



Exam Instruction Sheet

To:	Moinulatiq Malek Assistant Professor	From:	Miles Jackson (mjackson@cdm.depaul.edu) Manager of Online Learning	
Fax:	moin@nspac.edu.in	Pages:	(Including cover page)	
Phone:	+919974304763	Date:	May 05, 2024	
Re:	Midterm for Dhairyा Patel	Phone:	(312) 362-5286	
Exam Date: May 06, 2024		Course: SE 433 - 910 (Software Testing and Quality Assurance)		Instructor: Christopher Hield
Time Limit: 2 hours 0 minutes		Open Book: False		
Other:		Calculator: No		
Additional Instructions:				
Return Instructions: Please upload the completed exam to the link provided in the email that was received for this exam. Additionally, please mail the completed exam to: Miles Jackson DePaul CDM, 4 th Floor 243 South Wabash Ave Chicago, IL 60604-2301				

Attention!

- Please do NOT use pencil on this exam
- Extra pens and blank paper are available at the front of the room
- Please note that bathroom breaks are not allowed during the exam
- No phone, food or drinks are allowed

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Exam Started 1:05 pm

Exam Finished 3:00 pm

Proctor Initials MM

Student Initials DP

Name: Dhairya PatelSection (333 or 433): 433**Midterm Exam****110 Total Points.****SE 333: Graded out of 100 Points****SE 433 Graded out of 110 Points**

- 1) Associate the term below with the appropriate definition. Put the letter of the appropriate definition in the spaces provided (12 pts):

C Positive TestH Static TestingM Black BoxF Negative TestA Dynamic TestingB Equivalence PartitioningG Risk-Based TestingK White BoxL Boundary Value AnalysisI State-Based TestingD Grey BoxE All-Pairs Testing

- A. A term used to describe the testing of the application through examination of the physical responses from the system. The software must actually be compiled and run to perform this testing.
- B. In this method, the tester identifies various classes/groups of input data. A class/group is a set of input conditions that are likely to be handled the same way by the system.
- C. Testing which attempts to show that a given application does what it is supposed to do when given an acceptable set of inputs.
- D. Testing that involves having access to internal data structures and algorithms for purposes of designing the test cases, but then testing those at an external level.
- E. A combinatorial software testing method that, for every 2 input parameters to a system, tests all possible discrete combinations of those parameters.
- F. Testing which attempts to show that an application does not do anything that it is not supposed to do when given an unacceptable set of inputs.
- G. Software testing that prioritizes the features and functions to be tested based on priority/importance and likelihood or impact of failure.
- H. A form of software testing where the software isn't used, consisting mainly of syntax checking of the code or manually reading code and documents to find errors.
- I. Testing that involves deriving test cases from a state transition model of the system or function being tested.
- J. Selective retesting of a system or component to verify that modifications have not caused unintended effects and that the system or component still complies with its specified requirements.
- K. Testing that takes into account the internal data structures and algorithms of a system or component.
- L. A technique for test data identification. A test engineer chooses values that lie along data extremes - include maximum, minimum, just inside ranges, just outside ranges, typical values, and error values.
- M. Testing that ignores the internal mechanisms of a system or component and focuses solely on the outputs generated in response to selected inputs and execution conditions.

2) Which of the following are the basis for the testing axiom: "It's Impossible to Test a Program Completely"? (5 pts) [Circle the one best response]

- a) The number of possible inputs is very large.
- b) The number of possible outputs is very large.
- c) The number of paths through the software is very large.
- d) The software specification is subjective and open to interpretation.
- e) All of these
- f) None of these

3) What should be done to avoid "The Pesticide Paradox"? (5 pts) [Circle the one best response]

- a) Avoid over-testing any application to ensure that software bugs do not become "immune" to that testing.
- b) Software testers must continually write new and different tests to exercise different parts of the program to find more bugs.
- c) Only use test cases as regression tests once to ensure that the software will not become "immune" to them.
- d) Testers must strive to test all possible values/scenarios to ensure that software bugs do not become "immune" to that testing.
- e) All of these.
- f) None of these.

4) Which of the following are advantages of White Box testing? (6 pts) [Circle all that apply]

- a) As the knowledge of internal coding structure is prerequisite, it becomes very easy to find out which type of input/data can help in testing the application effectively.
- b) Tests may need to be updated if the code base is rapidly changing.
- c) White-box testing can speed up the testing process significantly.
- d) It helps in optimizing the code by removing superfluous sections of code and condensing existing code.
- e) It helps in removing hidden errors which may not come up during normal testing.
- f) There is no knowledge required of the test object's internal structure.

