

SWE 637 Software Testing

Chapter 8.1

Logic Coverage

In-class exercise

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(Dr. B for short)

<https://go.gmu.edu/SWE637>

Adapted from slides by Jeff Offutt and Bob Kurtz

Exercise 1

Given predicate $p = a \wedge (\neg b \vee c)$

Compute the conditions under which a determines p

Compute the conditions under which b determines p

Compute the conditions under which c determines p

Write the truth table for each clause, including which clause determines the predicate

Identify GACC rows for a , b , and c

Identify CACC rows for a , b , and c

Identify RACC rows for a , b , and c

Identify 4-tuples of rows for GICC for a , b , and c

Identify 4-tuples of rows for RICC for a , b , and c

Exercise 1 – a determines p

Given predicate $p = a \wedge (\neg b \vee c)$

Compute the conditions under which a determines p

Exercise 1 – a determines p

Given predicate $p = a \wedge (\neg b \vee c)$

Compute the conditions under which a determines p

$$\begin{aligned} P_a &= P_{a=\text{true}} \oplus P_{a=\text{false}} \\ &= \text{true} \wedge (\neg b \vee c) \oplus \text{false} \wedge (\neg b \vee c) \\ &= (\neg b \vee c) \oplus \text{false} \\ &= \neg b \vee c \end{aligned}$$

Exercise 1 – b determines p

Given predicate $p = a \wedge (\neg b \vee c)$

Compute the conditions under which b determines p

Exercise 1 – b determines p

Given predicate $p = a \wedge (\neg b \vee c)$

Compute the conditions under which b determines p

$$\begin{aligned} P_b &= P_{b=\text{true}} \oplus P_{b=\text{false}} \\ &= a \wedge (\text{false} \vee c) \oplus a \wedge (\text{true} \vee c) \\ &= a \wedge c \oplus a \\ &= a \wedge \neg c \end{aligned}$$

Exercise 1 – c determines p

Given predicate $p = a \wedge (\neg b \vee c)$

Compute the conditions under which c determines p

Exercise 1 – c determines p

Given predicate $p = a \wedge (\neg b \vee c)$

Compute the conditions under which c determines p

$$\begin{aligned} P_c &= P_{c=\text{true}} \oplus P_{c=\text{false}} \\ &= a \wedge (\neg b \vee \text{true}) \oplus a \wedge (\neg b \vee \text{false}) \\ &= a \oplus a \wedge \neg b \\ &= a \wedge b \end{aligned}$$

Exercise 1 – Determining Clauses

Write the truth table for each clause, including which clause determines the predicate

	a	b	c	$a \wedge (\neg b \vee c)$	p_a	p_b	p_c
1							
2							
3							
4							
5							
6							
7							
8							

Exercise 1 – Determining Clauses

Write the truth table for each clause, including which clause determines the predicate

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

Exercise 1 – Determining Clauses

Write the truth table for each clause, including which clause determines the predicate

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

Exercise 1 – Determining Clauses

Write the truth table for each clause, including which clause determines the predicate

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

Exercise 1 – Determining Clauses

Write the truth table for each clause, including which clause determines the predicate

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

Exercise 1 – Determining Clauses

Write the truth table for each clause, including which clause determines the predicate

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

Exercise 1 – Determining Clauses

Write the truth table for each clause, including which clause determines the predicate

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

Exercise 1 – Determining Clauses

Write the truth table for each clause, including which clause determines the predicate

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

Exercise 1 - GACC

General Active Clause Coverage (GACC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i determines p . *TR* has two requirements for c_j : c_j evaluates to true and c_i evaluates to false. The values chosen for minor clauses c_j do not need to be the same when c_i is true as when c_j is false.

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

List all rows that satisfy GACC with respect to a :

Exercise 1 - GACC

General Active Clause Coverage (GACC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i determines p . TR has two requirements for c_j : c_j evaluates to true and c_i evaluates to false. The values chosen for minor clauses c_j do not need to be the same when c_i is true as when c_j is false.

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

List all rows that satisfy GACC with respect to a :

$\{1, 3, 4\} \times \{5, 7, 8\}$

Exercise 1 - GACC

General Active Clause Coverage (GACC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i determines p . TR has two requirements for c_j : c_j evaluates to true and c_i evaluates to false. The values chosen for minor clauses c_j do not need to be the same when c_i is true as when c_j is false.

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

List all rows that satisfy GACC with respect to a :

$\{1, 3, 4\} \times \{5, 7, 8\}$

List all rows that satisfy GACC with respect to b :

Exercise 1 - GACC

General Active Clause Coverage (GACC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i determines p . TR has two requirements for c_j : c_j evaluates to true and c_i evaluates to false. The values chosen for minor clauses c_j do not need to be the same when c_i is true as when c_j is false.

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

List all rows that satisfy GACC with respect to a :

$\{1, 3, 4\} \times \{5, 7, 8\}$

List all rows that satisfy GACC with respect to b :

$(2, 4)$

List all rows that satisfy GACC with respect to c :

Exercise 1 – GACC

General Active Clause Coverage (GACC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i determines p . TR has two requirements for c_j : c_j evaluates to true and c_i evaluates to false. The values chosen for minor clauses c_j do not need to be the same when c_i is true as when c_j is false.

