

Software Testing & Verification



The Foundation (1)



Instructor: Haiying SUN

E-mail: hysun@sei.ecnu.edu.cn

Office: Science Build B1104

Available Time: Wednesday 8:00 a.m. – 12:00 a.m.

Agenda



- What is Software Testing
- Why to test
- Who to test
- When to test
- How to test

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What is Software Testing



Not Only **Detect Bugs**
But also **Prevent Bugs**

What is Software Testing

- 软件测试是贯穿整个软件开发生命周期，对软件产品进行验证和确认的活动过程，也是对软件产品质量持续的评估过程，其目的是**尽快尽早地发现**软件产品中存在的各种**缺陷**，尽最大可能揭示软件开发过程中所存在的产品质量风险，实现**缺陷预防**。
 - **静态测试**：不执行被测对象
 - **动态测试**：执行被测对象

What is Software Testing

- Myers (1979)
 - 程序测试是为了发现错误而执行程序的过程
- Binder(1999)
 - The execution of code using combination of input and state selected to reveal bugs
- Automatic software testing(2006)
 - The design and implementation of a special kind of software system which exercises with the intended to finding bugs

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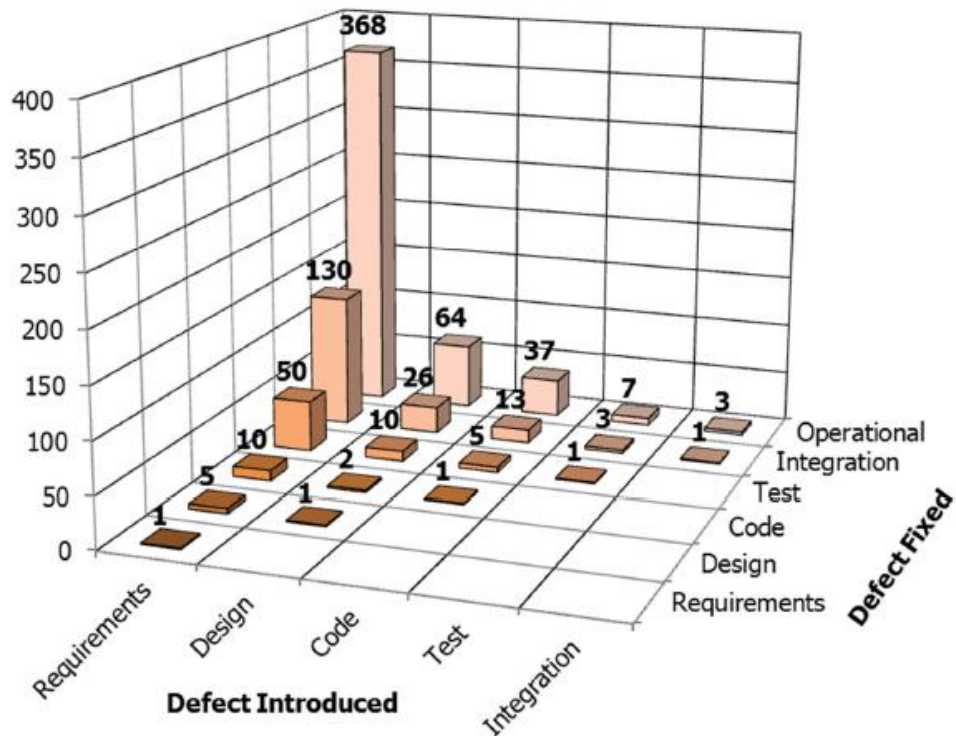
Software is Eating the Earth

