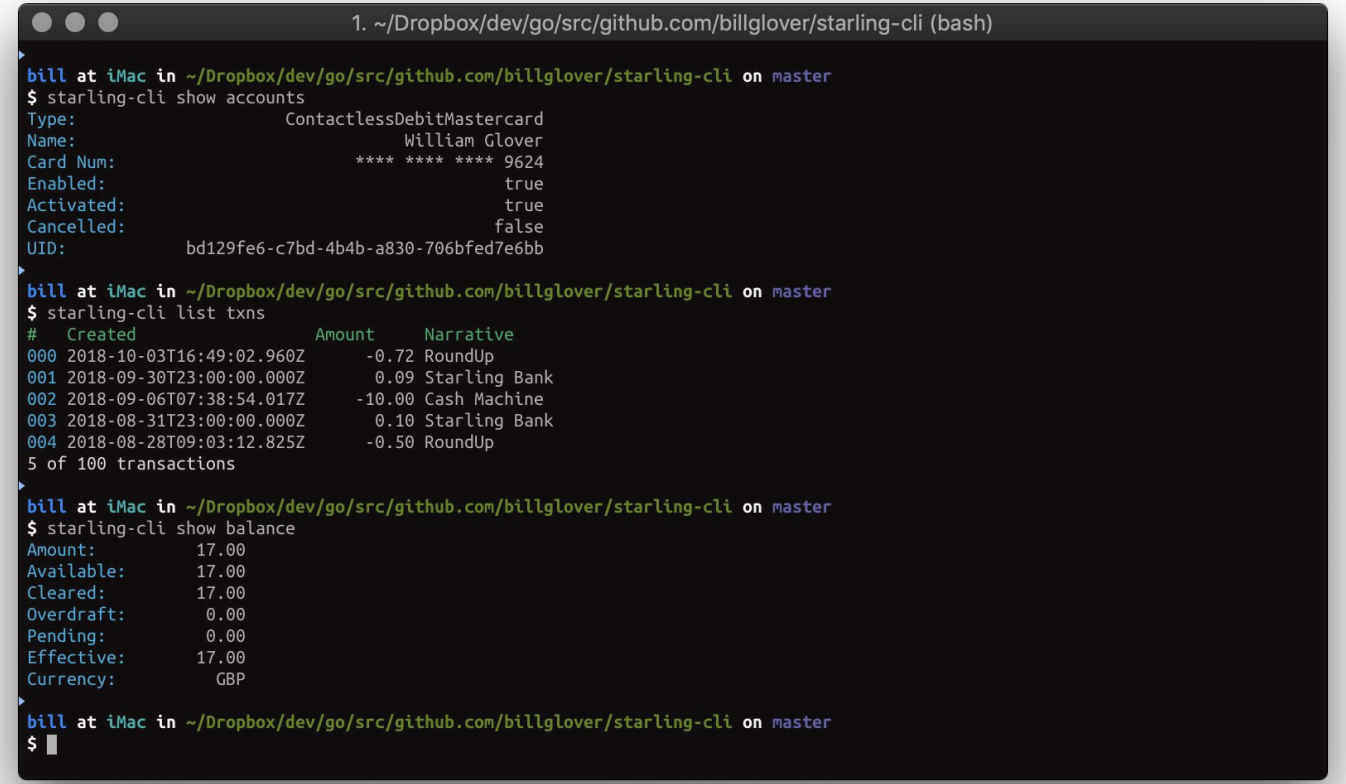