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

List all rows that satisfy GACC with respect to a :

$\{1, 3, 4\} \times \{5, 7, 8\}$

List all rows that satisfy GACC with respect to b :

$(2, 4)$

List all rows that satisfy GACC with respect to c :

Exercise 1 - GACC

General Active Clause Coverage (GACC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i determines p . TR has two requirements for c_j : c_j evaluates to true and c_i evaluates to false. The values chosen for minor clauses c_j do not need to be the same when c_i is true as when c_j is false.

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

List all rows that satisfy GACC with respect to a :

$\{1, 3, 4\} \times \{5, 7, 8\}$

List all rows that satisfy GACC with respect to b :

$(2, 4)$

List all rows that satisfy GACC with respect to c :

$(1, 2)$

Exercise 1 – CACC

Correlated Active Clause Coverage (CACC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i determines p . TR has two requirements for c_j : c_j evaluates to true and c_i evaluates to false. The values chosen for minor clauses c_j must cause p to be true for one value of major clause c_i and false for the other value of c_i .

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

List all rows that satisfy CACC with respect to a :

Exercise 1 – CACC

Correlated Active Clause Coverage (CACC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i determines p . TR has two requirements for c_j : c_j evaluates to true and c_i evaluates to false. The values chosen for minor clauses c_j must cause p to be true for one value of major clause c_i and false for the other value of c_i .

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

List all rows that satisfy CACC with respect to a :

$\{1, 3, 4\} \times \{5, 7, 8\}$

Exercise 1 – CACC

Correlated Active Clause Coverage (CACC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i determines p . TR has two requirements for c_j : c_j evaluates to true and c_i evaluates to false. The values chosen for minor clauses c_j must cause p to be true for one value of major clause c_i and false for the other value of c_i .

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

List all rows that satisfy CACC with respect to a :

$\{1, 3, 4\} \times \{5, 7, 8\}$

List all rows that satisfy CACC with respect to b :

Exercise 1 – CACC

Correlated Active Clause Coverage (CACC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i determines p . TR has two requirements for c_j : c_j evaluates to true and c_i evaluates to false. The values chosen for minor clauses c_j must cause p to be true for one value of major clause c_i and false for the other value of c_i .

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

List all rows that satisfy CACC with respect to a :

$\{1, 3, 4\} \times \{5, 7, 8\}$

List all rows that satisfy CACC with respect to b :

(2.4)

Exercise 1 – CACC

Correlated Active Clause Coverage (CACC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i determines p . TR has two requirements for c_j : c_j evaluates to true and c_i evaluates to false. The values chosen for minor clauses c_j must cause p to be true for one value of major clause c_i and false for the other value of c_i .

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

List all rows that satisfy CACC with respect to a :

$\{1, 3, 4\} \times \{5, 7, 8\}$

List all rows that satisfy CACC with respect to b :

(2,4)

List all rows that satisfy CACC with respect to c :

(1,2)

Exercise 1 - RACC

Restricted Active Clause Coverage (RACC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i determines p . TR has two requirements for c_j : c_j evaluates to true and c_i evaluates to false. The values chosen for minor clauses c_j must be the same when c_i is true as when c_i is false.

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

List all rows that satisfy RACC with respect to a :

Exercise 1 - RACC

Restricted Active Clause Coverage (RACC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i determines p . TR has two requirements for c_j : c_j evaluates to true and c_i evaluates to false. The values chosen for minor clauses c_j must be the same when c_i is true as when c_i is false.

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

List all rows that satisfy RACC with respect to a :

(1, 5), (3, 7), (4, 8)

Exercise 1 - RACC

Restricted Active Clause Coverage (RACC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i determines p . TR has two requirements for c_j : c_j evaluates to true and c_i evaluates to false. The values chosen for minor clauses c_j must be the same when c_i is true as when c_i is false.

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

List all rows that satisfy RACC with respect to a :

(1, 5), (3, 7), (4, 8)

List all rows that satisfy RACC with respect to b :

Exercise 1 - RACC

Restricted Active Clause Coverage (RACC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i determines p . TR has two requirements for c_j : c_j evaluates to true and c_i evaluates to false. The values chosen for minor clauses c_j must be the same when c_i is true as when c_i is false.

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

List all rows that satisfy RACC with respect to a :

(1, 5), (3, 7), (4, 8)

List all rows that satisfy RACC with respect to b :

(2, 4)

Exercise 1 - RACC

Restricted Active Clause Coverage (RACC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i determines p . TR has two requirements for c_j : c_j evaluates to true and c_i evaluates to false. The values chosen for minor clauses c_j must be the same when c_i is true as when c_i is false.

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

List all rows that satisfy RACC with respect to a :

(1, 5), (3, 7), (4, 8)

List all rows that satisfy RACC with respect to b :

(2, 4)

List all rows that satisfy RACC with respect to c :

Exercise 1 - RACC

Restricted Active Clause Coverage (RACC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i determines p . TR has two requirements for c_j : c_j evaluates to true and c_i evaluates to false. The values chosen for minor clauses c_j must be the same when c_i is true as when c_i is false.

