CMPSCI 187, Spring 2015 Discussion #8
A Guessing Game: Group Response Sheet

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adapted from a version written by David Mix Barrington

23 March 2015

Names: _____

Each *pair* of students should hand in one response sheet.

This pencil-and-paper exercise concerns the Java program available as `GuessANumber.class` on the course web-site.

Question 1: What happened when you played ten games against the program with $N = 2$? Why can you be confident that the program is not choosing a random number as it claims to be doing?

Question 2: Explain how you could guess the programs number every time, if N is of the form $2^k - 1$ and you are given k guesses. (The program gives you $k - 1$ guesses in this situation.) Argue as carefully as you can that your strategy will always work — language about recursion may be useful.

(Question 3 on other side.)

Question 3: Suppose that $N > 2^k - 1$. Explain how the program is always able to find a number after k guesses that is consistent with its answers and not equal to any of the numbers you have guessed.