Code : 1

```
package Topic_11_RecursionBacktracking;

import java.util.Scanner;

public class A_FloodFill {

	public static void main(String[] args) throws Exception {
		Scanner scn = new Scanner(System.in);
		int n = scn.nextInt();
		int m = scn.nextInt();
		int[][] arr = new int[n][m];
		for (int i = 0; i < n; i++) {
			for (int j = 0; j < m; j++) {
				arr[i][j] = scn.nextInt();
			}
		}
		boolean[][] visited = new boolean[n][m];
		floodfill(arr, 0, 0, "", visited);
	}

	public static void floodfill(int[][] maze, int sr, int sc, String asf, boolean[][] visited) {
		if (sr < 0 || sc < 0 || sr == maze.length || sc == maze[0].length || maze[sr][sc] == 1
				|| visited[sr][sc] == true) {
			return;
		}
		if (sr == maze.length - 1 && sc == maze[0].length - 1) {
			System.out.println(asf);
			return;
		}
		visited[sr][sc] = true;
		floodfill(maze, sr - 1, sc, asf + "t", visited);
		floodfill(maze, sr, sc - 1, asf + "l", visited);
		floodfill(maze, sr + 1, sc, asf + "d", visited);
		floodfill(maze, sr, sc + 1, asf + "r", visited);

	}
}
```

Code : 2

```
package Topic_11_RecursionBacktracking;

import java.io.*;

import java.util.*;

public class B_TargetSumSubset {

	public static void main(String[] args) throws Exception {
		Scanner scn = new Scanner(System.in);
		int n = scn.nextInt();
		int[] arr = new int[n];
		for (int i = 0; i < n; i++) {
			arr[i] = scn.nextInt();
		}
		int tar = scn.nextInt();
		printTargetSumSubsets(arr, 0, "", 0, tar); //1

	}

	// set is the subset
	// sos is sum of subset
	// tar is target
	public static void printTargetSumSubsets(int[] arr, int idx, String set, int sos, int tar) {

		if (idx == arr.length) { //2
			if (sos == tar) {
				System.out.println(set + ".");
			}
			return;
		}

		printTargetSumSubsets(arr, idx + 1, set + arr[idx] + ", ", sos + arr[idx], tar); //3
		printTargetSumSubsets(arr, idx + 1, set, sos, tar); //4

	}

}
```

Code : 3

```
package Topic_11_RecursionBacktracking;

import java.io.*;

import java.util.*;

public class C_NQueenProblem {

	public static void main(String[] args) throws Exception {
		BufferedReader br = new BufferedReader(new InputStreamReader(System.in));
		int n = Integer.parseInt(br.readLine());
		int[][] chess = new int[n][n];
		printNQueens(chess, "", 0);
	}

	public static void printNQueens(int[][] chess, String qsf, int row) {
		if (row == chess.length) {
			System.out.println(qsf + ".");
			return;
		}
		for (int col = 0; col < chess.length; col++) {
			if (chess[row][col] == 0 && isQueenSafe(chess, row, col) == true) {
				chess[row][col] = 1;
				printNQueens(chess, qsf + row + "-" + col + ", ", row + 1);
				chess[row][col] = 0;
			}
		}
	}

	public static boolean isQueenSafe(int[][] chess, int row, int col) {
		for (int i = row - 1, j = col - 1; i >= 0 && j >= 0; i--, j--) {
			if (chess[i][j] == 1) {
				return false;
			}
		}

		for (int i = row - 1, j = col; i >= 0; i--) {
			if (chess[i][j] == 1) {
				return false;
			}
		}

		for (int i = row - 1, j = col + 1; i >= 0 && j < chess.length; i--, j++) {
			if (chess[i][j] == 1) {
				return false;
			}
		}

		for (int i = row, j = col - 1; j >= 0; j--) {
			if (chess[i][j] == 1) {
				return false;
			}
		}

		return true;
```

```
        }
}
```

Code : 4

```
package Topic_11_RecursionBacktracking;

import java.io.*;

import java.util.*;

public class D_KnightsTour {

	public static void main(String[] args) throws Exception {
		Scanner s = new Scanner(System.in);
		int n = s.nextInt();
		int r = s.nextInt();
		int c = s.nextInt();
		int[][] chess = new int[n][n];
		printKnightsTour(chess, r, c, 1);
	}

	private static void printKnightsTour(int[][] chess, int r, int c, int move) {
		// TODO Auto-generated method stub
		if (r < 0 || c < 0 || r >= chess.length || c >= chess.length || chess[r][c] > 0) {
			return;
		} else if (move == chess.length * chess.length) {
			chess[r][c] = move;
			displayBoard(chess);
			chess[r][c] = 0;
			return;
		}
		chess[r][c] = move;
		printKnightsTour(chess, r - 2, c + 1, move + 1);
		printKnightsTour(chess, r - 1, c + 2, move + 1);
		printKnightsTour(chess, r + 1, c + 2, move + 1);
		printKnightsTour(chess, r + 2, c + 1, move + 1);
		printKnightsTour(chess, r + 2, c - 1, move + 1);
		printKnightsTour(chess, r + 1, c - 2, move + 1);
		printKnightsTour(chess, r - 1, c - 2, move + 1);
		printKnightsTour(chess, r - 2, c - 1, move + 1);
		chess[r][c] = 0;

	}

	private static void displayBoard(int[][] a) {
		for (int i = 0; i < a.length; i++) {
			for (int j = 0; j < a[0].length; j++) {
				System.out.print(a[i][j] + " ");
			}
			System.out.println();
		}
		System.out.println();
	}

}
```