ECE 322
Assignment 2

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XXXXXXX

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1 Credit Union

Conditions	Rules			
	1	2	3	4
city dweller	1	x	0	x
male	1	1	0	1
female	0	0	1	x
age < 25	x	1	0	x
$25 <$ age < 65	x	0	1	x
age > 65	x	0	0	1
Actions				
Show Product A	1	x	x	x
Show Product B	x	1	x	x
Show Product C	x	x	1	x
Do Not Show Product D	0	0	0	1

a) Maximal number of rules

As seen in the table above, the maximal number of rules is 4

b) Simplified table

Conditions	Rules			
	1	2	3	4
city dweller	1	x	0	x
male	1	1	0	1
female	0	0	1	0
age < 25	x	1	0	0
$25 <$ age < 65	x	0	1	0
age > 65	x	0	0	1
Actions				
Show Product A	1	x	x	x
Show Product B	x	1	x	x
Show Product C	x	x	1	x
Do Not Show Product D	0	0	0	1

2

For the given subdomain, the following lines form the boundaries:

- $y = 5, 0 \leq x \leq 7$
- $x = 0, 0 \leq y \leq 5$
- $y = -x, 0 \leq x \leq 1$
- $y = x - 2, 1 \leq x \leq 7$

a) EPC Strategy

From the boundary lines, we see that the maximum value that x can have is 7, its minimum is -1, and that the maximum value that y can have is 5 while its minimum value is 0. Using the EPC testing strategy, $4^2 + 1 = 17$ test cases are expected. The extreme points chosen are $(7, 7.1, 0, -0.1)$ for x, and $(5, 5.1, 0, -0.1)$ for y. For the additional test case within the boundary, $(x = 1, y = 1)$ is chosen. The full list of suggested test cases is found below:

test id	x	y
1	7	5
2	7	5.1
3	7	-1
4	7	-0.1
5	7.1	5
6	7.1	5.1
7	7.1	-1
8	7.1	-0.1
9	0	5
10	0	5.1
11	0	-1
12	0	-0.1
13	-0.1	5
14	-0.1	5.1
15	-0.1	-1
16	-0.1	-0.1
17	1	1

b) Weak n x 1 Strategy

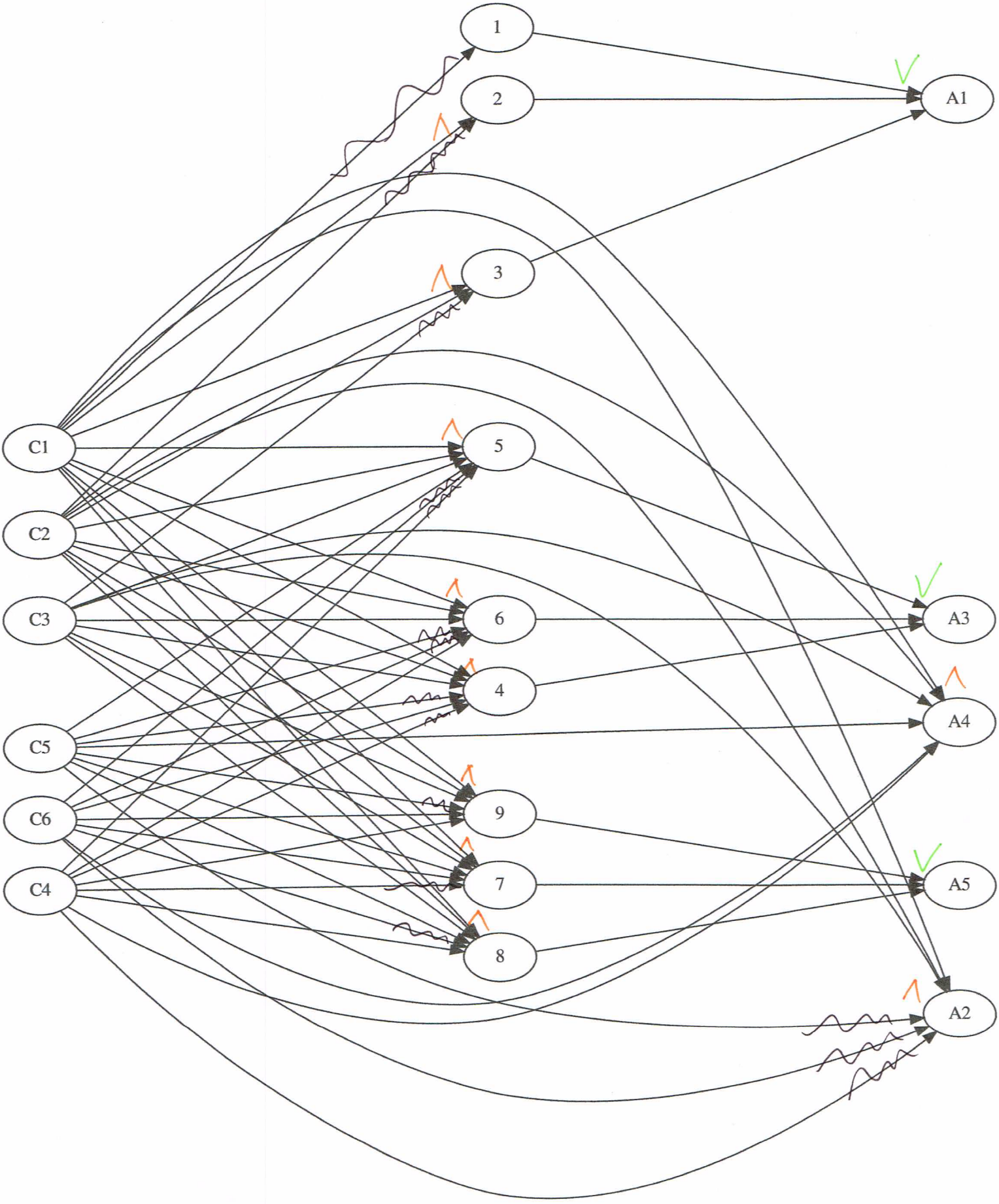
Given that there are 4 boundaries, we expect $4(2+1)+1 = 13$ test cases. The dimensionality is 2, so 2 points are chosen on each boundary, as well as one additional point just outside of each boundary. The last test case is one point inside the boundaries. The full list of suggested test cases is found below:

