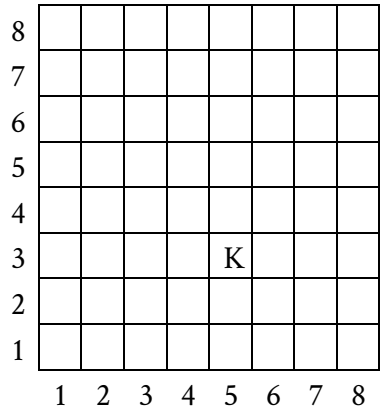
Chess

Chess is played on an 8x8 grid of squares. We will label each square with (*x,y*) to denote its position. To clarify how location is specified, the K is located at (5,3). See below for reference:



Assignment

DO NOT look online for help! You are encouraged to work with other students: just make sure you cite who you worked with, either through Haiku or as comments in your code!

You will be writing 4 separate classes (so submit 4 different Java files!):

Knight, Bishop, Rook, Queen

Each of these classes will have the following structure:

Instance Variables

The classes should be able to keep track of its location, and what type of piece it is.

Constructors

A default constructor will put the piece at (8,8). Otherwise, it will be placed at the specified location. The type of piece should not be changed.

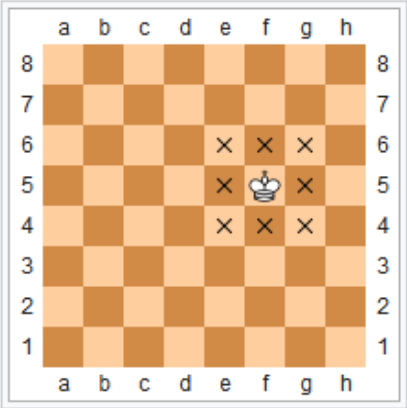
Methods

- Appropriate getters and setters (think of it as a real chess piece)
- `toString()` should return a String of this format: "{type}: {x}, {y}"
    - ex: "Queen: 3,4" or "Knight: 1, 2"
- `canMove(x, y)` should return whether the piece can move to the specified location
    - assume that only valid positions between (1,1) and (8,8) will be tested
- `move(x,y)` will move the piece to the specified location if possible
    - return whether or not the piece moves
    - will return false if asked to move to location that the piece is already in
        - same for canMove()

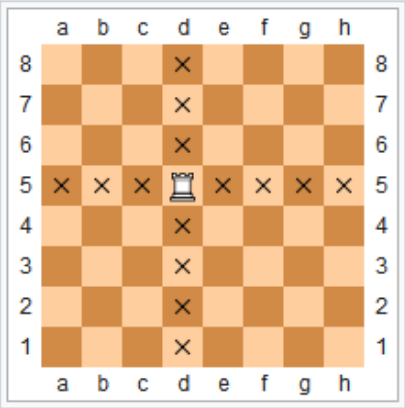
Details

Assume that the board is empty. There are no other pieces, so you only have to check if the position is valid according to how the pieces are allowed to move. The rules of movement are as follows: (pulled from Wikipedia: https://en.wikipedia.org/wiki/Rules_of_chess)

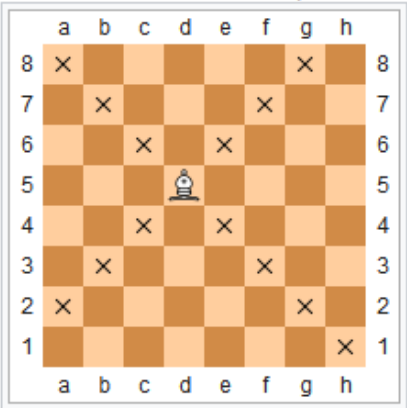
Moves of the king



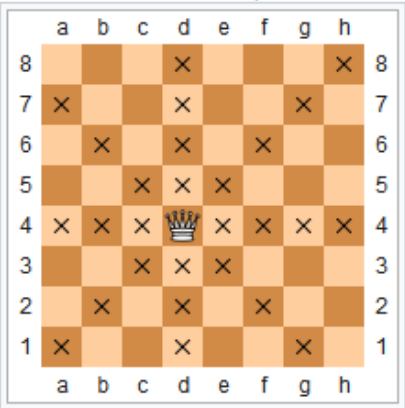
Moves of a rook



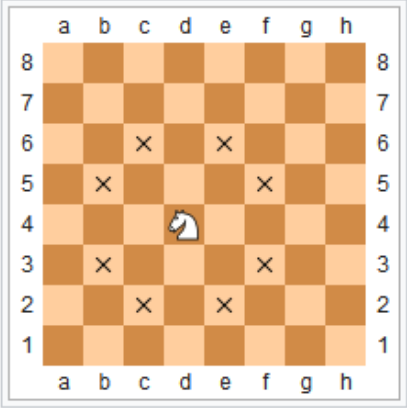
Moves of a bishop



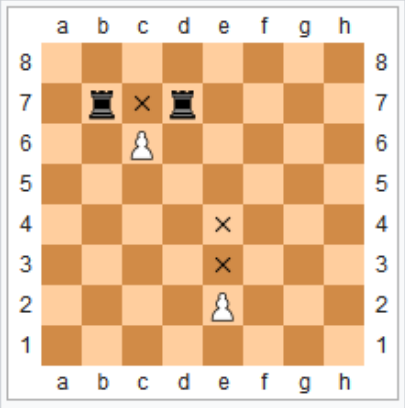
Moves of the queen



Moves of a knight



Moves of a pawn



Turn in

Submit the following files through Haiku (separately or in a .zip file)

- Knight.java
- Rook.java
- Bishop.java
- Queen.java

Rubric (Out of 20)

Your grade on this assignment will be counted **twice**!

+4: Each class has proper instance variables
+4: Each class has proper constructors
+4: Each class has proper getters, setters, and `toString()`
+8: Each class correctly implements `canMove()` and `move()`

Make sure your code is **well-commented**! Test your methods. Cite everyone you work with.