Assignment 3

The due date for submitting this assignment has passed.

Submitted assignment

This assignment is on data flow coverage criteria over graphs, along with structural coverage criteria over source code (both classical and the ones we learnt in the course).

1) State true or false: A definition of a variable will always reach at least one use. 1 point
   - (a) True
   - (b) False

   Accepted Answers:
   (b) False

2) Which of the following best describes a du-path for a variable v? 1 point
   - (a) A du-path for v is a simple path from a def of v to a use of v.
   - (b) A du-path for v is a path from a def of v to a use of v.
   - (c) A du-path for v is a set of all paths from all the defs of v to all the uses of v.
   - (d) A du-path for v is a set of all simple paths from all the defs of v to all the uses of v.

   Accepted Answers:
   (a) A du-path for v is a simple path from a def of v to a use of v.

3) Which of the following is true about side trips in data-flow coverage criteria? 1 point
   - (a) Side trips have to be def-clear.
   - (b) Side trips may or may not be def-clear.

   Accepted Answers:
   (a) Side trips have to be def-clear.

4) Prime path coverage subsumes all-du-paths coverage as each du-path is a simple path. 1 point

   Accepted Answers:
   (Type: String) simple path
5) State true or false: Test cases are generated after identifying du-pairs for a variable.

- (a) True
- (b) False

**Accepted Answers:**
(a) True

6) . . . . . . represent transfer of control in a control ow graph corresponding to one method.

**Accepted Answers:**
(Type: String) Edges

7) State true or false: CFG of a typical for loop has no extra nodes for initialization and incrementing the loop counter.

- (a) True
- (b) False

**Accepted Answers:**
(b) False

8) Cyclomatic complexity M for a piece of code with just one connected component in its CFG is computed using the formula $M = \ldots \ldots \ldots$.

**Accepted Answers:**
(Type: String) $EN + 2$

9) Which of the following is true about basis path testing?

- (a) Basis path testing subsumes edge-pair coverage.
- (b) Basis path testing is not related to any other graph coverage criteria.
- (c) Basis path testing subsumes complete path coverage.
- (d) Basis path testing subsumes branch coverage.

**Accepted Answers:**
(d) Basis path testing subsumes branch coverage.

10) State true or false: Single vertices of out-degree 2 are DD-paths.

- (a) True
- (b) False

**Accepted Answers:**
(a) True