1,715,430,778,504

ONETRILLIONSEVENHUNDREDFIFTEENBILLIONFOURHUNDREDTHIRTYMILLIONSEVENHUNDREDSEVENTY-EIGHTTHOUSANDFIVEHUNDREDFOUR

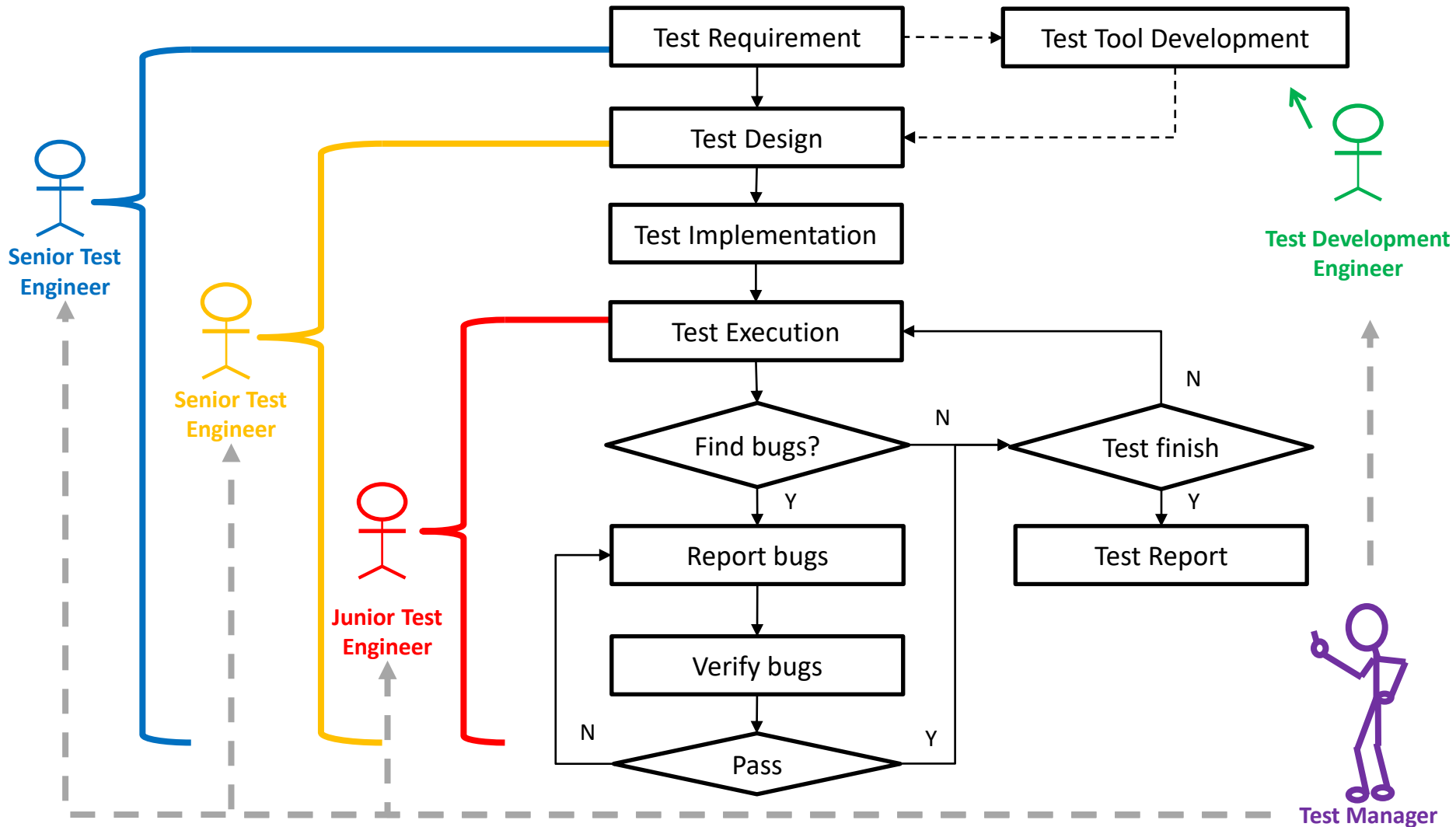


For Lower Development Cost



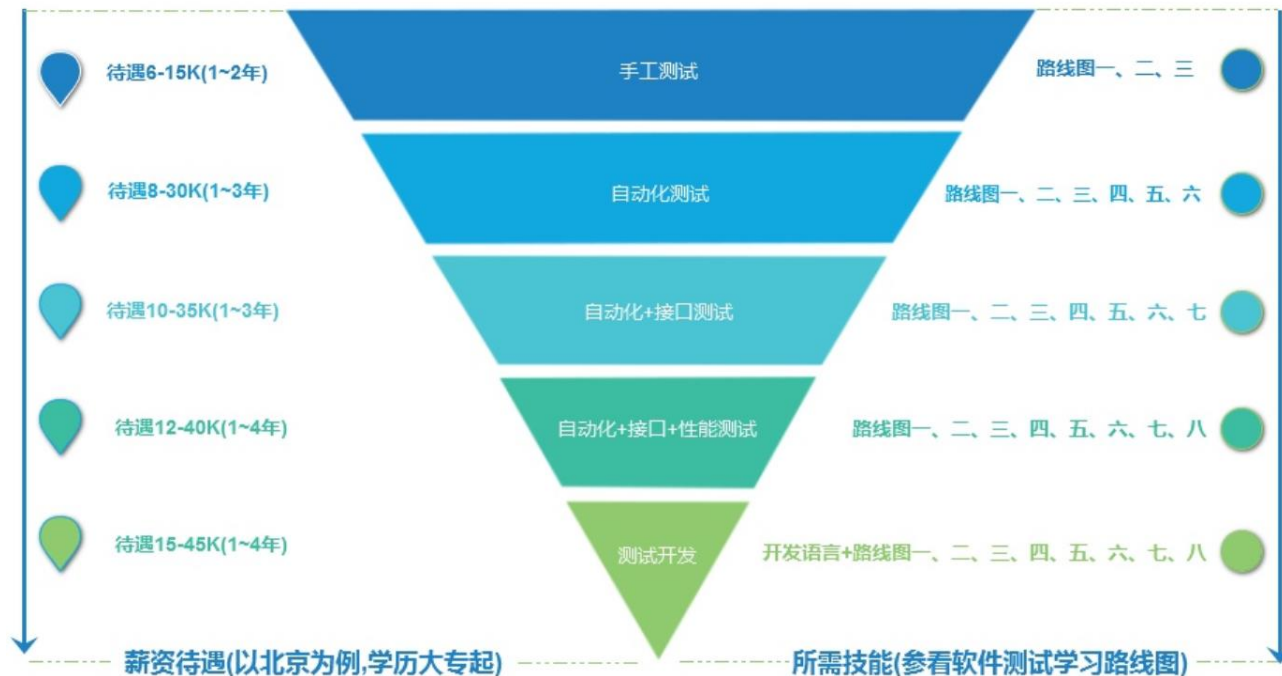
**Earlier Testing
Better Quality**

For Your Career



Software Testing Career

1. 计算机基础知识
2. Linux和数据库
3. 测试基础
4. Python, 数据结构
5. Web自动化
6. 移动自动化
7. 接口测试
8. 性能测试



