

The Realities of Software Testing

【书上第一章】

Software testing axioms

1. It is impossible to test a program completely.
2. Software testing is a risk-based exercise.
3. Testing cannot show the absence of bugs.
4. The more bugs you find, the more bugs there are.
5. Not all bugs found will be fixed.
6. It is difficult to say when a bug is indeed a bug.
7. Specifications are never final.
8. Software testers are not the most popular members of a project.
9. Software testing is a disciplined and technical profession.

Axiom 1

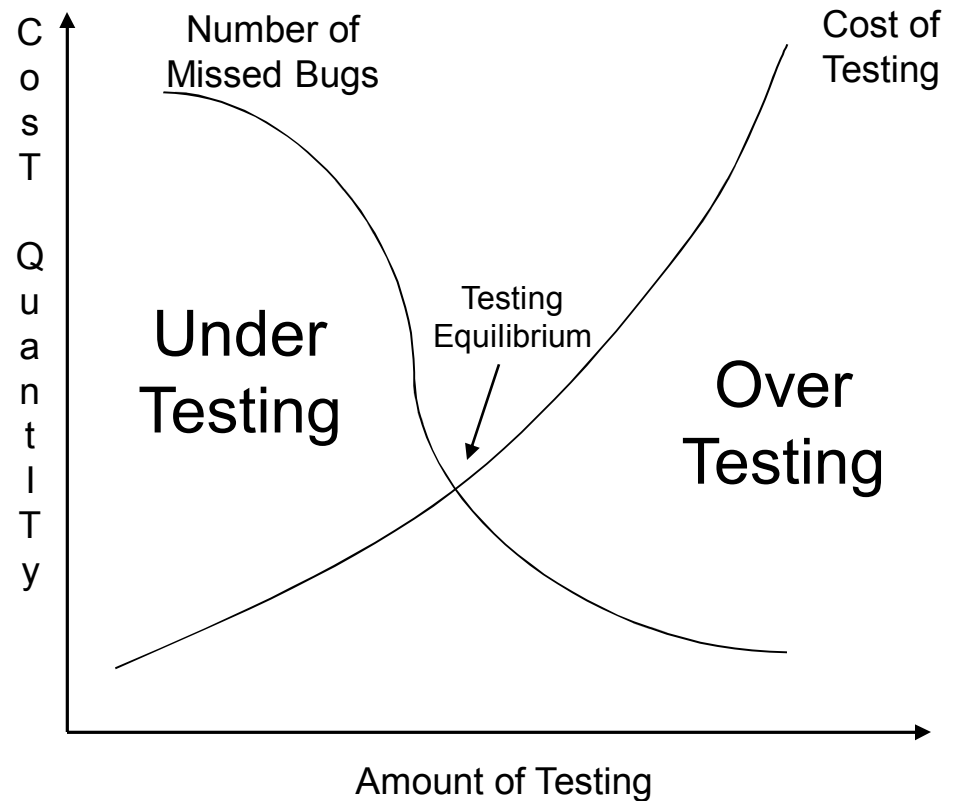
It is impossible to test a program completely

- **How many test cases do you need to exhaustively test:**
 - Powerpoint
 - A calculator
 - MS Word
 - Any interesting software!
- **The only way to be absolutely sure software works is to run it against all possible inputs and observe all of its outputs ...**
- **Oh, and the specification must be correct and complete.**

Axiom 2

Software testing is a risk-based exercise

- **If you try to test too much, the development cost becomes prohibitive 抑制.**
- **If you test too little, the probability of software failure increases and as we discussed ... software failures can cost us big time!**



Axiom 3

Testing cannot show the absence of bugs

- ***“Program testing can be used to show the presence of bugs, but never to show their absence!”***

Axiom 4

The more bugs you find, the more bugs there are

- **Bugs appear in groups, where you see one you will likely find more ... Why?**
 - **Programmers can have bad days**
 - **Programmers tend to make the same mistakes**
 - **Some bugs are just the tip of the iceberg.**

Axiom 5

Not all bugs found will be fixed

- **Why wouldn't you fix a bug you knew about?**
 - There's not enough time
 - Some deadlines cannot be extended (e.g., Y2K)
 - It's not really a bug
 - Specifications can be wrong
 - It's too risky to fix
 - It's just not worth it

Axiom 6

It is difficult to say when a bug is indeed a bug

- **If there is a problem in the software but no one ever discovers it ... is it a bug?**
- **What is your opinion? Does a bug have to be observable in order for it to be a bug?**
- **Bugs that are undiscovered are called *latent bugs*.**

Axiom 7

Specifications are never final

- **Building a product based on a “moving target” specification.**
 - **Competition is fierce**
 - **Very rapid release cycles**
 - **Software is “easy” to change**

Axiom 8

Software testers are not the most popular members of a project

- **Tips to avoid becoming unpopular:**
 - Find bugs early
 - Temper your enthusiasm ... act in a professional manner
 - Don't report just the bad news

Axiom 9

Software testing is a disciplined and technical profession

- **It is now too costly to build buggy software.
As a result testing has matured as a discipline**
 - **Sophisticated techniques**
 - **Tool support**
 - **Rewarding careers**

软件测试的原则

- 软件测试必须基于“质量第一”。
- 事先定义好产品的质量标准，根据测试的结果，对产品的质量进行分析和评估。
- 第三方进行测试会更客观，更有效。
- 重视文档，妥善保存一切测试过程文档（测试计划、测试用例、测试报告等）

You now know ...

- **... the 9 axioms of software testing**
- **软件测试的补充原则**