

355 fall 2022 assignment 1

For this assignment, post **CLARIFYING QUESTIONS ONLY** on eclass. Posting suggestions or your answers or hints on eclass or any other site – e.g. a discord server or anywhere else – is plagiarism.

You can work on this assignment in groups of up to 5: within your group, you can discuss any questions, but you cannot copy answers. Each student must submit their own assignment. Discussing or copying with any student outside your group is plagiarism.

We might ask you later to explain your answers: if you are unable to do so, we might deduct some or all marks and report this to the faculty of science.

For this assignment, each student's secret number is the 4th and 5th integer of their student id, interpreted as a 2-digit number. E.g. if your id is *****91****, then your secret number is 91. Some questions ask you for m , your secret number mod 3. E.g. if your secret number is 91, your m is 1.

Submit each answer on eclass. There are 7 questions, each worth 1 mark.

1. If you do not answer this question we will not mark the assignment and your assignment score will be 0.

(a) In your own words, state that you accept the plagiarism policy above.

(b) Give the names and ccids of all members of your discussion group (including yourself). Explain how you worked together: e.g. discussed every question, discussed only questions 1 and 3 with group members X and Z, etc.

2. Recall that a go position is *legal* if each block has at least one liberty. Prove or disprove: a go position is legal if and only if it is the final position in some go game.

3. a) In the AlphaGo movie trailer, Demis Hassabis says that the number of go positions is more than the number of atoms in the universe. Give details to back up this claim. b) Is this claim still true we replace *go positions* with *legal go positions*?

Hint: <https://tromp.github.io/go/legal.html>.

4. AlphaGo took more than 30 seconds to make its first move (move 2) in the first game of the Lee Sedol match. a) Why did this surprise the audience? b) What negative effect might this have had on Lee Sedol?

5. Watch the last ten minutes of the first game of the Lee Sedol match.

<https://www.youtube.com/watch?v=vFr3K2D0Rc8&list=PLqYmG7hTraZA7v9Hpbps0QNmJC4L1NE3S&t=3h37m>

The Tromp-Taylor rules for scoring are simple, but Garlock (ranking 1d) and Redmond (9p) spend a lot of time discussing the score. Why?

6. For this question, if your m is 0, 1, 2 respectively, answer only a), b), c).

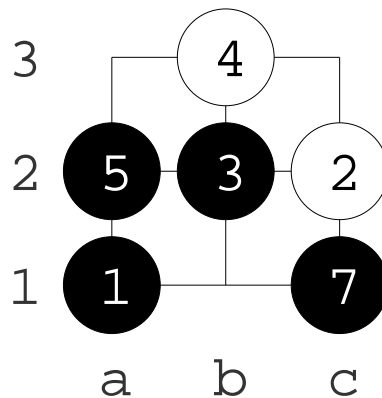
For game a) 2, b) 3, c) 5 of the AlphaGo-Lee Sedol challenge match. The game pdfs are at the bottom of this webpage:

<https://www.deepmind.com/research/highlighted-research/alphago/the-challenge-match>

Give the Tromp-Taylor score of the final game position, and explain why it differs from the score that Lee Sedol thought it was before he resigned.

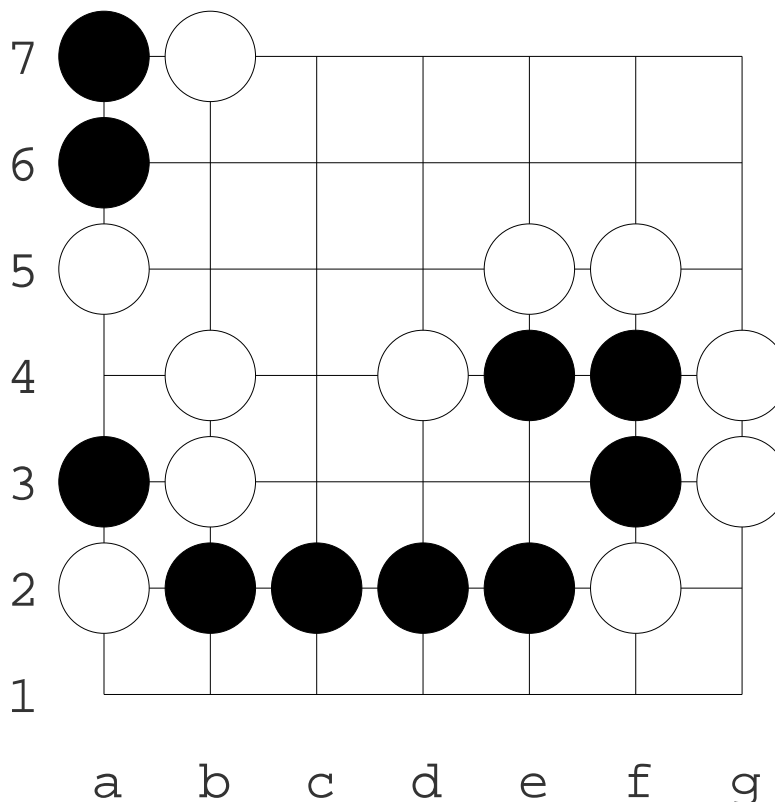
7. As in the previous question, answer only for a), b) or c).

In a go position, a block is in *atari* if it has exactly one liberty. E.g. in the position below, stone 2 at c2 is in atari, stone 7 at c1 is in atari, and the other two blocks are not in atari.

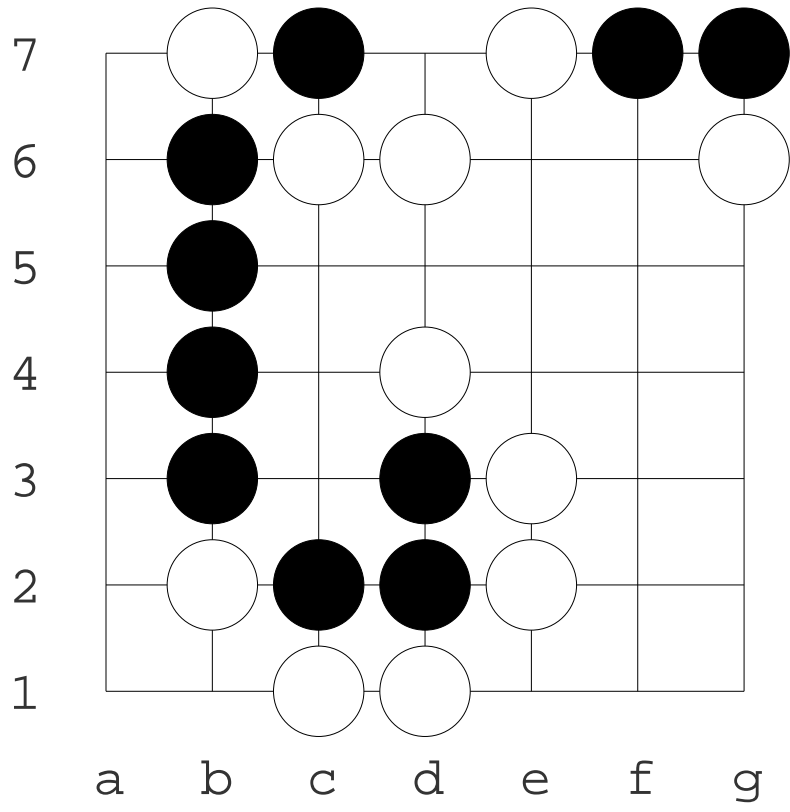


In the position below, identify all black blocks in atari. For each block in atari, give a legal next black move that takes the group out of atari, or explain why this is not possible.

a)



b)



c)

