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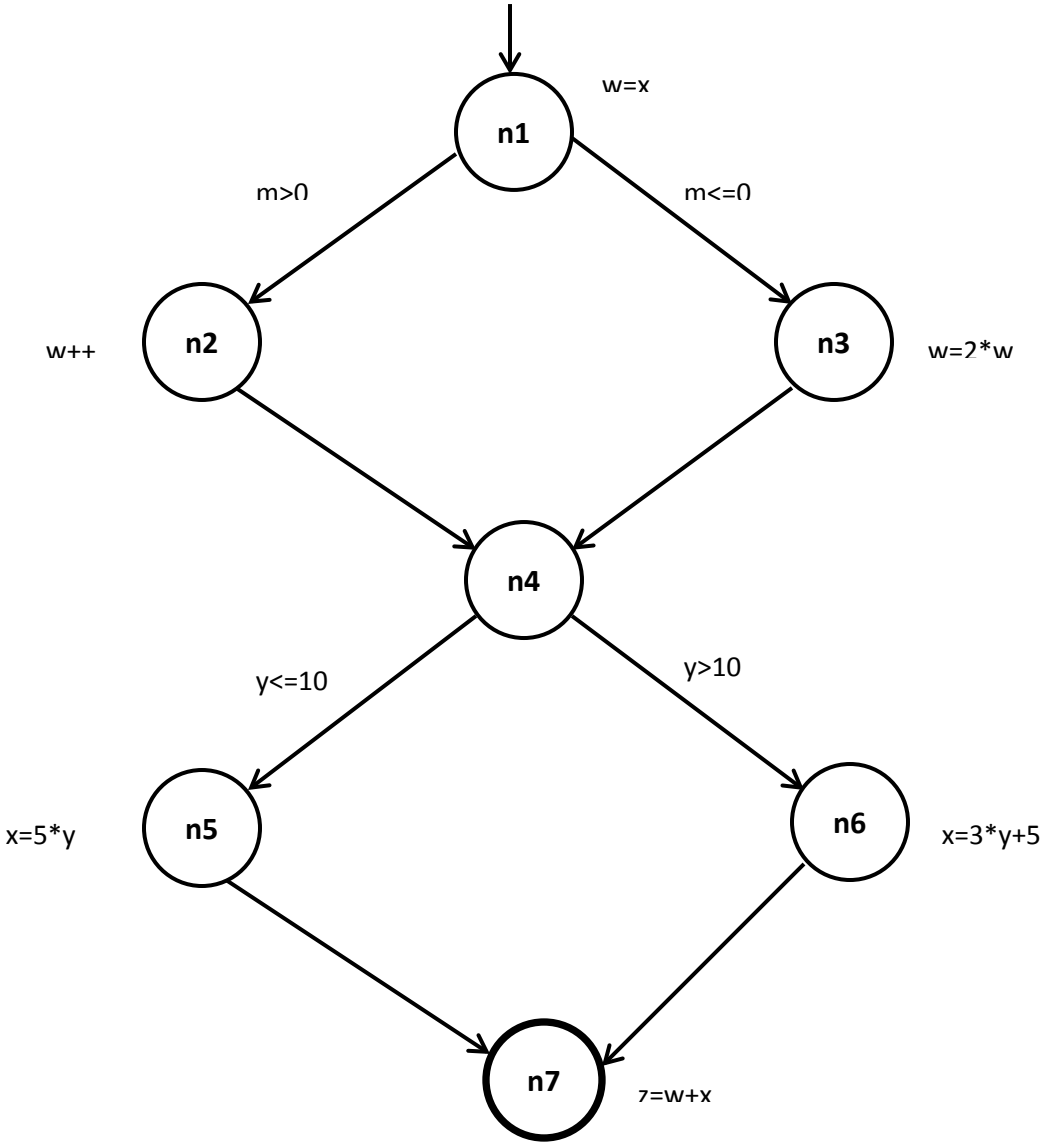
HW#2 – Due Oct 11, 2014 @ 11:59pm

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)



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 : $(bd + ce)$
Two paths from n4 to n7: $(fh + gi)$

Final path expression: $\boldsymbol{a\,(bd + ce)(fh + gi)j}$

b)
Path from n2 to n3 has a loop: *(cd)**
Path from n2 to n4: $(cf + e)$

Final path expression: $\boldsymbol{ab\,(cd)\,*\,(cf + e)g}$

c)
Sub Path n0 to n1: $a\ g^*\ f$
Sub path n0 to n2 to [n3 or n4 or n5] to n0: $b\ (ch + di + ej)$

