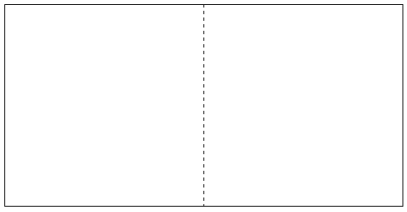
EECS 376: Foundations of Computer Science

Discussion 2 (Sec 23) Activity Sheet

List **uniqnames** of group members below:

Challenge 1

You are given a 2-inch by 1-inch rectangle below. The left half is for **X** points, and the right half is for **O** points. Plot as many **X**s and **O**s as possible within their respective halves, ensuring that no two points of the same symbol are closer than 1 inch apart. Both symbols (**X** and **O**) may lie on the dotted median line, and different symbols do not have to be 1 inch apart.

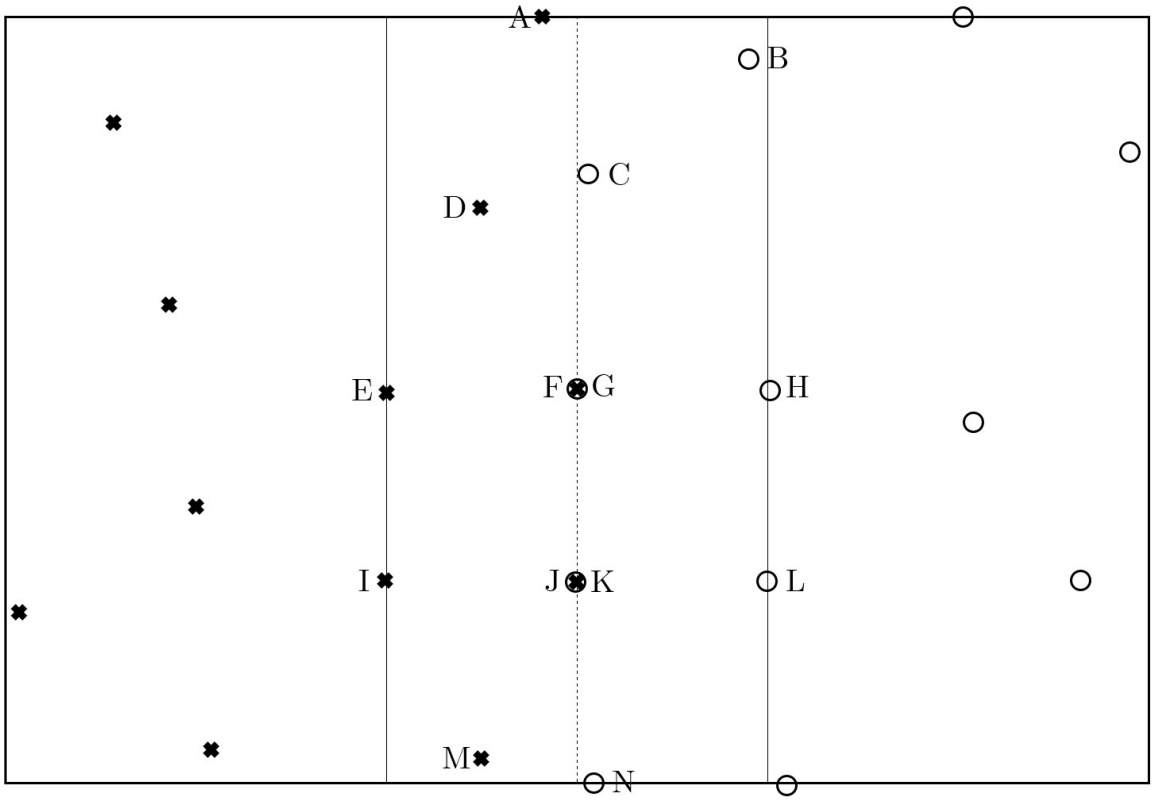


Once you have finished plotting, discuss why it wasn't possible to place more points. (Hint: divide each half into four sub-squares and apply The Pigeonhole Principle)

Challenge 2

In the box of points below, a 2-inch by 4-inch strip is drawn in the middle. For each point in the strip, find all other points that are less than 1-inch away from it. Follow alphabetical order when checking distances and aim to use as few checks as possible.

For bookkeeping, list the pairs of points you check as you work through the challenge.



Once you have finished the task, discuss your strategy for minimizing the number of checks. Using that strategy, what is the maximum number of checks needed for each point? Relate to your findings in Challenge 1.