DevOps is a Foreign Language

(or why there are no Junior SREs)

Josh Lee, Open Source Developer Advocate @
Altinity

> "Learning Kubernetes doesn't take 3 days, or 3 months. It takes 3 years"

— Kelsey Hightower, 2017

About Me

- 3/4ths of a degree in Second Language Acquisition
- 15+ years in tech, with many hats
- Developer Advocate at Altinity
- ClickHouse® and Observability Expert

What are we going to talk about?

- Linguistics 101 in 5 minutes
- What is Second Language Acquisition?
- Krashen's Five Hypothesis
- What can we do?

How many words do eskimos have for snow?

The cow is in the red big barn.*

It's raining cats and dogs…

What is a language?

A language is a structured system of communication that combines syntax, grammar, and vocabulary with the cultural, historical, and social contexts in which it is used. It is not merely a set of rules or symbols but a living, evolving tool that shapes and is shaped by the people who use it. **Language encodes cultural knowledge, values, and worldview, serving as a medium for expressing identity, fostering community, and transmitting traditions across generations.**

Human Brains

Amazing at learning languages...

... until puberty

Native Languages

All children have the capacity for natural language, and will learn one simply from exposure.

Disclaimer #1

All natural languages are equally expressive.

Mocking or disparaging natural languages is unacceptable.

Disclaimer #2

Constructed languages (like Java or Esperanto) — are not natural languages.

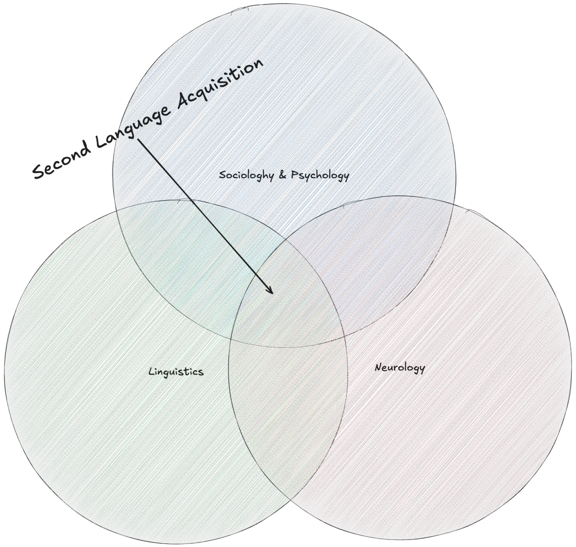
Written languages are not natural languages.

What is Second Language Acquisition?

What is Second Language Acquisition?

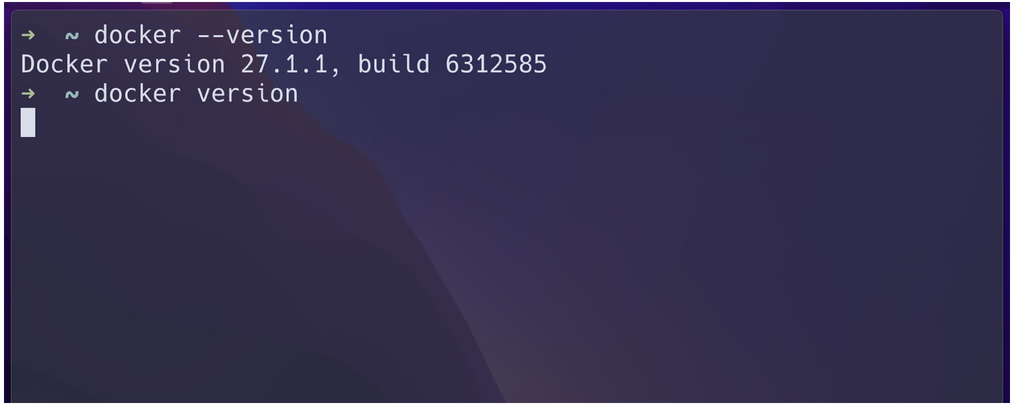
The study of the process by which adults learn new languages after puberty

What is Second Language Acquisition?



How is this relevant to the SDLC?

What command do I use to see which version of docker is installed?



```
➜  ~ docker --version
Docker version 27.1.1, build 6312585
➜  ~ docker version
█
```

How do we know this?

