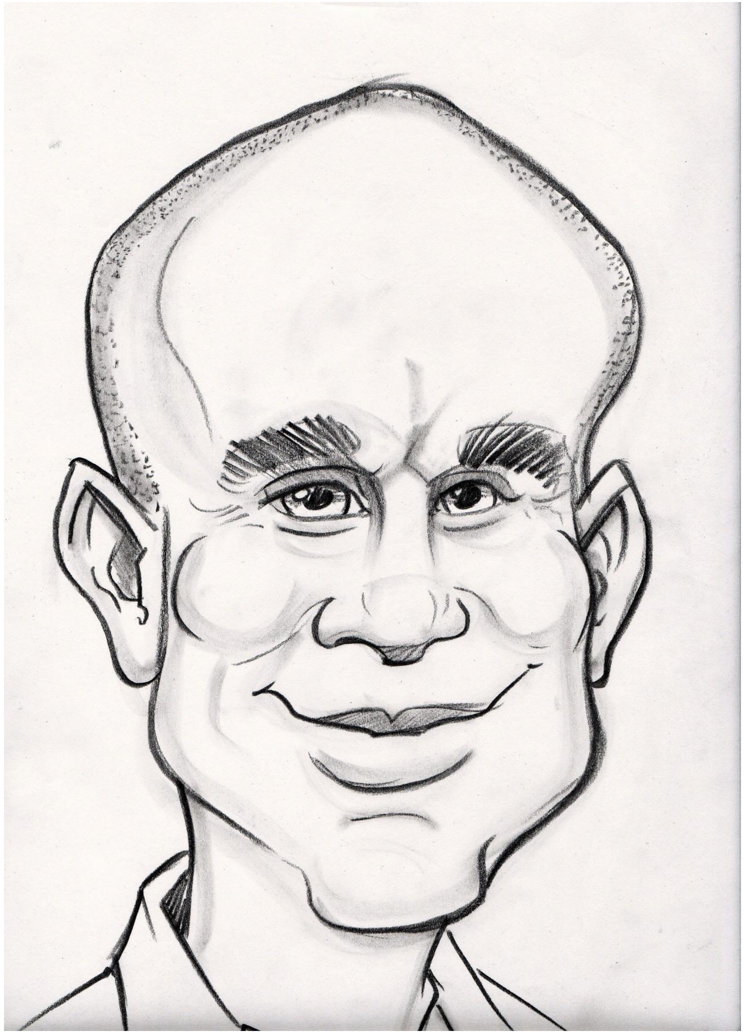
Writing Secure

GO

Code

Miki Tebeka



CEO, CTO, UFO ...

353solutions

First rule of computer security: **don't buy a computer**.

Second rule: if you buy one, **don't turn it on**.

- Dark Avenger

The Security Mindset

Bruce Schneier

Culture > Process

GO

Go Security Policy

Where?

- Go CVE List
- Synk Vulnerability DB
- golang-announce

OWASP Top Ten

A1: Injection

A2: Broken Authentication

A3: Sensitive Data Exposure

A4: XML External Entities (XXE)

A5: Broken Access Control

A6: Security Misconfiguration

A7: Cross-Site Scripting (XSS)

A8: Insecure Deserialization

A9: Using Components with Known Vulnerabilities

A10: Insufficient Logging & Monitoring

Input	A1: Injection A4: XML External Entities (XXE) A8: Insecure Deserialization
Output	A7: Cross-Site Scripting (XSS) A3: Sensitive Data Exposure
Authentication	A2: Broken Authentication A5: Broken Access Control
Infrastructure	A6: Security Misconfiguration A9: Using Components with Known Vulnerabilities A10: Insufficient Logging & Monitoring

