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HW#2 – Due Oct 11, 2014 @ 11:59pm

1. Section 2.3 Question 1 (Pages 60–61)

2. Section 2.7 Question 1 (Page 99)

3. Section 3.3 Question 2 (Page 130)

4. Section 3.3 Question 3 – answer this question with respect to CACC instead of GACC (Page 130–131)

Section 2.3 Question 1 (Pages 60–61) [Answer]

a)

w=x

m<=0

m>0

w=2\*w

w++

y>10

y<=10

x=3\*y+5

x=5\*y

z=w+x

b) def(w) = n1, n2, n3

c) use(w) = n2, n3, n7

d) a du-path(w) is 1-2-4-5-7

e)

|  |
| --- |
| All Du-paths (w) |
| 1-2-4-5-7  1-2-4-6-7  1-3-4-5-7  1-3-4-6-7 |

|  |
| --- |
| All Du-paths (x) |
| 5-7  6-7 |

Section 2.7 Question 1 (Page 99) [Answer]

a)

Two paths from n1 to n4 :

Two paths from n4 to n7:

Final path expression:

b)

Path from n2 to n3 has a loop: *(cd)\**

Path from n2 to n4:

Final path expression: **\***

c)

Sub Path n0 to n1: \*

Sub path n0 to n2 to [n3 or n4 or n5] to n0:

Final path expression: **\* \***

Section 3.3 Question 2 (Page 130) [Answer]

Substitute (x < y) for z

|  |  |
| --- | --- |
| twoPred | Rules for determining twoPred |
| A | (x<y) && (x+y == 10) |
| B | (x>=y) || (x+y != 10) |
|  |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | True | | |  | False | | |
|  | Predicate | x | y | EO |  | x | y | EO |
| P1 |  | 0 | 10 | A |  | 0 | 0 | B |
| P2 |  | 0 | 0 | B |  | 1 | 2 | A |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
|  |  |  |  | x | y |
| 1 | T | T |  | 4 | 3 |
| 2 | T | F |  | 5 | 5 |
| 3 | F | T |  | 3 | 4 |
| 4 | F | F |  | 4 | 6 |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

RACC can be satisfied by row pairs (1,3) and (2,4)

b)

P2=true P2=false

RICC can be satisfied by row pairs (1,4) and (2,3)

Section 3.3 Question 3 – answer this question with respect to CACC instead of GACC (Page 130–131)

a)

Predicate is

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | A | B | C |  | EDGE |
| 1 | T | T | T | T | X |
| 2 | T | T | F | T |  |
| 3 | T | F | T | T |  |
| 4 | T | F | F | T |  |
| 5 | F | T | T | T | X |
| 6 | F | T | F | T |  |
| 7 | F | F | T | T | X |
| 8 | F | F | F | F | X |

When PA, CACC can be satisfied by choosing any rows 1,2,3,4 AND 8. (1,8), (2,8), (3,8), (4,8)

When PB, CACC can be satisfied by choosing any rows 1,2,5,6 AND 8. (1,8), (2,8), (5,8), (6,8)

When PC, CACC can be satisfied by choosing any rows 1,3,5,7 AND 8. (1,8), (3,8), (5,8), (7,8)

b) CFG for Program fragment Q

A

!A

m()

B

!B

m()

C

!B

m()

The CACC test set for fragment Q does provide edge coverage for fragment P. This makes sense since CACC subsumes Clause (edge) coverage.

c)

Choosing tests from rows 1, 5, 7, 8 (from part a) will satisfy edge coverage with fewest tests.