

Problem 1

$G = a'b'd' + bc'd' + ab'd' + ac$ Given G , show if the following implicants are contained by it. Use the recursive paradigm for the positional cube notation.

- (a) $ac'd'$
- (b) bc
- (c) abd'

Problem 2

Given the constraint mapping A , find the minimum encoding matrix E that satisfies the constraints of A .

$$A = \begin{pmatrix} 1 & 1 & 0 & 0 \\ 0 & 1 & 1 & 0 \\ 1 & 0 & 0 & 1 \\ 0 & 1 & 0 & 1 \end{pmatrix} \quad (1)$$

- (a) Write the dichotomies considering that the columns in A correspond to the operations AND , OR , JMP and ADD .
- (b) Write the seed dichotomies.
- (c) Find the compatible seed dichotomies and draw the compatibility graph.
- (d) Find the prime dichotomies.
- (e) Write the covering matrix and find a minimum cover.
- (f) Write the encoding matrix.