Software Testing – Foundation Level
Examination

Lecturer: Uwe Gühl
Friday, 13th of March, 2020

Name:_____   ID:_____

Points:_____/ 40   Passed:_____

Instructions: Read the following guidelines thoroughly before starting working on the exam

1   Nature of exam and scoring rules

1.1   Duration of the examination is 75 minutes.

1.2   There are 40 Multiple-Choice-Questions on next pages. Maximum 40 points are available. You should attempt to complete every question. The exam spans 12 pages in total, including this cover page.

1.3   Choose only ONE choice that you believe is correct (or most suitable). Mark your selected choice with a crossing sign (X) for each respective problem.
Marking more than one choice for each problem is considered invalid and no points will be given.

2   Exam policy during exam session

2.1   No books, lecture notes, or any kind of documents, including calculators, are permitted.

2.2   Use only blue or black inked pens to write your name, student ID, and to mark the results on the exam sheet.

2.3   Do NOT separate any exam page from the exam set, or it will be considered an attempt to cheat.

2.4   Turn off all communication devices, or it will be considered an attempt to cheat.

2.5   No discussions/talking among students are permitted, or students involved will be considered cheating.

2.6   At the expiration of exam time, students are to return the complete exam set to the exam proctor.

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Question #1 (1 Point)   [/ 1]

Which of the following is NOT a testing objective?
- a) Preventing defects.   ☐
- b) Finding defects.   ☐
- c) Debugging defects.   ☐
- d) Gaining confidence about the level of quality and providing information.   ☐

Question #2 (1 Point)   [/ 1]

During which test activity do you determine the exit criteria?
- a) Test planning.   ☐
- b) Test monitoring and control.   ☐
- c) Test implementation.   ☐
- d) Test completion.   ☐

Question #3 (1 Point)   [/ 1]

Which of the following is an example of a failure in a car configuration system?
- a) The related use case contains the ambiguous words "fast and user friendly". ☐
- b) Unnecessary code from the used car module was included in the system.   ☐
- c) If the *ThaiCar 9 TLS* has been configured, a wrong price is displayed.   ☐
- d) A developer has forgotten to include a fix in the built of the latest release. ☐

Question #4 (1 Point)   [/ 1]

Given the following test activities and tasks:
- A. Test monitoring and control
- B. Test analysis
- C. Test implementation
- D. Test execution
- 1. Evaluating the test basis for testability.
- 2. Analyzing discrepancies to determine their cause
- 3. Prioritizing test procedures and creating test data
- 4. Ongoing comparison of actual progress against the test plan.

Which of the following BEST matches the activities with the tasks?

- a) A-1, B-2, C-3, D-4.   ☐
- b) A-4, B-1, C-3, D-2.   ☐
- c) A-4, B-1, C-2, D-3.   ☐
- d) A-1, B-2, C-4, D-3.   ☐

Question #5 (1 Point)   [/ 1]

Which of the following is a true statement about exhaustive testing?
- a) It is a form of load and performance testing.   ☐
- b) It is only feasible for small projects.   ☐
- c) It is commonly done as a part of experienced-based testing.   ☐
- d) It is usually an early test activity.   ☐

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Question #6 (1 Point)   [/ 1]

What is a reason to establish bidirectional traceability between test conditions and requirements?
   a) It helps for a better calculation of the test effort in test execution phase.   ☐
   b) It is required to better assign testers to corresponding test cases.   ☐
   c) It is helpful for impact analysis when requirements change.   ☐
   d) It supports to optimize defect reports.   ☐

Question #7 (1 Point)   [/ 1]

Which of the following is a possibility to improve communication and relationships between testers and others?
   a) Escalate possible issues to human resources and stress the importance of common respect. ☐
   b) Communicate findings on the product in a neutral, fact-focused way, e.g., reproducible defect descriptions.   ☐
   c) Communicate findings in a setting with senior management to ensure everyone understands.   ☐
   d) Ensure that blaming concerning quality issues is only communicated within the test team.   ☐

