

Why Software Testing

Software Testing
(3104313)

Amirkabir University of Technology
Spring 1399-1400

Why do we test software?

Why do we test software?

Software **quality** is increasingly becoming essential to all businesses

- Reliability
- Usability
- Security
- Availability, Scalability, Maintainability, Performance

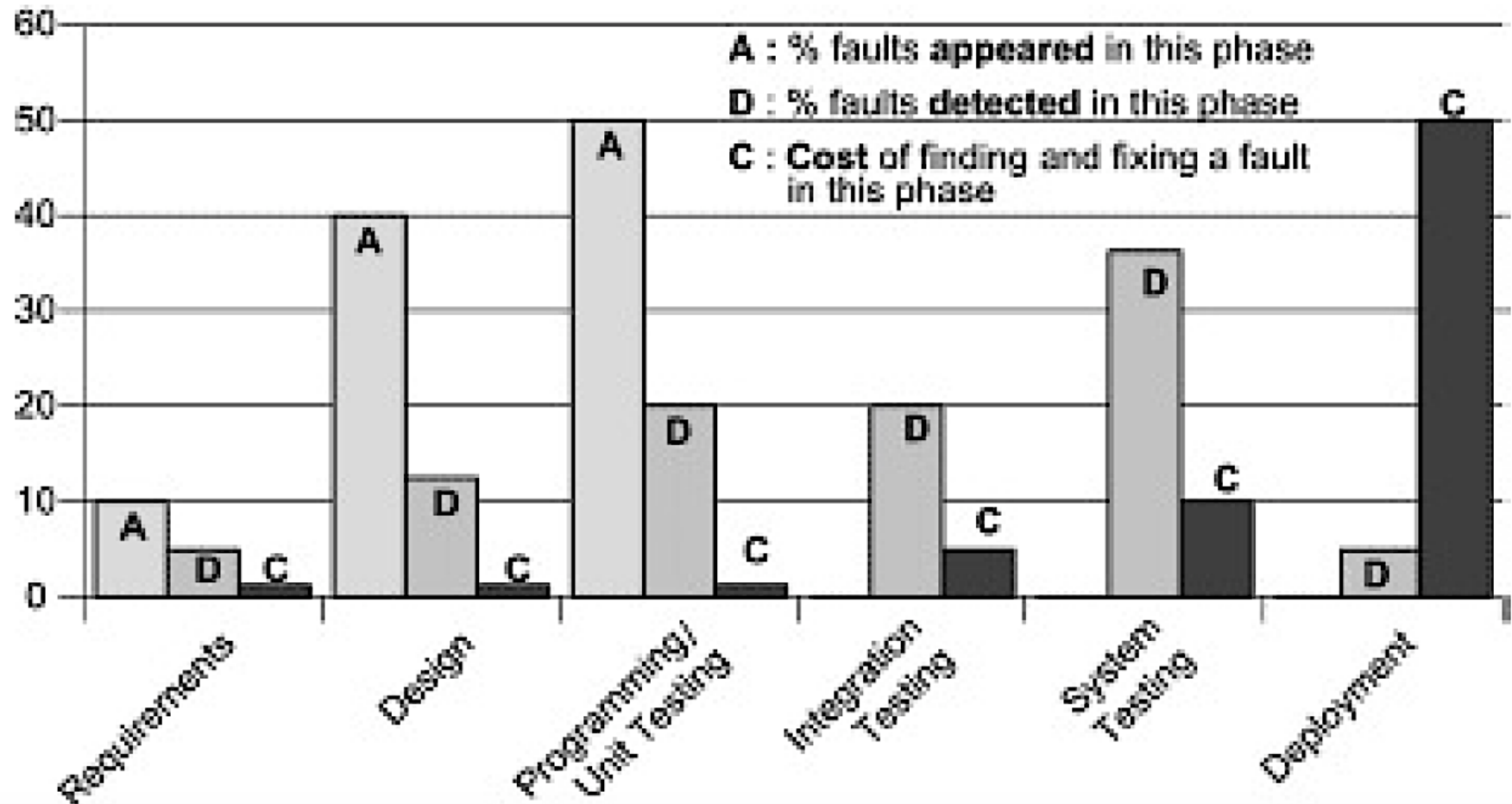
In-Class Exercise

#1

In a paragraph explain the software failure that you read about, and discuss whether and how testing could prevent the failure.

