



## Exam 12 May 2018, answers

Software Quality Assurance (University of Ottawa)



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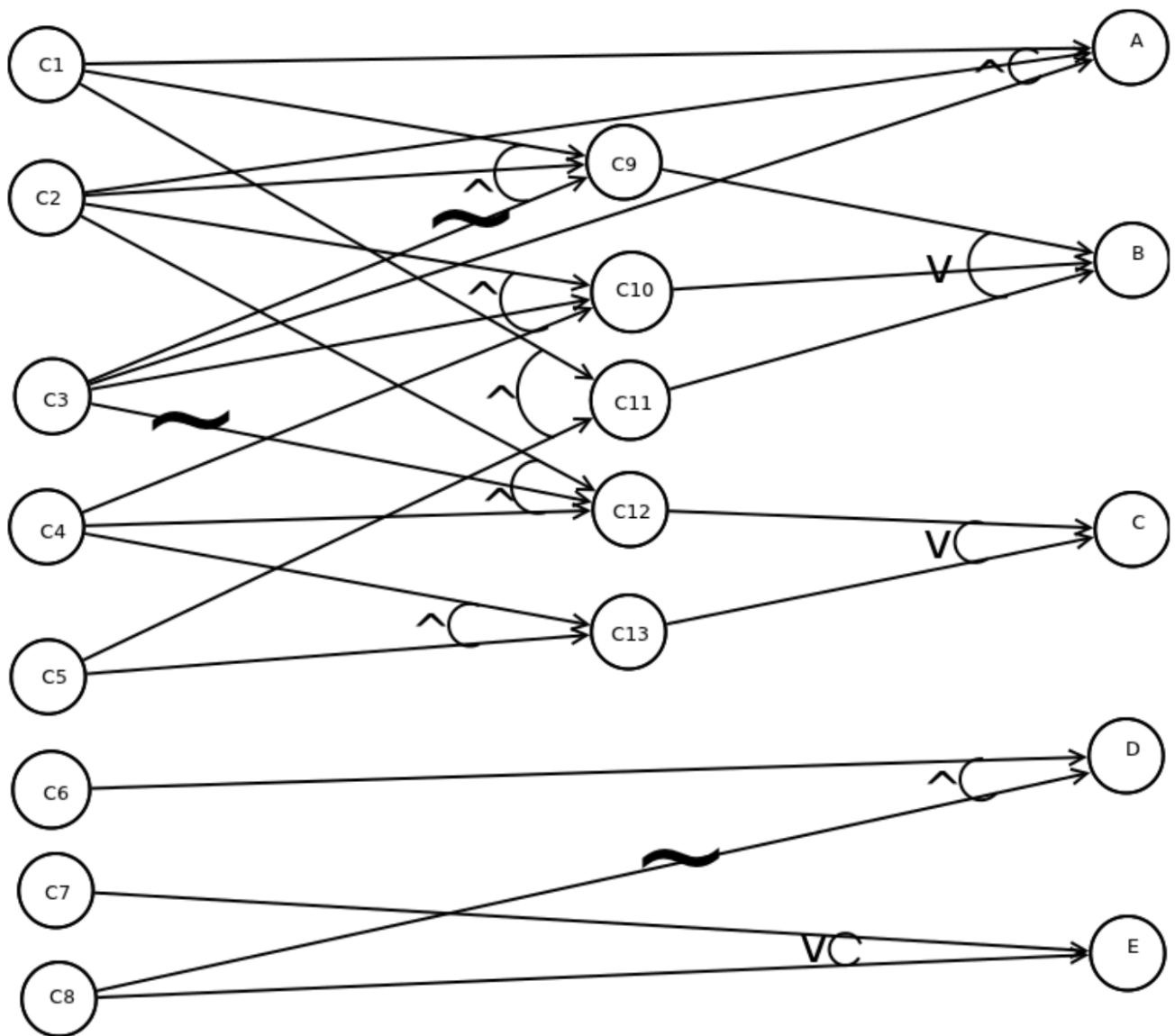
i)

<i>Input Conditions</i>	<i>Valid ECs</i>	<i>Invalid ECs</i>
C	1. C.length = 3  2. $-100 \leq C[0], C[1], C[2] \leq 100$ 2.1 $C[0] = C[1] = 0$ 2.2 $C[0] = 0, C[1] \neq 0$ 2.3 $C[0], C[1], C[2]$ such that $\Delta = 0$ 2.4 $C[0], C[1], C[2]$ such that $\Delta < 0$ 2.5 $C[0], C[1], C[2]$ such that - $C[0] \neq 0, C[1] \neq 0$ and - $\Delta > 0$	3. C is null 4. C.length < 3 5. C.length > 3  6. $C[0] < -100$ 7. $C[0] > 100$ 8. $C[1] < -100$ 9. $C[1] > 100$ 10. $C[2] < -100$ 11. $C[2] > 100$

ii)

