

SAT: Testing Principle and the testing pyramid

In a team of 3-4 students (aim for 3 if we have 1-2 students left they will join existing teams) talk about these questions and write your collective answers in the report. You may refer to Reading2.

Testing Principles

1. What are the differences between systematic and effective testing and gut-feeling testing? (the example of John vs Eleanor). Gut-feeling tests: what characterizes John's behavior? What makes Eleanor's behavior more systematic? Our goal is to come up with one sentence that explains what gut-feeling testing is, and another one explaining what systematic testing is.

2. **This part should not be included in your report**

Recall the testing principles mentioned in the book:

- Exhaustive testing is impossible
- Knowing when to stop
- Variability is important (the pesticide paradox)
- Bugs happen in some places more than others (defect clusters)
- Testing will never be perfect
- Context is king
- Verification is not validation

Each of you is responsible for explaining 2 principles to the others. When a team mate explains a principle don't rely on your knowledge, act like you hear this information for the first time and ask questions for clarifications, examples, etc, whatever you would need to learn this information as if you hear it for the first time.

3. Compare the testing principles:

- Exhaustive testing is impossible vs testing shows the presence of bugs but not their absence
- Absence-of-errors fallacy vs pesticide paradox
- Verification vs validation

4. Kelly, a very experienced software tester, visits *Books!*, a social network that matches people based on the books they read. Users do not report bugs often, as the *Books!* developers have strong testing practices in place. However, users say that the software is not delivering what it promises. What testing principle applies here and why?

The absence-of-errors fallacy (or verification is not validation principle). While the software does not have many bugs, it does not give users what they want. In this case, the verification is good, but the developers need to work on the validation.

5. Suzanne, a junior software tester, has just joined a very large online payment company. As her first task, Suzanne analyzes the past two years' worth of bug reports. She observes that more than 50% of the bugs happen in the international payments module. Suzanne promises her manager that she will design test cases that completely cover the international payments module and thus find all the bugs. Which of the testing principles may explain why this is not possible and why?

Exhaustive testing is impossible in most cases.

6. John strongly believes in unit testing. In fact, this is the only type of testing he does for any project he's part of. Which testing principles is John disregarding?

Pesticide paradox (or variability is important), tests are context-dependent, and absence-of-errors fallacy (or verification is not validation) principles.

7. Sally just started working as a consultant for a company that develops a mobile app to help people keep up with their daily exercises. The development team members are fans of automated software testing and, more specifically, unit tests. They have high unit test code coverage (>95% branch coverage), but users still report a significant number of bugs. Sally, who is well-versed in software testing, explains a testing principle to the team. Which testing principles did she most likely talk about and why?

The pesticide paradox (or variability is important) fits the discussion best. The development team has high code coverage, but they need to apply different techniques.

The testing pyramid

8. Can you think of reasons to do manual testing?

9. Deciding the test level isn't that straightforward. How would you do it? What would you take into account to decide which test level to go for?

10. Personal taste plays a role. Are you more of a 'unit testing type of person' or an 'integration testing type of person' ?