Question #8 (1 Point)   [/ 1]

What describes best the pesticide paradox testing principle?
   a) The poisonous atmosphere in case of communication issues between testers and developers.   ☐
   b) Clustered defects in modules are responsible for most of the functional failures.   ☐
   c) If there are still severe defects in the software even if exhaustive testing was done.   ☐
   d) Running the same tests over a period of time they lose their effectiveness to find new defects.   ☐

Question #9 (1 Point)   [/ 1]

Which statement is true?
   a) Confirmation testing looks for unexpected side effects; regression testing is repeating those tests.   ☐
   b) Confirmation testing is done after faults are fixed; regression testing is done earlier.   ☐
   c) Confirmation testing is done by developers; regression testing is done by independent testers.   ☐
   d) Confirmation testing means running a test again after a fix; regression testing looks for unexpected side effects.   ☐

Question #10(1 Point)   [/ 1]

Maintainability testing is an example of which type of testing?
   a) Functional testing.   ☐
   b) Non-functional testing.   ☐
   c) White-box testing.   ☐
   d) Change-related testing.   ☐

Question #11(1 Point)   [/ 1]

A system reaches the end of its life and is planned to be retired, what type of maintenance testing may be required?
- a) Decommission testing.   ☐
- b) Data migration testing.   ☐
- c) Change-related testing.   ☐
- d) Equivalence partitioning testing.   ☐

Question #12(1 Point)   [/ 1]

Which of the following statements about test types and test levels is CORRECT?
- a) Functional, non-functional and change-related testing could be performed at any test level.   ☐
- b) Functional and non-functional testing can be performed at system and acceptance test levels, white-box testing is limited to component and integration testing.   ☐
- c) Change-related testing could be performed at any test level, while white-box testing is restricted to component and integration testing   ☐
- d) Non-functional testing can be performed at any test level, functional testing is restricted to system and acceptance test levels.   ☐

Question #13(1 Point)   [/ 1]

Which of the following requirements are functional requirements and which are non-functional requirements?

1. *ThaiCarWeb* displays all cars that are stored in the *ThaiCarWeb* database.
2. A user creates an order to buy a car. It includes his name, his address, and the way he would like to pay the car.
3. The order should be processed in less than 5 seconds.
4. The command "confirm" will open another web site informing the user that his order gets processed.
5. *ThaiCarWeb* must be able to process up to 100,000 used cars
6. *ThaiCarWeb* must be usable with Internet Edge Version 44.18362.449.0 and higher, and with Firefox 73.0.1 and higher.

- a) 2-3-6 are functional requirement, 1-4-5 are non-functional requirements.   ☐
- b) 1-4-5 are functional requirements, 2-3-6 are non-functional requirements.   ☐
- c) 1-2-4 are functional requirements, 3-5-6 are non-functional requirements.   ☐
- d) 1-4 are functional requirements, 2-3-5-6 are non-functional requirements.   ☐

Question #14(1 Point)   [/ 1]

Which of the following are roles in a formal review?
- a) Moderator, Review leader, Scribe, Tester.   ☐
- b) Author, Manager, Moderator, Scribe.   ☐
- c) Author, Manager, Reviewer, Tester.   ☐
- d) Author, Developer, Moderator, Reviewer.   ☐

Question #15(1 Point)   [/ 1]

What kind of defect could be found with static analysis?
- a) The use of a variable before it is defined.   ☐
- b) Memory leaks.   ☐
- c) Run-time problems.   ☐
- d) Configuration issues leading to failures.   ☐

Question #16(1 Point)   [/ 1]

What are the main review process activities?
- a) Initiate review, issue communication and analysis, fixing and reporting, follow up and root cause analysis.   ☐
- b) Planning, kick off, individual preparation, review meeting, root cause analysis.   ☐
- c) Planning, initiate review, individual review, issue communication and analysis, fixing and reporting.   ☐
- d) Planning, initiate review, status, rework, follow up.   ☐