Code

Input

A1: Injection

database/sql

A8: Insecure Deserialization

```
<?xml version="1.0"?>
<!DOCTYPE lolz [
 <!ENTITY lol "lol">
 <!ELEMENT lolz (#PCDATA)>
 <!ENTITY lol1 "&lol;&lol;&lol;&lol;&lol;&lol;&lol;&lol;&lol;&lol;">
 <!ENTITY lol2 "&lol1;&lol1;&lol1;&lol1;&lol1;&lol1;&lol1;&lol1;&lol1;&lol1;">
 <!ENTITY lol3 "&lol2;&lol2;&lol2;&lol2;&lol2;&lol2;&lol2;&lol2;&lol2;&lol2;">
 <!ENTITY lol4 "&lol3;&lol3;&lol3;&lol3;&lol3;&lol3;&lol3;&lol3;&lol3;&lol3;">
 <!ENTITY lol5 "&lol4;&lol4;&lol4;&lol4;&lol4;&lol4;&lol4;&lol4;&lol4;&lol4;">
 <!ENTITY lol6 "&lol5;&lol5;&lol5;&lol5;&lol5;&lol5;&lol5;&lol5;&lol5;&lol5;">
 <!ENTITY lol7 "&lol6;&lol6;&lol6;&lol6;&lol6;&lol6;&lol6;&lol6;&lol6;&lol6;">
 <!ENTITY lol8 "&lol7;&lol7;&lol7;&lol7;&lol7;&lol7;&lol7;&lol7;&lol7;&lol7;">
 <!ENTITY lol9 "&lol8;&lol8;&lol8;&lol8;&lol8;&lol8;&lol8;&lol8;&lol8;&lol8;">
]>
<lolz>&lol9;</lolz>
```

