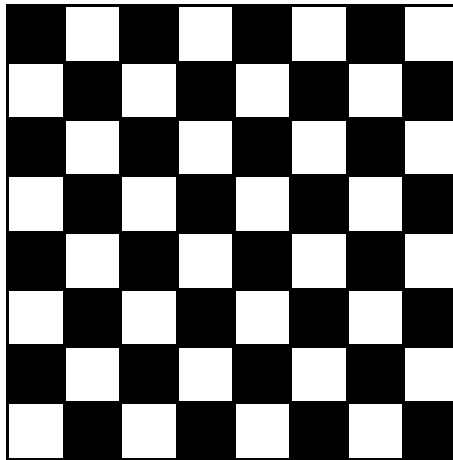


Project 2 – 40 points

For the second project, you will be combining your knowledge of GUIs and problem solving. In addition, there is a bonus aspect that will be your first foray into Artificial Intelligence. Like the other project, no assistance will be provided by the TAs or myself on implementation of the project, rather you can ask us concept questions only. The exception to this is the bonus aspect described below.

Gui (25 points)

In class, we went over the n-Queens problem. Implement a GUI representing an 8x8 chessboard. Allow users to click on a space on the chessboard to place a Queen with the Mouse. If they click on a space that already has a Queen, that Queen is removed. They can place up to 8 Queens total. (10 points)



AT ANY TIME a user can click a button to determine if their (partial) solution is correct thus far. So, for example, if I have 3 Queens placed, I can click that button to find out if those 3 Queens are “safe” at this point and that this is a valid partial solution. This means that you will have to transform the current (visual) state of the board into something your program can understand. If the Queen placement is incorrect, the conflict (Queens that are at risk) must be identified BOTH visually AND textually in your GUI (NO console). You are free to use (and modify) the code we did together in class/from the textbook to assess your potential solution. Just CITE IT! (10 points)

Points will be given for the look and feel of your GUI, efficiency of your code (for example, does it make sense to calculate all the partial solutions up front or evaluate the currently proposed solution only/each time the button is pushed), and following the conventions and rules we discussed in class. (5 points)

Artificial Intelligence (5 Points + 5 Bonus)

For these points, you will be extending your project utilizing artificial intelligence.

Basic (5 points)

Have a button on your GUI (called Tip, et cetera), that can be pressed ONLY when there are less than 8 Queens on the board. If this button is pressed, you will highlight or indicate in text OR the GUI (NO console) a suggestion for where the user should place their next Queen. For these 5 points, simply pick one of the solutions from your set at random that meets the current constraints of the board, that is, puts the Queen in a “Safe Space”.

Bonus (5 points)

For FULL bonus points, have a separate button on your GUI (called Smart Tip or Hint) that can be pressed ONLY when there are less than 8 Queens on the board. This button will pick the next Queen location based on the largest number of solutions that will still be an option after placing that new Queen by looking at all acceptable solutions to the 8 Queens problem. This full bonus part is the only part of the project you can ask for direct help on from me and the TAs. Of course, we can give you indirect help on everything else.

Presentation (10 marks)

You will be giving a 3-minute presentation to the lab on Friday Dec 9th of your solution. You must describe

1. All your design/programming decisions, (2 points)
2. Any challenges you faced, (2 points)
3. What you learned, (2 points)
4. Any interesting features your project has. (2 points)

(2 points) Will be given for adhering to the time constraints and overall presentation.

INCLUDE YOUR PRESENTATION in your submission so it can be loaded quickly during class. You will lose 2 points if you neglect to do this, no exceptions.

You will not be loading your code and running your programs (there is not enough time). So, if you would like, you can do screen captures, animations, or movies to showcase (showoff) your game.

Submission

Turn in by 11:00am on Friday Dec 9th

- 1) .zip file of your src directory with the Java files organized properly in your USERID package
- 2) Your presentation file to Canvas. I will be accepting .ppt, .pptx, and .pdf. Let me know if you require another format early on.

Grading will be based on conforming to the standards we reviewed in class as well as following the requirements of this project. Since it is the last day of classes, ABSOLUTELY no late submissions will be allowed. So, submit early and often.