Homework 2 summary

- There are solutions about high level test cases with steps
- Words “high, low, negative, positive” in context of test case type are not needed in title or description

5. Types of testing

Wow, there are so many!

Astea Solutions QA Team

Overview

- By object of testing
- By knowing internal structure
- By time of test execution
- By positivism of test scenarios
- By degree of isolation
- By degree of automation
- By level of preparation
- Static testing

Questions

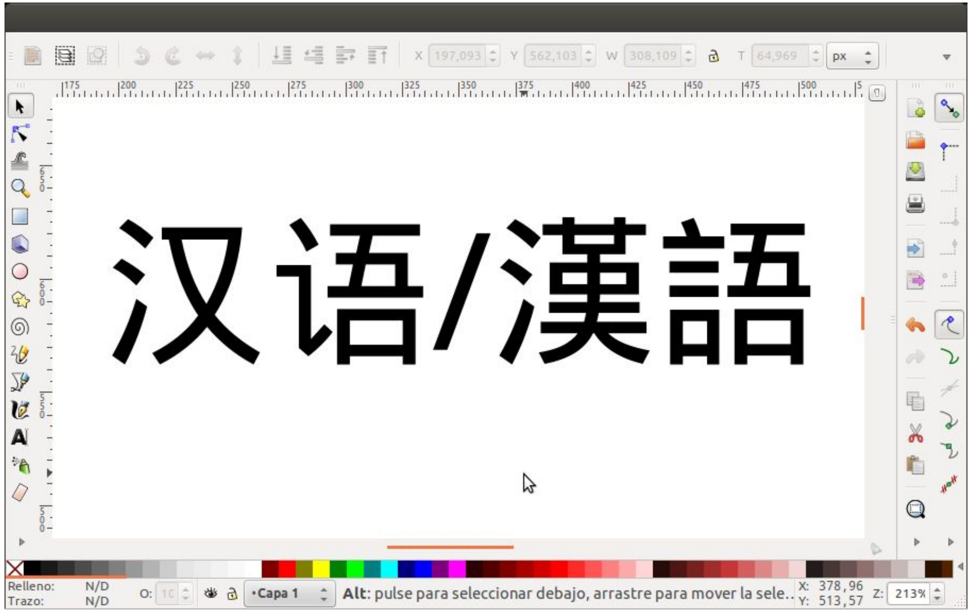
- Why do we test?
- When do we have a bug and what to do when in doubt?
- What is test case?
- What is test suite?
- Test case types?
- Why do we create test cases and test suites?
- What should we test first?
- When should we stop testing?
- What is scrum?
- What is waterfall?
- What are the differences between scrum and kanban?

By object of testing (1)

- Functional testing
  - Most common type of testing
  - Verifies system functionalities
  - Most software testing activities are about functional testing
- UI testing
  - Verify UI is as in specification
- GUI testing
  - The process of ensuring proper functionality of the graphical user interface (GUI) for a given application and making sure it conforms to its written specifications

By object of testing (2)

- Localization testing
  - Verify UI in case of different translations
  - Handling of different input text encoding