测试经验 领域知识

勤奋 坚持



Software Testing Career

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2. Linux和数据库

3. 测试基础

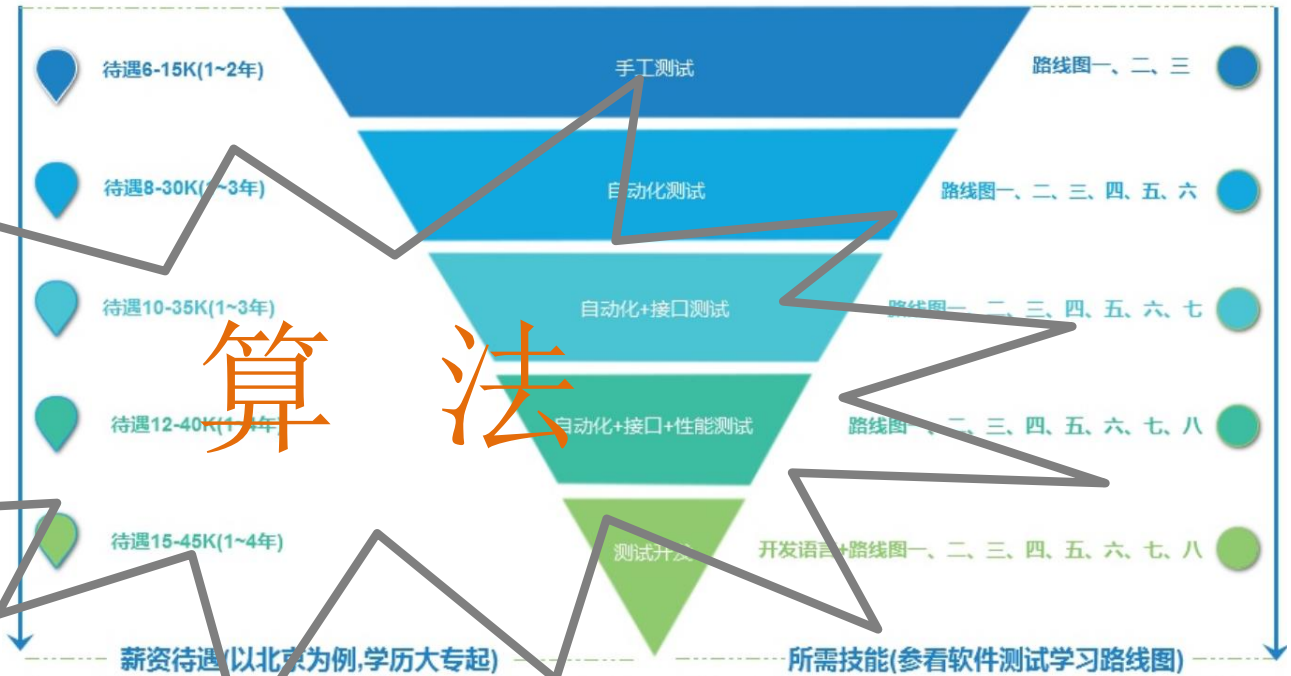
4. Python, 数据结构

5. Web自动化

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测试经验 领域知识

