

? CODE QUIZ: SMALL BUG – BIG IMPACT

BTPEX SRM DEVELOPER FORUM

“All bugs in this presentation are based on actual events.” 🐞🎬

You literally could say:

*“The following code has actually taken down
rockets, banks, and billions.” ✨*



QUIZ

```
if ((err = SSLVerify(...)) != 0)
    goto fail;
goto fail;
```

? What's the issue on this c Code?



```
if ((err = SSLVerify(...)) != 0)
    goto fail;
```

delete second goto



QUIZ: APPLE "GOTO FAIL" (2014)

⚠️ IMPACT

- SSL certificate verification skipped
- Affected iOS and macOS
- Allowed MitM attacks over HTTPS
- Shook public trust in Apple security

QUIZ

```
ecs-cli down --cluster "s3-*
```

? What went wrong with bash command?

✓ FIX

```
# Intended:  
ecs-cli down --cluster "s3-a"  
# Actual:  
ecs-cli down --cluster "s3-*
```

eliminate wildcard on input argument

✓ ADDITIONAL FIX

```
read -p "Confirm cluster: $CLUSTER_NAME? (yes/no): " ans  
[[ "$ans" != "yes" ]] && exit 1
```




QUIZ: AWS S3 OUTAGE (2017)



IMPACT

- Disabled entire region's S3 infrastructure
- Took down major platforms: GitHub, Slack, Trello
- Estimated economic loss in the hundreds of millions

QUIZ

```
double time = t * 0.1; // using fixed-point approximation
```

? Why is this dangerous in long-running systems?



```
uint64_t ticks = t;  
double time = ticks * 0.1; // use precise conversion
```



QUIZ: PATRIOT MISSILE DRIFT (1991)



IMPACT

- System time drifted $\sim 0.34s$ after 100h
- Caused missile defense failure
- 28 soldiers killed in attack



QUIZ

```
balance = Math.round(balance * 100) / 100.0;
```

? What's the risk with this rounding logic?



```
int balanceCents = depositCents - withdrawalCents;
```



QUIZ: HORIZON ACCOUNTING SCANDAL



IMPACT

- 700+ postmasters falsely accused and convicted
- Based on flawed accounting system
- Legal battle, reputational damage, ruined lives



QUIZ

```
database_url: ""
```

? Why did this config cause massive failure?



```
if not config.database_url:  
    raise ConfigError("Missing database URL")
```



QUIZ: GOOGLE CLOUD CONFIG OUTAGE (2025)



IMPACT

- Global services went offline
- Due to unvalidated critical config fields (null / empty check)
- Highlighted fragility of cloud infrastructure



QUIZ

CATIA V4 (german team)
CATIA V5 (french team)

? What's the risk of using different CAD tools?

PROBLEM

CATIA V4: cable = 1000 mm
CATIA V5: required = 1001 mm

✓ FIX

- Standardize to CATIA V5
- Validate full digital mockups (DMU)
- Sync ECAD-MCAD data across teams



QUIZ: AIRBUS A380 – CAD VERSION MISMATCH



IMPACT

- 530 km of cabling incorrect
- Massive rework, 2-year delay
- Billions of euros in cost



QUIZ

```
try {  
    Connection conn = dataSource.getConnection();  
    // processing code that throws an exception...  
    conn.close();  
} catch (Exception e) {  
    logger.error("Failure", e);  
}
```

? What's the critical mistake in this try block?



```
Connection conn = null;
try {
    conn = dataSource.getConnection();
    // work with conn
} catch (Exception e) {
    logger.error("Failure", e);
} finally {
    if (conn != null) {
        try {
            conn.close();
        } catch (SQLException ignore) {
            // handle / log closing-issue
        }
    }
}
```


EVEN BETTER FIX

```
try (Connection conn = dataSource.getConnection()) {  
    // safe processing  
} catch (Exception e) {  
    logger.error("Failure", e);  
}
```

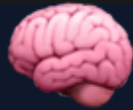


QUIZ: SAP HANA JAVA CONNECTION LEAK (~2017)



IMPACT

- Happened in **SAP IoT context** under load
- Unclosed HANA connections accumulated silently
- After ~500 connections → **DB crashed**
- Crash occurred after ~15 min of runtime
- Required debug analysis across services and logs
- several ours of service outage for customers



KEY TAKEAWAYS

- ✓ Automated testing catches edge cases early
- ✓ Four-eyes principle for pull requests prevents human oversight
- ✓ Consistent tooling & formats reduce integration errors
- ✓ Config validation is as critical as code
- ✓ Legacy code reuse must be validated in new contexts
- ✓ Edge-case awareness (overflows, precision, units) is vital
- ✓ Communication across teams and systems prevents disasters
- ✓ Float \neq money or time – use precise datatypes



THANKS FOR PLAYING!

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🎯 Which failure surprised you the most? What could you bring into your daily development practice?

