



Programming for Artificial Intelligence Lab

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Task 04

Input:

```

N Queen.py > solve_n_queens
1  N = 4
2  def print_board(board):
3      for row in board:
4          print(" ".join("Q" if cell else "." for cell in row))
5      print()
6  def is_safe(board, row, col):
7      if any(board[row][i] for i in range(col)):
8          return False
9      if any(board[i][col] for i, j in zip(range(row, -1, -1), range(col, -1, -1))):
10         return False
11     if any(board[i][col] for i, j in zip(range(row, N), range(col, -1, -1))):
12         return False
13     return True
14 def place_queens(board, col):
15     if col == N:
16         print_board(board)
17         return True
18     for row in range(N):
19         if is_safe(board, row, col):
20             board[row][col] = 1
21             if place_queens(board, col + 1):
22                 return True
23             board[row][col] = 0
24     return False
25 def solve_n_queens():
26     board = [[0] * N for _ in range(N)]
27     if not place_queens(board, 0):
28         print("No solution found.")
29 solve_n_queens()
30
```

Output:

```

PS C:\Users\DELL\Desktop\Task 4> & C:/Users/DELL/AppData/Local/Programs/Python/Python313/python.exe "c:/N Queen.py"
. . Q .
Q . . .
. . . Q
. Q . .

PS C:\Users\DELL\Desktop\Task 4>
```

