



Software Testing

Assignment- 2

TYPE OF QUESTION: MCQ/MSQ

Number of questions: 10

Total mark: 10 X 1 = 10

For each of the following questions one or more of the given options are correct. Choose the correct options.

QUESTION 1:

Which of the following are black box testing techniques?

- a. Boundary value testing
- b. Cause-effect (Decision Table) testing
- c. Combinatorial testing
- d. Basic Condition testing
- e. Mutation testing

Correct Answer: a. Boundary value testing, b. Cause-effect (Decision Table) testing, c. Combinatorial testing

Detailed Solution:

Basic condition testing is a white box testing. Mutation testing is also a different kind of testing.

QUESTION 2:

Which one of the following is an implicit assumption made in equivalence class testing?

- a. A program behaves in very similar ways to each of the set of input value belonging to an equivalence class.
- b. Different equivalence classes of a program contain similar bugs
- c. Different equivalence classes of a program contain dissimilar bugs
- d. Equivalence classes define the behaviorally similar components of a program
- e. The input data values to a software can be split into a finite number of equivalence classes for each of which the software produces identical outputs

Correct Answer: a. A program behaves in very similar ways to each of the set of input value belonging to an equivalence class.

Detailed Solution:

In the equivalence class testing, a program behaves in similar ways to every input value belonging to an equivalence class. For more details please check week-2, Slide-2.



Questions 3 to 5 are based on the following data:

In a certain bank, customers are offered the following interest rates on deposits.

For deposits of any amount upto Rs. 1 Lakh, the rate of interest:

- 6% for deposit upto 1 year
- 7% for deposit over 1 year but less than 3 years
- 8% for deposit over 3 years and less than 10 years

For deposits of any amounts between Rs. 1 Lakh to less than 1 crore, the rate of interest:

- 7% for deposit upto 1 year
- 8% for deposit over 1 year but less than 3 years
- 9% for deposit over 3 years and less than 10 years

QUESTION 3:

A function named **compute-interest-rate(amount, months)** was developed by the bank to compute the interest rate applicable for a deposit made by a customer. At least how many test cases are needed for weak equivalence class testing of the function **compute-interest-rate**?

- a. 2
- b. 3
- c. 5
- d. 6
- e. 12

Correct Answer: b. 3

Detailed Solution:

For amount: Valid classes: Class 1 = upto 1 lakh, Class 2 = Rs 1 lakh to less than Rs 1 crore
Invalid class: Class 1: more than or equal to Rs 1 crore.

For year: Valid classes: Class-1: upto 1 year, Class-2: over 1 year but less than 3 years, Class-3: over 3 years and less than 10 years

Invalid class: class 1 = over 10 years

Test cases are needed for weak equivalence testing = Maximum (Total number of valid equivalence classes for Amount , Total number of valid equivalence classes for Year) = $\max(2, 3) = 3$



QUESTION 4:

For the function **compute-interest-rate** of Q. 3, at least how many test cases are needed for strong equivalence testing?

- a. 6
- b. 8
- c. 9
- d. 12
- e. 15

Correct Answer: a. 6

Detailed Solution:

Test cases are needed for strong equivalence testing = Total number of valid equivalence classes for Amount * Total number of valid equivalence classes for Year = $2 * 3 = 6$

QUESTION 5:

For the function **compute-interest-rate** of Q. 3, at least how many test cases are needed for robust equivalence testing?

- a. 12
- b. 15
- c. 16
- d. 20
- e. 27

Correct Answer: a. 12

Detailed Solution:

For Robust equivalence testing both the valid and invalid classes are considered.

