GUIDELINES FOR WRITING PROJECTS

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The following issues came up in the previous assignment of describing the strategies for Poison. Be careful about them in future projects as well.

(1) Every article needs a title, name of author and date.
(2) Explain the problem.
(3) Define all words and mathematical concepts that you need. Not every reader knows the notation that you use.
(4) Formulate you main point as a theorem in a few sentences so that is visible at the first glance. Be precise, but also efficient, for example:

    Theorem. *If Poison starts with* $3n + 1$ *stones for* $n \in \mathbb{N}_0$*, then player 2 can always win; otherwise ...*

(5) If you use variables $n, x, \ldots$, write what you can plug in. Be careful about quantifiers.
    Example: Poison is a game with n stones for any natural number n.
(6) Give an argument why your theorem is true in full generality.
    Examples that your result works for special choices are not a proof. Showing that one player can win the game with 10 stones does not prove that your strategy works for any number of stones.
(7) If possible, reduce your problem to some easier problem or some case where you already know the solution.
    Example: Suppose you already showed that player 2 can always win a game that starts with $3n+1$ stones (for any $n \in \mathbb{N}_0$). Next you want to explain what happens in a game with $3n+2$ stones: If player 1 removes 1 stone, then player 2 has $3n+1$ stones to choose from. You can now refer to your previous argument to explain what will happen.

Rubric for the write-up for Poison

Presentation: 1 point each for

- Title, author, date;
- description of the game;
- formulating a theorem using `\begin{theorem} ... \end{theorem}`
- formulating a proof using `\begin{proof} ... \end{proof}`

Mathematical correctness

- 2 points for stating the correct outcomes of the game in all cases;
- 4 points for giving the correct strategies for each case and showing that they lead to victory.

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