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

List all rows that satisfy RACC with respect to a :

(1, 5), (3, 7), (4, 8)

List all rows that satisfy RACC with respect to b :

(2, 4)

List all rows that satisfy RACC with respect to c :

(1, 2)

Exercise 1 - GICC

General Inactive Clause Coverage (GICC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i *does not* determine p . The values chosen for minor clause c_j *do not* need to be the same when c_i is true as when c_i is false.

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

List all 4-tuples of rows that satisfy GICC with respect to a :

Exercise 1 - GICC

General Inactive Clause Coverage (GICC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i *does not* determine p . The values chosen for minor clause c_j *do not* need to be the same when c_i is true as when c_i is false.

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

List all 4-tuples of rows that satisfy GICC with respect to a :

$p = \text{true}$:

$p = \text{false}$:

Exercise 1 - GICC

General Inactive Clause Coverage (GICC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i *does not* determine p . The values chosen for minor clause c_j *do not* need to be the same when c_i is true as when c_i is false.

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

List all 4-tuples of rows that satisfy GICC with respect to a :

$p = \text{true}$: infeasible

$p = \text{false}$: (2,6)

Exercise 1 - GICC

General Inactive Clause Coverage (GICC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i *does not* determine p . The values chosen for minor clause c_j *do not* need to be the same when c_i is true as when c_i is false.

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

List all 4-tuples of rows that satisfy GICC with respect to a :

$p = \text{true}$: infeasible

$p = \text{false}$: (2,6)

List all 4-tuples of rows that satisfy GICC with respect to b :

$p = \text{true}$:

$p = \text{false}$:

Exercise 1 - GICC

General Inactive Clause Coverage (GICC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_j does not determine p . The values chosen for minor clause c_j do not need to be the same when c_i is true as when c_i is false.

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

List all 4-tuples of rows that satisfy GICC with respect to a :

$p = \text{true}$: infeasible

$p = \text{false}$: (2,6)

List all 4-tuples of rows that satisfy GICC with respect to b :

$p = \text{true}$: (1,3)

$p = \text{false}$: {5,6} x {7,8}

Exercise 1 - GICC

General Inactive Clause Coverage (GICC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i *does not* determine p . The values chosen for minor clause c_j *do not* need to be the same when c_i is true as when c_i is false.

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

List all 4-tuples of rows that satisfy GICC with respect to a :

$p = \text{true}$: infeasible

$p = \text{false}$: (2,6)

List all 4-tuples of rows that satisfy GICC with respect to b :

$p = \text{true}$: (1,3)

$p = \text{false}$: {5,6} x {7,8}

List all 4-tuples of rows that satisfy GICC with respect to c :

$p = \text{true}$:

$p = \text{false}$:

Exercise 1 - GICC

General Inactive Clause Coverage (GICC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_j does not determine p . The values chosen for minor clause c_j do not need to be the same when c_j is true as when c_j is false.

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

List all 4-tuples of rows that satisfy GICC with respect to a :

$p = \text{true}$: infeasible

$p = \text{false}$: (2, 6)

List all 4-tuples of rows that satisfy GICC with respect to b :

$p = \text{true}$: (1, 3)

$p = \text{false}$: {5, 6} x {7, 8}

List all 4-tuples of rows that satisfy GICC with respect to c :

$p = \text{true}$: (3, 4)

$p = \text{false}$: {5, 7} x {6, 8}

Exercise 1 - RICC

Restricted Inactive Clause Coverage (RICC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_j *does not* determine p . The values chosen for minor clause c_j *must* be the same when c_j is true as when c_j is false.

List all 4-tuples of rows that satisfy RICC with respect to a :

$p = \text{true}$:

$p = \text{false}$:

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

Exercise 1 - RICC

Restricted Inactive Clause Coverage (RICC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i *does not* determine p . The values chosen for minor clause c_j *must* be the same when c_i is true as when c_i is false.

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

List all 4-tuples of rows that satisfy RICC with respect to a :

$p = \text{true}$: infeasible

$p = \text{false}$: (2,6)

Exercise 1 - RICC

Restricted Inactive Clause Coverage (RICC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_j *does not* determine p . The values chosen for minor clause c_j *must* be the same when c_j is true as when c_j is false.

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

List all 4-tuples of rows that satisfy RICC with respect to **a**:

$p = \text{true}$: infeasible

$p = \text{false}$: (2, 6)

List all 4-tuples of rows that satisfy RICC with respect to **b**:

$p = \text{true}$: (1, 3)

$p = \text{false}$: (5, 7), (6, 8)

Exercise 1 - RICC

Restricted Inactive Clause Coverage (RICC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i *does not* determine p . The values chosen for minor clause c_j *must* be the same when c_i is true as when c_i is false.

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

List all 4-tuples of rows that satisfy RICC with respect to **a**:

$p = \text{true}$: infeasible

$p = \text{false}$: (2, 6)

List all 4-tuples of rows that satisfy RICC with respect to **b**:

$p = \text{true}$: (1, 3)

$p = \text{false}$: (5, 7), (6, 8)

List all 4-tuples of rows that satisfy RICC with respect to **c**:

$p = \text{true}$:

$p = \text{false}$:

Exercise 1 - RICC

Restricted Inactive Clause Coverage (RICC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i *does not* determine p . The values chosen for minor clause c_j *must* be the same when c_i is true as when c_i is false.