Also, does a bootcamp grad know how to Ctrl-C?

Implicit vs Explicit Knowledge

How we learn

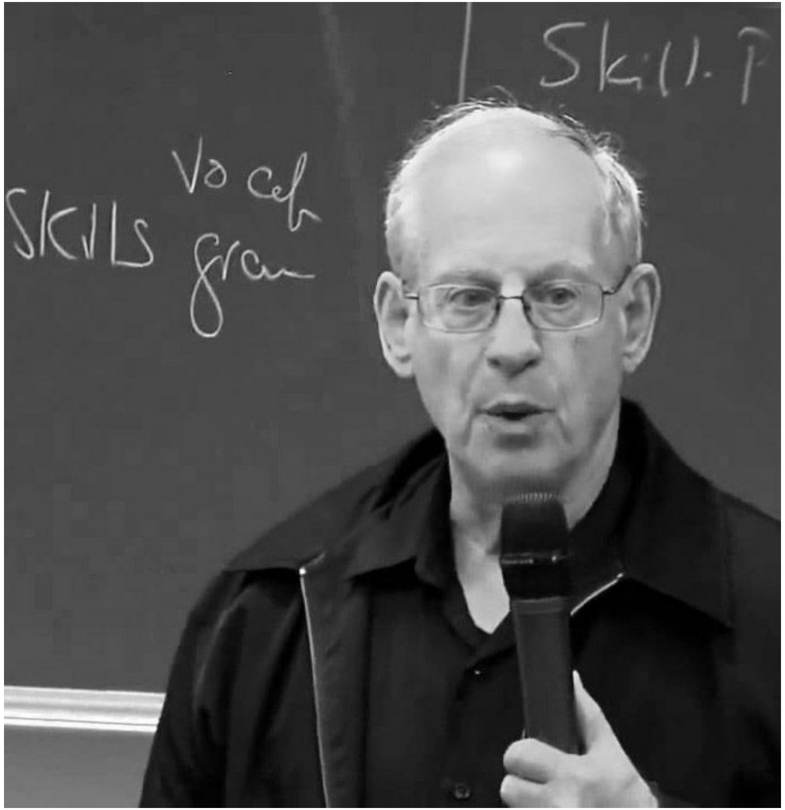
How we learn DevOps

My Hypothesis

Successful software practitioners require an abundance of implicit (cultural) knowledge — which may not even be acknowledged in the learning journey.

Stephen Krashen

Principles and Practice in Second Language Acquisition **(1982)**



Krashen's Theory

1. **Acquisition & Learning Hypothesis**
2. **Comprehensible Input Hypothesis**
3. **Natural Order Hypothesis**
4. **Monitor Hypothesis**
5. **Affective Filter Hypothesis**

