Writing Secure

Code

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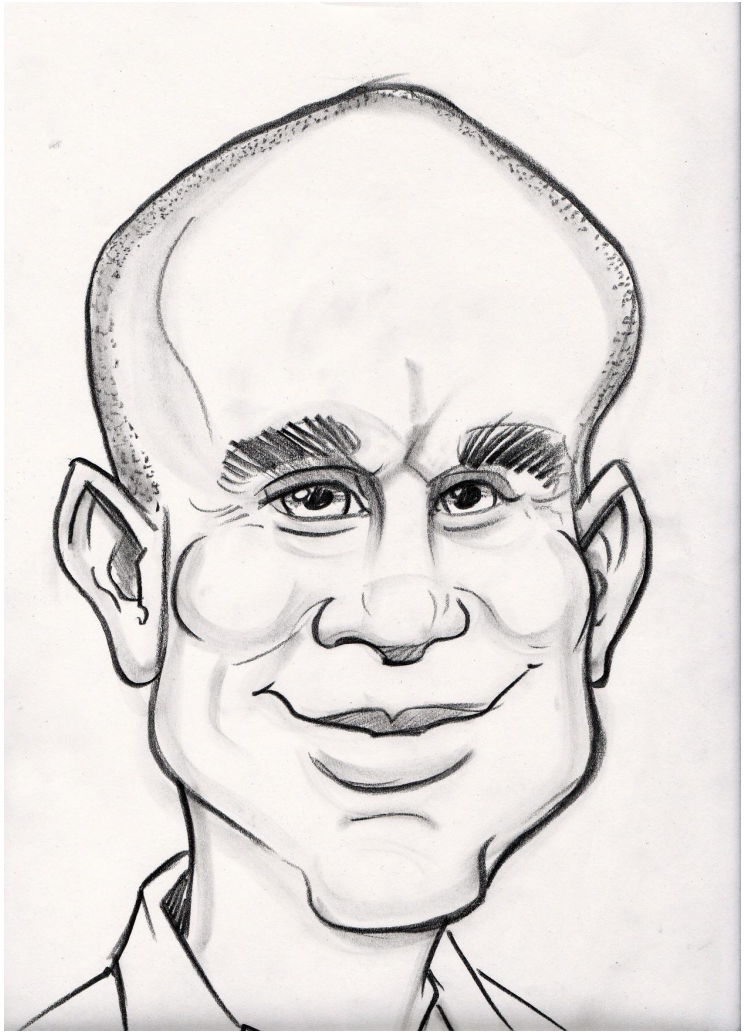


CEO, CTO, UFO ...

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 Security Policy

Go CVE List

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)

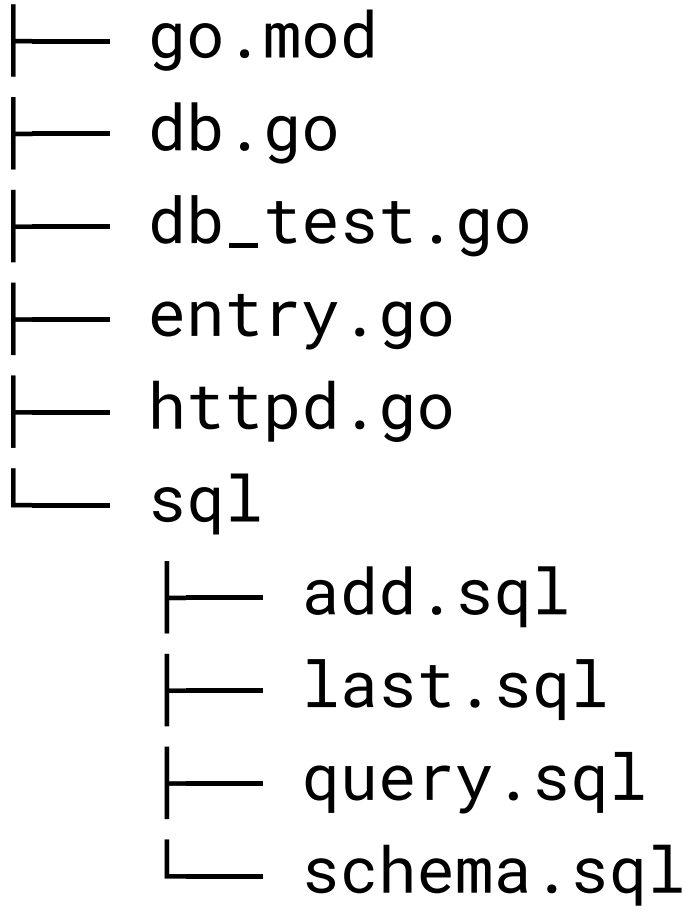
A8: Insecure Deserialization

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


├── go.mod
├── db.go
├── db_test.go
├── entry.go
├── httpd.go
└── sql
    ├── add.sql
    ├── last.sql
    ├── query.sql
    └── schema.sql

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

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!