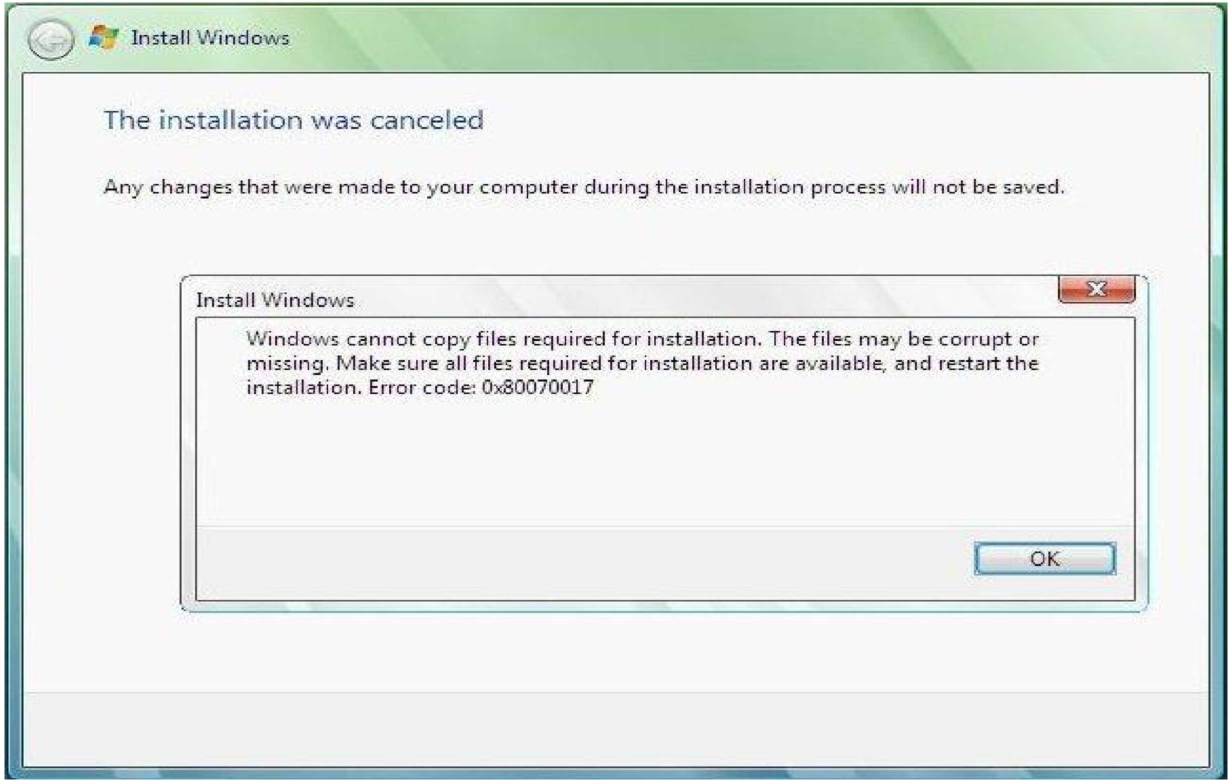
汉语/漢語

Relleno: N/D
Trazo: N/D
O: 10
•Capa 1
Alt: pulse para seleccionar debajo, arrastre para mover la sele..
X: 378,96
Y: 513,57
Z: 213%

- Usability testing
  - Evaluate user experience with software
  - Conducted with target group of the software
  - Tasks are given to people and tasks completion is measured

By object of testing (3)

- Installability testing



The installation was canceled

Any changes that were made to your computer during the installation process will not be saved.

Windows cannot copy files required for installation. The files may be corrupt or missing. Make sure all files required for installation are available, and restart the installation. Error code: 0x80070017

By object of testing (4)

- Installability testing
  - Checks the guideline provided in installation document suitable for installing the application into environment properly or not.
  - 3 main cases to be considered
    - Install the software on clean machine
    - Upgrade of already existing version
    - Uninstall the software
  - Other cases:
    - Disk space not enough
    - OS not supported

By object of testing (5)

- Security testing
  - Security testing refers to testing the protection against security breaches
  - It checks to see if the application is vulnerable to attacks, if anyone hack the system or login to the application without any authorization
  - It is a process to determine that an information system protects data and maintains functionality as intended
  - Simulate hacker attacks

By object of testing (6)

