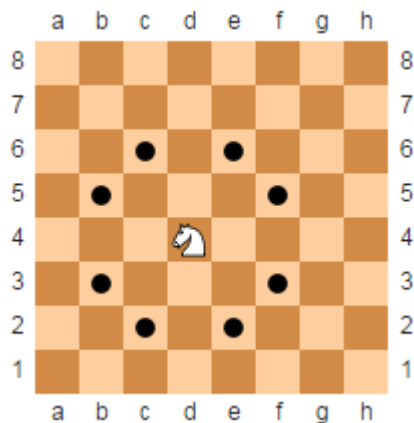


# C++ assignment: Knight's Tour



## Assignment

Chess is two-player board game played on a checkered board with 64 arranged in an eight-by-eight grid. Each player controls 16 pieces, of which six different ones: the king, the queen, the rook, the bishop, the knight and the pawn. Each chess piece has a unique movement style. The knight moves in an “L-shape”, either two square vertically and one square horizontally, or two squares horizontally and one square vertically.



The knight's tour problem is a mathematical problem that dates back to the 9th century. The knight can be placed anywhere on a chessboard, it then visits every square at least and only once.

There are several solutions to solving this problem with programming. Any viable solution is allowed, but be sure to check if this solution meets the requirements.

## Delivery

The student delivers a GIT repository that includes a report and a C++ project (source + runnable binaries). The report documents the solution applied in the C++ project and motivates, with code examples, how each requirement/exemplar is met.

To hand in your assignment, upload a text file to the VLO to the assignments directory for this assignment before Wednesday February 17, 23:59. It must contain a link to the git repository (gitlab, github, git repo from HvA, etc.) and the credentials needed to open it.

Make sure the report contains your name and student number.

## Requirements

- ☐ Programming language has to be C++.
- ☐ The program makes use of pointers and references.
- ☐ There is a visual representation. (*hint: see Eight Queens solution by Bill Weinman*)
- ☐ The board is at least 5x5 in size.
- ☐ The knight has to move according to its movement rules.
- ☐ The knight can only visit each square once.

## Exemplar

- ☐ Board size can be set by the user (*NxN size*).
- ☐ The user can decide where the knight starts.
- ☐ Uses a more efficient solution than brute force (*explain in report required*)

## Grading

This assignment is the first part of the Methods & Techniques grading of this project. See the M&T assessment criteria on the VLO (Documents/Assessments/Methods & Techniques) for more details.

## Relevant Reading Material

[C++ Essential Training by Bill Weinman](#) on Lynda.com

[Code Clinic: C++ by Bill Weinman](#) on Lynda.com (especially Problem Three: Eight Queens)  
(*visual representation in ASCII*)

[Knight's Tour wiki-page](#)

[A Brute Force Approach to Solving the Knight's Tour Problem using Prolog](#)

[Java brute-force Knight's Tour](#)

[Solving the Knight's Tour on and off the Chess Board](#)

[Warnsdorff's Rule](#)

[Knight's Tour and Warnsdorff's Rule](#)

[Backtracking | Set 1 \(The Knight's tour problem\)](#)

[C++ Win32 Courses](#)