Final D.S Project

- Chess Game
- By: Mohammad Yaqoob
- CMS: 023-21-0335
- Class BS(CS)-III

Github Link

https://github.com/Shaikh-Yaqoob/Chess_Game.git

Overview

Chess is a game played between two opponents on opposite sides of a board containing 64 squares of alternating colors. Each player has 16 pieces: 1 king, 1 queen, 2 rooks, 2 bishops, 2 knights, and 8 pawns. The goal of the game is to checkmate the other king.

Notation

Chess notation combines the chess piece moved with the new square it has moved to, on the chessboard. Chess notation uses abbreviations for each piece, using capitalized letters. King = K, Queen = Q, Bishop = B, Knight = N, Rook = R, Pawn = no notation.

Classes that are used

- Board/Main Class
  A chessboard is a game board used to play chess. It consists of 64 squares, 8 rows by 8 columns, on which the chess pieces are placed. It is square in shape and uses two colors of squares, one light and one dark, in a chequered pattern.

- Piece Class
  There are is class representing different kinds of chess pieces: King, Queen, Knight, Bishop, Rook, and Pawn. Piece is a class rather than an interface because it has some code in it

Data Structure that is used

- Linked List
  A data structure to collect data entities in sequential order. Unlike an array or vector, where consecutive nodes or elements remain in sequential order in memory for sequential as well as random access, each node of a linked list is composed of a datum and one or more explicit links, a pointer, reference or index to the next and/or previous node of the sequence. This structure allows for efficient insertion or removal of elements from any position in the sequence, without copying other nodes around but only to update some references.

Libraries that are used

- awt.Color
  The Color class is a part of Java Abstract Window Toolkit (AWT) package. The Color class creates color by using the given RGBA values where RGBA stands for RED, GREEN, BLUE, ALPHA or using HSB value where HSB stands for HUE, SATURATION, and BRIcomponents.
- awt.Graphics
  Java AWT (Abstract Window Toolkit) is an API to develop Graphical User Interface (GUI) or windows-based applications in Java.
- awt.event.MouseListener
  The Java Mouse Listener is notified whenever you change the state of mouse. It is notified against Mouse Event. The Mouse Listener interface is found in java. Awt. Event package
- awt.event.MouseMotionListener
  The Java MouseMotionListener is notified whenever you move or drag mouse. It is notified against MouseEvent. The MouseMotionListener interface is found in java. Awt. Event package.
- awt.image.BufferedImage
  A BufferedImage is comprised of a ColorModel and a Raster of image data. The number and types of bands in the SampleModel of the Raster must match the number and types required by the ColorModel to represent its color and alpha components. All BufferedImage objects have an upper left corner coordinate of (0, 0).

- ## io.File

  Java I/O stream is the flow of data that you can either read from, or you can write to. It is used to perform read and write operations in file permanently. Java uses streams to perform these tasks. Java I/O stream is also called File Handling, or File I/O.

- ## io.IOException

  IOException is the base class for exceptions thrown while accessing information using streams, files and directories. The Base Class Library includes the following types, each of which is a derived class of IOException: DirectoryNotFoundException. EndOfStreamException. FileNotFoundException.

- ## util.LinkedList

  In Java, the linked list class is an ordered collection that contains many objects of the same type. Data in a Linked List is stored in a sequence of containers. The list holds a reference to the first container and each container has a link to the next one in the sequence.

- ## swing.JFrame

  JFrame is a top-level container that provides a window on the screen. A frame is actually a base window on which other components rely, namely the menu bar, panels, labels, text fields, buttons, etc. Almost every other Swing application starts with the JFrame window.

- ## swing.JPanel

  JPanel, a part of the Java Swing package, is a container that can store a group of components. The main task of JPanel is to organize components, various layouts can be set in JPanel which provide better organization of components, and however, it does not have a title bar.