# CS404 HW3

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## 1 Modelling

### 1.1 Players

Since the first player is the one that places the right slants and the MAX player always starts as the first player we will be naming this player as MAX. Thus, the second player that places the left slants will be labeled as MIN.

### 1.2 State

States are all possible combinations of 0 to (N x N) / 2 right or left slants. For example for a 2 x 2 board; the states will be all combinations 0, 1, 2 left slants combined with 0, 1, 2 right slants within the matrix with no slants sharing the same cell.

### 1.3 Initial State

The initial state will be a matrix where no right or left slants have been placed.

### 1.4 Terminal State

The terminal state is the state where within the grid no empty cell exists and the number of left slants is equal to the number of right slants.

### 1.5 State Transition Function

The state transition function is a transitional model function where it takes a state and an action (which consists of a coordinate and a slant) and returns the resulting state.

### 1.6 Payoff Function

Payoff function will return how good the terminal state is for the first player (MAX). We do not define another payoff function for the second player because of the fact that this is a zero-sum game and the strategies where the second player minimizes the first player's payoff are rational.