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Static testing
Requirements testing

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Content

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Static testing:

- What is it? (Main idea and key point)
- Static testing subjects
- Requirements testing
- Static testing techniques
- Static testing tips

What is it?

What is it?

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Static testing is a software testing method that involves the examination of a program, along with any associated documents, but does not require the program to be executed.

In most cases the analysis is performed on some version of the source code.

Static VS Dynamic

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Static Testing	Dynamic Testing
It is performed in the early stage of the software development.	It is performed at the later stage of the software development.
In static testing whole code is not executed.	In dynamic testing whole code is executed.
Static testing prevents the defects.	Dynamic testing finds and fixes the defects.
Static testing is performed before code deployment.	Dynamic testing is performed after code deployment.
Static testing is less costly.	Dynamic testing is highly costly.
It generally takes shorter time.	It usually takes longer time as it involves running several test cases.
It can discover variety of bugs.	It expose the bugs that are explorable through execution hence discover only limited type of bugs.

Benefits

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- Early detection and correction of coding errors
- Reduces cost in early stages of development
- Reduced timescales for development
- Feedback on this stage can help improve the overall functioning
- Developers can detect the better way of implementation
- Can be quite fast (with automatic tools using)

Static testing subjects

Subjects

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- Requirements specifications
- Design documents
- Use cases
- Source code
- Test plan, test cases and test data
- Technical specifications and traceability matrix
- User documentation

Requirements testing

Requirements types

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- Business Requirements – high-level statements that describe the goals and objectives of the business
- Stakeholder/User Requirements – needs of a particular group of stakeholders and what they require of a particular solution
- Solution Requirements – describe what characteristics a solution will have to meet the needs of the stakeholders and business
  - Functional Requirements – describe the behavior of the solution and the information managed
  - Non-Functional Requirements – the qualities of the solution or the environmental conditions under which the solution will remain effective
- Transition Requirements – characteristics that a solution must have in order to transition from the current state to the desired future state

Key attributes

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Requirement:

- Unambiguous (однозначность)
- Clearness (ясность)
- Independent (независимость)
- Atomic (атомарность)
- Completeness (полнота)
- Testability (тестируемость)
- Necessary (необходимость)

The full set is:

- Consistent (последовательность)
- Nonredundant (не избыточно)
- Completed (завершенность)
- Changeable (изменяемость)

Examples

Examples

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Home page view:

- Page is grey
- Login button is in left corner
- Logo is blue and in the header
- Font is Arial
- Color is white
- Header contains slogan, it should be dark blue
- Username is always shown near the logo
- Admin has DELETE permission

Examples

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Home page view:

- Page is grey
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- Color is white
- Header contains slogan, it should be dark blue
- Username is always shown near the logo
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- Page background is solid grey
- Login button is in top left corner
- Logo is blue
- Logo is in the header of page in top right corner
- Font is Arial for all texts on the home page
- Color of all texts is white
- Header contains slogan at the left of the logo
- Header color is dark blue
- Username is shown under the logo for all authorized users
- ~~Admin has DELETE permission~~

Static testing techniques

Review roles

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Moderator

- the person who leads the review of the document(s) including planning the review, running the meeting, and following-up after the meeting

Author

- the writer or person who is responsible for the document(s) to be reviewed

Reviewers

- people with a specific technical or business background who will check document(s)

Recorder

- Makes notes about all found issues, key points, open questions, etc.

Review process

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1. Planning (review criteria, personnel, objects to review, roles)
2. Entry and exit criteria defining (for formal review types)
3. Kick-off (documents sharing; objectives and process explanation)
4. Entry criteria checking (for formal review types)
5. Individual preparations (reviewing)
6. Defects, questions and points noting
7. Evaluation and results recording
8. Rework (fixing, checking, etc.)