Test cases are needed for strong robust equivalence testing = Total number of equivalence classes for Amount * Total number of equivalence classes for Year = $3 * 4 = 12$

QUESTION 6:

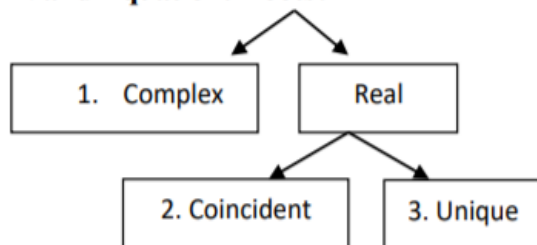
Consider a function named **solver** that solves a quadratic equation of the form $ax^2+bx+c=0$, where a , b , and c are floating point numbers. At least how many test cases are needed for strong equivalence class testing of the function **solver** considering only valid equivalence classes?

- a. 3
- b. 4
- c. 5
- d. 6
- e. 7

Correct Answer: a. 3

Detailed Solution:

Valid Equation: Roots?





QUESTION 7:

Consider a function named **compute-grade** that computes the grade of a student based on his attendance and the total marks obtained out of 100. If the attendance is below 80%, the student is assigned “F” grade irrespective of the marks scored. If the attendance of a student is 80% or more, the student with mark M is assigned a grade from EX, A, B, C, D, P, F depending upon whether $M > 89\%$, $90\% > M > 79\%$, $80\% > M > 69\%$, $70\% > M > 59\%$, $60\% > M > 49\%$, $50\% > M > 29\%$, or $M < 30\%$. If the decision making about the grade computation is represented in the form of a decision table, at least how many test cases are needed for decision table testing?

- a. 6
- b. 7
- c. 8
- d. 9
- e. 10

Correct Answer: c. 8

Detailed Solution:

Decision table for question 7:

Conditions								
C1: attendance < 80%	T	F	F	F	F	F	F	F
C2: M > 89%	-	T	F	F	F	F	F	F
C3: 90% > M > 79%	-	-	T	F	F	F	F	F
C4: 80% > M > 69%	-	-	-	T	F	F	F	F
C5: 70% > M > 59%	-	-	-	-	T	F	F	F
C6: 60% > M > 49%	-	-	-	-	-	T	F	F
C7: 50% > M > 29%	-	-	-	-	-	-	T	F
C8: M < 30%	-	-	-	-	-	-	-	T
Actions								
A1: Grade=F	x							
A2: Grade=A		x						
A3: Grade=B			x					
A4: Grade=C				x				
A5: Grade=D					x			
A6: Grade=E						x		
A7: Grade=P							x	
A8: Grade=F								x

QUESTION 8:

If a user interface has two check boxes, at least how many test cases are required to achieve pair-wise coverage testing?

- a. 3
- b. 4
- c. 5
- d. 6

Correct Answer: b. 4

Detailed Solution:

If we use the following test cases: (00), (01), (10), (11), all pairs of check boxes can be covered.



QUESTION 9:

Cause-effect test cases are, in effect, are designed using which one of the following types of testing techniques?

- a. Decision-table based testing
- b. Coverage-based testing
- c. Fault-based testing
- d. Path-based testing
- e. Equivalence testing

Correct Answer: a. Decision-table based testing

Detailed Solution:

Cause Effect Graphing based technique is a technique in which a graph is used to represent the situations of combinations of input conditions. The graph is then converted to a decision table to obtain the test cases.

QUESTION 10:

Consider the function $\text{find-intersection}(m_1, c_1, m_2, c_2)$ that computes the point of intersection of two straight lines of the form $y = mx + c$. For equivalence class testing of the given function, at the first level of the equivalence class hierarchy the valid and invalid equivalence classes can be formed. The valid set of input values can be further divided into how many equivalence classes?

- a. 1
- b. 2
- c. 3
- d. 4
- e. 5

Correct Answer: c. 3

Detailed Solution: The valid input divided in equivalence classes are the following:

- Parallel lines ($m_1 = m_2, c_1 \neq c_2$)
- Intersecting lines ($m_1 \neq m_2$)
- Coincident lines ($m_1 = m_2, c_1 = c_2$)

*****END*****