

17/10/24

Lab - 10

Alpha-Beta Pruning for 8 Queens

```
function is-safe(board, row, col):  
    for i from 0 to row - 1:
```

```
        if board[i] == col or
```

```
            return False
```

```
    return True
```

```
function minimax(board, row,  
    alpha, beta, is-max):
```

```
    if row == N:
```

```
        return 1
```

```
    if is-max:
```

```
        max-score = 0
```

```
    for col from 0 to N - 1:
```

```
        if is-safe board (board, row, col)
```

```
            board[row] = col
```

```
            score = minimax(board,
```

```
                row + 1, alpha, beta, false)
```


max-score += score

board[row] -= 1

alpha = max(alpha, max-score)

if beta <= alpha

break

return max-score

else

min-score = infinity

for col from 0 to N-1:

if is-safe(board, row, col)

board[row] = col

score = minimax(board, row+1,
alpha, beta, true)

return min-score

output

—	—	<u>0</u>	<u>0</u>	—	—	—	—
—	—	—	—	—	<u>0</u>	<u>0</u>	—
—	—	—	—	—	—	—	<u>0</u>
<u>0</u>	—	—	—	—	—	—	—
—	—	—	<u>0</u>	—	—	—	—
—	—	—	—	—	—	<u>0</u>	—
—	—	—	—	<u>0</u>	—	—	—
—	<u>0</u>	—	—	—	—	—	—

8

+1,