Review process

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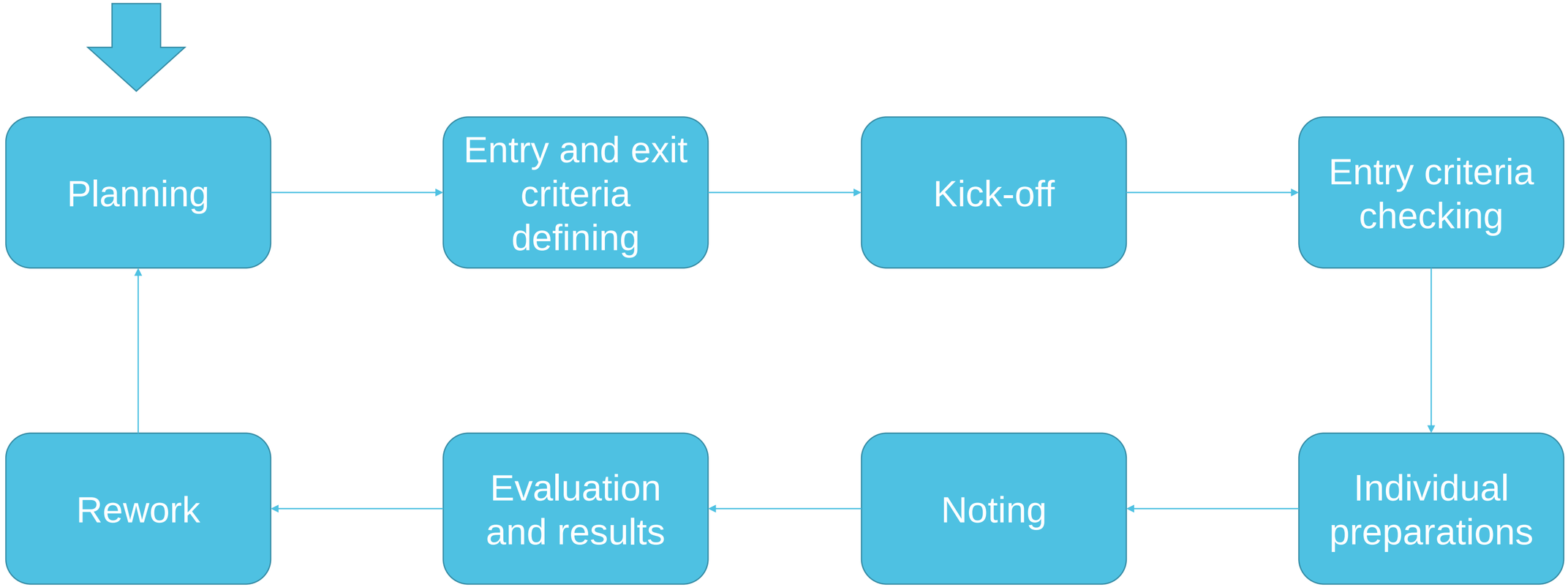

Review techniques

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- Informal Review (неформальный обзор)
- Walkthrough (беглый просмотр)
- Technical Review (технический обзор)
- Inspection (инспекция)

Informal Review

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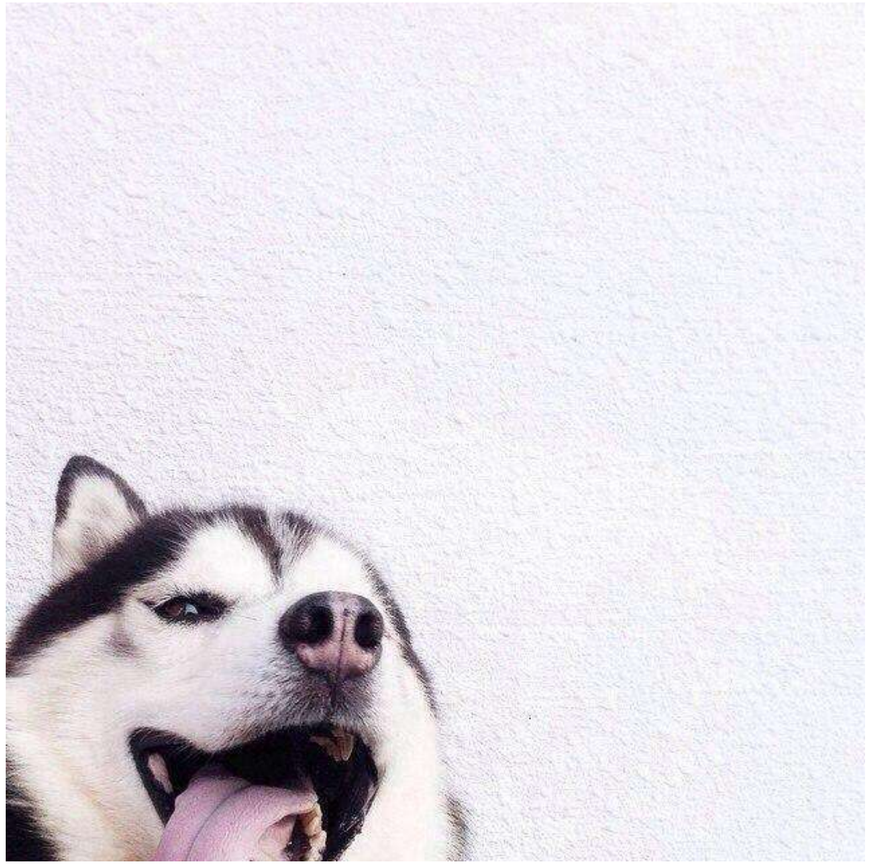
- No formal process
- May take the form of pair programming or code review
- Varies in usefulness depending on the reviewers
- Results may be documented
- Main purpose: inexpensive way to get some benefit