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

List all 4-tuples of rows that satisfy RICC with respect to **a**:

$p = \text{true}$: infeasible

$p = \text{false}$: (2, 6)

List all 4-tuples of rows that satisfy RICC with respect to **b**:

$p = \text{true}$: (1, 3)

$p = \text{false}$: (5, 7), (6, 8)

List all 4-tuples of rows that satisfy RICC with respect to **c**:

$p = \text{true}$: (3, 4)

$p = \text{false}$: (5, 6), (7, 8)

END OF EXERCISE 1

Exercise 2

Given predicate $p = a \vee (b \wedge c)$

Compute the conditions under which a determines p

Compute the conditions under which b determines p

Compute the conditions under which c determines p

Write the truth table for each clause, including which clause determines the predicate

Identify GACC rows for a , b , and c

Identify CACC rows for a , b , and c

Identify RACC rows for a , b , and c

Identify 4-tuples of rows for GICC for a , b , and c

Identify 4-tuples of rows for RICC for a , b , and c

Exercise 2 – a determines p

Given predicate $p = a \vee (b \wedge c)$

Compute the conditions under which a determines p

Exercise 2 – a determines p

Given predicate $p = a \vee (b \wedge c)$

Compute the conditions under which a determines p

$$\begin{aligned} P_a &= P_{a=\text{true}} \oplus P_{a=\text{false}} \\ &= \text{true} \vee (b \wedge c) \oplus \text{false} \vee (b \wedge c) \\ &= \text{true} \oplus (b \wedge c) \\ &= \neg b \vee \neg c \end{aligned}$$

Exercise 2 – B determines p

Given predicate $p = a \vee (b \wedge c)$

Compute the conditions under which b determines p

Exercise 2 – B determines p

Given predicate $p = a \vee (b \wedge c)$

Compute the conditions under which b determines p

$$\begin{aligned} \mathcal{P}_b &= \mathcal{P}_{b=\text{true}} \oplus \mathcal{P}_{b=\text{false}} \\ &= a \vee (\text{true} \wedge c) \oplus a \vee (\text{false} \wedge c) \\ &= a \vee c \oplus a \\ &= \neg a \wedge c \end{aligned}$$

Exercise 2 – c determines p

Given predicate $p = a \vee (b \wedge c)$

Compute the conditions under which c determines p

Exercise 2 – c determines p

Given predicate $p = a \vee (b \wedge c)$

Compute the conditions under which c determines p

$$\begin{aligned} P_c &= P_{c=\text{true}} \oplus P_{c=\text{false}} \\ &= a \vee (b \wedge \text{true}) \oplus a \vee (b \wedge \text{false}) \\ &= a \vee b \oplus a \\ &= \neg a \wedge b \end{aligned}$$

Exercise 2 – Determining Clauses

Write the truth table for each clause, including which clause determines the predicate

	a	b	c	$a \vee (b \wedge c)$	p_a	p_b	p_c
1							
2							
3							
4							
5							
6							
7							
8							

Exercise 2 – Determining Clauses

Write the truth table for each clause, including which clause determines the predicate

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

Exercise 2 – Determining Clauses

Write the truth table for each clause, including which clause determines the predicate

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

Exercise 2 – Determining Clauses

Write the truth table for each clause, including which clause determines the predicate

	a	b	c	$a \vee (b \wedge c)$	p_a	p_b	p_c
1	T	T	T	T			
2	T	T	F	T	✓(1)		
3	T	F	T	T	✓(2)		
4	T	F	F	T	✓(3)		
5	F	T	T	T		✓(4)	✓(5)
6	F	T	F	F	✓(1)		✓(5)
7	F	F	T	F	✓(2)	✓(4)	
8	F	F	F	F	✓(3)		

Exercise 2 – GACC

General Active Clause Coverage (GACC) – For each p in P and each major clause c_i in Cp , choose minor clauses c_j ($j \neq i$) such that c_i determines p . TR has two requirements for c_j : c_j evaluates to true and c_i evaluates to false. The values chosen for minor clauses c_j do not need to be the same when c_i is true as when c_j is false.

	a	b	c	$a \vee (b \wedge c)$	p_a	p_b	p_c
1	T	T	T	T			
2	T	T	F	T	✓(1)		
3	T	F	T	T	✓(2)		
4	T	F	F	T	✓(3)		
5	F	T	T	T		✓(4)	✓(5)
6	F	T	F	F	✓(1)		✓(5)
7	F	F	T	F	✓(2)	✓(4)	
8	F	F	F	F	✓(3)		

List all rows that satisfy GACC with respect to a :

$\{2, 3, 4\} \times \{6, 7, 8\}$

List all rows that satisfy GACC with respect to b :

Exercise 2 – GACC

General Active Clause Coverage (GACC) – For each p in P and each major clause c_i in Cp , choose minor clauses c_j ($j \neq i$) such that c_i determines p . TR has two requirements for c_j : c_j evaluates to true and c_i evaluates to false. The values chosen for minor clauses c_j do not need to be the same when c_i is true as when c_j is false.

	a	b	c	$a \vee (b \wedge c)$	p_a	p_b	p_c
1	T	T	T	T			
2	T	T	F	T	✓(1)		
3	T	F	T	T	✓(2)		
4	T	F	F	T	✓(3)		
5	F	T	T	T		✓(4)	✓(5)
6	F	T	F	F	✓(1)		✓(5)
7	F	F	T	F	✓(2)	✓(4)	
8	F	F	F	F	✓(3)		