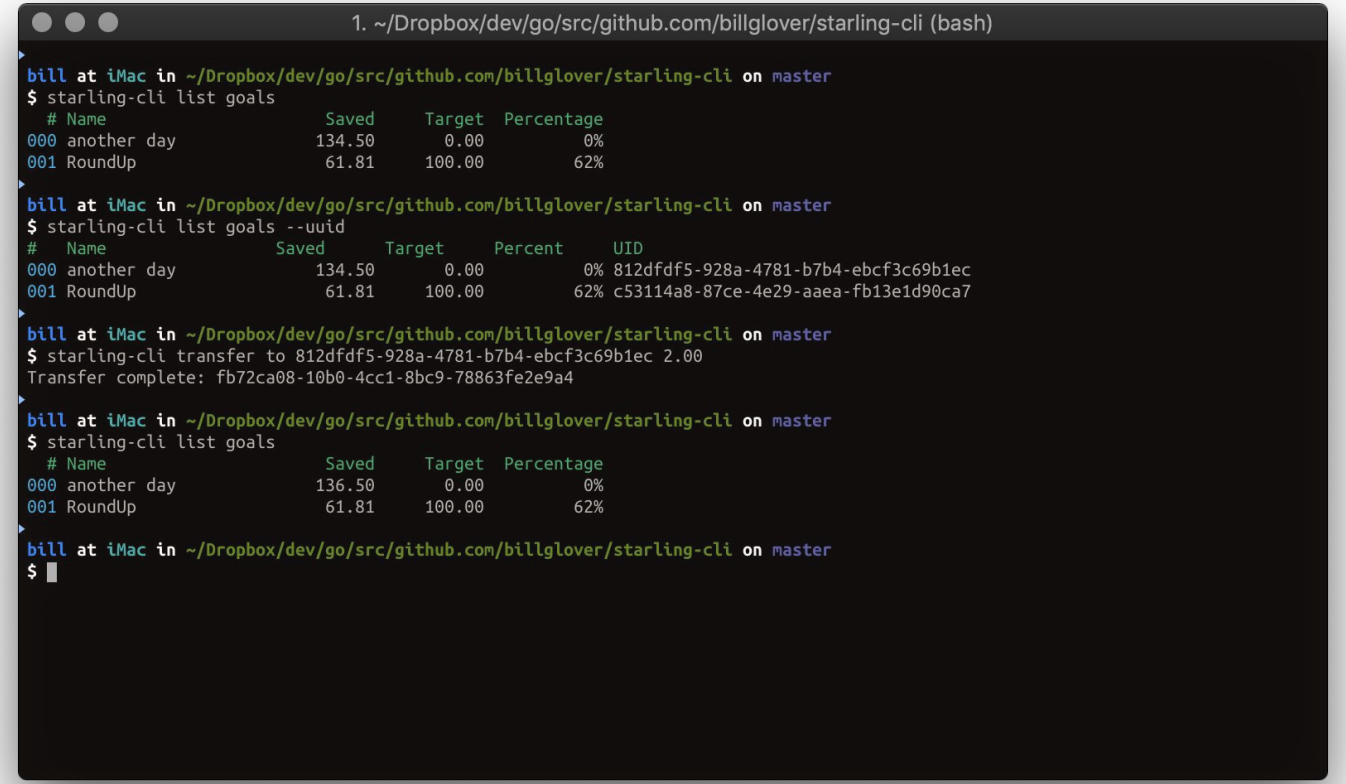
# Banking on the command line