I. Acquisition / Learning Hypothesis

Acquisition / Learning Hypothesis

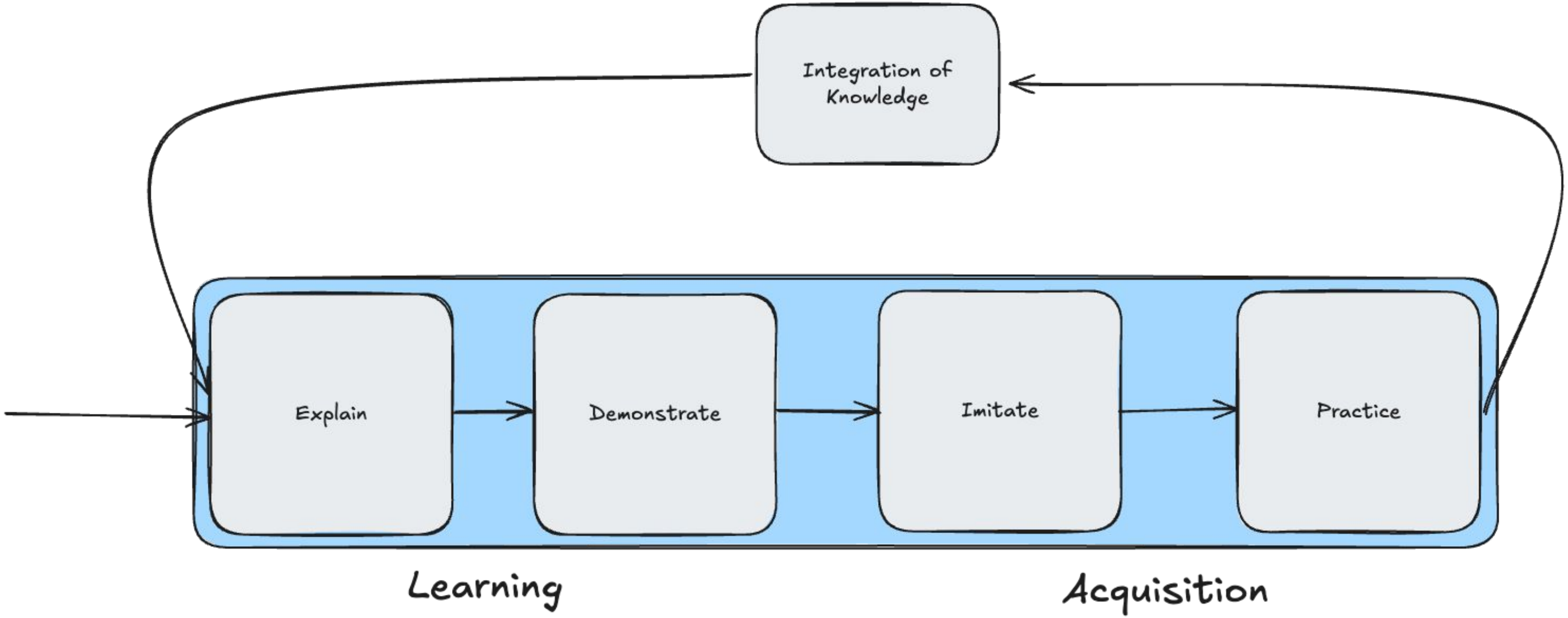
Humans learn best by combining theoretical learning with real-world knowledge acquisition

Acquisition / Learning

EDIP Learning

1. Explain
2. Demonstrate
3. Imitate
4. Practice

Acquisition / Learning



II. Comprehensible Input Hypothesis

Comprehensible Input Hypothesis

Humans learn best when exposed to new inputs of size i+1, where i represents already familiar concepts.

El pintor coloca el lienzo sobre el caballete en el estudio.

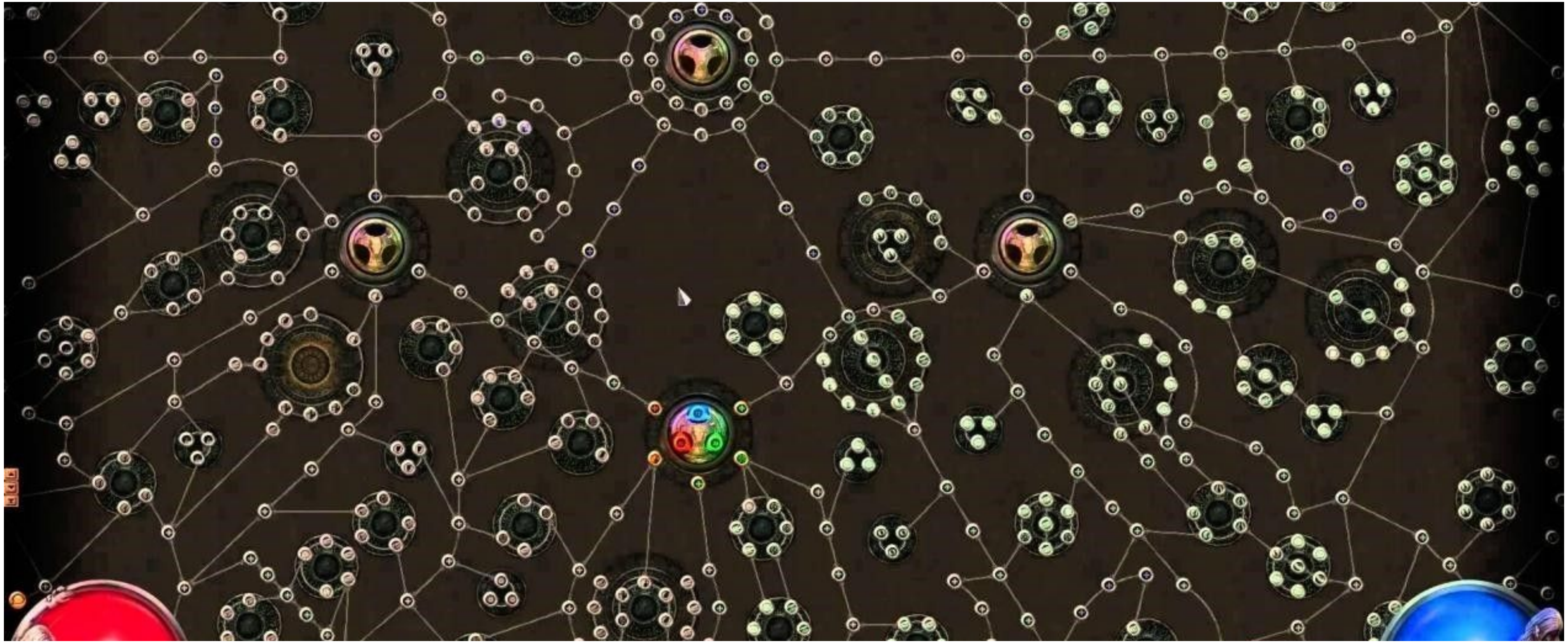
The painter places the canvas on the caballete in the studio.

