PROMPT Software Testing

Introduction to test design

"Experience suggests that software that has passed a thorough set of systematic tests is likely to be more dependable than software that has been only superficially or haphazardly tested"

- Software testing and analysis: process, principles, and techniques, Pezzè and Young

"Experience suggests that software that has passed a thorough set of systematic tests is likely to be more dependable than software that has been only superficially or haphazardly tested"

- Mauro Pezzè and Michal Young

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- We cannot formally prove software to be correct
- We cannot exhaustively test software
- What is then meant by **thorough** and **systematic** testing?

The answer lies in Test Design…

Remember…

…these are our goals in testing…

● Testing seems to involve **execution of the software** and provide a verdict by checking the result against an **expected outcome**…

● …with the intent of **evaluating** whether it **meets its specifications** or **its intented use**…

● …or to **measure** some aspect of its **quality** (e.g., correctness, robustness, performance, usability, etc.)…

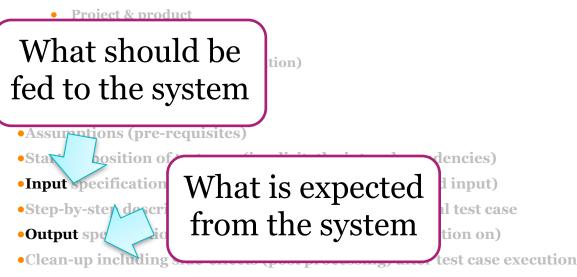● …and to **detect** the existence of **defects**.

There is no single overarching objective of testing.

● Also, it is suggested that a high **organizational awareness** and **maturity** of testing is claimed to contribute to the **prevention** of **defects** and **reduction** of **software risk**.

Test Case - Academic View

- **Test Case Name (& number)**
- **Test suite, (version)**
- **Test technique used**
- **Time to create the test case**
- **Version or unique reference to:**
  - Test items (test object lists, test artifcacts, test plans, etc.)
  - Software under test
  - Project & product

> What should be fed to the system

...tion)

- **Assumptions (pre-requisites)**
- **State... position of test... (implicit...inter-dependencies)**
- **Input** specification... ...d input)
- **Step-by-step** descri... ...al test case
- **Output** spe... ...tion on)
- **Clean-up including side-effects (post-processing) after test case execution**

> What is expected from the system

...SO,

how does one develop **test cases** that best meet the **goals of testing**?

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how does one develop **test cases** that best meets the **goals of testing**?

This is the fundamental question of test design

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Test Design Techniques

Software artifact → Test design technique → Test cases