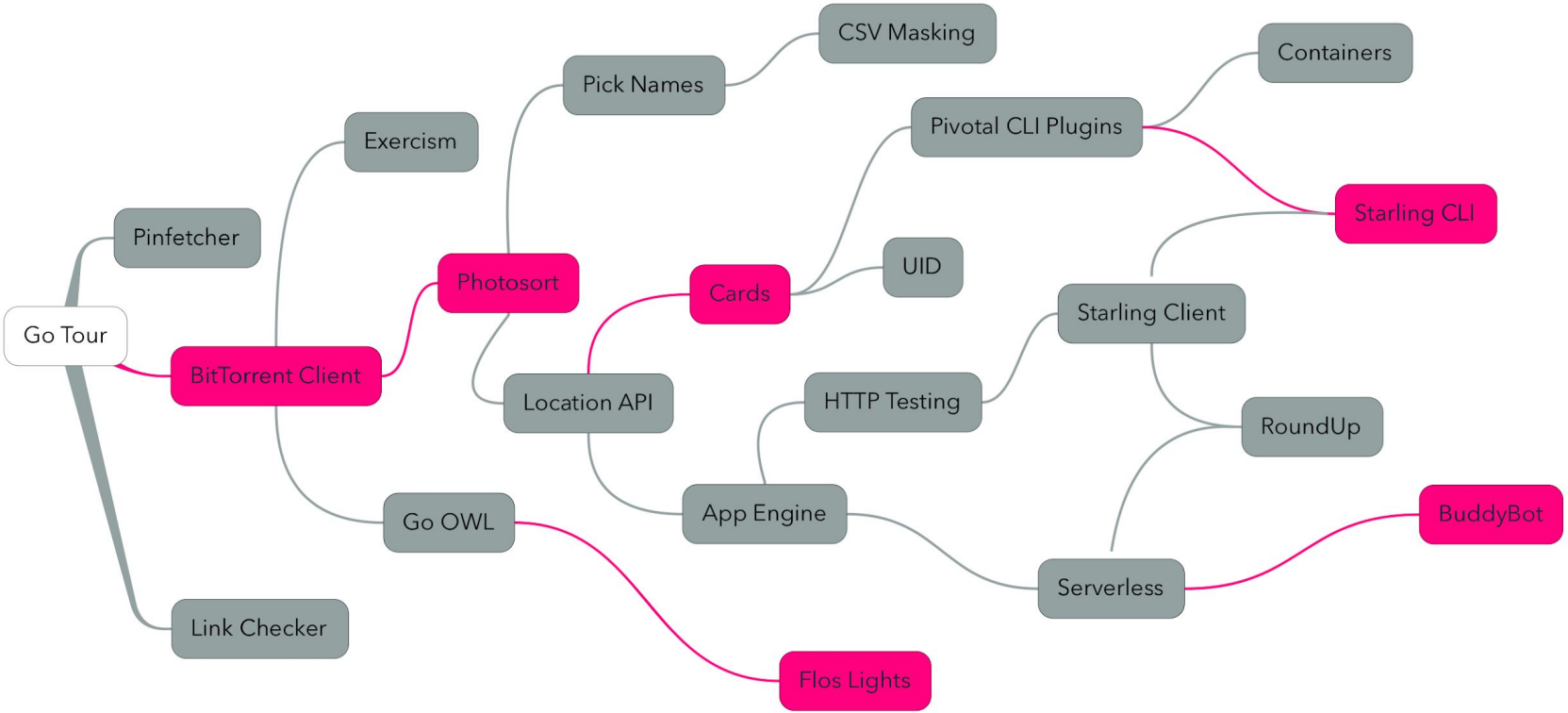


# Banking on the command line



Build things that you (or others) will use, even if only briefly!

# Things come together...

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# A journey beyond the tour

Five things I learned:

- Less is more… you don’t need to use all features in all programs!
- Code is disposable… not everything you write will make it to production!
- Repetition is not a crime… repeat yourself and repeat yourself often!
- Go isn’t always the right tool for the job… but don’t let that stop you!
- Build things that you (or others) will use - even briefly!

And one ask:

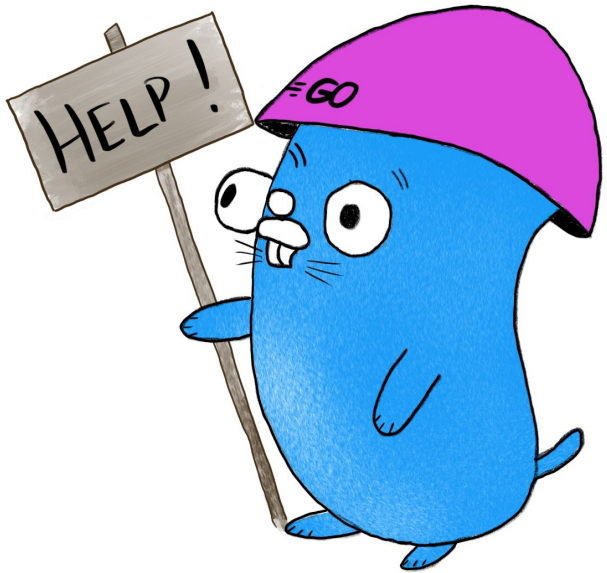
- Next time someone asks how they should learn Go, don’t just send them a link to the tour, help them plan a journey.

# THE IMPORTANCE OF BEGINNERS

Natalie Pistunovich
@NataliePis

# Beyond the Tour

a ~~dis~~connected journey

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