<i>Test Case number</i>	<i>Test Data</i>		<i>Equivalence Classes</i>
	Input	Expected Result	
1	C = {0,0,0}	returns null	1, 2.1
2	C = {0,100,100}	returns array of length 1 = {-1}	1, 2.2
3	C = {1,2,1}	returns array of length 1 = {-1}	1, 2.3
4	C = {100,-100,-100}	returns null	1, 2.4
5	C = {1, 4, 3}	returns array of length 2 = {-1, -3}	1, 2.5
6	C = null	error message	3

i)



One and only one (O) constraints between C1, C4, C6, C7

One and only one (O) constraints between C2, C5, C8

ii)

$$B \equiv C9 \vee C10 \vee C11$$

$$\equiv (C1 \wedge C2 \wedge \neg C3) \vee (C2 \wedge C3 \wedge C4) \vee (C1 \wedge C5)$$

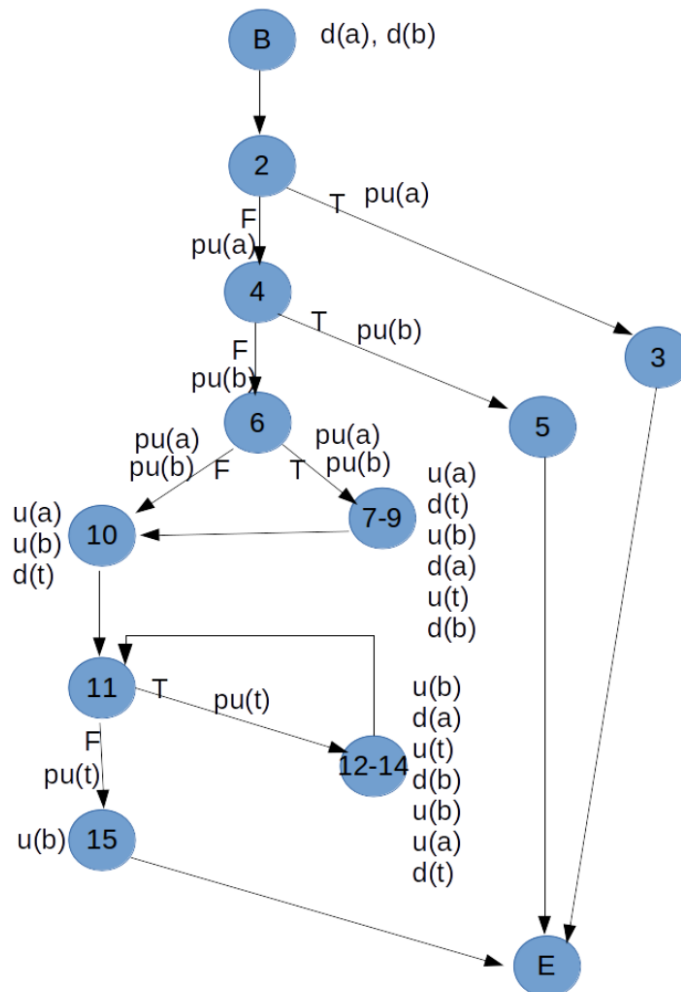
iii)

$$C \equiv (C4 \wedge C5) \vee (C2 \wedge \neg C3 \wedge C4)$$

<i>C1</i>	<i>C2</i>	<i>C3</i>	<i>C4</i>	<i>C5</i>	<i>C6</i>	<i>C7</i>	<i>C8</i>	<i>C</i>
-	F	-	<b>F</b>	<b>T</b>	-	-	F	
F	-	-	<b>T</b>	<b>F</b>	F	F	-	
F	F	-	<b>T</b>	<b>T</b>	F	F	F	<b>X</b>
F	<b>F</b>	<b>T</b>	<b>T</b>	-	F	F	-	
-	<b>F</b>	<b>F</b>	<b>F</b>	-	-	-	-	
-	<b>T</b>	<b>T</b>	<b>F</b>	F	-	-	F	
F	<b>T</b>	<b>F</b>	<b>T</b>	F	F	F	F	<b>X</b>

Table considering constraints.

i)



ii)

Test Case	Input	Expected Output	Path Covered
1	a=0, b=5	-1	B-2-3-E
2	a=1, b=0	-1	B-2-4-5-E
3	a=4, b=2	2	B-2-4-6-10-11-15-E
4	a=6, b=9	3	B-2-4-6-7-10-11-12-11-15-E