List all rows that satisfy GACC with respect to a :

$\{2, 3, 4\} \times \{6, 7, 8\}$

List all rows that satisfy GACC with respect to b :

$(5, 7)$

Exercise 2 – GACC

General Active Clause Coverage (GACC) – For each p in P and each major clause c_i in Cp , choose minor clauses c_j ($j \neq i$) such that c_i determines p . *TR* has two requirements for c_j : c_j evaluates to true and c_i evaluates to false. The values chosen for minor clauses c_j do not need to be the same when c_i is true as when c_j is false.

	a	b	c	$a \vee (b \wedge c)$	p_a	p_b	p_c
1	T	T	T	T			
2	T	T	F	T	✓(1)		
3	T	F	T	T	✓(2)		
4	T	F	F	T	✓(3)		
5	F	T	T	T		✓(4)	✓(5)
6	F	T	F	F	✓(1)		✓(5)
7	F	F	T	F	✓(2)	✓(4)	
8	F	F	F	F	✓(3)		

List all rows that satisfy GACC with respect to a :

$\{2, 3, 4\} \times \{6, 7, 8\}$

List all rows that satisfy GACC with respect to b :

$(5, 7)$

List all rows that satisfy GACC with respect to c :

Exercise 2 – GACC

General Active Clause Coverage (GACC) – For each p in P and each major clause c_i in Cp , choose minor clauses c_j ($j \neq i$) such that c_i determines p . TR has two requirements for c_i : c_i evaluates to true and c_i evaluates to false. The values chosen for minor clauses c_j do not need to be the same when c_i is true as when c_i is false.

	a	b	c	$a \vee (b \wedge c)$	p_a	p_b	p_c
1	T	T	T	T			
2	T	T	F	T	✓(1)		
3	T	F	T	T	✓(2)		
4	T	F	F	T	✓(3)		
5	F	T	T	T		✓(4)	✓(5)
6	F	T	F	F	✓(1)		✓(5)
7	F	F	T	F	✓(2)	✓(4)	
8	F	F	F	F	✓(3)		

List all rows that satisfy GACC with respect to a :

$\{2, 3, 4\} \times \{6, 7, 8\}$

List all rows that satisfy GACC with respect to b :

$(5, 7)$

List all rows that satisfy GACC with respect to c :

$(5, 6)$

Exercise 2 – CACC

Correlated Active Clause Coverage (CACC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i determines p . TR has two requirements for c_j : c_j evaluates to true and c_i evaluates to false. The values chosen for minor clauses c_j must cause p to be true for one value of major clause c_i and false for the other value of c_i .

	a	b	c	$a \vee (b \wedge c)$	p_a	p_b	p_c
1	T	T	T	T			
2	T	T	F	T	✓(1)		
3	T	F	T	T	✓(2)		
4	T	F	F	T	✓(3)		
5	F	T	T	T		✓(4)	✓(5)
6	F	T	F	F	✓(1)		✓(5)
7	F	F	T	F	✓(2)	✓(4)	
8	F	F	F	F	✓(3)		

List all rows that satisfy CACC with respect to a :

Exercise 2 – CACC

Correlated Active Clause Coverage (CACC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i determines p . TR has two requirements for c_j : c_j evaluates to true and \bar{c}_j evaluates to false. The values chosen for minor clauses c_j must cause p to be true for one value of major clause c_i and false for the other value of c_i .

	a	b	c	$a \vee (b \wedge c)$	p_a	p_b	p_c
1	T	T	T	T			
2	T	T	F	T	✓(1)		
3	T	F	T	T	✓(2)		
4	T	F	F	T	✓(3)		
5	F	T	T	T		✓(4)	✓(5)
6	F	T	F	F	✓(1)		✓(5)
7	F	F	T	F	✓(2)	✓(4)	
8	F	F	F	F	✓(3)		

List all rows that satisfy CACC with respect to a :

$\{2, 3, 4\} \times \{6, 7, 8\}$

List all rows that satisfy CACC with respect to b :

Exercise 2 – CACC

Correlated Active Clause Coverage (CACC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i determines p . TR has two requirements for c_j : c_j evaluates to true and \bar{c}_j evaluates to false. The values chosen for minor clauses c_j must cause p to be true for one value of major clause c_i and false for the other value of c_i .

	a	b	c	$a \vee (b \wedge c)$	p_a	p_b	p_c
1	T	T	T	T			
2	T	T	F	T	✓(1)		
3	T	F	T	T	✓(2)		
4	T	F	F	T	✓(3)		
5	F	T	T	T		✓(4)	✓(5)
6	F	T	F	F	✓(1)		✓(5)
7	F	F	T	F	✓(2)	✓(4)	
8	F	F	F	F	✓(3)		

List all rows that satisfy CACC with respect to a :

$\{2, 3, 4\} \times \{6, 7, 8\}$

List all rows that satisfy CACC with respect to b :

$\{5, 7\}$

List all rows that satisfy CACC with respect to c :

Exercise 2 – CACC

Correlated Active Clause Coverage (CACC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i determines p . TR has two requirements for c_j : c_j evaluates to true and \bar{c}_j evaluates to false. The values chosen for minor clauses c_j must cause p to be true for one value of major clause c_i and false for the other value of c_i .

