Faculty of Engineering, Architecture and Science
Department of Electrical and Computer Engineering
Laboratory Report Cover Page

Course Number	COE891
Course Title	Software Testing & QA
Semester/Year	Winter 2023
Instructor	Reza Semavi
TA Name	Hamed Karimi

Lab/Tutorial Report No.	7

Section No.	012
Group No.	N/A
Submission Date	Mar 27th, 2023
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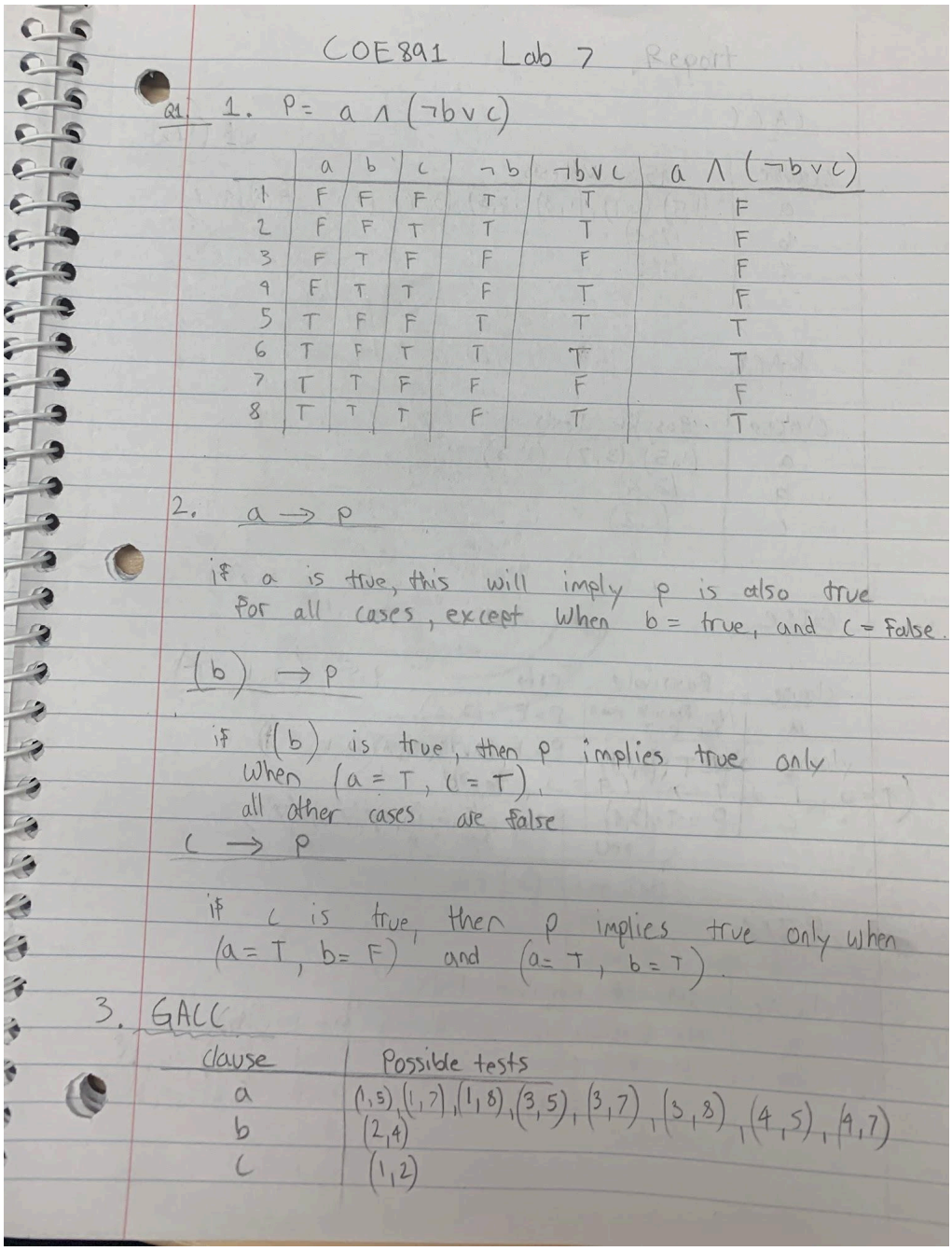
Student Name	Student ID	Signature
Hamza Iqbal	500973673	H.I

Q1.



COE891 Lab 7 Report

Q1. 1. $P = a \wedge (\neg b \vee c)$

	a	b	c	$\neg b$	$\neg b \vee c$	$a \wedge (\neg b \vee c)$
1	F	F	F	T	T	F
2	F	F	T	T	T	F
3	F	T	F	F	F	F
4	F	T	T	F	T	F
5	T	F	F	T	T	T
6	T	F	T	T	T	T
7	T	T	F	F	F	F
8	T	T	T	F	T	T

2. $a \rightarrow p$

if a is true, this will imply p is also true for all cases, except when b = true, and c = false.

$(b) \rightarrow p$

if (b) is true, then p implies true only when (a = T, c = T). all other cases are false

$c \rightarrow p$

if c is true, then p implies true only when (a = T, b = F) and (a = T, b = T).

