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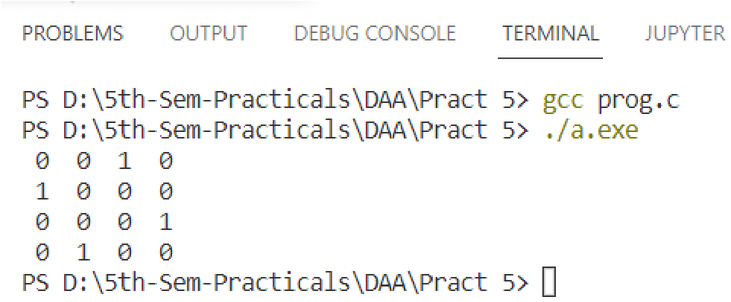
Roll No: 53

Program:

```
#define N 4
#include <stdbool.h>
#include <stdio.h>

void printSolution(int board[N][N])
{
	for (int i = 0; i < N; i++) {
		for (int j = 0; j < N; j++)
			printf(" %d ", board[i][j]);
		printf("\n");
	}
}

bool isSafe(int board[N][N], int row, int col)
{
	int i, j;
	for (i = 0; i < col; i++)
		if (board[row][i])
			return false;
	for (i = row, j = col; i >= 0 && j >= 0; i--, j--)
		if (board[i][j])
			return false;
	for (i = row, j = col; j >= 0 && i < N; i++, j--)
		if (board[i][j])
			return false;

	return true;
}
bool solveNQUtil(int board[N][N], int col)
{
    if (col >= N)
        return true;
    for (int i = 0; i < N; i++) {

        if (isSafe(board, i, col)) {
            board[i][col] = 1;
            if (solveNQUtil(board, col + 1))
                return true;
            board[i][col] = 0; // BACKTRACK
        }
    }
    return false;
}
bool solveNQ()
{
    int board[N][N] = { { 0, 0, 0, 0 },
                                { 0, 0, 0, 0 },
                                { 0, 0, 0, 0 },
                                { 0, 0, 0, 0 } };

    if (solveNQUtil(board, 0) == false) {
        printf("Solution does not exist");
        return false;
    }

    printSolution(board);
    return true;
}
int main()
```

```
{
	solveNQ();
	return 0;
}
```

Output:



```
PS D:\5th-Sem-Practicals\DAA\Pract 5> gcc prog.c
PS D:\5th-Sem-Practicals\DAA\Pract 5> ./a.exe
 0  0  1  0
 1  0  0  0
 0  0  0  1
 0  1  0  0
PS D:\5th-Sem-Practicals\DAA\Pract 5> 
```