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Static Testing

Objectives

Explain why and how dynamic testing is different from static testing and their complimentary role in the SDLC.

Identify, with examples, what can be tested using static techniques and explain why

Recognise and understand reviews and

Dynamic/Static

**Dynamic -** Examination of the code though execution of the software

**Static -** Examination of software without the code being executed. This would instead invite reviews of documentation or static code analysis.

What can be inspected?

Code

Requirements

Business Policy

Strategy

Test Plans/Designs/Cases

\*Reviews and Levels of Formality

**Informal** – No Process; Not usually documented; Inexpensive way to achieve limited benefits; May be implemented as pair programming

**Walkthrough** – Led by the author of the document; Can vary widely in practice from formal to informal; Main purpose to enable learning

**Technical Review** – Documented, usually performed as a peer review let by a moderator; Can also vary widely from informal to formal

**Inspection –** Led by trained moderator; Pre-meeting prep is essential; Main purpose to find defects; Secondary may be process improvement

Benefits

Early defect detection and correction

Fewer defects

Reduced testing time and cost

Reduced development timescales

Development productivity improvements

Improved communication

Activities in a Formal Review

Planning

* Defining the review criteria
* Selecting the personnel
* Allocating roles
* Defining the entry and exit criteria for more formal review types (eg inspections)
* Selecting which parts of documents to review
* Checking entry and exit criteria (for more formal review types)

Kick-off

* Distributing documents
* Explaining the objectives, process and documents to the participants

Individual Preparation

* Preparing for the review meeting by reviewing the documents
* Noting potential defects, questions and comments

Examination/Evaluation/Recording or Results

* Discussing or logging, with documented results or minutes (more formal)
* Noting defects, making recommendations regarding handling the defects, making decisions about the defects
* Examining/evaluating and recording issues during any physical meeting or tracking any group electronic communications

Rework

* Fixing defects found (typically done by author)
* Recording update status of defects (in formal reviews)

Follow-up

* Checking that defects have been addressed
* Gathering Metrics

Roles in a Formal Review

**Leader/Moderator** – Plans review, chooses participant’s, conducts meeting, performance follow up

**Manager** – Decides on the execution of reviews. Determines whether review process objectives have been met

**Author** – of the document being reviewed (code) Helps understanding of the defects

**Reviewers/Inspectors** – Specialised fault-finding roles

**Scribe** - Documents all the issues and points made during the meeting

**Others** - Inspection/review co-ordinator

What might be found?

60% of defects have normally been made before coding has even started

Verification and Validation\_ we have already spoken about his in relation the V-Model

You find causes rather than faults. This is a positive way to test

Security Vulnerabilities

Programming standards violations

Unreachable (dead code)

Missing or incorrect logic.

Success Factors for Reviews

Each review has clear predefined objectives

The right people for the reviewer’s objectives are involved

Testers are valued reviewers who contribute to the review and also learn about the product which enables them to prepare tests earlier

Defects found are welcomed and expressed objectively

People issues and psychological aspects are dealt with (eg, making it a positive experience for the author)

The review is conducted in an atmosphere of trust; the outcome will not be used for the evaluation of the participants

Review techniques are applied that are suitable to achieve the objectives and the type of level of software products and reviewers

Checklists or roles are used if appropriate to increase effectiveness of defect identification

Training is given in review techniques, especially the more formal techniques such as inspection

Management supports a goo review process, e.g. by incorporating adequate time for review activities in project schedules

There is an emphasis on learning and process improvements

Summary