勤奋 坚持

测试惊魂三问

为什么这个Bug测不出来？



测试惊魂三问

测试怎么测得？到底会不会测？



测试惊魂三问

测试快点啊，为什么总是测试
拖后腿，到最后才报Bug

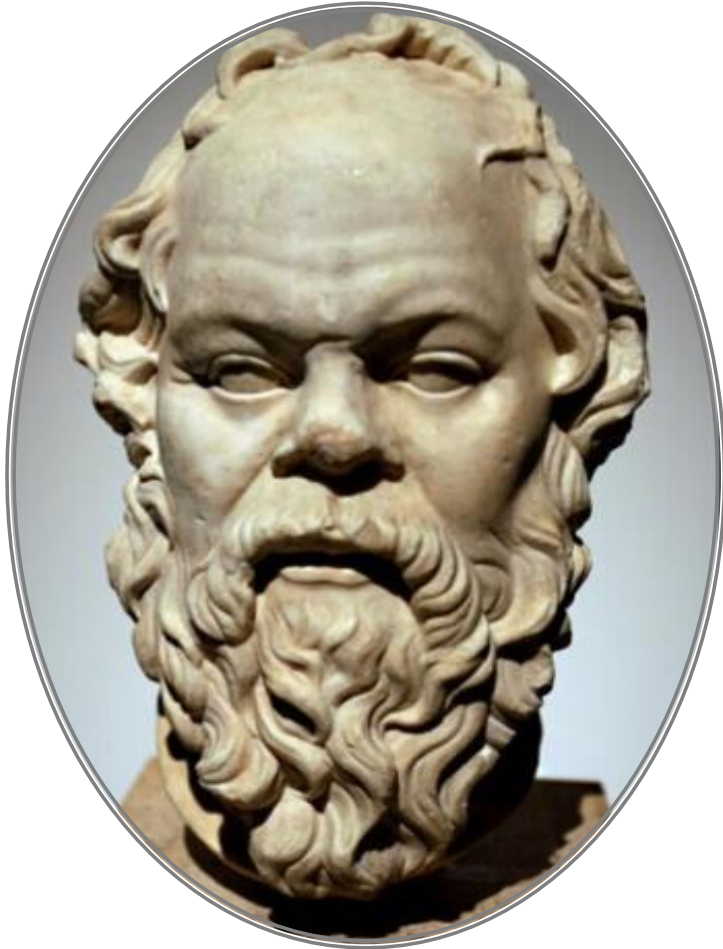


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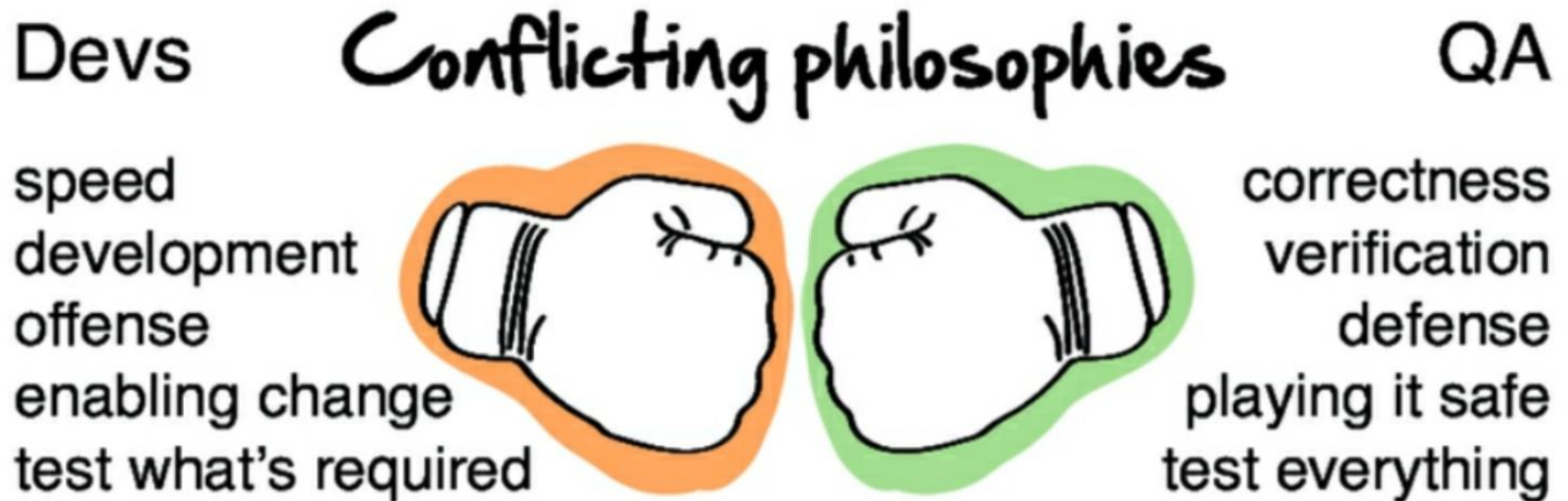
Software Tester