Question #17(1 Point)   [/ 1]

Which of the following statements about static testing is MOST true?
- a) Static testing is expensive as many defects could be detected.   ☐
- b) When testing safety-critical system, static testing has less value because dynamic testing finds the defects better.   ☐
- c) Static testing helps to detect failures early and improves the communication between testers and developers.   ☐
- d) Static testing allows early validation of user requirements.   ☐

Question #18(1 Point)   [/ 1]

You are participating in a role-based review session. Your assigned role is that of a senior customer.
The software under test is the car configuration module of *ThaiCarWeb*.
You review the user interface of the car configuration module with a prototype that works on smartphones.
Which of the following is an area that you should review?
- a) The size and clarity of the describing text.   ☐
- b) The attractiveness of the application.   ☐
- c) The reliability of the configuration module when the connection is dropped.   ☐
- d) The speed of response from the *ThaiCarWeb* database.   ☐

Question #19(1 Point)   [/ 1]

A program calculates flexible working hours. If the start of work is before 8.00 am, 15 minutes will be subtracted for a breakfast break. If an employee works more than 6 hours, 30 minutes for a regular break will be subtracted. Which test cases cover all valid equivalence partitions?
   a) Test case 1: 7.00 to 13.00   and test case 2: 8.00 to 14.00   ☐
   b) Test case 1: 7.30 to 13.45   and test case 2: 16.00 to 21.15.   ☐
   c) Test case 1: 8.00 to 14.00   and test case 2: 10.30 to 18.00.   ☐
   d) Test case 1: 7.45 to 14.00   and test case 2: 10.15 to 17.45.   ☐

Question #20(1 Point)   [/ 1]

The following state diagram is given:
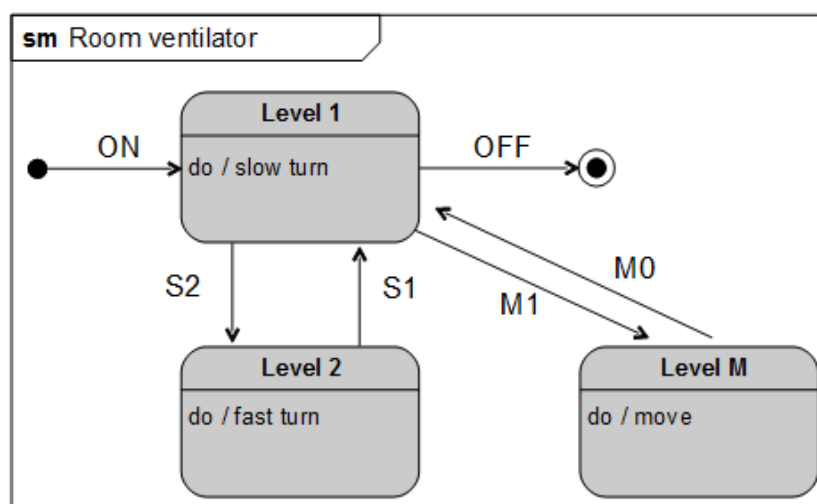
Which of the following represents an INVALID state transition?
   a) Level 1 to final state   ☐
   b) Level 2 to Level 1   ☐
   c) Level M to Level 1   ☐
   d) Level M to Level 2   ☐

Question #21(1 Point)   [/ 1]

In a Java project 100 % decision coverage is required. You got following report from a code coverage tool:
   Statement coverage: 100 %
What of the following statements is TRUE?
   a) As decision coverage is weaker than statement coverage the requirement is fulfilled.   ☐
   b) 100 % statement coverage means 100 % decision coverage.   ☐
   c) More test cases might be required to achieve 100 % decision coverage.   ☐
   d) Fewer test cases might be sufficient to achieve 100 % decision coverage.   ☐

