

CSC236 Assignment 1

last portion of hints

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Final hints for assignment 1.

1. Try organizing your domino tiles. For example, make of row of the tiles with maximum dot set size 0. Add a new row of the new tiles you must add to have maximum dot set size 1. And so on . . .
2. “Three mutual strangers,” means three students who don’t know each other. Similarly, “three mutual acquaintances,” means three students who know each other. A set of four mutual strangers certainly includes several sets of three mutual strangers.
Try to focus on a particular student, and consider that student’s possible connection to the other five. This student might be acquainted with all of the other five, just four of them, and so on.
3. I think last week’s hint was plenty.
4. Is there a set of natural numbers that provide candidates for the remainder, r ? Consider this example, where $m = 29$ and $n = 7$:

$$29 = 0 \cdot 7 + 29$$

$$29 = 1 \cdot 7 + 22$$

$$29 = 2 \cdot 7 + 15$$

$$29 = 3 \cdot 7 + 8$$

$$29 = 4 \cdot 7 + 1$$

5. Suppose I remove a node v and its k edges from a connected graph. Convince yourself that this leaves a remaining graph with at most k connected pieces (subgraphs).
6. I found it helpful to note that if $n > 0$ then $n = (n + 1)/(1 + 1/n)$. You may be able to solve the question without this manipulation.