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Week 6 : Assignment 6

The due date for submitting this assignment has passed.

Due on 2024-09-04, 23:59 IST.

Assignment submitted on 2024-09-02, 22:14 IST

1) Typically, how do logical constraints occur in pre-conditions and postconditions that specify assumptions on inputs to methods or describe the properties of the methods? ***1 point***

- The logical conditions can be any logical predicate.
- The logical conditions occur in conjunctive or disjunctive normal form.
- The logical conditions are a simple OR or AND combinations of two or more clauses.
- The logical conditions always describe what the methods should not process as inputs.

Yes, the answer is correct.
Score: 1

Accepted Answers:
The logical conditions occur in conjunctive or disjunctive normal form.

2) State true or false: It is desired that a logical predicate used in a decision statement be a tautology. ***1 point***

- True.
- False.

Yes, the answer is correct.
Score: 1

Accepted Answers:
False.

3) How do logical predicates occur in finite state machines? ***1 point***

- They occur as guards in the transitions of a finite state machine.
- They occur as predicates in the states of a finite state machine.

- They occur in the actions labeling the transitions of a finite state machine.
- They occur in the events of a finite state machine.

Yes, the answer is correct.
Score: 1
Accepted Answers:
They occur as guards in the transitions of a finite state machine.

4) State true or false: The logical predicates occuring in the condition statements of a method are all simple propositional logic formulas. ***1 point***

- True.
- False

Yes, the answer is correct.
Score: 1
Accepted Answers:
False

Consider the following code that has two conditional statements and the corresponding two logical predicates. Answer the following questions with reference to logical coverage criteria on this code.

```
import java.util.Scanner;
class Sum_Odd_Number
{
  public static void main(String[] args)
   {
Scanner input = new Scanner(System.in);
System.out.print("Enter The Number of Limit : ");
int l =input.nextInt();
int sum = 0;
for(int s=1;s<=l;s++)
 {
    if(s%2==1)
sum = sum + s;
         }
System.out.println("Sum of Odd Numbers :"+sum);
   }
}
```

5) Which of the options below best describe what the above program computes? ***1 point***

- It computes the sum of all the numbers up to the limit l.
- It computes the sum of all the even numbers up to the limit l.
- It computes the sum of all the odd numbers up to the limit l.
- It computes the number of odd numbers up to the limit l.

Yes, the answer is correct.
Score: 1
Accepted Answers:
It computes the sum of all the odd numbers up to the limit l.

6) How many clauses are there in the above program, per predicate? ***1 point***

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- (●) There are two predicates, each having one clause.
- ( ) There are two clauses in the program, to be considered as a part of the second predicate.
- ( ) There are four clauses in the program, two per predicate.
- ( ) There are I different clauses in the program, one for each iteration of the loop.

Yes, the answer is correct.
Score: 1
Accepted Answers:
There are two predicates, each having one clause.

7) What does predicate coverage test for the second clause in the above program? ***1 point***

- (●) It tests for the number being odd or even.
- ( ) It tests for the number being within or outside the limit.

Yes, the answer is correct.
Score: 1
Accepted Answers:
It tests for the number being odd or even.

8) What does the test case for predicate coverage evaluating to true for the first predicate mean in the above program? ***1 point***

- (●) The first predicate evaluating to true indicates repeated iterations of the for loop.
- ( ) The first predicate evaluating to true indicates exit from the for loop.

Yes, the answer is correct.
Score: 1
Accepted Answers:
The first predicate evaluating to true indicates repeated iterations of the for loop.

9) State true or false: Clause coverage and predicate coverage are the same for both the predicates in the above program? ***1 point***

- (●) True.
- ( ) False.

Yes, the answer is correct.
Score: 1
Accepted Answers:
True.

10) In the ith iteration of the for loop, which of the following represents the actual predicate corresponding to the if statement? ***1 point***

- (●) The predicate in the ith iteration is s%2 == 1.
- ( ) The predicate in the ith iteration is (1 + i)%2 == 1.
- ( ) The predicate in the ith iteration is i%2 == 1.
- ( ) The predicate in the ith iteration is 1%2 == 1.

No, the answer is incorrect.
Score: 0
Accepted Answers:
The predicate in the ith iteration is i%2 == 1.