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NPTEL (<https://swayam.gov.in/explorer?ncCode=NPTEL>) » Software Testing (course)


Course outline

How does an NPTEL online course work?

Pre-requisite Assignment

Week 1

Week 2

Week 3

Week 4

Week 5

Week 6

Week 7

Week 8

Week 9

Week 10

Week 11

☒ Symbolic Testing (unit?)

Assignment 11

The due date for submitting this assignment has passed.

Due on 2020-12-02, 23:59 IST.

Assignment submitted on 2020-12-01, 22:50 IST

1) Which of the following best defines symbolic testing?

1 point

- ☐ A white box testing technique that executes all decision statements once.
- ☒ A white box testing technique that executes all possible execution paths in the control flow graph.
- ☐ A testing technique based on logical predicates being true.
- ☐ A testing technique that works with branches and loops in the control flow graph of a program.

Yes, the answer is correct.

Score: 1

Accepted Answers:

A white box testing technique that executes all possible execution paths in the control flow graph.

2) State true or false: Symbolic execution can be terminated if the program under execution reaches an exit statement or encounters an error.

1 point

- ☒ True.
- ☐ False.

Yes, the answer is correct.

Score: 1

Accepted Answers:

True.

3) Which of the following is a list of disadvantages of symbolic execution?

1 point

unit=77&lesson=78)

☒ Symbolic
Testing 2
(unit?
unit=77&lesson=79)

☐ DART:
Directed
Automated
Random
Testing (unit?
unit=77&lesson=80)

☐ DART:
Directed
Automated
Random
Testing - 2
(unit?
unit=77&lesson=81)

☐ DART:
Directed
Automated
Random
Testing 3
(unit?
unit=77&lesson=82)

☒ Software
testing : Week
11 Feedback
(unit?
unit=77&lesson=84)

☒ Quiz:
Assignment
11
(assessment?
name=128)

Week 12

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- ☐ Generating too many path constraints, even if they are all solvable.
- ☐ Generating too many path constraints and many of them are unsolvable.
- ☒ Generating unsolvable path constraints, code containing functions whose source code is not available.
- ☐ Generating unsolvable path constraints, managing difficult program paths.

Yes, the answer is correct.

Score: 1

Accepted Answers:

Generating unsolvable path constraints, code containing functions whose source code is not available.

4) State true or false: Symbolic testing can always detect non-terminating loops.

1 point

- ☐ True.
- ☒ False.

Yes, the answer is correct.

Score: 1

Accepted Answers:

False.

Consider the code fragment given below. Answer the following questions related to symbolic execution of the given code fragment.

```
0: int x, y;
1: if (x > y) {
2:     x = x + y;
3:     y = x - y;
4:     x = x - y;
5:     if (x - y > 0)
6:         assert(false);
}
```

5) What does the code fragment do?

1 point

- ☐ It checks if **x** is greater than **y**.
- ☐ It checks if **y** is greater than **x**.
- ☒ It swaps the values of **x** and **y**.
- ☐ It swaps the values of **x** and **y** twice.

Yes, the answer is correct.

Score: 1

Accepted Answers:

*It swaps the values of **x** and **y**.*

6) How many nodes will be there in the symbolic execution tree of the above code fragment?

1 point

- ☒ 3 nodes.
- ☐ 4 nodes.
- ☐ 7 nodes.
- ☐ 8 nodes.

No, the answer is incorrect.

Score: 0

Accepted Answers:

8 nodes.

7) How many decision points are there in the code fragment?

1 point

- ☒ Two decision points.
☐ Three decision points.

Yes, the answer is correct.

Score: 1

Accepted Answers:

Two decision points.

8) What will be the path constraint at line 1 of the code fragment such that no further execution happens? **1 point**

- ☐ $x > y$.
☒ $x \leq y$.

Yes, the answer is correct.

Score: 1

Accepted Answers:

$x \leq y$.

9) What will be the path constraint to reach statement 6?

1 point

- ☒ $x > y \ \&\& \ y - x > 0$.
☐ $x > y \ \&\& \ y - x \leq 0$.

Yes, the answer is correct.

Score: 1

Accepted Answers:

$x > y \ \&\& \ y - x > 0$.

10) State yes or no: Is statement 6 reachable in the program fragment?

1 point

- ☐ Yes.
☒ No.

Yes, the answer is correct.

Score: 1

Accepted Answers:

No.