	a	b	c	$a \vee (b \wedge c)$	p_a	p_b	p_c
1	T	T	T	T			
2	T	T	F	T	✓(1)		
3	T	F	T	T	✓(2)		
4	T	F	F	T	✓(3)		
5	F	T	T	T		✓(4)	✓(5)
6	F	T	F	F	✓(1)		✓(5)
7	F	F	T	F	✓(2)	✓(4)	
8	F	F	F	F	✓(3)		

List all rows that satisfy CACC with respect to a :

$\{2, 3, 4\} \times \{6, 7, 8\}$

List all rows that satisfy CACC with respect to b :

$(5, 7)$

List all rows that satisfy CACC with respect to c :

$(5, 6)$

Exercise 2 - RACC

Restricted Active Clause Coverage (RACC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i determines p . TR has two requirements for c_j : c_j evaluates to true and c_i evaluates to false. The values chosen for minor clauses c_j must be the same when c_i is true as when c_i is false.

	a	b	c	$a \vee (b \wedge c)$	p_a	p_b	p_c
1	T	T	T	T			
2	T	T	F	T	✓(1)		
3	T	F	T	T	✓(2)		
4	T	F	F	T	✓(3)		
5	F	T	T	T		✓(4)	✓(5)
6	F	T	F	F	✓(1)		✓(5)
7	F	F	T	F	✓(2)	✓(4)	
8	F	F	F	F	✓(3)		

List all rows that satisfy RACC with respect to a :

Exercise 2 - RACC

Restricted Active Clause Coverage (RACC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i determines p . TR has two requirements for c_j : c_j evaluates to true and \bar{c}_j evaluates to false. The values chosen for minor clauses c_j must be the same when c_i is true as when \bar{c}_i is false.

	a	b	c	$a \vee (b \wedge c)$	p_a	p_b	p_c
1	T	T	T	T			
2	T	T	F	T	✓(1)		
3	T	F	T	T	✓(2)		
4	T	F	F	T	✓(3)		
5	F	T	T	T		✓(4)	✓(5)
6	F	T	F	F	✓(1)		✓(5)
7	F	F	T	F	✓(2)	✓(4)	
8	F	F	F	F	✓(3)		

List all rows that satisfy RACC with respect to a :

(2, 6), (3, 7), (4, 8)

List all rows that satisfy RACC with respect to b :

Exercise 2 - RACC

Restricted Active Clause Coverage (RACC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i determines p . TR has two requirements for c_j : c_j evaluates to true and c_i evaluates to false. The values chosen for minor clauses c_j must be the same when c_i is true as when c_i is false.

	a	b	c	$a \vee (b \wedge c)$	p_a	p_b	p_c
1	T	T	T	T			
2	T	T	F	T	✓(1)		
3	T	F	T	T	✓(2)		
4	T	F	F	T	✓(3)		
5	F	T	T	T		✓(4)	✓(5)
6	F	T	F	F	✓(1)		✓(5)
7	F	F	T	F	✓(2)	✓(4)	
8	F	F	F	F	✓(3)		

List all rows that satisfy RACC with respect to a :
 (2, 6), (3, 7), (4, 8)

List all rows that satisfy RACC with respect to b :
 (5, 7)

List all rows that satisfy RACC with respect to c :

Exercise 2 - RACC

Restricted Active Clause Coverage (RACC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i determines p . TR has two requirements for c_j : c_j evaluates to true and c_i evaluates to false. The values chosen for minor clauses c_j must be the same when c_i is true as when c_i is false.

	a	b	c	$a \vee (b \wedge c)$	p_a	p_b	p_c
1	T	T	T	T			
2	T	T	F	T	✓(1)		
3	T	F	T	T	✓(2)		
4	T	F	F	T	✓(3)		
5	F	T	T	T		✓(4)	✓(5)
6	F	T	F	F	✓(1)		✓(5)
7	F	F	T	F	✓(2)	✓(4)	
8	F	F	F	F	✓(3)		

List all rows that satisfy RACC with respect to a :
(2, 6), (3, 7), (4, 8)

List all rows that satisfy RACC with respect to b :
(5, 7)

List all rows that satisfy RACC with respect to c :
(5, 6)

Exercise 2 - GICC

General Inactive Clause Coverage (GICC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i *does not* determine p . The values chosen for minor clause c_j *do not* need to be the same when c_i is true as when c_i is false.

	a	b	c	$a \vee (b \wedge c)$	p_a	p_b	p_c
1	T	T	T	T			
2	T	T	F	T	✓(1)		
3	T	F	T	T	✓(2)		
4	T	F	F	T	✓(3)		
5	F	T	T	T		✓(4)	✓(5)
6	F	T	F	F	✓(1)		✓(5)
7	F	F	T	F	✓(2)	✓(4)	
8	F	F	F	F	✓(3)		

List all 4-tuples of rows that satisfy GICC with respect to a :

$p = \text{true}$:

$p = \text{false}$:

Exercise 2 - GICC

General Inactive Clause Coverage (GICC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i *does not* determine p . The values chosen for minor clause c_j *do not* need to be the same when c_i is true as when c_i is false.