3. GACC

clause	Possible tests
a	(1,5), (1,7), (1,8), (3,5), (3,7), (3,8), (4,5), (4,7)
b	(2,4)
c	(1,2)

CACC

Clause	Possible Tests
a	(1,5), (1,7), (1,8), (3,5), (3,7), (3,8), (4,5), (4,7)
b	(2,4)
c	(1,2)

RACC

Clause	Possible Tests
a	(1,5), (3,7), (4,8)
b	(2,4)
c	(1,2)

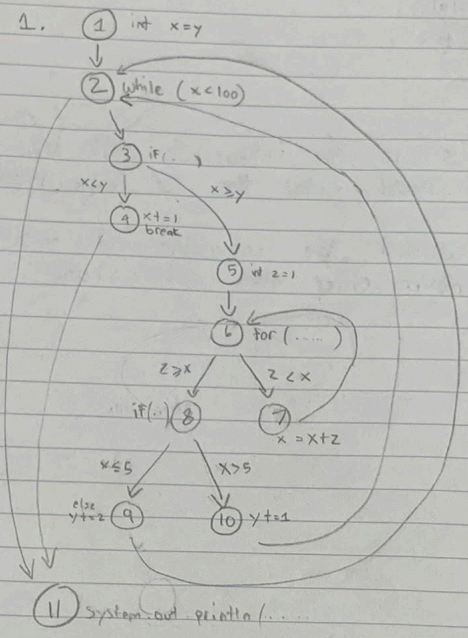
GICC

Clause	Possible Tests	
a	No feasible pairs for P=T	P=F : (2,6)
b	P=T : (1,3)	P=F : (5,7), (5,8), (6,7), (6,8)
c	P=T : (3,4)	P=F : (5,6), (5,8), (7,6), (7,8)

RICC

Clause	set of possible tests	
a	No feasible pairs for P=T	P=F : (2,6)
b	P=T : (1,3)	P=F : (5,7), (6,8)
c	P=T : (3,4)	P=F : (5,6), (7,8)

Q2. 1.



2.

Node n	def ( )	use ( )
1	def (x)	use (y)
2	–	use (x)
3	–	use (x), use (y)
4	–	use (x)
5	def (z)	
6		use (z), use (x)
7	def (x)	use (x)
8		use (x)
9	def (y)	
10	def (y)	
11		use (x), use (y)

3. x: (1,2), (1,4), (1,3), (1,4)
y: (9,10), (9,11)
z: (5,6) (6,7)

4. 6-7-6-8 is an infeasible path b/c if x=0, it will never enter the for loop. Additionally, 1-2 would be infeasible if x > 100, which would never enter the while loop.

5. ADC

Test	test set
1	y=0
2	y=1
3	y=2

6. AUC

Test	Test set
1	y=0, x=1
2	y=1, x=1

7. All du paths coverage:

Test	test set
1	y=1, x=1
2	y=1, x=1
3	y=0, x=3
4	y=1, x=3
5	y=0, x=6
6	y=1, x=6

Q3.

1. Both lines 6 & 9 have reachability predicates

2.

	TR	Test cases	Satisfy PC	EXP output
1	$s_1 \leq 0,\ s_2 \leq 0$ $s_3 \leq 0$	$s_1 = 0,\ s_2 = 0,\ s_3 = 0$	✓	INVALID
2	$s_1 + s_2 \leq s_3$ $s_1 + s_3 \leq s_2$ $s_2 + s_3 \leq s_1$	$s_1 = 2,\ s_2 = 4,\ s_3 = 7$	✓	SCALENE
3	$s_1 == s_2$ $s_2 == s_3$	$s_1 = 6,\ s_2 = 6,\ s_3 = 6$	✓	EQUILATERAL

3.

	TR	Test cases	Satisfy CC	EXP output
1	$s_1 == s_3,\ s_2 == s_3$ $s_1 == s_2$	$s_1 = 3,\ s_2 = 3,\ s_3 = 5$	✓	ISOSCELES
2	$s_1 + s_2 \leq s_3$ $s_1 + s_3 \leq s_2$ $s_2 + s_3 \leq s_1$	$s_1 = 4,\ s_2 = 5,\ s_3 = 6$	✓	SCALENE
3	$s_1 \leq 0$ $s_2 \leq 0$ $s_3 \leq 0$	$s_1 = -3,\ s_2 = -1,\ s_3 = 2$	✓	INVALID

4. Line 12: $((s_1 == s_2)\ \&\&\ (s_2 == s_3))$

Line 15: $((s_1 == s_2)\ ||\ (s_2 == s_3)\ ||\ (s_1 == s_3))$

5. $s_1 = 4,\ s_2 = 4,\ s_3 = 4 \rightarrow$ equilateral
$s_1 = 6,\ s_2 = 6,\ s_3 = 2 \rightarrow$ isoceles
$s_1 = 5,\ s_2 = 7,\ s_3 = 6 \rightarrow$ scalene

6. There are no infeasible requirements