Question #22(1 Point)   [/ 1]

Following test cases have been designed for a smartphone App "*Used ThaiCars*":
    101 Install the "*Used ThaiCars*" from the store
    102 Uninstall the "*Used ThaiCars*" from the smartphone
    103 Check, if "*Used ThaiCars*" could be installed again after uninstalling
    201 Select a used car
    301 Enter contact information for a newsletter
    401 Buy a used car with credit card
    402 Buy a used car with credit card – Cancel purchase
    403 Check error messages if credit card credentials are not valid
    404 Check database entries after confirmation of a purchase
A sanity check is planned to evaluate basic function of the app. Which test cases would you use for a sanity check of a new delivered release after a complete refactoring?

    a)   101, 102, 103.   ☐
    b)   401, 402, 404.   ☐
    c)   101, 201, 401.   ☐
    d)   101, 102, 103, 201, 301, 401, 402, 403, 404.   ☐

Question #23(1 Point)   [/ 1]

Error guessing is which kind of test technique?
    a)   Structural test technique   ☐
    b)   Experience-based test technique   ☐
    c)   Grey-box test technique   ☐
    d)   Confirmation testing.   ☐

Question #24(1 Point)   [/ 1]

ThaiCarWeb contains a configuration module, for a new *ThaiCar 99*. A user could configure a *ThaiCar 99* and gets finally – after the configuration is finished – the price.

ThaiCar 99 is offered with either a basic engine with 100 hp, or with a sport version with 195 hp, or with a power sport version with 360 hp. The basic price is ฿595,000, the basic price for the sport version *ThaiCar 99 S* (S is added at the end of the type name) is ฿645,000, for the power sport version *ThaiCar 99 X* (X is added at the end of the type name) is ฿795,000.

Luxury equipment for every *ThaiCar 99* could be ordered for ฿100,000 or alternatively for ฿200,000 with outstanding features. To be able to recognize the luxury version, in the type name 'L' is listed, for example *ThaiCar 99 L* or *ThaiCar 99 LS*. If outstanding features have been ordered, in the type name 'GL' is listed, for example *ThaiCar 99 GL* or *ThaiCar 99 GLX*.

How many test cases are required to cover all combinations?

    a)   6   ☐
    b)   7   ☐
    c)   8   ☐
    d)   9   ☐

Question #25(1 Point) [/ 1]

Which of the following statements is TRUE about exploratory testing?
- a) More experienced testers who have tested similar systems will do better exploratory testing than less experienced testers. ☐
- b) Exploratory testing can include the use of black-box techniques but not white-box techniques. ☐
- c) The time required to conduct an exploratory testing session could not be determined. ☐
- d) Exploratory testing is not recommended when formal test techniques have already been used by experienced testers. ☐

Question #26(1 Point) [/ 1]

Following descriptions and statements:
1. A tester uses a high-level list of items to be noted, checked, or remembered, or a set of rules or criteria against which a product has to be verified.
2. Check of the processing within the test object.
3. Test cases are designed based on boundary values
4. Tests are based on defects' likelihood and their distribution.
5. Requirements are reviewed.
6. Test basis are delivered user stories.

Which of the descriptions and statements match BEST to
- Black-box test techniques ("Black")
- White-box test techniques ("White")
- Experience-based test techniques ("Experience")?

a) Black: 3 and 6	White: 2 and 5	Experience: 1 and 4	☐
b) Black: 1, 3, and 6	White: 2	Experience: 4 and 5	☐
c) Black: 1 and 6	White: 3 and 5	Experience: 2 and 4	☐
d) Black: 1	White: 3 and 4	Experience:.2, 5 and 6	☐

Question #27(1 Point) [/ 1]

When should expected results for test cases ideally be defined?
- a) During test planning. ☐
- b) Before tests get executed. ☐
- c) During test execution. ☐
- d) When a defect was detected. ☐

Question #28(1 Point) [/ 1]

A speed control and reporting system accepts integer values between 0 and 100, interpreted as km/h.
If the speed is 0 to 50 km/h it returns "Ok". If the speed is faster than 50 km/h, but not more than 60 km/h it returns "Warning". If the speed is faster than 60 km/h it returns "Stop car".
If you apply two-value boundary value analysis, how many test cases will you need to achieve minimum test coverage?