	a	b	c	$a \vee (b \wedge c)$	p_a	p_b	p_c
1	T	T	T	T	x		
2	T	T	F	T	✓(1)		
3	T	F	T	T	✓(2)		
4	T	F	F	T	✓(3)		
5	F	T	T	T	x	✓(4)	✓(5)
6	F	T	F	F	✓(1)		✓(5)
7	F	F	T	F	✓(2)	✓(4)	
8	F	F	F	F	✓(3)		

List all 4-tuples of rows that satisfy GICC with respect to a :

$p = \text{true}$: (1,5)

$p = \text{false}$: infeasible

Exercise 2 – GICC

General Inactive Clause Coverage (GICC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i *does not* determine p . The values chosen for minor clause c_j *do not* need to be the same when c_i is true as when c_i is false.

	a	b	c	$a \vee (b \wedge c)$	p_a	p_b	p_c
1	T	T	T	T			
2	T	T	F	T	✓(1)		
3	T	F	T	T	✓(2)		
4	T	F	F	T	✓(3)		
5	F	T	T	T		✓(4)	✓(5)
6	F	T	F	F	✓(1)		✓(5)
7	F	F	T	F	✓(2)	✓(4)	
8	F	F	F	F	✓(3)		

List all 4-tuples of rows that satisfy GICC with respect to **a**:

$p = \text{true}$: (1,5)

$p = \text{false}$: infeasible

List all 4-tuples of rows that satisfy GICC with respect to **b**:

$p = \text{true}$:

$p = \text{false}$:

Exercise 2 - GICC

General Inactive Clause Coverage (GICC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i *does not* determine p . The values chosen for minor clause c_j *do not* need to be the same when c_i is true as when c_i is false.

	a	b	c	$a \vee (b \wedge c)$	p_a	p_b	p_c
1	T	T	T	T		x	
2	T	T	F	T	✓(1)	x	
3	T	F	T	T	✓(2)	x	
4	T	F	F	T	✓(3)	x	
5	F	T	T	T		✓(4)	✓(5)
6	F	T	F	F	✓(1)	x	✓(5)
7	F	F	T	F	✓(2)	✓(4)	
8	F	F	F	F	✓(3)	x	

List all 4-tuples of rows that satisfy GICC with respect to a :

$p = \text{true}$: (1,5)

$p = \text{false}$: infeasible

List all 4-tuples of rows that satisfy GICC with respect to b :

$p = \text{true}$: {1, 2} x {3, 4}

$p = \text{false}$: (6, 8)

Exercise 2 - GICC

General Inactive Clause Coverage (GICC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i *does not* determine p . The values chosen for minor clause c_j *do not* need to be the same when c_i is true as when c_i is false.

	a	b	c	$a \vee (b \wedge c)$	p_a	p_b	p_c
1	T	T	T	T			
2	T	T	F	T	✓(1)		
3	T	F	T	T	✓(2)		
4	T	F	F	T	✓(3)		
5	F	T	T	T		✓(4)	✓(5)
6	F	T	F	F	✓(1)		✓(5)
7	F	F	T	F	✓(2)	✓(4)	
8	F	F	F	F	✓(3)		

List all 4-tuples of rows that satisfy GICC with respect to a :

$p = \text{true}$: (1,5)

$p = \text{false}$: infeasible

List all 4-tuples of rows that satisfy GICC with respect to b :

$p = \text{true}$: {1, 2} x {3, 4}

$p = \text{false}$: (6, 8)

List all 4-tuples of rows that satisfy GICC with respect to c :

$p = \text{true}$:

$p = \text{false}$:

Exercise 2 - GICC

General Inactive Clause Coverage (GICC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i *does not* determine p . The values chosen for minor clause c_j *do not* need to be the same when c_i is true as when c_i is false.

	a	b	c	$a \vee (b \wedge c)$	p_a	p_b	p_c
1	T	T	T	T			x
2	T	T	F	T	✓(1)		x
3	T	F	T	T	✓(2)		x
4	T	F	F	T	✓(3)		x
5	F	T	T	T		✓(4)	✓(5)
6	F	T	F	F	✓(1)		✓(5)
7	F	F	T	F	✓(2)	✓(4)	x
8	F	F	F	F	✓(3)		x

List all 4-tuples of rows that satisfy GICC with respect to a :

$p = \text{true}$: (1,5)

$p = \text{false}$: infeasible

List all 4-tuples of rows that satisfy GICC with respect to b :

$p = \text{true}$: {1, 2} x {3, 4}

$p = \text{false}$: (6, 8)

List all 4-tuples of rows that satisfy GICC with respect to c :

$p = \text{true}$: {1, 3} x {2, 4}

$p = \text{false}$: (7, 8)

Exercise 2 - RICC

Restricted Inactive Clause Coverage (RICC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i *does not* determine p . The values chosen for minor clause c_j *must* be the same when c_i is true as when c_i is false.

	a	b	c	$a \vee (b \wedge c)$	p_a	p_b	p_c
1	T	T	T	T			
2	T	T	F	T	✓(1)		
3	T	F	T	T	✓(2)		
4	T	F	F	T	✓(3)		
5	F	T	T	T		✓(4)	✓(5)
6	F	T	F	F	✓(1)		✓(5)
7	F	F	T	F	✓(2)	✓(4)	
8	F	F	F	F	✓(3)		