test id	description	x	y
1	on $y = 5, 0 \leq x \leq 7$ boundary	2	5
2	on $y = 5, 0 \leq x \leq 7$ boundary	4	5
3	outside $y = 5, 0 \leq x \leq 7$ boundary	3	5.1
4	on $x = 0, 0 \leq y \leq 5$ boundary	0	2
5	on $x = 0, 0 \leq y \leq 5$ boundary	0	4
6	outside $x = 0, 0 \leq y \leq 5$ boundary	-0.1	3
7	on $y = -x, 0 \leq x \leq 1$ boundary	0.3	-0.3
8	on $y = -x, 0 \leq x \leq 1$ boundary	0.7	-0.7
9	outside $y = -x, 0 \leq x \leq 1$ boundary	0.5	-0.6
10	on $y = x - 2, 1 \leq x \leq 7$ boundary	3	1
11	on $y = x - 2, 1 \leq x \leq 7$ boundary	5	3
12	outside $y = x - 2, 1 \leq x \leq 7$ boundary	4	1.9
13	Inside the boundaries	1	1

3 Cause-Effect Graph

From the following decision table, the cause effect graph below is generated:

Conditions											
C1: $a < b + c$?	0	1	1	1	1	1	1	1	1	1	1
C2: $b < a + c$?	x	0	1	1	1	1	1	1	1	1	1
C3: $c < a + b$?	x	x	0	1	1	1	1	1	1	1	1
C4: $a = b$?	x	x	x	1	1	1	1	0	0	0	0
C5: $a = c$?	x	x	x	1	1	0	0	1	1	0	0
C6: $b = c$?	x	x	x	1	0	1	0	1	0	1	0
Actions											
A1: Not a Triangle	1	1	1	x	x	x	x	x	x	x	x
A2: Scalene	x	x	x	x	x	x	x	x	x	x	1
A3: Isosceles	x	x	x	x	x	x	1	x	1	1	x
A3: Equilateral	x	x	x	1	x	x	x	x	x	x	x
A4: Impossible	x	x	x	x	1	1	x	1	x	x	x


1
2
3
5
6
4
9
7
8
C1
C2
C3
C5
C6
C4
A1
A3
A4
A5
A2

4 Combinatorial Testing