

m bush (1) mund Dute: 5/3/25

Skut

Emp No: 1

Alm: To develop a pythen program that
solves the 8-Queens problem werner the
Backbackeng algorithm. The program should
ensure that no two queens should
and attack eachother and display value
diessboard confoquentions.

Case Scenauso.

A chessboard consists of 8008 squares, and your task is to place 8 queens on the board such that no how queens attach eachother. Quens can attack in horizontal, Vertical, and diagonal derections.

Tourk Requirements many would un?

- 1. Problem Representation.

 Represent the Equeen problem as a constraint satisfaction problem.
 - Insphement a solution wong Backhackings

128

def print L solution (board):

for row and board:

print ("", jobn ("a" if cell else ", "for cell now)

print ("")

def is_sofe (bord, row, co);

for i in range (row).

if board [i] [col] 221:

return false

for iso in zip Crange crows -1, -1) range (col, -1, -1):

if board [i [ii] 221

return Ralse.

for is in the Crange Crows-1,-1) range (cols N):

if board [i][i] = 21:

return false

nehum Free

def solve _n_quans (board, row):

if row >= N:

print_solution (board)

veturn True

3. Output Requirement. Display a Valsel 8x8 chessboard with queens CAD placed on a correct marrier. 4 Performance Analysis June 1 Compan execution time for deferrent bord' stees. Ost las I Caron I brood netur. Paler Proce dure def solve () I Start 2). Enenitialise NXN chessboard with all empty positions (Dunal Coant C) and for fi 3): Deline a pasikan is safe (board, raw, col, N); 4) Define a successare function solve-nqueen Choard, par, if NOW 22 N) Print the Board (solution found) Try placing queen in each column. if Is-safe () 22 mu, place the queen.

and receive for the next now. if placing a queen leads to failure, Buckhach. 5) Call salve_n-queens () for the first row (rows 20) It a solution is found print the board

for col h range (N): of 18-safe (board, row, col): Board Crows Cool Je 1 if Solve_n_queen (board, rower): mehin Frue (1) 300 mg/mo) lary, Herros. Board [row] [col]20 return Pale def solve () board = ITOI N for In range (N)] if not Solvern - exceens (board 0): 33 Octobe of Cappen Salakan Existing W. Defere a succe Solve () (way, hered) Million if NOO 22N) Print Her Board (solution found) Try placery green in each col trentero if he safe as a new place the queen and received the interior of if plasmy a quein lialis to failwore, Buthoute. Q. 5) (all some in queens of for five ino (mora) It of regioning found spirit He board

if a solution is found, pront the board; else, pront "No solution Bodots". 'A': [B', 'c'] ['B', 'a']: 'B' a rolds street and L'ai : 5 makes as a graphy colors, EJ: "O represent a clong sind [ES] : 3 [] (a) the Runchson to parform 10 PB. olif des Cgraph start good wilet. Nove Park allone): if wieled is None: Visited = Setl) if path is none: Doth : let W the Mark Owners Norte as visited and odd Park Visited, add (slout) pater. apple (short) a if goal to found return the path if short as good: rehim palh.