- a) 4 ☐
- b) 6 ☐
- c) 7 ☐
- d) 8 ☐

Question #29(1 Point)   [/ 1]

Given following decision table:

Car Rental Rules		1	2	3	4	5	6	7	8
Conditions	Customer has driver license	yes	yes	yes	yes	no	no	no	no
	Customer is 23 years or older	yes	yes	no	no	yes	yes	no	no
	Customer has credit card	yes	no	yes	no	yes	no	yes	no
Actions	Porsche car offer	x							
	Normal car offer	x	x	x	x				
	5 % discount	x		x					
	No car offer					x	x	x	x

How many test cases are required for full test coverage?
- a) 4   ☐
- b) 5   ☐
- c) 6   ☐
- d) 8   ☐

Question #30(1 Point)   [/ 1]

Which of the following is MOST correct concerning the tasks of a tester and a test manager?
- a) A test manager sets up configuration management of testware and reviews the test plan. ☐
- b) A test manager identifies and documents test conditions. ☐
- c) A tester prepares and acquires test data, he reviews tests developed by others. ☐
- d) A tester plans and initiates the specification, preparation, implementation and execution of tests and monitors and controls the execution. ☐

Question #31(1 Point)   [/ 1]

What of the following is NOT required in a test summary report?
- a) Status of executed test cases. ☐
- b) Risks concerning test analysis and design. ☐
- c) Open defects with status and priority. ☐
- d) Test coverage of requirements. ☐

Question #32(1 Point)   [/ 1]

Should the test environment be under configuration management?
- a) No, because it is not part of the test object. ☐
- b) No, because configuration management concerns only about the test object and test material. ☐
- c) Yes, because the testers need this information to install the test object for running the test. ☐
- d) Yes, because a tester may need to restore the test environment. ☐

Question #33(1 Point)   [/ 1]

Which of the following risks are product risks and which are project risks?
1. Political problems and delays in especially complex areas in the product.
2. Skill and staff shortages.
3. Possible security issues.
4. Error-prone areas, potential harm to the user, poor product characteristics.
5. Problems in defining the right requirements, potential failure areas in the software or system.
6. Low quality of requirements, design, code and tests.

a)	Project risks: 1, 2, 5, and 6	Product risks: 3 and 4	☐
b)	Project risks: 1, 2, and 4	Product risks: 3, 5, and 6	☐
c)	Project risks: 2, 3, and 6	Product risks: 1, 4, and 5	☐
d)	Project risks: 1, 5	Product risks: 2, 3, 4, and 5	☐

Question #34(1 Point)   [/ 1]

Which of the following statements is TRUE?
a)	A defect report should contain information how to fix the bug.	☐
b)	The final status of a defect is fixed.	☐
c)	A defect may be closed without being fixed.	☐
d)	Customers and developer should not open defect reports.	☐

Question #35(1 Point)   [/ 1]

You collected following information concerning the *ThaiCarWeb* application:
- If customers buy a *ThaiCar*, 70 % of all customers buy with using a credit card. The most often used credit card is the "ThaiExtend" credit card.
- The *ThaiCar* company earns most money with selling the *ThaiCar 9 Coupé* version.
- A fix was delivered for the critical defect "System crashes when choosing *ThaiCar* with sport engine."

