Software testing methods

Exploratory testing

Jouni Juntunen, Jari Kiiskinen
University of Applied Sciences
Spring 2026

“Is a style of software testing that emphasizes the personal freedom and responsibility of the individual tester to continually optimize the quality of his/her work by treating test-related learning, test design, test execution, and test result interpretation as mutually supportive activities that run in parallel throughout the project.”

Cem Kaner, 1984

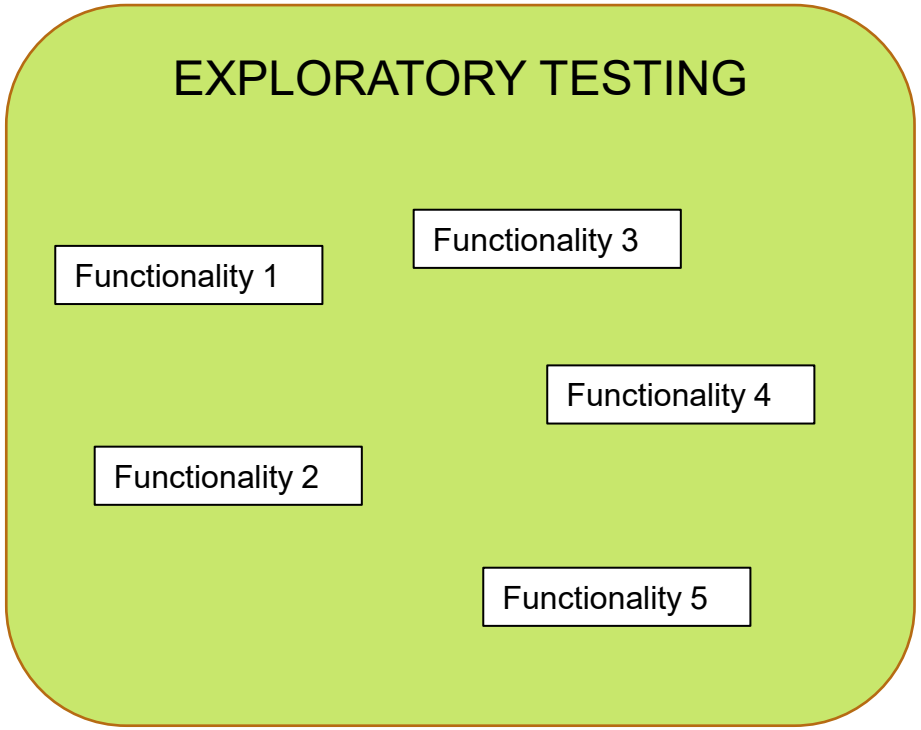
Exploratory testing

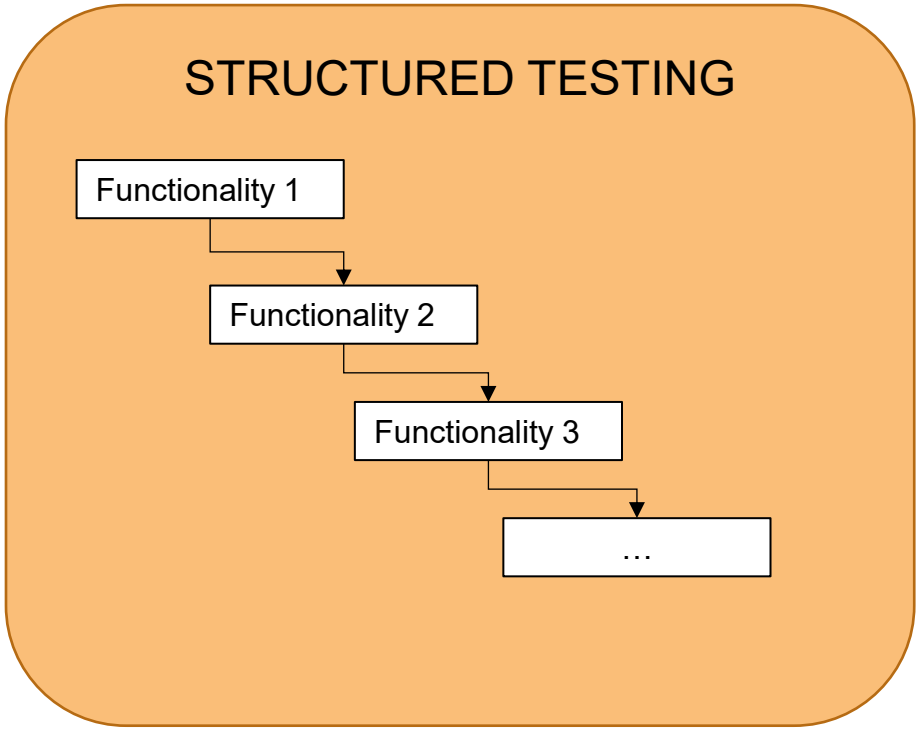
- Simultaneous and concurrent learning, test design and execution, testing as “thinking”
- Exploring the tested software and how it will handle various cases (on the fly)
- Running test without (extensive) previous planning, “ad-hoc” testing, “free-style” (but is by no meas random)
- Expectations are open, some results may be predicted/expected, but others may not
- Black-box testing, reviewing tested software form the user’s point of view, knowing user personas is important