- You have 10 minutes
- Do the exercise individually
- Upload your answer in Moodle.

Cost of Late Testing



What purpose(s) does a test serve?

Test Process Maturity

Level 0 - There's no difference between testing and debugging

Level 1 - The purpose of testing is to show correctness

Level 2 - The purpose of testing is to show that the software doesn't work

Level 3 - The purpose of testing is not to prove anything specific, but to reduce the risk of using the software

Level 4 - Testing is a mental discipline that helps all IT professionals develop higher quality software

Why Each Test

- What fact is each test trying to **verify**?
- Document test **objectives** and test **requirements**

In-Class Exercise

#2

- What is your experience with test coverage?
 - How would you define "test coverage"?
 - What is the rationale for test coverage? That is, what do we really care about during testing, and how is coverage related to that?
-
- You have 10 minutes
 - Do the exercise individually
 - Upload your answer in Moodle.

Why Each Test

- What fact is each test trying to **verify**?
- Document test **objectives** and test **requirements**
- How much testing is **enough** and when testing will **complete**
- **Coverage** levels

Verification and Validation

Verification- The process of determining whether the products of a phase of the software development process **fulfill** the requirements established during the **previous phase**.

Validation- The process of evaluating software **at the end** of software development to ensure **compliance** with intended **usage**.

A Light Switch in Conference Room

- Assume that, ultimately, the lights **cannot** be controlled independently.
- Does the lighting fail verification?
- Does the lighting fail validation?

User Requirement

“the lights in front of the projector screen can be controlled independently of the other lights in the room.”

Specification

“the lights in front of the projector screen can be controlled with a light switch”

A Light Switch in Conference Room

- Assume that, ultimately, the lights **cannot** be controlled independently.
- Does the lighting fail **verification**?
- Does the lighting fail validation?

User Requirement

“the lights in front of the projector screen can be controlled independently of the other lights in the room.”

Specification

“the lights in front of the projector screen can be controlled with a light switch”

A Light Switch in Conference Room

- Assume that, ultimately, the lights **cannot** be controlled independently.
- Does the lighting fail **verification**?
- Does the lighting fail validation?

User Requirement

“the lights in front of the projector screen can be controlled independently of the other lights in the room.”

Specification

“the lights in front of the projector screen can be controlled with a light switch”

Validation exposes **flaws** in **specifications**.

In-Class Exercise

#3

- **Discuss** the *testing* in the context of verification and validation? Is it verification, validation, or both?
 - Specify one thing you learned from *Chapter 1* that you didn't already know.
-
- You have 10 minutes
 - Do the exercise individually
 - Upload your answer in Moodle.

Why do we test software?

- A tester's goal is to **eliminate faults as early as possible**
- Improve quality
- Reduce cost
- Preserve customer satisfaction

break



سرزمین مقدس؛ سفری به فلسطین

نویسنده: گی دولیل

مترجم: عاطفه احمدی

گی دولیل، کارتون‌نویست مشهور کانادایی، یک سال همراه همسر و فرزندانش در فلسطین زندگی کرده و دیده‌ها و شنیده‌هایش در این مدت را به تصویر کشیده است. دولیل در این کتاب مثل سفرنامه‌های دیگرش، در پی ارائه‌ی تفسیر و توضیحی جامع درباره‌ی شرایط اجتماعی، سیاسی و فرهنگی کشور میزبان‌ش نیست. روایت مصور او فقط گزارشی دقیق و پر جزئیات از مشاهدات شخصی درباره‌ی زندگی روزمره درون جامعه‌ی ملتهب فلسطین است که رسانه‌ها معمولاً به آن نمی‌پردازند.

