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Assignment 3

The due date for submitting this assignment has passed.

Due on 2020-10-07, 23:59 IST.

Assignment submitted on 2020-10-06, 21:44 IST

1) Which of the following best defines a linearly independent path of execution in the CFG of a program? ***1 point***

- A linearly independent path in the CFG is a path that does not contain other paths within it.
- A linearly independent path is a simple path in the CFG.
- A linearly independent path is a path from one decision to another in a CFG.
- A linearly independent path is a prime path in the CFG.

No, the answer is incorrect.
Score: 0

Accepted Answers:
A linearly independent path in the CFG is a path that does not contain other paths within it.

2) Given a variable v in a program, when do we say that a definition of v at a location l_i reaches a use at a location l_j ? ***1 point***

- We say that the definition of v at l_i reaches its use at l_j if there is a path from l_i to l_j in the CFG of the program.
- We say that the definition of v at l_i reaches its use at l_j if there is a def-clear path from l_i to l_j in the CFG of the program.

Yes, the answer is correct.
Score: 1

Accepted Answers:

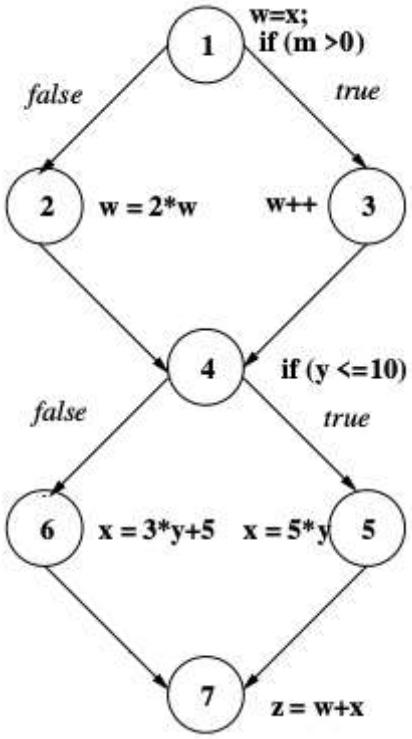
We say that the definition of v at l_i reaches its use at l_j if there is a def-clear path from l_i to l_j in the CFG of the program.

3) State true or false: All uses coverage criterion subsumes edge coverage criterion. ***1 point***

- (•) True
- ( ) False

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

The following description is that of a CFG whose nodes are labelled with statements involving five different variables, namely, x, y, w, z and m. The CFG corresponds to a program fragment that has two decision statements. Answer the following questions with respect to this CFG and the definitions and uses of the variables, as per the statements.



4) Which of the following is a list of nodes having defs for variable w? ***1 point***

- (•) Nodes 1, 2, 3 have defs for w.
- ( ) Nodes 2 and 3 have defs for w.

Yes, the answer is correct.
Score: 1
Accepted Answers:
Nodes 1, 2, 3 have defs for w.

5) Which of the following is a list of nodes having uses for variable w? ***1 point***

Nodes 2, 3, and 7 have uses for w.

Nodes 2 and 3 have uses for w.

Yes, the answer is correct.
Score: 1

Accepted Answers:
Nodes 2, 3, and 7 have uses for w.

6) State true or false: Nodes 4, 5 and 6 have uses for variable x. **1 point**

True

False

Yes, the answer is correct.
Score: 1

Accepted Answers:
False

7) State yes or no: Are there any du-paths with respect to variable w from node 1 to node 7? **1 point**

Yes

No

Yes, the answer is correct.
Score: 1

Accepted Answers:
No

8) Does the statement at node 7 correspond to a definition or a use for the variable z? **1 point**

It corresponds to a definition of z.

It corresponds to a use of z.

Yes, the answer is correct.
Score: 1

Accepted Answers:
It corresponds to a definition of z.

9) Which of the following is a list of du-paths for the variable w? **1 point**

Paths [2, 4, 5, 7], [2, 4, 6, 7], [3, 4, 5, 7] and [3, 4, 6, 7].

Paths [1, 2], [1, 3], [2, 4, 5, 7], [2, 4, 6, 7], [3, 4, 5, 7] and [3, 4, 6, 7].

Yes, the answer is correct.
Score: 1

Accepted Answers:
Paths [1, 2], [1, 3], [2, 4, 5, 7], [2, 4, 6, 7], [3, 4, 5, 7] and [3, 4, 6, 7].

10) Which of the following is a list of du-paths for the variable x? **1 point**

Paths [5, 7] and [6, 7].

Paths [5, 7], [6, 7] and [7, 7].

Yes, the answer is correct.
Score: 1

Accepted Answers:
Paths [5, 7] and [6, 7].