DSA

Assignment 1

Q. Explain what is NQueen problem.

Ans: The N-Queens problem is a computer science problem that involves placing N number of Queen on a N×N chessboard in unique ways. The condition is that no two queens are attacking each other. In simple words, no two queens should be on the same row, column or diagonal. The solution uses backtracking by which the previous queen can be tracked and if a row is not found safe, we can go back to the previous queen and change its position.

Q. Write Algorithm for N Queen problem

1) Prompt the user for a value of N.

2) Create a chessboard of NxN using 2-D array and intialize all the indexes with 0.

3) Use a recursive function to backtrack and check if all the N queens have been placed on the chessboard.

4) The base condition for the recursive function is if (row==N), this indicates that all the rows have been checked and a solution is found.

5) The recursive step of the function, first checks if the cell is safe to place a queen on.

   5.1) If a position is safe the function sets the value to 1 and calls the next row recursively. It checks if any other queen is present in the same colounn, row or diagnol. If a queen is present on these position, returns false

6) The function checks for all rows, if a solution is found, it prints the chessboard.