Walkthroughs

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- The author will explain the document to the team; participants are asking questions and making notes
- Optional pre-meeting preparation of reviewers
- Optional preparation of a review report including list of findings
- Optional participation
- May vary from quite informal to very formal
- Main purposes: learning, gaining

understanding, finding defects

Technical Reviews

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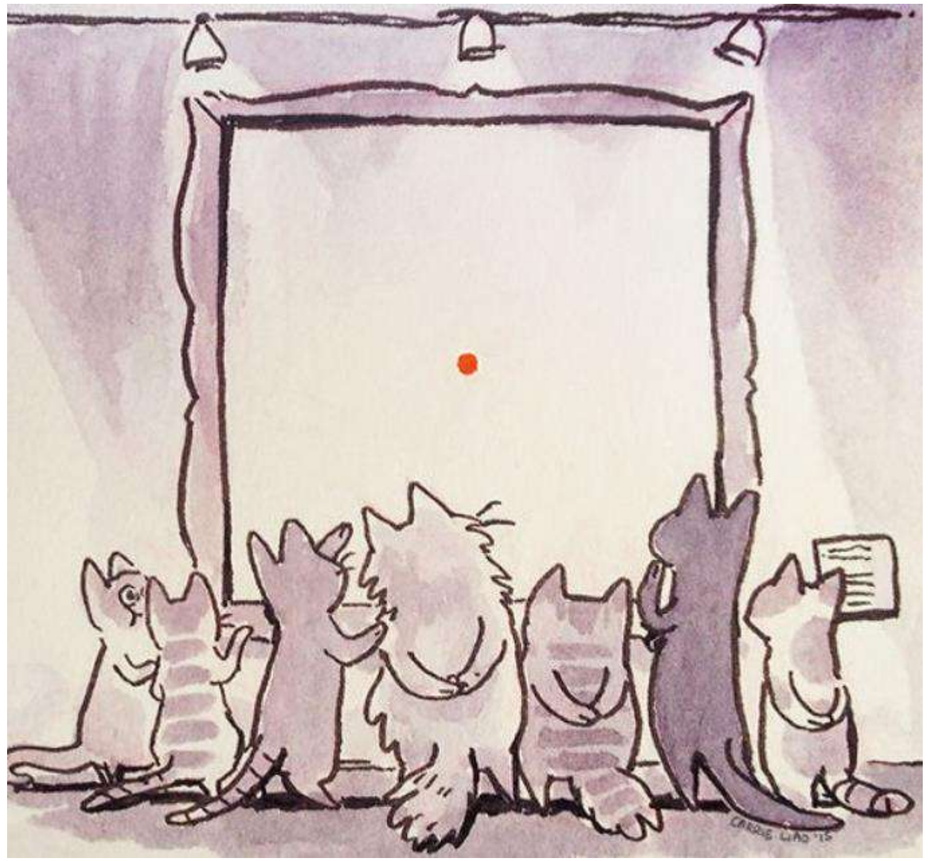
- Document is reviewed by the technical experts in order to detect any discrepancies or issues
- Pre-meeting preparation by reviewers
- Optional use of checklists
- Preparation of a review report which includes the list of findings, the verdict whether the software product meets requirements and standards
- May vary in practice from quite informal to very formal
- Main purposes: discussing, making decisions, finding defects, solving technical problems and checking conformance to specifications and standards



Inspections

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- Moderator provides a strict review to find defects
- Roles are strongly defined
- Might includes metrics gathering
- Formal process based on rules and checklists
- Specified entry and exit criteria for acceptance
- Pre-meeting preparation
- Main purpose: finding defects

Static testing tips

Tips

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- Focus only on things that really count
- Explicitly plan and track review activities
- Train participants with examples
- Keep process formal as the project culture
- Continuous Improvement

Questions

Thanks for attention!