Following test cases have been prepared.
T1: "Configure Thai Car with basic engine, sedan version"
T2: "Configure Thai Car with sport engine, sedan version"
T3: "Configure Thai Car with basic engine, coupé version"
T4: "Configure Thai Car with sport engine, coupé version"
T5: "Configure Thai Car with basic engine, hatchback version"
T6: "Configure Thai Car with sport engine, hatchback version"
T7: "Buy car with check"
T8: "Buy car with "ThaiExtend" credit card"
T9: "Buy car with "SuperCisa" credit card"

How should be the order of the test cases in the test execution schedule?
a)	T1, T2, T3, T4, T5, T6, T7, T8, T9	☐
b)	T4, T8, T3, T9, T6, T7, T5, T1, T2	☐
c)	T3, T8, T5, T9, T1, T7, T2, T4, T6	☐
d)	T2, T6, T4, T8, T3, T9, T5, T7, T1	☐

Question #36(1 Point) [/ 1]

Following list of open defects is available. Nit is tester, Mai is developer, Bum is the customer
- TCWeb0701 "System crashes during purchase", Status: in development, Priority: critical, Assigned to: Nit, Modified: 3 days ago
- TCWeb0702 "ThaiCar Logo is missing on help page", Status: ready for test, Priority: minor, Assigned to: Nit, Modified: 1 day ago
- TCWeb0706 "ThaiCar Wrong calculation of price of ThaiCar 9 GTS", Status: fixed, Priority: major, Assigned to: Nit, Modified: 2 days ago
- TCWeb0713 "Copyright date 2019 instead of 2020", Status: ready for test, Priority: minor, Assigned to: Nit, Modified: 1 week ago
- TCWeb0716 "Acceptance criteria missing in User Story TCWeb0601", Status: open, Priority: major, Assigned to: Bum, Modified: 1 week ago

Which activity should FIRST be done by the test manager?
- a) Motivate Nit to retest defects TCWeb0702 and TCWeb0713 as soon as possible ☐
- b) Clarify assignment of defect TCWeb0706, clarify with Mai if the fix could be deployed. ☐
- c) Clarify assignment of defect TCWeb0701, clarify with Mai until when the defect could be fixed. ☐
- d) Concerning TCWeb0716 motivate Bum to add the missing acceptance criteria as soon as possible so that development could start. ☐

Question #37(1 Point) [/ 1]

Which of the following is an entry criteria and which is an exit criteria?
1. 100% of all planned critical tests have been executed and passed.
2. Security audit has been conducted. All found failures have been fixed and retested.
3. At least one test for each user story has been executed and passed.
4. The test environment has been set up, 10 test users are available.
5. All user stories are covered by prepared test cases.
6. All project members who will do testing passed the software test foundation level examination

- a) Entry criteria: 2, 4, and 6   Exit criteria: 1, 3, and 5 ☐
- b) Entry criteria: 4, 5, and 6   Exit criteria: 1, 2, and 3 ☐
- c) Entry criteria: 4 and 6   Exit criteria: 1, 2, 3, and 5 ☐
- d) Entry criteria: 1 and 5   Exit criteria: 2, 3, 4, and 6 ☐

Question #38(1 Point) [/ 1]

Which one of the following is included in a test summary report?

- a) Percentage of independent testers in the project team ☐
- b) Defining pass/fail criteria and objectives of testing. ☐
- c) Defect information, e.g., defect density, defects found and fixed. ☐
- d) The size of the testing team and skills of the developers. ☐

Question #39(1 Point) [/ 1]

How is a tool called that supports traceability, recording of incidents, and scheduling of tests?
    a)   A configuration management tool   ☐
    b)   A test execution tool.   ☐
    c)   A bug tracker system.   ☐
    d)   A test management tool.   ☐

Question #40(1 Point) [/ 1]

Which one of the following best describes a characteristic of a keyword-driven test execution tool?
    a)   A table with test input data, action words, and expected results, controls execution of the system under test.   ☐
    b)   Actions of testers logged in a test script that is rerun several times.   ☐
    c)   Actions of testers logged in a test script that is run with several sets of test input data.   ☐
    d)   The capability to record test results and compare them against the expected results, stored in a log file.   ☐