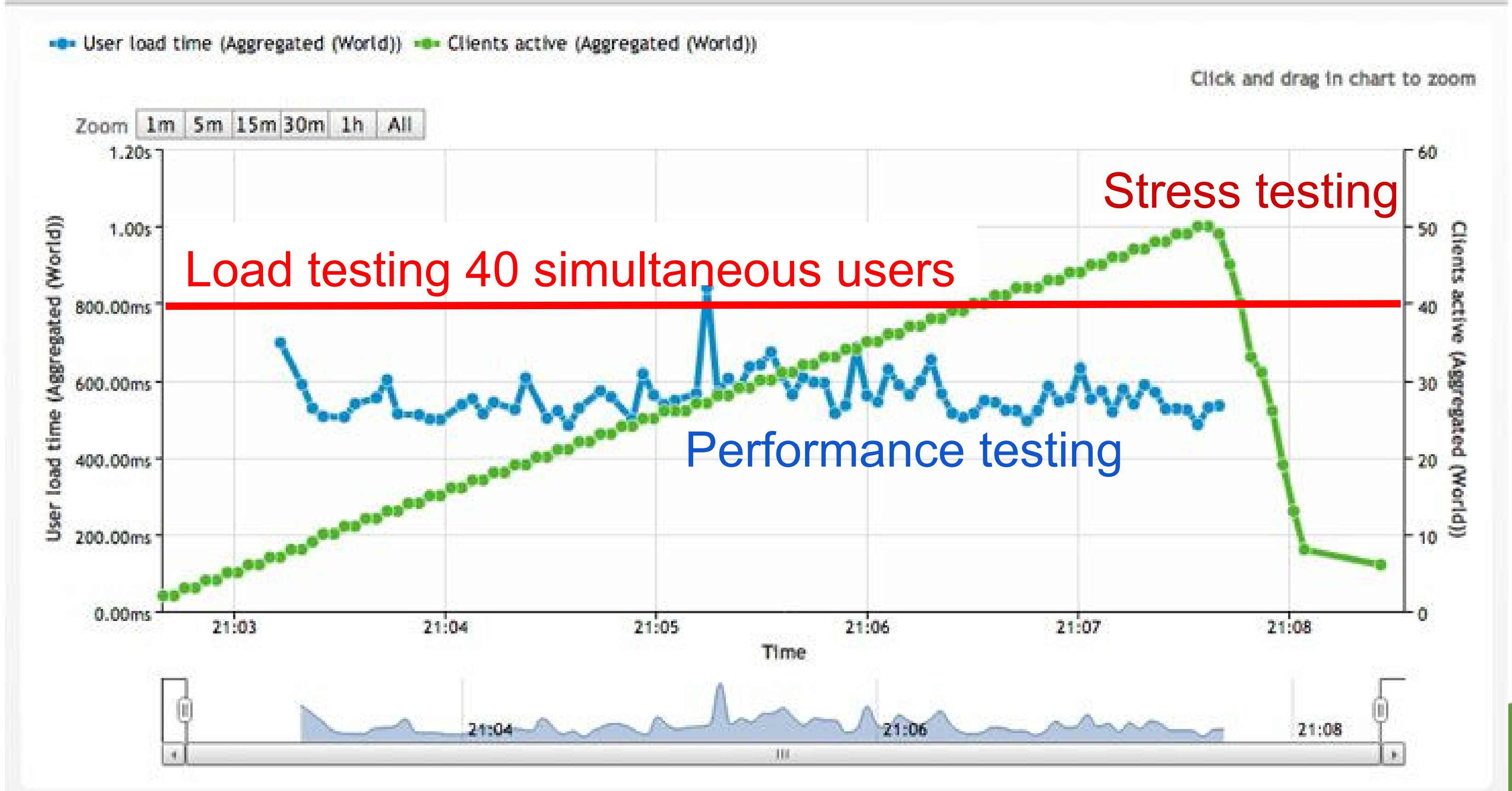
- Security testing

By object of testing (7)

- Recovery testing
  - Recovery testing is done in order to check how fast and better the application can recover after it has gone through any type of crash or hardware failure etc.
  - Data loss and time to restore in case of system failure
  - Examples:
    - While an application is running, suddenly restart the computer
    - While an application is receiving data from a network
- Compatibility testing
  - Test with different OS or browser
  - Most common OS/Browser combinations are fully tested
  - Statistics are used to determine most common combinations

By object of testing (8)

Performance vs. Load vs. Stress testing



By object of testing (9)

- Performance vs. Load vs. Stress testing
  - Performance testing checks how well software works within different workloads
    - check the response time of the system or its components
  - Load testing is done to check the behavior of the software under normal and over peak load conditions
  - In stress testing the software is subjected to peak loads and even to a break point to observe how the software would behave at breakpoint. It also tests the behavior of the software with insufficient resources like CPU, Memory, Network bandwidth, Disk space, etc.

By object of testing (10)

- Volume testing
  - Carried out to find the response of the software with different sizes of the data being received or to be processed by the software
  - Try to open 50 MB .xlsx file with following software products

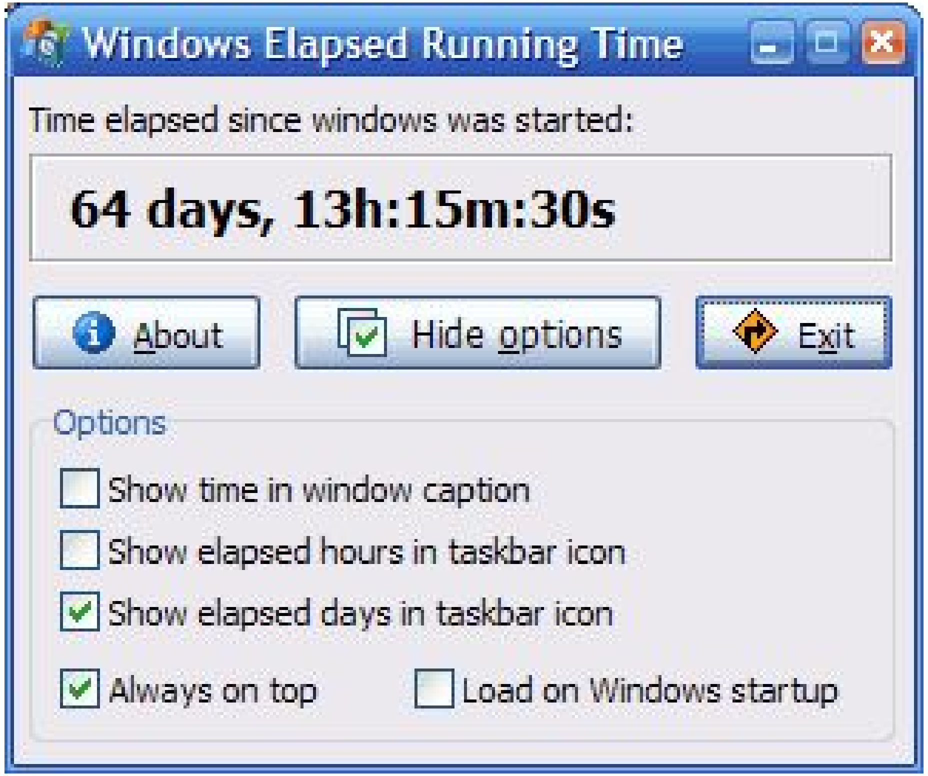
vs.

