

Project proposal: Second integrative task CaDS 2023-2.

Game title: Chess.

Description

Chess is a classic two-players board game where each player starts with sixteen (16) mobile pieces; each of these pieces don't have any important value (except for the King). These pieces move along a board, catching the other player's pieces, following certain rules.

Objective

The purpose of this integrative task is to recreate this game using the graph theory learned in class and Java. The board of the game can be represented by a 50 vertex and 50 edges; each piece has a certain rule for its movement, then, graph theory can be used to restrict their movement. The chess rules, such as the check, the checkmate, the castling or the peon promotion, can be design using search algorithms (DFS, BFS) with the purpose of detecting the moment where these rules can be applied.

Finally, when the king is in check, Djikstra or Floyd-Warshall algorithms can be used to find and suggest and escape route for the player. If the scape route its not found, the game will end, being the one who put the other player in check the winner.

Enumerating these objectives:

1. Use graph theory to model Chess in Java.
2. Use search algorithms and Minimum Weight Paths algorithms to design the game rules.
3. Implement a user interface (GUI) using JavaFX.
4. Develop a code capable of adapting to two types of graph implementations (adjacency list, adjacency matrix).