苏格拉底



Test Philosophies



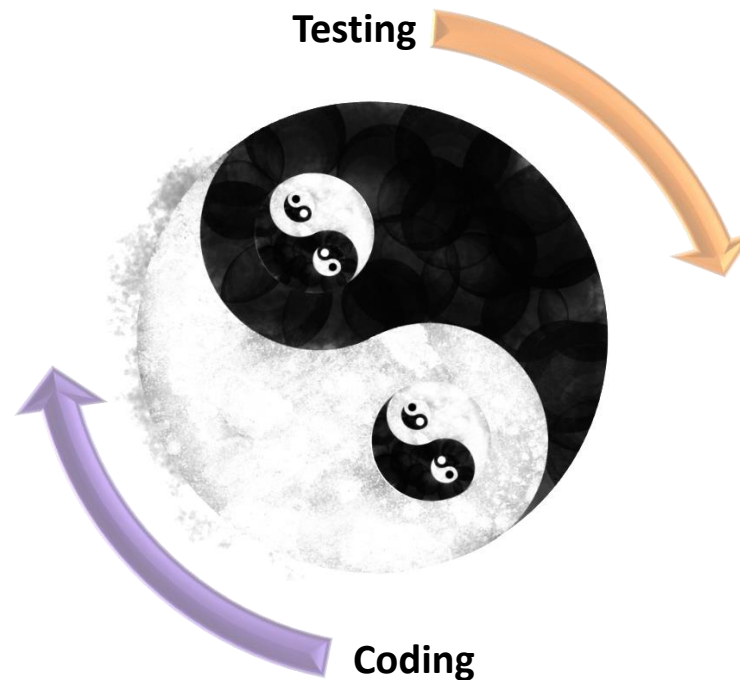
around the purpose of automated testing

Agenda

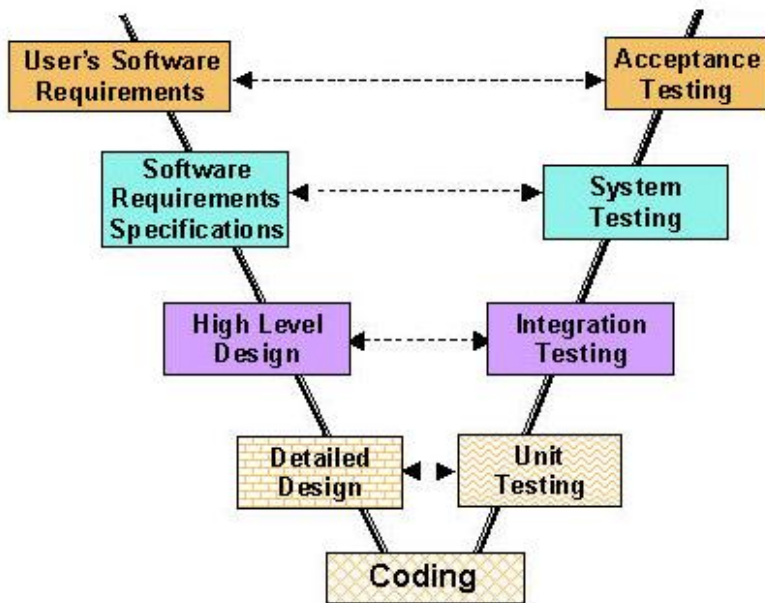


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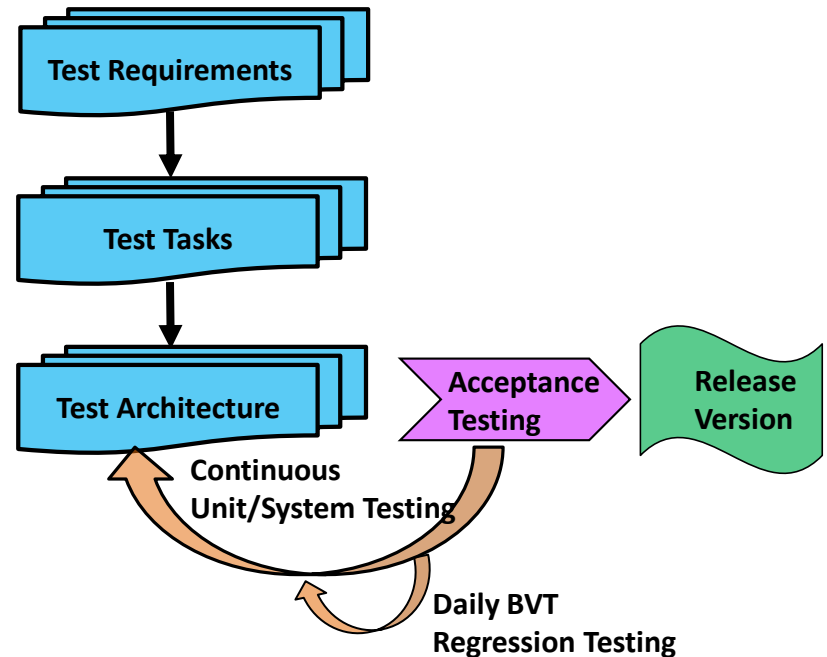
Testing Through the Whole Process