III. Natural Order Hypothesis

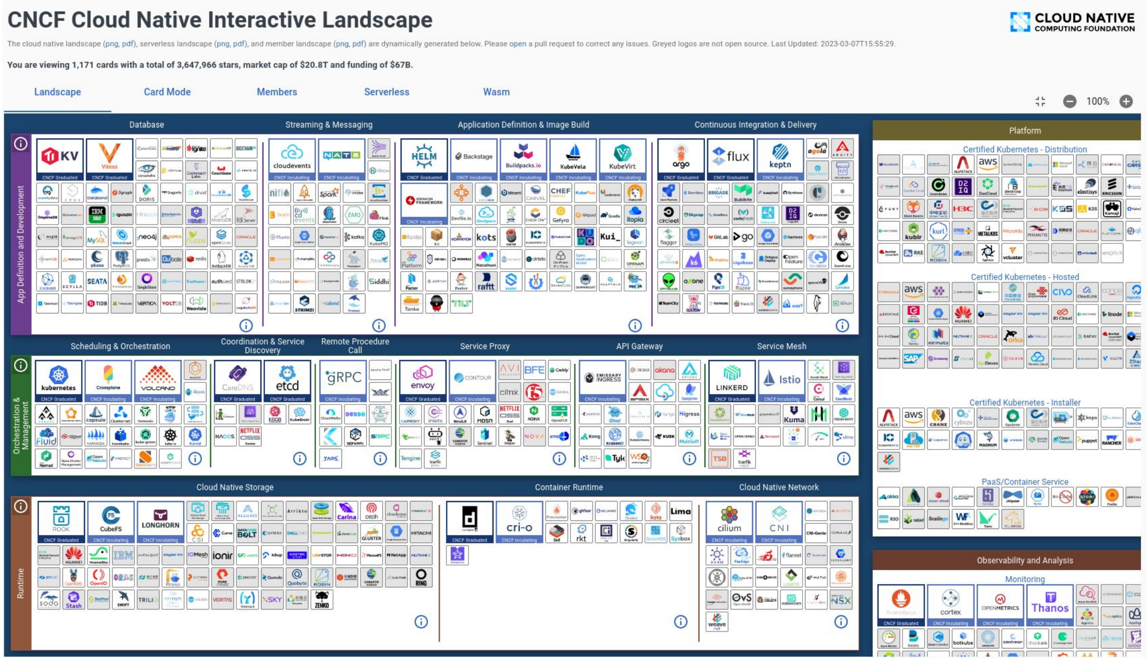
Natural Order Hypothesis

There is a natural progression for learning complex systems like languages.

Natural Order Hypothesis



Natural Order Hypothesis



CNCF Cloud Native Interactive Landscape

The cloud native landscape (png, pdf), serverless landscape (png, pdf), and member landscape (png, pdf) are dynamically generated below. Please open a pull request to correct any issues. Greyed logos are not open source. Last Updated: 2023-03-07T15:55:29.