List all 4-tuples of rows that satisfy RICC with respect to a :

$p = \text{true}$:

$p = \text{false}$:

Exercise 2 - RICC

Restricted Inactive Clause Coverage (RICC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i *does not* determine p . The values chosen for minor clause c_j *must* be the same when c_i is true as when c_i is false.

	a	b	c	$a \vee (b \wedge c)$	p_a	p_b	p_c
1	T	T	T	T	x		
2	T	T	F	T	✓(1)		
3	T	F	T	T	✓(2)		
4	T	F	F	T	✓(3)		
5	F	T	T	T	x	✓(4)	✓(5)
6	F	T	F	F	✓(1)		✓(5)
7	F	F	T	F	✓(2)	✓(4)	
8	F	F	F	F	✓(3)		

List all 4-tuples of rows that satisfy RICC with respect to a :

$p = \text{true}: (1, 5)$

$p = \text{false}: \text{infeasible}$

Exercise 2 - RICC

Restricted Inactive Clause Coverage (RICC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i *does not* determine p . The values chosen for minor clause c_j *must* be the same when c_i is true as when c_i is false.

	a	b	c	$a \vee (b \wedge c)$	p_a	p_b	p_c
1	T	T	T	T			
2	T	T	F	T	✓(1)		
3	T	F	T	T	✓(2)		
4	T	F	F	T	✓(3)		
5	F	T	T	T		✓(4)	✓(5)
6	F	T	F	F	✓(1)		✓(5)
7	F	F	T	F	✓(2)	✓(4)	
8	F	F	F	F	✓(3)		

List all 4-tuples of rows that satisfy RICC with respect to **a**:

$p = \text{true}$: (1, 5)

$p = \text{false}$: *infeasible*

List all 4-tuples of rows that satisfy RICC with respect to **b**:

$p = \text{true}$:

$p = \text{false}$:

Exercise 2 - RICC

Restricted Inactive Clause Coverage (RICC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i *does not* determine p . The values chosen for minor clause c_j *must* be the same when c_i is true as when c_i is false.

	a	b	c	$a \vee (b \wedge c)$	p_a	p_b	p_c
1	T	T	T	T		x	
2	T	T	F	T	✓(1)	x	
3	T	F	T	T	✓(2)	x	
4	T	F	F	T	✓(3)	x	
5	F	T	T	T		✓(4)	✓(5)
6	F	T	F	F	✓(1)	x	✓(5)
7	F	F	T	F	✓(2)	✓(4)	
8	F	F	F	F	✓(3)	x	

List all 4-tuples of rows that satisfy RICC with respect to a :

$p = \text{true}$: (1, 5)

$p = \text{false}$: infeasible

List all 4-tuples of rows that satisfy RICC with respect to b :

$p = \text{true}$: (1, 3), (2, 4)

$p = \text{false}$: (6, 8)

Exercise 2 - RICC

Restricted Inactive Clause Coverage (RICC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i *does not* determine p . The values chosen for minor clause c_j *must* be the same when c_i is true as when c_i is false.

	a	b	c	$a \vee (b \wedge c)$	p_a	p_b	p_c
1	T	T	T	T			
2	T	T	F	T	✓(1)		
3	T	F	T	T	✓(2)		
4	T	F	F	T	✓(3)		
5	F	T	T	T		✓(4)	✓(5)
6	F	T	F	F	✓(1)		✓(5)
7	F	F	T	F	✓(2)	✓(4)	
8	F	F	F	F	✓(3)		

List all 4-tuples of rows that satisfy RICC with respect to **a**:

$p = \text{true}$: (1, 5)

$p = \text{false}$: infeasible

List all 4-tuples of rows that satisfy RICC with respect to **b**:

$p = \text{true}$: (1, 3), (2, 4)

$p = \text{false}$: (6, 8)

List all 4-tuples of rows that satisfy RICC with respect to **c**:

$p = \text{true}$:

$p = \text{false}$:

Exercise 2 - RICC

Restricted Inactive Clause Coverage (RICC) – For each p in P and each major clause c_i in C_p , choose minor clauses c_j ($j \neq i$) such that c_i *does not* determine p . The values chosen for minor clause c_j *must* be the same when c_i is true as when c_i is false.

	a	b	c	$a \vee (b \wedge c)$	p_a	p_b	p_c
1	T	T	T	T			x
2	T	T	F	T	✓(1)		x
3	T	F	T	T	✓(2)		x
4	T	F	F	T	✓(3)		x
5	F	T	T	T		✓(4)	✓(5)
6	F	T	F	F	✓(1)		✓(5)
7	F	F	T	F	✓(2)	✓(4)	x
8	F	F	F	F	✓(3)		x

List all 4-tuples of rows that satisfy RICC with respect to **a**:

$p = \text{true}$: (1, 5)

$p = \text{false}$: infeasible

List all 4-tuples of rows that satisfy RICC with respect to **b**:

$p = \text{true}$: (1, 3), (2, 4)

$p = \text{false}$: (6, 8)

List all 4-tuples of rows that satisfy RICC with respect to **c**:

$p = \text{true}$: (1, 2), (3, 4)

$p = \text{false}$: (7, 8)

END OF EXERCISE 2