5) Which of the following is not a commonly used task estimation technique? (5 pts) [Circle the one best response]

- a) Expert opinion
- b) Delphi technique
- c) Fibonacci sequence
- d) Three-point Technique
- e) All of these
- f) None of these

6) Which of the following are advantages of Black Box testing? (6 pts) [Circle all that apply]

- a) The development of black box tests can be initiated at an early stage of the development of software.
- b) Tests in black box testing are conducted from the end-user perspective.
- c) It can be difficult to understand the root cause of issues uncovered via black box testing techniques.
- d) Testers don't need to have programming knowledge, resulting in potential cost savings (less expensive resources required)
- e) Testing is considered unbiased because the developers and testers work independently.
- f) Because black-box testing does not consider the internals of an application, it is difficult to determine test coverage.

7) Which of the following testing techniques are considered white-box testing, and which are considered black-box testing? (6 pts) [Put a check-mark (✓) in the appropriate column for each listed technique]

Testing Technique	White-Box	Black-Box
Unit Testing	✓	
Design Review	✓	
Requirements Review	✓	
Functional/System Testing		✓
Risk-Based Testing		✓
Equivalence Partitioning		✓
Code Review	✓	
Decision Table Testing		✓
Code Walkthrough	✓	
Boundary Value Analysis		✓
All-Pairs Testing		✓
State-Based Testing		✓

8) Using the three-point technique, assume you have an optimistic estimate of 3 days, a pessimistic estimate of 13 days, and a most likely estimate of 5 days. What would the resulting final estimate be? (5 pts) [Circle the one best response]

- a) 3 days
- b) 4 days
- c) 5 days
- d) 6 days
- e) 7 days
- f) None of these

9) A fully specified test case would contain which 3 sections? (5 pts) [Circle the three best responses]

- a) Pre-Conditions/Pre-Requisites d) Test Actions & Verifications
b) Alternate Endings e) Regression Steps
 c) Cleanup Actions & Verifications f) Automated Instructions

10) The purpose of Load Testing is: (5 pts) [Circle the one best response]

- a) To ensure the application performs properly under a specific expected load.
b) To break the application.
c) To determine the application's robustness in times of extreme load.
d) To make sure that the system fails and recovers gracefully
e) All of these
f) None of these

11) Which of the following is not a type of performance testing? (5 pts) [Circle the one best response]

- a) Load testing d) Spike testing
b) Stress testing e) All of these
 c) Integration testing f) None of these

12) If I passed by a conference room and heard/saw the following interactions among a people working at a marker board, what kind of testing would I assume they are doing? Select (circle) one answer. (6 pts)

- (Person 1 pointing at a box in a diagram) What if the function in this box fails?
- (Person 2 asking the group) Can this function ever be invoked at the wrong time?
- (Person 1 pointing at another box in a diagram) What error checking do you do here?
- (Person 3 pointing at an arrow in the diagram) What exactly does this arrow mean? What would happen if it were broken?
- (Person 2 pointing at a data flow) If the data going from here to there was somehow corrupted, how would you know? What would happen?

- a) State-Based Testing d) Inside-Out Risk Based Testing
b) Outside-In Risk Based Testing e) Load Testing
c) Regression Testing f) None of These

13) Associate the term below with the appropriate definition. Put the letter of the appropriate definition in the spaces provided (8 pts):

J Unit Testing

C Beta Testing

F Integration Testing

H Stress Testing

I Functional and System Testing

E Performance Testing

G Regression Testing

B Usability Testing

- A. In this method, the tester identifies various classes/groups of input data. A class/group is a set of input conditions that are likely to be handled the same way by the system. If the system were to handle one case in the class erroneously, it would handle all cases erroneously.
- B. Testing conducted to evaluate the extent to which a user can learn to operate, prepare inputs for, and interpret outputs of a system or component.
- C. When an advanced partial or full version of a software package is available, the development organization can offer it free to one or more (and sometimes thousands) potential users.
- D. A form of software testing where the software isn't actually used, consisting mainly of syntax checking of the code or manually reading code and documents to find errors.
- E. Testing conducted to evaluate the compliance of a system or component with specified execution time requirements.
- F. Testing in which software components, hardware components, or both are combined and tested to evaluate the interaction between them.
- G. Selective retesting of a system or component to verify that modifications have not caused unintended effects and that the system or component still complies with its specified requirements.
- H. Testing conducted to evaluate a system or component at or beyond the limits of its specification or requirement.
- I. Using black box testing techniques, testers examine the customer requirements specification to plan the test cases that ensure the code does what it is intended to do.
- J. The testing of individual software modules or groups of related modules. Using white box testing techniques, testers (usually the developers creating the code implementation) verify that the code does what it is intended to do at a very low structural level.

- 14) For each of the data fields/specifications below, indicate what minimum set of data values would you use for testing the following inputs (12 pts):

Duration:

[Value type: Whole Number] A time duration, in minutes - must be greater or equal to 1 and less than 360.

$$\text{Given} \rightarrow 1 \leq \text{duration} < 360$$

$\rightarrow \text{Minimum} = 1$ (to test the lower boundary)

$\rightarrow \text{Maximum} = 359$ (to test the upper boundary)

Cost:

[Value type: Decimal] A dollars & cents cost value - must not be less than \$0.00. There is no maximum cost.