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Card Mode
Members
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100%
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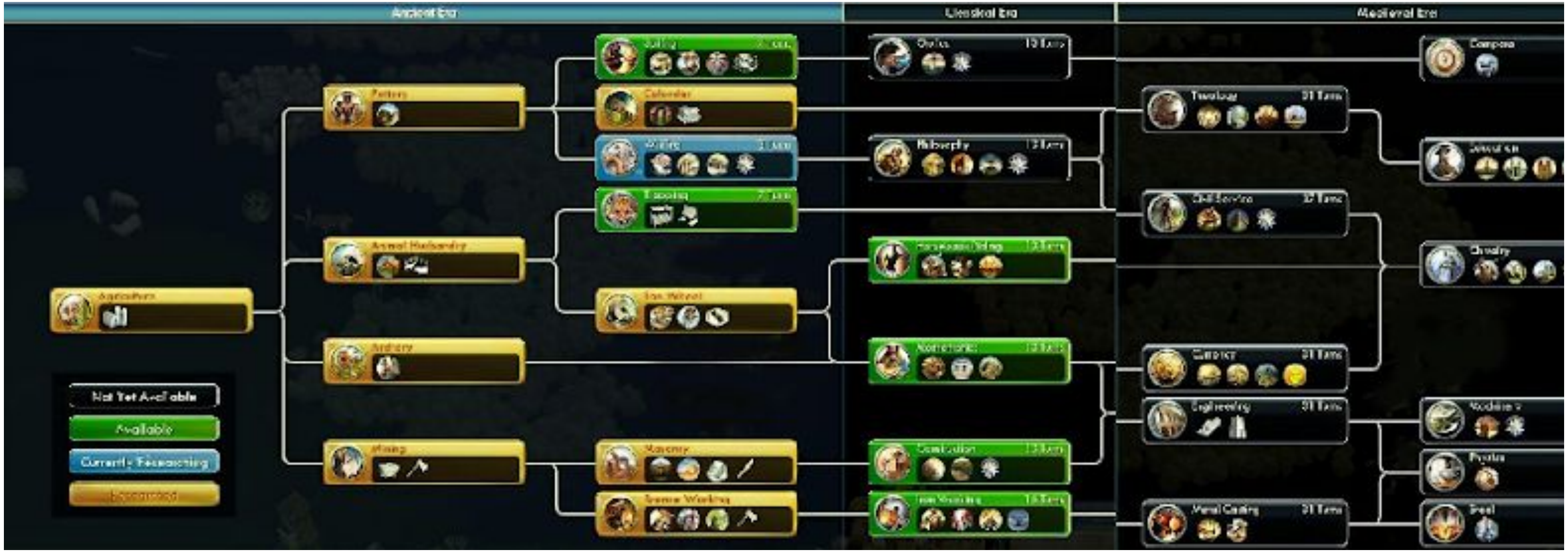
Database
Streaming & Messaging
Application Definition & Image Build
Continuous Integration & Delivery
Orchestration & Management
Scheduling & Orchestration
Coordination & Service Discovery
Remote Procedure Call
Service Proxy
API Gateway
Service Mesh
Runtime
Cloud Native Storage
Container Runtime
Cloud Native Network
Platform
Certified Kubernetes - Distribution
Certified Kubernetes - Hosted
Certified Kubernetes - Installer
PaaS/Container Service
Observability and Analysis
Monitoring

Natural Order Hypothesis



IV. Monitor Hypothesis

Monitor Hypothesis

Learners will self-correct, but when feedback is too frequent or too strict, it hinders progress.

It's all about feedback loops

Not too strict, not too permissive

Not too fast, not too slow

Don't be afraid to admit when you don't know the answer.

Don't be afraid to try.

V. Affective Filter Hypothesis

Affective Filter Hypothesis

Motivation **and** ***mood*** **are the strongest filters on our ability to learn.**

Know your "why"

Knowing why you are trying to learn a new skill can help keep you motivated.

Acknowledge the Humanity

Humans are humans. Do not assume they will always behave the same way or be at their best. We're building sociotechnical systems.

