

## COSC 2436 Lab 4: Closed Knights Tour with Backtracking

Create a C++ program to solve the knight's tour problem for different sized boards. In particular, we are interested in a closed tour of the given board, where the knight returns to its starting location after visiting each of the squares on the board exactly once.

Construct a recursive solution using backtracking to solve this problem. Because we are visiting all the squares on the board in a closed loop, we can select any point as the starting (and ending) point. For ease, we can select the upper-left corner square at (0,0) as the starting and ending point.

### 1. Input files

- The input files contain a single line with the number of rows followed by the number of columns. This is the size of the board to be tested.
- Not all board will be square, but the input is always valid; it contains two positive integers.

### 2. Output files

- Output as single line indicating that a closed tour solution exists or does not exist for the size of board specified.

### 3. Example

input1.txt	output1.txt
3 3	A closed tour does not exist!
input2.txt	output2.txt
4 6	A closed tour does not exist!
input3.txt	output3.txt
6 6	A closed tour does exist!

To solve this problem, you will need to keep track of the possible valid moves a knight could make at each point. One way to manage this would be with a queue of moves.

### 4. Reminder

- Turn in your lab assignment to our Linux server, follow the link [here](#) for more instructions.
- Make sure to only have **one (1)** .cpp file with the main() function in your working directory, otherwise your program will fail the grading script.
  - Create a folder under your root directory, name the folder *lab4* (case sensitive), copy all your .cpp and .h files to the folder (ArgumentManager.h is also needed)
  - Only include the necessary files (.cpp and .h files) in your working directory in your final submission
  - To test your program, copy the input files into the server and run your program. After verifying that they pass, delete the .txt files.

Please reach out to myself or the TAs for any clarifications or typos.