3.5.3.3: The NIM Game when x = 7

Example: The *nim* game when x = 7

Objective: your opponent lose

The subtraction Game
divide a pile of matches into
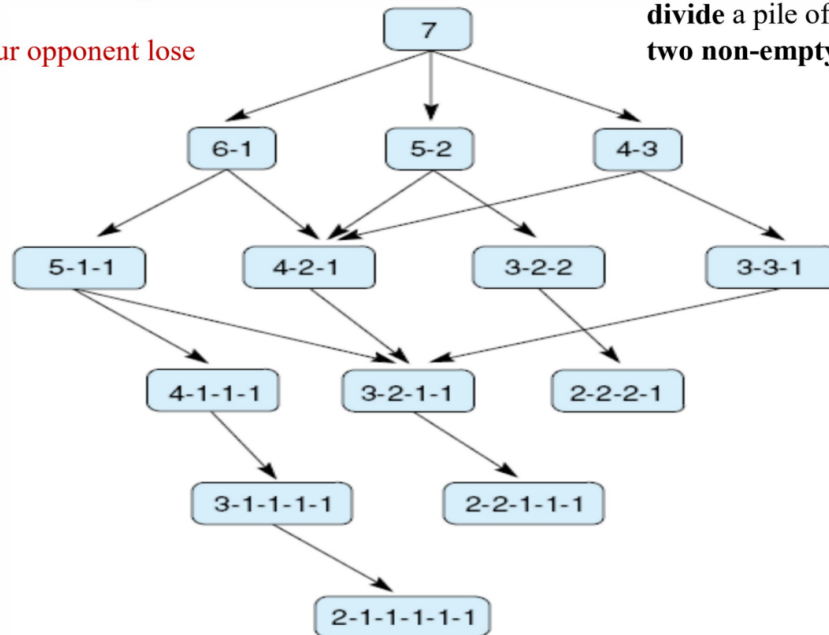**two non-empty&different piles**

Fig 4.13 State space for a variant of *nim*. Each state partitions the seven matches into one or more piles.

Solution ① Use minimax Algorithm

Min play first

Max win : 1

Min win : 0

Min

Max

Min

Max

Min

Max

7 | 1

6-1 | 1   5-2 | 1   4-3 | 1

5-1-1 | 0   4-2-1 | 1   3-2-2 | 0   3-3-1 | 1

4-1-1-1 | 0   3-2-1-1 | 1   2-2-2-1 | 0

3-1-1-1-1 | 0   2-2-1-1-1 | 1

2-1-1-1-1-1 | 0