Testing Process



V Model



Testing in Scrum

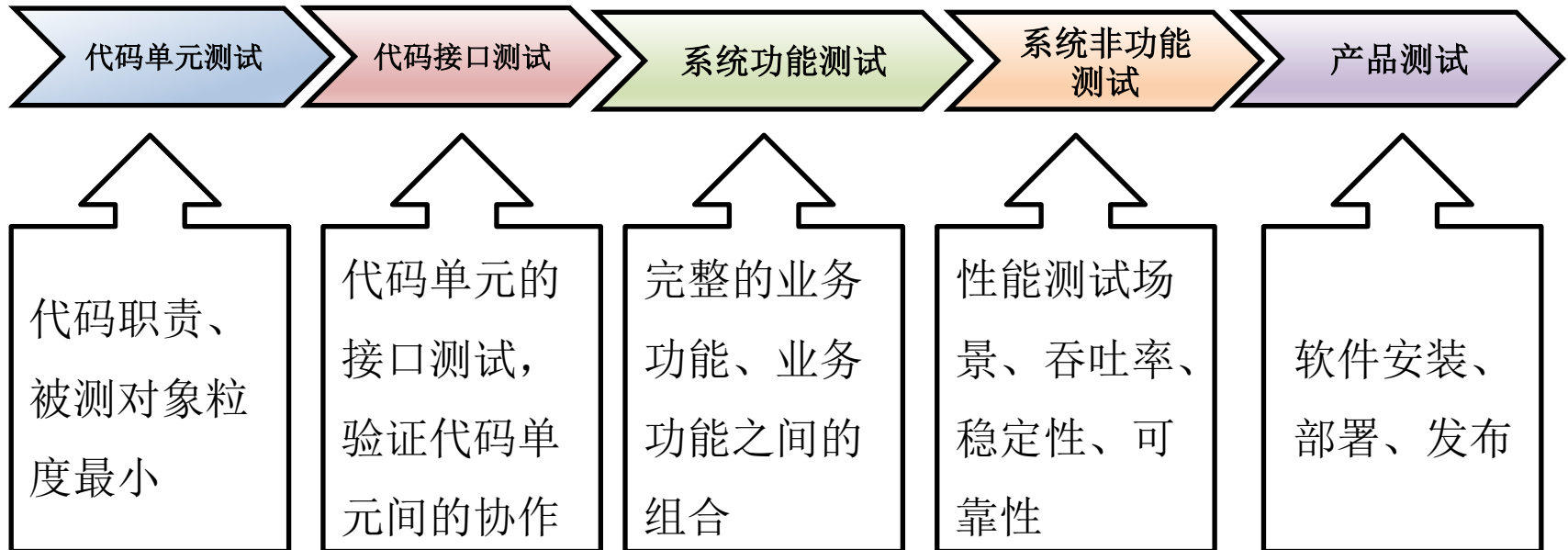
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- What is Software Testing
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- **How to test**
 - Test Process
 - Test Method
 - Testing Tool

