UiO : Institutt for informatikk
Det matematisk-naturvitenskapelige fakultet

Compulsory assignment 2

Exam 2016

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1 Exercise 1: Open-ended questions

1.1 According to the ISTQB Glossary, regression testing is required for what purpose?

Answer: D. To ensure that defects have not been introduced by a modification.

1.2 Pair the following processes with their corresponding activities:

1. Test analysis - Establish the scope, objectives and risks of testing
2. Test plan-Transform the test objectives into test conditions and test cases.
3. Test implementation - Group tests into scripts.
4. Test reporting - Establish the scope, objectives and risks of testing.

1.3 Which of the following is a non-functional quality characteristic?

Answer: B. Reliability

1.4 Which of these is a functional test?

Answer: C. Counting if the number of outputs is as expected.

1.5 Acceptance testing is not the responsibility of the development team. It is the responsibility of the consumers, but the development team can assist in the process.

Answer: B. False

1.6 Static code analysis typically identifies all but one of the following problems. Which is it?

Answer: B. Memory leaks

1.7 In the ___ phase of a review activity, the moderator checks if the defects reported by the reviewers have been indeed fixed by the document author.

Answer : Follow-up

1.8 Should pre-conditions and post-conditions be part of a test case?

Answer: B. No

1.9 ___ is applied as test design technique when the inputs and the outputs of a software under test can be grouped in a way that exhibits similar behavior.

Answer : Equivalence partition

1.10 Pair the following roles with their typical activities:

Tester:

- Writes automated tests
- Evaluates the results of the execution of tests: pass or fail
- Gives recommendations to continue or stop the testing, based on the test execution.

Test leader:

- Writes test summary reports for management
- Introduces metrics for measuring the test progress
- Acquires and prepares test data

1.11 Which of the following metrics would be most useful to monitor during test execution?

Answer: D. Percentage of requirements for which a test has been written.

1.12 Is it allowed to use lof-fidelity prototyping when designing a user-centric software system?

Answer : A. Yes

1.13 What does it mean that a user interface is operable?

Answer : D. All of the above.

2 Exercise 2 : Short questions

2.1 What are the five fundamental test activities? Briefly describe their respective tasks from planning to closure

- **Planning and control**
  Determining the scope and risks, test approach, exit criteria, test resources etc. Implement test policy and/or test strategy.
- **Analysis and design**
  Identify test conditions, design tests, evaluate testability of the requirements and system. Designing the test environment set-up, along with identifying the required infrastructure and tools.
- **Implementation and execution**
  Make test conditions into test cases, procedures etc, then executing them while logging.
- **Evaluating exit criteria and reporting**
  Measure results to exit criteria to find out if more tests are needed. and writing test summary reports.
- **Test closures activities**
  Ensure that all incident reports have been resolved, check if everything is delivered, archive project testware for later use and handing it over to the maintenance organization. Evaluating how the testing went.

2.2 Explain briefly the following terms:

Regression testing is to test if any new defects have been introduced/returned after changing the software.
Confirmation testing is testing whether or not a previously reported defect actually has been fixed.

2.3 Identify and describe three types of non-functional software characteristics

Performance: Eg. How fast the software reacts to user input, or how many users the software can support at once.
Reliability: Eg. How much uptime the software has, or how often it crashes.
Security: Eg. How secure information used in the software is.

2.4 How does testing depend on the development life-cycle for the software under test? (sequential and iterative-incremental)

Seeing as both are two very different approaches in regards to development, both also have two very different approaches when it comes to testing. For instance, with the regular waterfall method, you do all the testing at the very end, so you're testing a nearly complete system which will require a lot of tests. Whereas with an incremental method, you'll be doing tests after each increment, so you'll test more often during the development process, but the tests will be on smaller chunks of the project, which might be more manageable.

2.5 Define and explain the purpose of entry criteria in software testing.

An entry criteria is specific conditions or on-going activities that must be present before a process can begin. A exit criteria is the specific conditions or on-going activities that must be present before a life cycle can be considered complete. The life cycle specifies which exit criteria are required at each phase. The purpose of an entry criteria is that is specifies what must be in order and ready before starting a test, this ensures that testing before readiness occurs, an exit criteria is used to ensure that the results of the tests are satisfying in regards to what we expected.

2.6 Summarize the potential benefits and potential risks a company may face when using test tools.

Potential benefits would be the reduction of repetitive work, more consistent testing (the tools do the tests exactly the same way each time), more consistent interpretation of data (the tool, not the user, interprets the data), and the data might be presented in a much more "human-friendly" way.
Potential risks might be unrealistic expectations from the tool, high cost or difficulty learning the tool, high learning curve before the tool gives significant benefits from use, and potential over-reliance on the tool.

