

Branch-and-bound – Lower Bound Calculation

- How do I calculate the lower bound of a subtree?

- Varies depending on your problem
- Minimum cover problem
 - lower bound = number of prime implicants (columns committed so far) + MIS

- Maximally Independent Set (MIS)

- Equal to the number of independent rows in the table
 - Rows are independent if no overlapping X's
 - Indicates the lowest possible number of prime implicants required to cover the remaining minterms

~~▪ We want worst case, so we pick the largest set~~

- If no independent rows are found, the lower bound for a cyclic matrix is at least 2
 - If matrix cyclic no column covers all rows (which would have enabled reduction of matrix)
 - Thus, a minimum of two columns are required to cover all rows

	p1	p2	p3	p4
1	X	X		
2			X	X
3	X		X	
4		X		X
5	X			X
6		X	X	

{1, 2}

{3, 4}

{5, 6}

MIS = 2