Testing Process

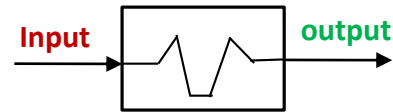
- Rule
 - 被测对象粒度从小到大推进
- Example



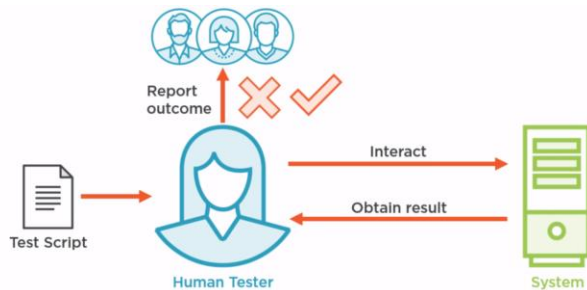
Testing Methods: The Big Picture



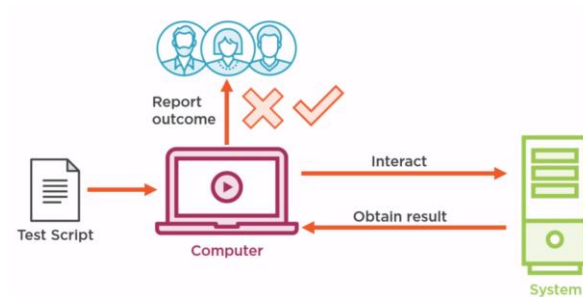
Black box Testing



White box Testing



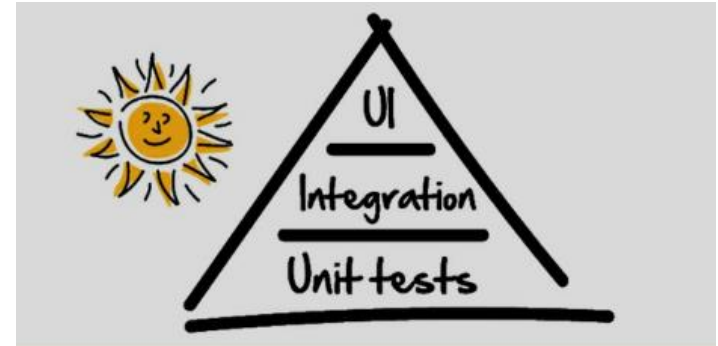
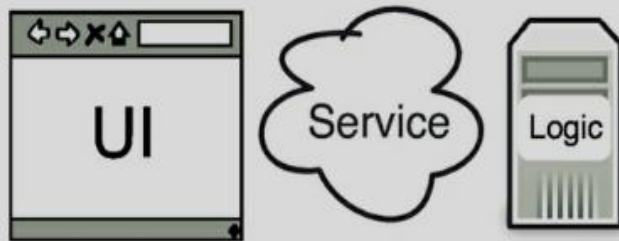
Manual Testing



