

## AI Search Project: <<Who is fatter>>

### ● Initial input:

1. Let player choose to be Player 1 or Player 2 (Player 1 is leading player).
2. Set board size: 4\*4 or 6\*6 squared.
  - a. In 4\*4 board, you have a set of chess: [2, 3, 5, 8, 13] which number equal to weight.
  - b. In 6\*6 board, you have two set of chess: [2, 3, 5, 8, 13] which number equal to weight, and one more "8". In other word, you have two "2, 3, 5, 13" and three "8".

Ex: (Row, Col) — Top left corner —> (0, 0)

**4\*4**

|       |  |  |       |
|-------|--|--|-------|
| (0,0) |  |  | (0,3) |
|       |  |  |       |
|       |  |  |       |
| (3,0) |  |  | (3,3) |

#### 4\*4 board:

Player 1: [2, 3, 5, 8, 13]

Player 2: [2, 3, 5, 8, 13]

**6\*6**

|  |  |  |  |  |  |
|--|--|--|--|--|--|
|  |  |  |  |  |  |
|  |  |  |  |  |  |
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#### 6\*6 board:

Player 1: [2, 2, 3, 3, 5, 5, 8, 8, 8, 13, 13]

Player 2: [2, 2, 3, 3, 5, 5, 8, 8, 8, 13, 13]

### ● Each round Input:

(Row, Column, Weight) #Weight is which chess you want to put on the board

### ● Each round Output:

1. Output the simple calculated chessboard. #Note! Calculate every next chess, rules below.
  - a. Weight limit in center of nine-square is 16.
  - b. At the end of each round, each grid must check whether the sum of the numbers in the nine-square grid centered on it exceeds 16 (the upper limit).
  - c. If exceeds upper limit, the center-grid will break. And the chess on the center will "die". And this grid can no longer be placed on other chess.
  - d. If the chess is dead, in the end of the game, you can't get the score represented by this chess.

EX1:

|  |  |   |   |
|--|--|---|---|
|  |  | 5 |   |
|  |  | 3 |   |
|  |  |   | 8 |



|  |  |   |   |
|--|--|---|---|
|  |  | 5 |   |
|  |  | X |   |
|  |  |   | 8 |

$$3+5+8 = 16$$

$$16 \geq \text{Limit (16)}$$

EX2:

|  |    |   |  |
|--|----|---|--|
|  | 13 | 5 |  |
|  |    |   |  |
|  |    |   |  |



|  |    |   |  |
|--|----|---|--|
|  | 13 | 5 |  |
|  |    |   |  |
|  |    |   |  |



|   |   |  |  |
|---|---|--|--|
| X | X |  |  |
|   |   |  |  |
|   |   |  |  |

$$5+13 = 18$$

$$18 \geq \text{Limit (16)}$$

- e. The game ends when both players have used up all the chess. Notice, you must put one chess in each round, there is no "pass" here.

- f. Your final score is sum of your alive chess on the board.

EX3:

|    |   |   |   |
|----|---|---|---|
| X  | X | X |   |
| 2  | X | 5 |   |
|    |   | 2 |   |
| 13 |   |   | 8 |



Player 1 final score:  $2 + 5 + 8 = 15$

Player 2 final score:  $13 + 2 = 15$

Following the winning and losing rules below, Player 2 is winner.

● **Final Output:**

1. When the game is finished, output the winner is Player 1 or Player 2.

**Winning and losing** rules:

- $NP1(x)$  = Number of x owned by Player 1.
- $NP2(x)$  = Number of x owned by Player 2.

If (Score of Player 1 = Score of Player 2)

For CHESS in [13, 8, 5, 3, 2]:

If  $NP1(CHESS) == NP2(CHESS)$

continue

elif  $NP1(CHESS) > NP2(CHESS)$

Output: Winner is P1.

Else

Output: Winner is P2.

elif Score of P1 > Score of P2

Output: Winner is P1.

Else

Output: Winner is P2.