Final path expression: $\boldsymbol{[[a\ g^*\ f] + [b(ch + di + ej)]]\ *\ k}$

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	$(x < y) \wedge (x + y == 10)$	0	10	A		0	0	B
P2	$(x \geq y) \vee (x + y \neq 10)$	0	0	B		1	2	A

	$(x \geq y)$	$(x + y \neq 10)$		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)
$P2_{=true} \oplus P2_{=false}$

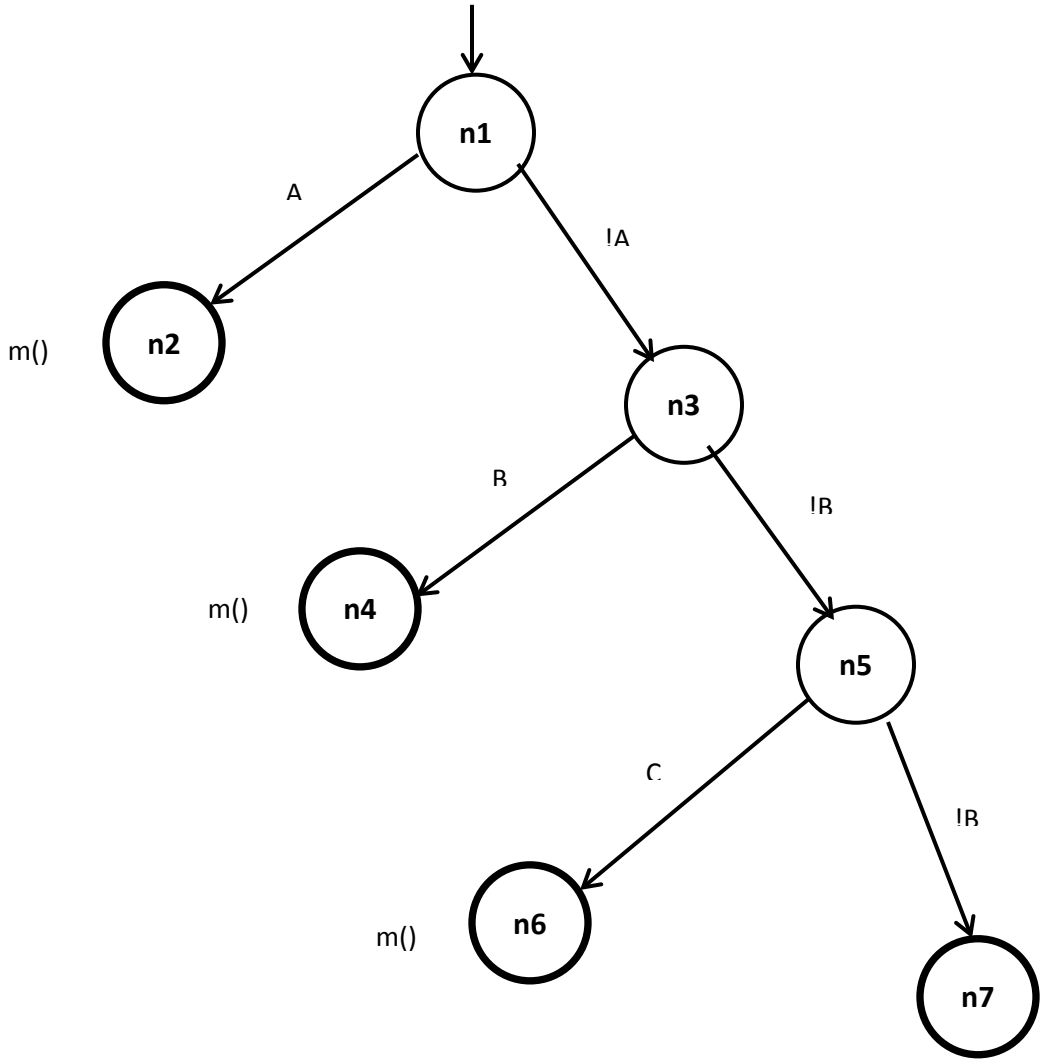
RICC can be satisfied by row pairs (1,4) and (2,3)

Section 3.3 Question 3 – answer this question with respect to CACC instead of GACC (Page 130–131)
a)
Predicate is $A \vee B \vee C$

	A	B	C	$A \vee B \vee C$	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 P_A, CACC can be satisfied by choosing any rows 1,2,3,4 AND 8. (1,8), (2,8), (3,8), (4,8)
When P_B, CACC can be satisfied by choosing any rows 1,2,5,6 AND 8. (1,8), (2,8), (5,8), (6,8)
When P_C, 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



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.