By object of testing (11)

- Endurance testing
  - Involves testing a system with a significant load extended over a significant period of time, to discover how the system behaves under sustained use
  - For example, in software testing, a system may behave exactly as expected when tested for 1 hour but when the same system is tested for 3 hours, problems such as memory leaks cause the system to fail or behave randomly

By object of testing (12)

- Endurance testing


Windows Elapsed Running Time

Time elapsed since windows was started:

64 days, 13h:15m:30s

Options

[ ] Show time in window caption

[ ] Show elapsed hours in taskbar icon

[✓] Show elapsed days in taskbar icon

[✓] Always on top [ ] Load on Windows startup

By knowing internal structure (1)

- Black box testing
  - Test cases are created based on functionalities of the system
  - What is the system doing
  - Internal structure is not considered, only user behaviour
  - Assumes that the tester usually doesn't know how the back end was written
  - Ideas for testing come from expected user behavior
  - Expected patterns of user behaviour are scenarios that we expect will be (OR are already) taking place as users use our software

By knowing internal structure (2)

- White box testing(also known as "glass box testing," "clear box testing," and "open box testing")
  - Test cases are created based on code structure
  - How is the system doing it
  - Exists in the form of unit testing performed by the programmer against his or her own code

By knowing internal structure (3)

- Grey box testing
    - Combination of both black and white box testing
    - Most effective, increased test coverage
    - On the one hand, the tester uses black box methodology to come up with test scenarios.
    - On the other hand, the tester possesses some knowledge about the back end, and he or she actively uses that knowledge

By time of execution (1)

- Alpha testing
  - Takes place at developers' sites
  - Simulated or actual operational testing
  - Real customers or independent test team
  - Outside development organisation

By time of execution (2)

- Beta testing
    - Takes place at customers' sites
    - Operational testing by potential or existing customers
    - Good for feedback gathering

By positivism

- Positive testing
  - Executed first to verify system functions as expected
  - Different use case scenarios are covered
- Negative testing
  - Test system response in case of errors made by users
  - Verify error messages are useful for users and support
  - Many negative combinations are possible
  - More bugs are found by negative testing

By degree of isolation

- Component testing
  - Component is minimal software that can be tested in isolation
  - Test component to ensure it functions as per specification
- Integration testing
  - Functional testing of the interaction between two or more integrated components.
- System (end-to-end) testing
  - Functional testing of a logically complete path consisting of two or more integrated components.
  - Testing of the system as a whole

By degree of automation

- Manual testing
  - Test cases, test data are created and executed manually
  - Manual functional black box testing is the most often testing performed
- Automation testing
  - Test cases are executed by automation testing tools
  - Automation test cases are created manually
- Semi-automation testing
  - Automation tools are used to help manual testing
  - Test data can be generated with automation tools
  - Most common scenarios can be automated

By level of preparation

- Formal/Documented testing
  - Planned and documented testing effort
  - Test cases are mandatory
- Ad-hock/Exploratory testing
  - Testing performed without any planning or specific purpose
  - Testing is performed without any test cases
  - Depends on QA experience and imagination
  - Can catch interesting bugs

Static testing (1)

- Dynamic testing - requires the execution of software

- Static testing
  - Opposite to dynamic testing the test object is not provided with test data and executed but rather analyzed.
  - Static investigations like reviews and tool-supported analysis of code and documents can be used very successfully for improving quality
  - The goal of examination is to find defects and deviations from the existing specifications, standards to comply with, or even the project plan
  - Optimizing the development process
  - The basic idea is defect prevention: defects and deviations should be recognized as early as possible before they have any effect in the further development process where they would result in expensive rework

Static testing (2)

- Review process
  - Checking documents or code
  - Formal or informal
- Static analysis
  - Checking documents with formal structure or code
  - Done by tools
  - Mostly used by developers
  - Compiler
  - Static code analyzer - Rubocop, Code Climate
  - Calculation metrics - eg. tests code coverage
  - Project dependencies analysis - eg. Gemnasium alerts about updates and security vulnerabilities

Summary

- What is the most performed type of testing?
- Performance vs. Load vs. Stress testing?
- What kind of testing is going to explore more bugs?
- What is beta testing?
- Why do we need to do static testing?

QUESTIONS