Exploratory testing

- Can be executed throughout the project
- Anyone can participate/test (testers, developers, designers, end-users, product owner…)
- Dependent on tester's skills to invent test cases and finding defects not easily detected by other types of tests
- Finding defects and bugs that other are not covered by the other tests, include exploratory testing as part of a comprehensive test coverate strategy
- Is one of the testing approches used in Agile development

Exploratory testing vs. structured testing





“No matter how many test cases of how many types you’ve created, you will run out of formally planned tests. You can keep testing. Run new tests as you think of them, without spending much time preparing or explaining the tests. Trust your instincts.”

Cem Kaner, Testing Computer Software, 1988

Steps for exploratory testing

- 5 phases according to the session based test manament (SBTM cycle)
  - Bug classification/taxonomy
  - Test charter
  - Time box
  - Review results
  - Debrief

Advantages of exploratory testing

- Quickly find important/essential bugs and defects, rapid feedback
- Provide more versatile tests and find problems, that other predefined and scripted or automated tests are not detecting
- Less preparation (and thefore using recources)
- Learning about a service or product
- React quickly to changes and adapt testing accordingly

Advantages of exploratory testing

- Reinforcing formal testing process (e.g. creating automated tests out of cases used in exploratory testing).
- More stimulating that executing (boring) predefined scripted tests (especially if done manually)
- Foster collaboration
- According to the some studies, exploratory testing discovers more defects and bugs compared to scripted testing

Disadvantages of exploratory testing

- Can’t be reviewed in advance
- Hard to keep track, which part of the software is tested (might be hard to reproduce error or do regression testing)
- Documentation might be challenging (or at least special attention must be paid)
- In case there are stardards, laws etc. regulation or rules, testing cannot rely only in exploratory testing
- Test cases might not be valid or will found positive false if not executed professionally

Tools

- Lot of tools available for exploratory testing
- Gathering evidence and documentation is important, for example, sessions can be recorded for later analysis and reporting
- Taking notes and screenshots
- (Automated) and (fast) analysing and reporting
- Creating test charters

Agile and exploratory testing

- Exploratory testing is one of the testing methods used in agile development
- Complements test automation (ofter used in agile development)
- Fits in the agile methodology enabling to adapt and respond changes quickly and easily
- Whole team is responsible of testing (development team, product owner, end-users), improves collaboration

Resources

- Atlassian. Exploratory testing. https://www.atlassian.com/continuous-delivery/software-testing/exploratory-testing
- Guru99. What is Exploratory Testing? Techniques with Examples. https://www.guru99.com/exploratory-testing.html
- Global App Testing. Exploratory Testing in Agile Teams. https://www.globalapptesting.com/blog/the-critical-role-exploratory-testing-plays-in-agile-teams
- Exploratory Testing. What is Exploratory Testing? https://www.exploratorytesting.com/what-is-exploratory-testing/

Resources

- Tinkham, A. & Kaner, C. Exploring Exploratory Testing. http://kaner.com/pdfs/ExploringExploratoryTesting.pdf
- IEEE Access. Levels of Exploration in Exploratory Testing: From Freestyle to Fully Scripted. https://www.diva-portal.org/smash/get/diva2:1204485/FULLTEXT01.pdf
- Smartbear. The benefits of exploratory testing in agile environments. https://smartbear.com/blog/exploratory-testing-benefits/
- Smartbear. A Handy Guide to Using Agile Methodology in Testing: Processes, Best Practises & Tools. https://smartbear.com/test-management/agile-testing-best-practices/