

## DP algorithm for two-person game

Consider the starting condition  $(x, y)$  to mean that pile 1 has  $x$  rocks and pile 2 has  $y$  rocks.

Define a matrix  $M[0\dots x, 0\dots y]$  by

- ▶  $M[0, 0] = 2$
- ▶ If  $i + j > 0$  then  $M[i, j]$  is 1 if and only if Player 1 has a winning strategy for starting condition  $(i, j)$ .

Questions to class:

- ▶ What is  $M[1, 0]$ ?
- ▶ What is  $M[2, 0]$ ?
- ▶ What is  $M[3, 0]$ ?
- ▶ What is  $M[1, 1]$ ?

How should  $M[i, j]$  be defined, algorithmically?