$\rightarrow \text{Minimum} = \0.00 (to test lower boundary)

$\rightarrow \text{Maximum} = \0.01 (to test upper boundary)

Catalog Id:

[Value type: String] A catalog id must be exactly 9 characters, and contain only upper/lowercase letters and numbers.

- 1) 9 characters
- 2) 8 characters
- 3) 10 characters
- 4) Empty
- 5) null

6) 8 characters

Item Code:

[Value type: Character] The item code must be an uppercase letter character from A through Z. No other values are allowed.

- 1) A
 - 2) Z
 - 3) null
 - 4) a
 - 5) Empty
- 6) non characters

15) Associate the key Software Requirements Specification issues listed below with the appropriate definition.

Put the letter of the appropriate definition in the spaces provided. Choose only one definition per term. (9 pts):

B Correct

A Complete

L Manageable

I Feasible

J Free of Design Detail

H Testable

E Consistent

D Precise and Unambiguous

F Relevant

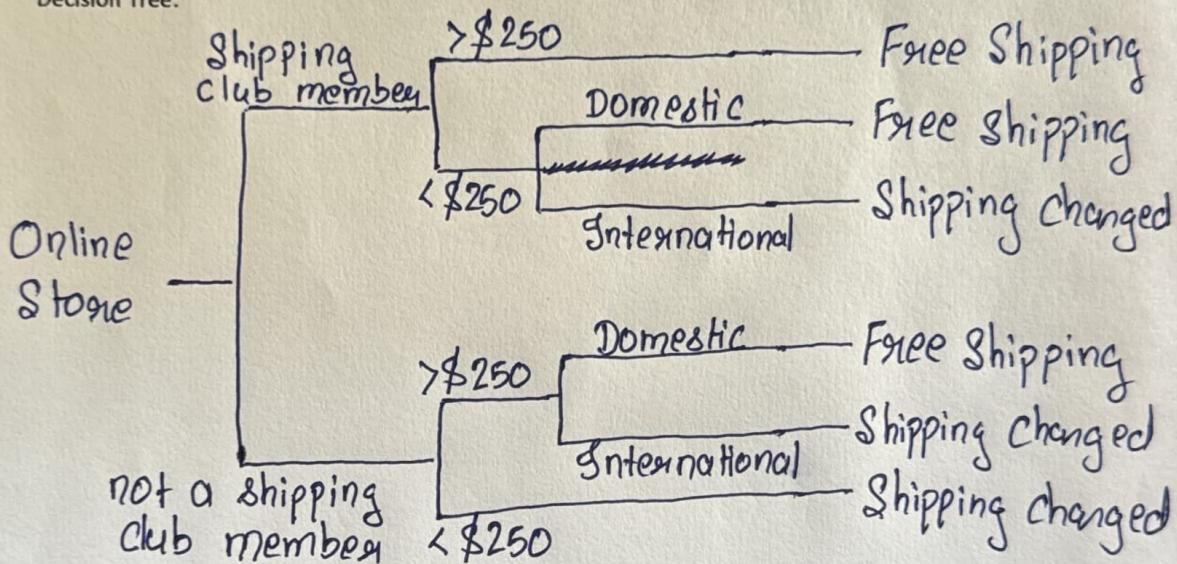
- A. Every requirement should be comprehensive and give all information on what is expected.
- B. Every requirement specified in the requirements document will be accurate.
- C. All requirements must be deemed worthwhile by potential development staff.
- D. Each item in the requirement should be clear and have a single interpretation for every member in the team; the meaning of each item should be understood and specifications should be easy to read.
- E. Requirements should not conflict with each other.
- F. Each item is pertinent to the problem and its solution.
- G. Each requirement should be provided within the specified schedule.
- H. It should be possible to determine whether the stated requirement has been satisfied or not.
- I. It should be possible to implement the requirements with the available techniques, tools and resources within the specified cost and schedule constraints.
- J. Requirements documents should not include implementation details.
- K. Requirements must not rhyme.
- L. Requirements should be expressed in such a way that each item can be changed without excessive impact on other items.

- 16) Read the following rules on Shipping guidelines for an online store. After reading, develop a decision tree representing these guidelines, then draw and reduce a decision table showing the minimum number of test cases needed to test these guidelines (10 pts):

Packages shipped to domestic locations will only receive Free Shipping if the customer is a "Shipping Club" member. If not a member, but if the purchase total is greater than \$250, the customer receives receive Free Shipping. Otherwise shipping is charged.

Packages shipped to international locations will only receive Free Shipping if the customer is a "Shipping Club" member and the purchase total is greater than \$250. Otherwise these packages are shipped at a charge.

Decision Tree:



Final Decision Table:

Shipping Location	Shipping Club member?	Purchase Total	Shipping Change?
Domestic	Yes	N/A	Free
Domestic	No	> \$250	Free
Domestic	No	< \$250	Changed
International	Yes	> \$250	Free
International	Yes	< \$250	Changed
International	No	N/A	Changed

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