2.7 What is a decision table? Provide an example.

A decision table is a table that shows what actions will/should be performed according to which conditions are true/false.
Example of a printer not working:

Tabell 1: Decision table

		Rules							
Conditions	Printer does not print	Y	Y	Y	Y	N	N	N	N
	A red light is flashing	Y	Y	N	N	Y	Y	N	N
	Printer is unrecognised	Y	N	Y	N	Y	N	Y	N
Actions	Check the power cable			X					
	Check the printer-computer cable	X		X					
	Ensure printer software is installed	X		X		X		X	
	Check/replace ink	X	X			X	X		
	Check for paper-jam		X		X				

2.8 Explain the role of the personas in the study of accessibility. Provide an example of such a persona.

Persona is a "virtual person" created to exemplify a typical user of the software. E.g for a scientific calculator software: Eli, age 27 - difficulty with calculating advance math but expert computer user

3 Exercise 3 : Problems to solve

3.1 Problem 1

Test 1: 12,5%
Test 2: 25%
Additional tests: To get 100% statement coverage we will need to test a warm drink with milk and sugar.

3.2 Problem 2

Equivalence partitioning combined with Boundary value analysis would be the "obvious" choice here.
Both spar and super-spar has an invalid partition containing all negative amounts of money, while spar has three other partitions: "0 - 1000", "1001 - 10 000" and "> 10 000", and super-spar has two: "0 - 5000" and "> 5000". The minimum number of tests needed would be testing negative and boundary values for both accounts. 2 (negative values for both accounts) + 5 (boundary for spar) + 3 (boundary for super-spar) + 5 (equivalence partition- test for each partition) = 1 5 .
NB: minimum and completely used in the same sentence actually means that we need to check every possible case at least once, but we get the impression that this is not what you actually mean (exhaustive testing), so we ignored this.
Test takes two parameters, account and money in account.
test(Spar, -1)
test(Spar, 0)
test(Spar, 423)
test(Spar, 1000)
test(Spar, 1001)
test(Spar, 4236)
test(Spar, 10 000)
test(Spar, 10 001)
test(Spar, 42 634)
test(Super-Spar, -1)
test(Super-Spar, 0)
test(Super-Spar, 2523)
test(Super-Spar, 4999)

test(Super-Spar, 5000)
test(Super-Spar, 52 534)
NB: The text says “more than 5000 NOK”, so it would be valuable to test both 5000 and 5001 here. Should exactly 5000 NOK give 5 or 10 percent?

3.3 Problem 3

Unsure about what you want us to do here. We find that the issue is that the main branch and post-condition does not test the requirement; to add items and continue shopping is not a requirement that is being tested in the main branch and post-condition.
Test incident report identifier : 07-280417
Summary : The requirement and main branch + post-condition does not match. It is not testing what we want it to test!
Incident description : Expected result where the user was able to continue shopping when pre-conditions are as assigned, but the result we received was “that the user was correctly logged out, and the cart was empty”.
Impact : Severe - important requirement to test.

4 Exercise 4 : Essay-type questions

They way we see this ATM is that it has a default screen, and when you touch the screen, you get asked to enter the card, once you've entered the card, it will validate it, and ask for you PIN. If you write the correct pin, it will take you to the 'menu' screen, if you have the wrong PIN you'll have another chance at typing it, if you get it wrong say 3-4 times the machine will eat your card.
Once at the 'menu' you can either choose to withdraw or receive the report. If you choose the receive the report, it'll print out the report and exit, giving you the card back. If you choose to withdraw, it'll show you different amount or give you the options to enter a own amount, it will give you the money and ask you if you want the report, if you enter OK, you get the report and the ATM will exit giving you the card back, same if you press NO, only you wont get the report. Actors regarding to the tests: User and bank.

Tests:

- Test #1: Are you able to enter the correct account if you write the correct PIN?
- Test #2: Can you withdraw more money than you have on your account?
- Test #3: Is the report you receive correct?
- Test #4: Does the card eat the card after x attempts?
- Test #5: Does the ATM return the card at the end?
- Test #6: Does the ATM show a error message if you try to withdraw more than the ATM has available?
- Test #7: Does the ATM show a error message if there is not enough paper to print the report?
- Test #8: Is the ATM able to establish a connection with the bank?
- Test #9: Is the ATM able to read the card?

Priorities where 1 is the highest:

1. Test #2
2. Test #1
3. Test #5
4. Test #4
5. Test #3
6. Test #9
7. Test #8

We believe we were able to test everything of relevance. We left out testing what would happen if someone entered a 'fake card', seeing as it wouldn't have a PIN and would not be able to proceed. Also it would be checked during test #9.