CSEN 171 - Practicum 3

The N Pieces Problem (Java)
Due Tuesday Nov 11 at 11:59pm

Overview

Given: Practicum3.java
Goal: Place N identical chess pieces on an NxN board so that no two attack each other.

- ➔ Your task is to complete the TODOs (numbered) below.
- ➔ Each unimplemented part currently throws UnsupportedOperationException.
  - ◆ That way you can compile early and know what to implement next.
- ➔ When you finish all TODOs, the program should work as specified.
- ➔ **Submit your completed Practicum3.java on gradescope, NOT camino!**
  - ◆ Autograder won't work if file name is anything else (case sensitive)

TODOs

- (1) PieceFactory.create [PARTIAL]
- (2) Knight.menaces [FULL]
- (3) Rook.menaces
- (4) Bishop.menaces
- (5A) Queen.place [PARTIAL]
- (5B) Queen.menaces [PARTIAL]
- (6A) Amazon.place
- (6B) Amazon.menaces
- (7) Renderer.asciiBoard [PARTIAL]
- (8) Renderer.coordsList [PARTIAL]
- (9) Solver.backtrack [PARTIAL]

DON'T MESS WITH CLASSES WITHOUT TODOs!!
Comment out the "throw new ..." lines and replace with your implementation.

How To Compile

TO COMPILE: javac Practicum3.java
- Make sure you can run javac (search it up)

TO RUN: echo [N] | java Practicum3 [piece] [mode] [k]
WHERE:
- [N] = board size (positive integer)

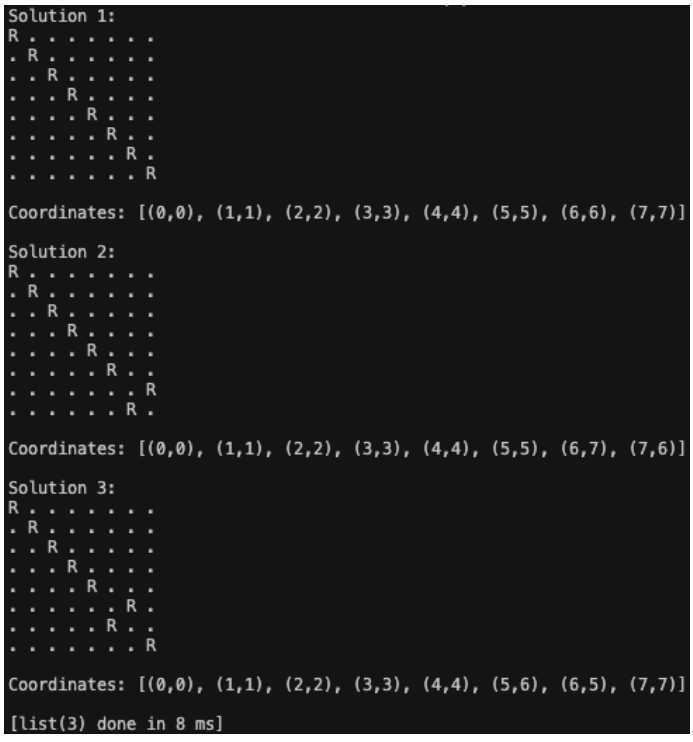
- [piece] = piece type (knight|rook|bishop|queen|amazon)
- [mode] = mode (count|one|list)
- [k] = integer for list mode (positive integer)

EXAMPLES:

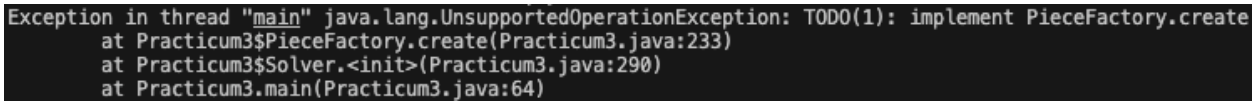
- echo 8 | java Practicum3

- echo 8 | java Practicum3 queen one

- echo 8 | java Practicum3 rook list 3



- echo 8 | java Practicum3 (without implementing anything)



Grading

- Practicum attendance in lieu of report (20 points)
- Upload completed Practicum3.java on gradescope (80 points)

The gradescope score is mainly for testing / feedback, not your final score.

- Test your code on gradescope for as many times as you want to before the due date.
- Make changes according to the autograder results.

After it's due, here's how Practicum 3 will be graded:

- **(1) If the autograder shows 80/80** then you will receive full credit.
- **(2) If there are some cases that fail**
    - … and if there's no work shown the grade will stay as is.
    - … and if there's work shown I'll give half credit for that case.
- **(3) If your program exceeds runtime** (likely from backtracking) and no score is shown on gradescope
    - I will find the section that causes it then replace it with the solution
    - You will get half credit for the cases related to that section, then the rest will be graded the same way as **(2)**.

Again, if you're having trouble with the practicum at any point **before the due date** I'm more than happy to help.

Office Hours: Monday Nov 10, 3 - 4 PM @ Heafey 135
Email: dchui2@scu.edu