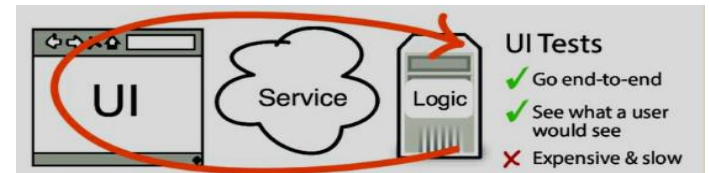
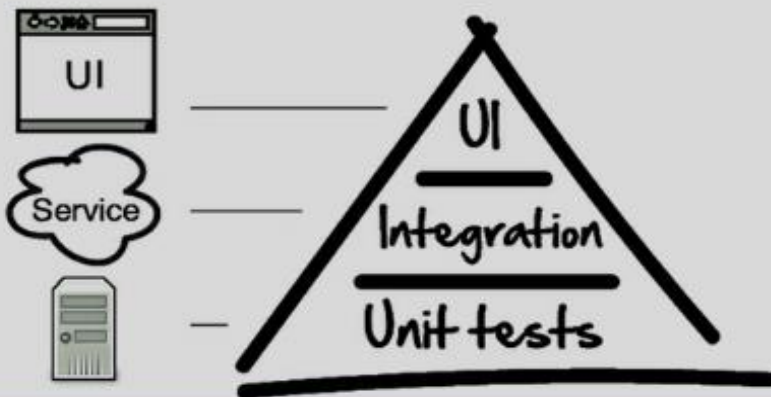
Automation Testing

WebApp Testing Pyramid

Most software applications typically have three layers



Each layer maps to a layer of the pyramid



Testing Tools



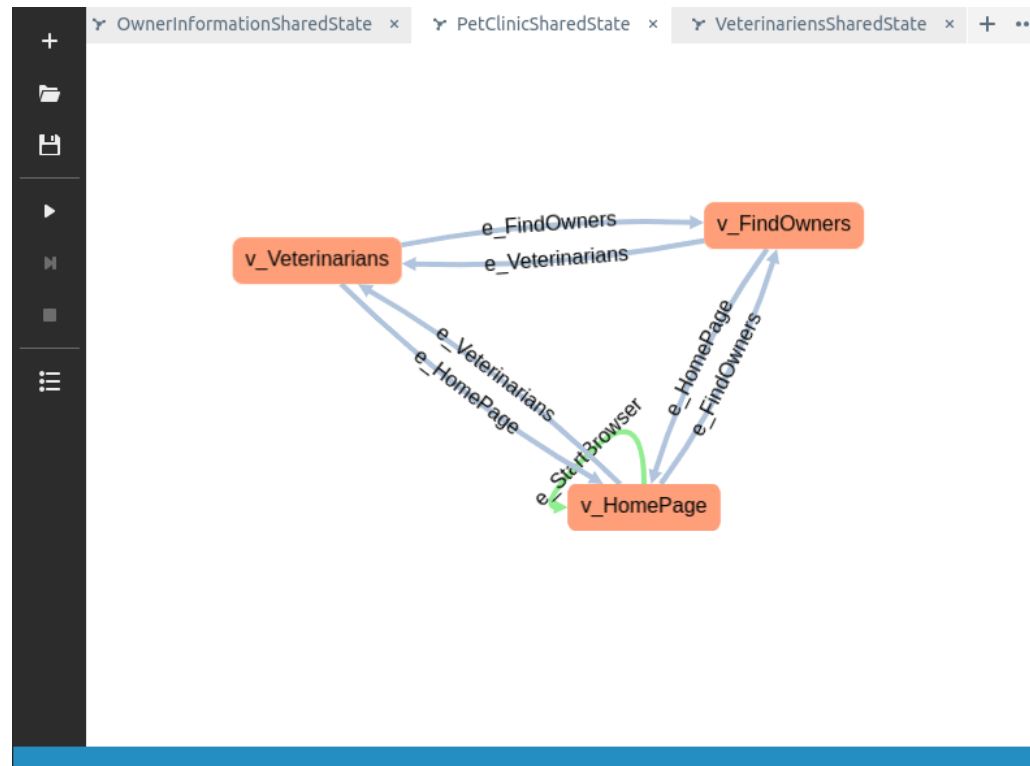
Selenium WebDriver



Develop Tools for Testing



<https://graphwalker.github.io/>



Summary

- Software testing is to detect and prevent software bugs
- Software testing can assure software quality and decrease dev cost in a long term
- Software testing should be conducted during the entire dev process
- A Software tester is the software break-man
- Good Software testing needs suitable test process, test methods and testing tools
- Test Generator is the most advanced testing techniques

The End