

CS-472: Design Technologies for Integrated Systems

Exercise Problem Set 7

Date: 14/11/2024

Topic: Symbolic and Encoding Optimization (cf. slide set 9)

Problem 1

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

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

- (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.