Unit 13 - Week 11

Assignment 11

The due date for submitting this assignment has passed. As a result, you have not submitted this assignment.

Due on 2019-10-16, 23:59 IST.

1) In symbolic execution, each path/variable pair of a program is represented using each of the following data structures below:
   - A state of a program
   - A set of states
   - A set of transitions
   - A set of paths/variables
   - No, the statement is incorrect.
   - Score 1
   - Accepted Answers: A set of states

2) State true or false:
   - Symbolic execution can be represented if the program hits an error:
     - True
     - False
     - Score 1
     - Accepted Answers: False

3) No, the statement is incorrect.
   - Score 1
   - Accepted Answers: None

4) Which of the following lists disadvantages of symbolic testing?
   - Path constraint cannot be solved by a constraint solver
     - Program has an error
     - Program has many paths
     - Program has many functions
     - No, the statement is incorrect.
     - Score 1
     - Accepted Answers: Program has an error, Program has many paths, Program has many functions

5) No, the statement is incorrect.
   - Score 1
   - Accepted Answers: None

6) Which of the following describes symbolic constraints?
   - Special symbols for program variables
   - Memory addresses for program variables
   - Temporary memory for program variables
   - No, the statement is incorrect.
   - Score 1
   - Accepted Answers: Special symbols for program variables

7) No, the statement is incorrect.
   - Score 1
   - Accepted Answers: None

8) Test Yourself

   Consider the code fragment below: It is written in a generic programming language, doesn't represent a fully executable piece of code. Answer the following questions related to symbolic execution of the given code fragment:

   ```
   int x, y;
   if (x > y) {
       x = x + y;
   }
   if (x < y) {
       x = x - y;
   }
   ```

   a) What does the code fragment do?
      - Score 1
      - Accepted Answers: Updates the values of x and y

   b) Does the code fragment produce?
      - Score 1
      - Accepted Answers: 1, 1, 0, 0

   c) How many test cases will there be in the symbolic execution tree of this code fragment?
      - Score 1
      - Accepted Answers: 2

   d) What will be the path constraint on line 1 of the code fragment such that no further execution happens?
      - Score 1
      - Accepted Answers: x < y

   e) What will be the path constraint on each statement of the code fragment?
      - Score 1
      - Accepted Answers: x > y, x < y

   f) What will be the path constraint to reach statement 0?
      - Score 1
      - Accepted Answers: x = y, x > y, x < y