Billion laughs attack

Java Hangs When Converting 2.2250738585072012e-308

Exploring Binary

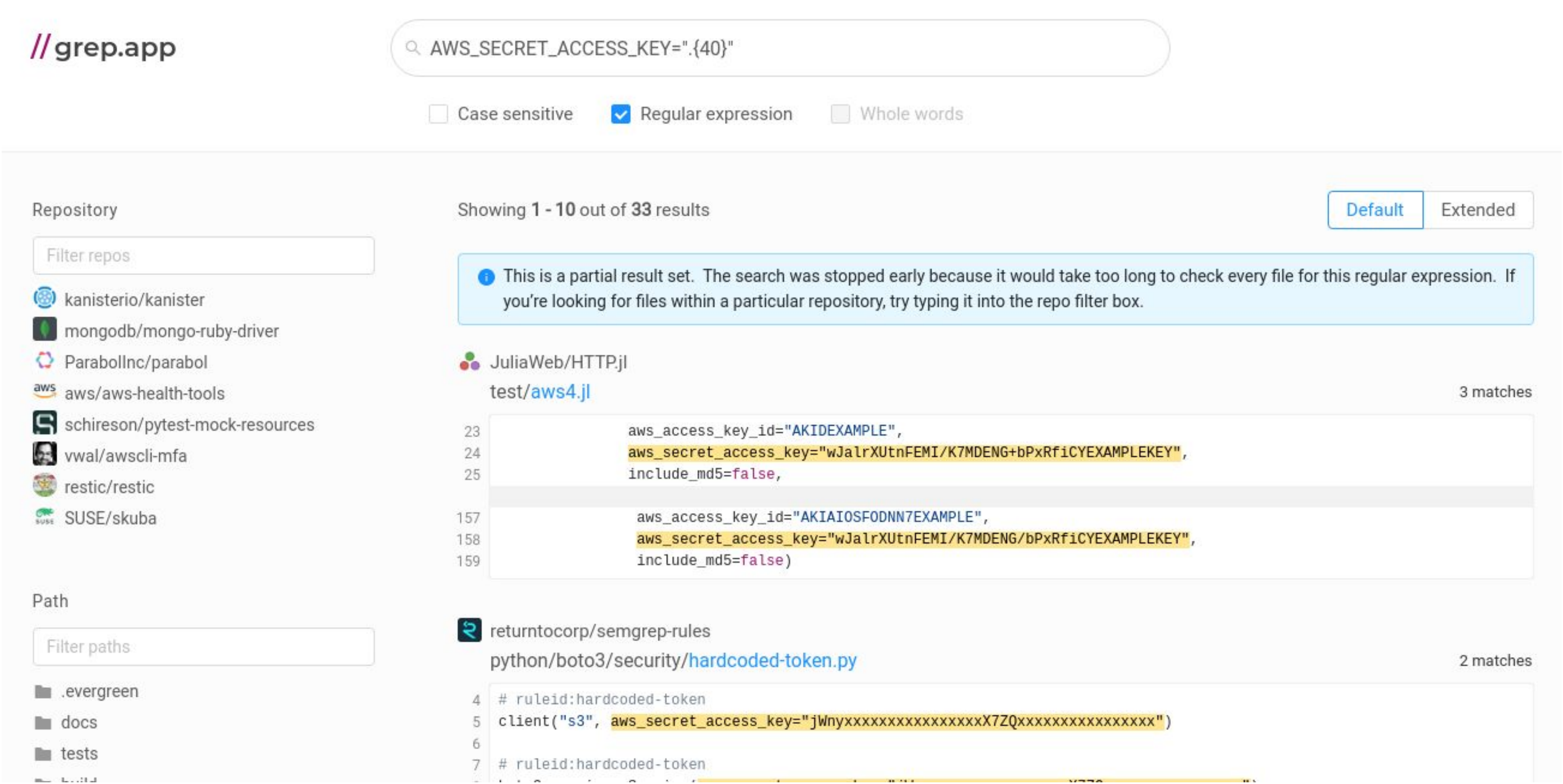
io.LimitReader

Output

A7: Cross-Site Scripting (XSS)

html/template

A3: Sensitive Data Exposure



AWS_SECRET_ACCESS_KEY=".{40}"

☐ Case sensitive ☑ Regular expression ☐ Whole words

Repository

Filter repos

- kanisterio/kanister
- mongodb/mongo-ruby-driver
- ParabolInc/parabol
- aws/aws-health-tools
- schireson/pytest-mock-resources
- vwal/awscli-mfa
- restic/restic
- SUSE/skuba

Path

Filter paths

- .evergreen
- docs
- tests

Showing **1 - 10** out of **33** results

This is a partial result set. The search was stopped early because it would take too long to check every file for this regular expression. If you're looking for files within a particular repository, try typing it into the repo filter box.

JuliaWeb/HTTP.jl

test/aws4.jl — 3 matches

```
                aws_access_key_id="AKIDEXAMPLE",
                aws_secret_access_key="wJalrXUtnFEMI/K7MDENG+bPxRfiCYEXAMPLEKEY",
                include_md5=false,

                 aws_access_key_id="AKIAIOSFODNN7EXAMPLE",
                 aws_secret_access_key="wJalrXUtnFEMI/K7MDENG/bPxRfiCYEXAMPLEKEY",
                 include_md5=false)
```

returntocorp/semgrep-rules

python/boto3/security/hardcoded-token.py — 2 matches

```
# ruleid:hardcoded-token
client("s3", aws_secret_access_key="jWnyxxxxxxxxxxxxxxxxX7ZQxxxxxxxxxxxxxxxxx")

# ruleid:hardcoded-token
```

Authentication

A2: Broken Authentication

- Basic
- Oauth2
- JWT
- OICD
- …

A5: Broken Access Control

- ACL
- RBAC
- …

Infrastructure

A6: Security Misconfiguration

http.ListenAndServeTLS

x/crypto/acme/autocert

A9: Using Components with Known Vulnerabilities

go.mod

go.sum

dependatbot

A10: Insufficient Logging & Monitoring

- log
- go.uber.org/zap
- ...

- expvar
- prometheus
- ...

Questions?

Thank You!

3S3 SOLUTIONS
LEARN FROM THE EXPERTS

Ardan labs