Work in, and provide, a safe (blame-aware) environment

Psychological safety is paramount.

So what can we do about this...

as learners?

Start with basics

Start small and simple, then iterate.

Embrace practical experiences

Choose real goals that allow you to apply your theoretical learnings.

Seek feedback

Train internal monitors through feedback from others. Don't be afraid to admit what you don't know.

Stay positive

You've got this!

So what can we do about this...

as the people building tools and platforms?

Embrace early adopters

Early adopters are your brave pioneers.
Embrace them and learn from them.

Design for accessibility

Provide context and meaningful feedback to any action.

Meet users where they are

Let users make mistakes without it hindering their forward progress if it doesn't need to.

and offer a paved path (with guardrails)

"Platform Engineering reduces the depth of the stack for developers"
- Hazel Weakly

We already had this figured out before

My first platform:

Version 1.2a
Dreamweaver 30 Day Trial

Dreamweaver 30 day Trial
Click on this screen to continue

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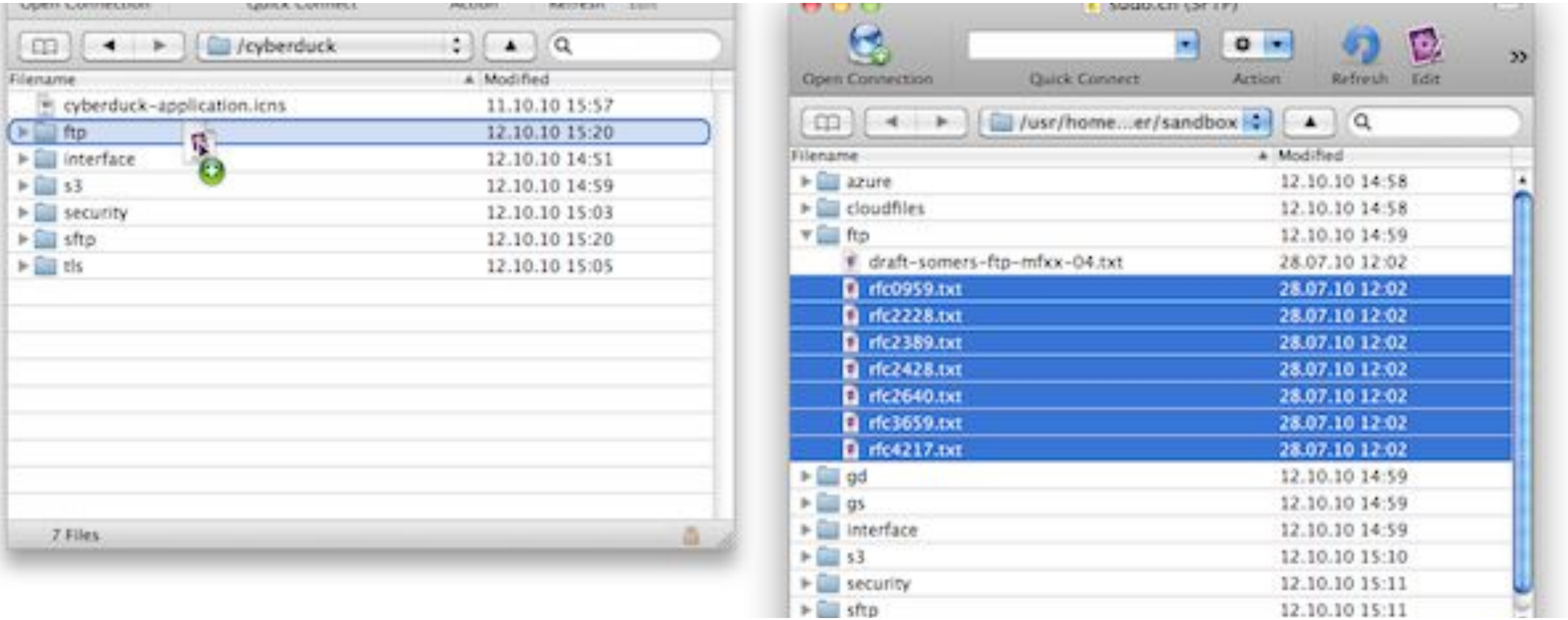
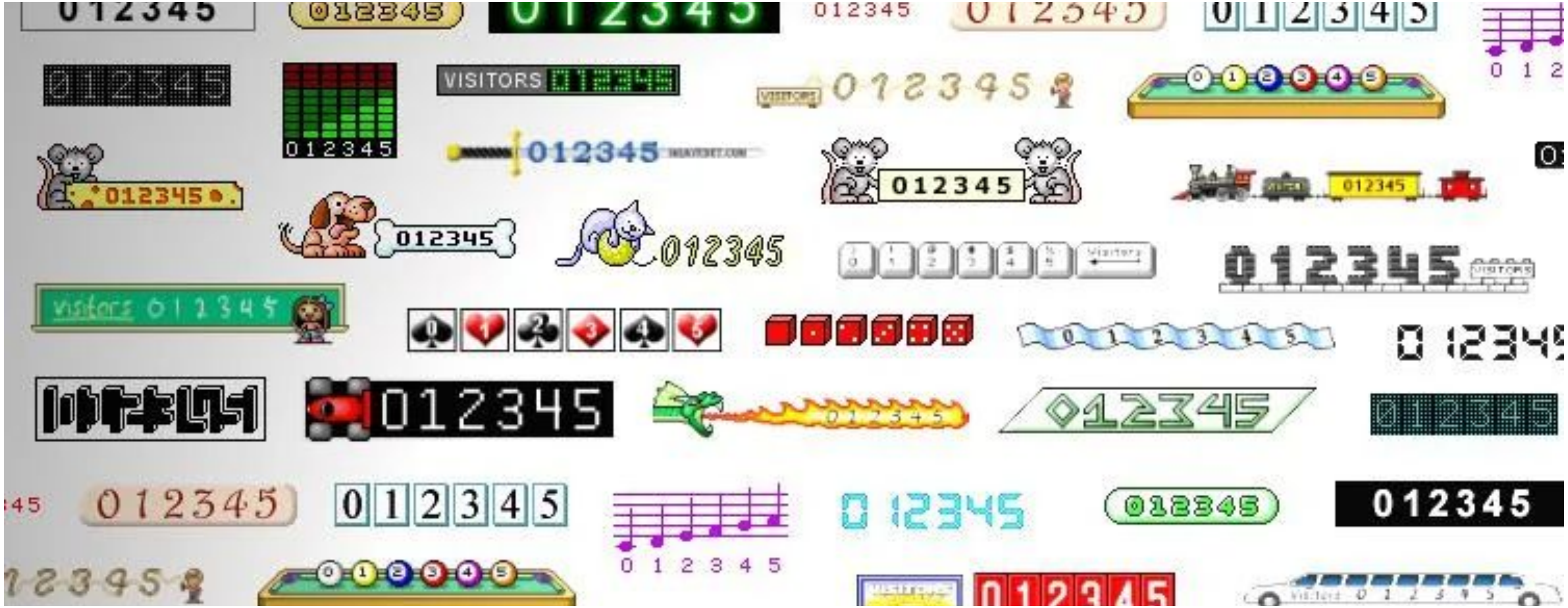
CI/CD:



Filename	Modified
cyberduck-application.icns	11.10.10 15:57
ftp	12.10.10 15:20
interface	12.10.10 14:51
s3	12.10.10 14:59
security	12.10.10 15:03
sftp	12.10.10 15:20
tls	12.10.10 15:05

Filename	Modified
azure	12.10.10 14:58
cloudfiles	12.10.10 14:58
ftp	12.10.10 14:59
draft-somers-ftp-mfxx-04.txt	28.07.10 12:02
rfc0959.txt	28.07.10 12:02
rfc2228.txt	28.07.10 12:02
rfc2389.txt	28.07.10 12:02
rfc2428.txt	28.07.10 12:02
rfc2640.txt	28.07.10 12:02
rfc3659.txt	28.07.10 12:02
rfc4217.txt	28.07.10 12:02
gd	12.10.10 14:59
gs	12.10.10 14:59
interface	12.10.10 14:59
s3	12.10.10 15:10
security	12.10.10 15:11
sftp	12.10.10 15:11

Observability:



Let's make this fun again.

Q&A

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Thank you!

Connect with me