Date __/__/__
Page _____

Lab - 10

Alpha beta for 8 queens

Algorithm :

```
def is_valid (board, row, col):
    for i in range (row):
        if board[i] == col or (board[i] - col) == abs (i - row):
            return false
    return true

def alpha_beta (board, row, alpha, beta, is max):
    if row == len(board):
        return 1
    if is max:
        max score = 0
        for col in rang (len (board)):
            if invalid (board, row, col):
                board [row] = col
                max score += alpha_beta (board, row+1,
                    alpha, beta, false)
                board [row] = -1
            alpha = max (alpha, max_score)
            if beta <= alpha:
                break
        return max score
    else:
        min score = float ('inf').
        for col in range (len (board)):
            if is valid (board, row, col):
                board [row] = col
```

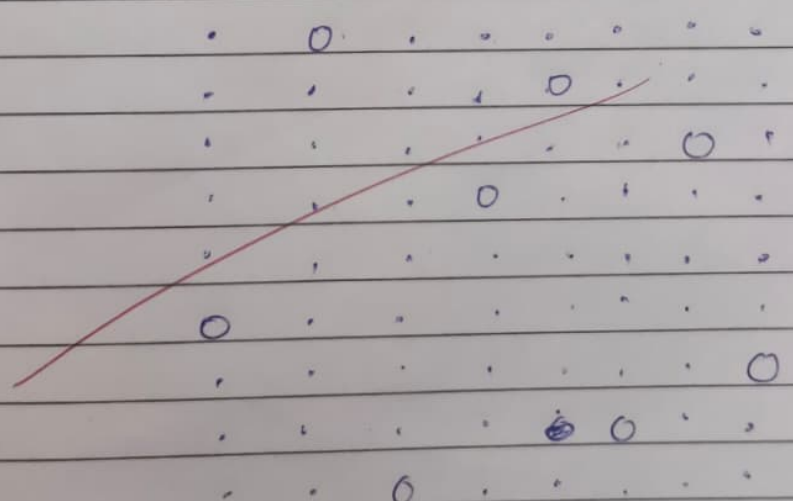
Date __/__/__
Page _____

```
min_score = min(min_score, alpha_beta(board,
                row+1, alpha, beta, True))

board[row] = -1
beta = min(beta, min_score)
if beta <= alpha
    break
return min_score

def solve_8_queens():
    board = [-1] * 8
    alpha = -float('inf')
    beta = float('inf')
    return alpha_beta(board, 0, alpha, beta, True)
```

Output: Total sol: 6



8/12/24