

# Exercise

- Consider again the space of rectangles ( $a \leq x \leq b \wedge c \leq y \leq d$ ) on the  $[0,10] \times [0,10]$  grid.
- Trace the FIND-S algorithm for the following sequence of examples:

(2,4) 1

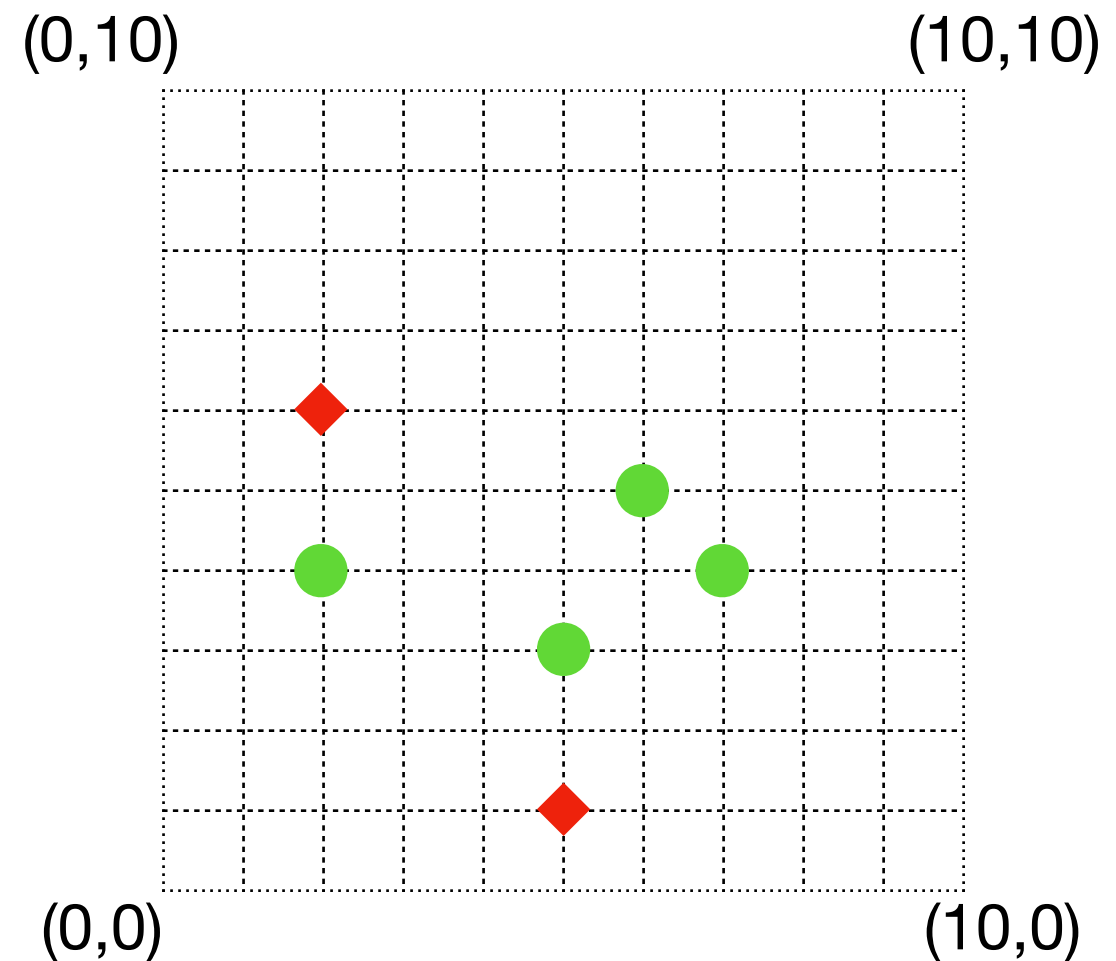
(7,4) 1

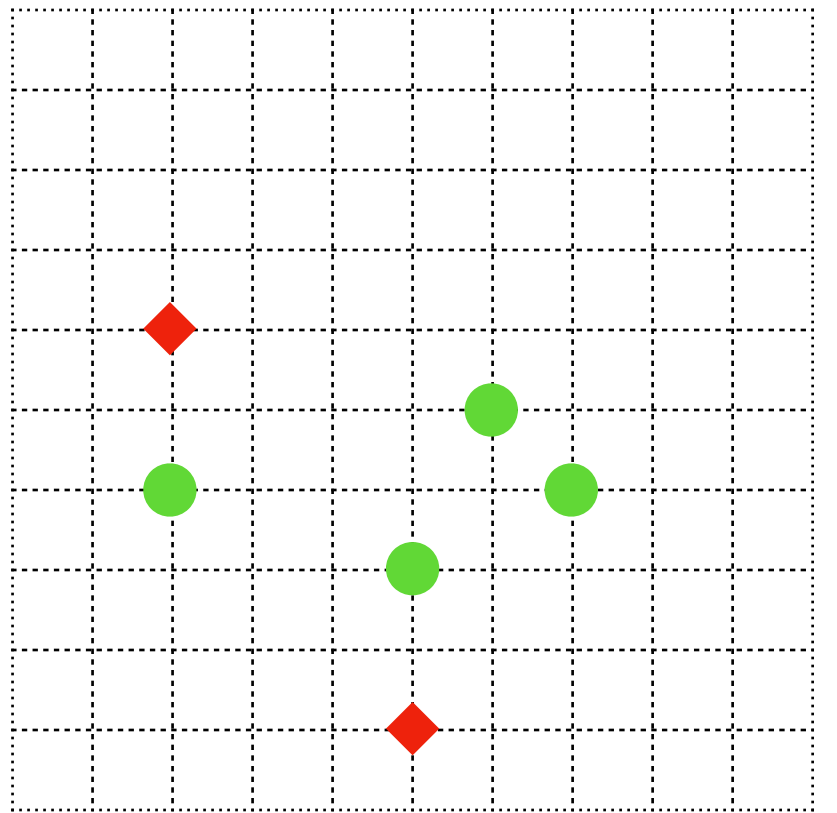
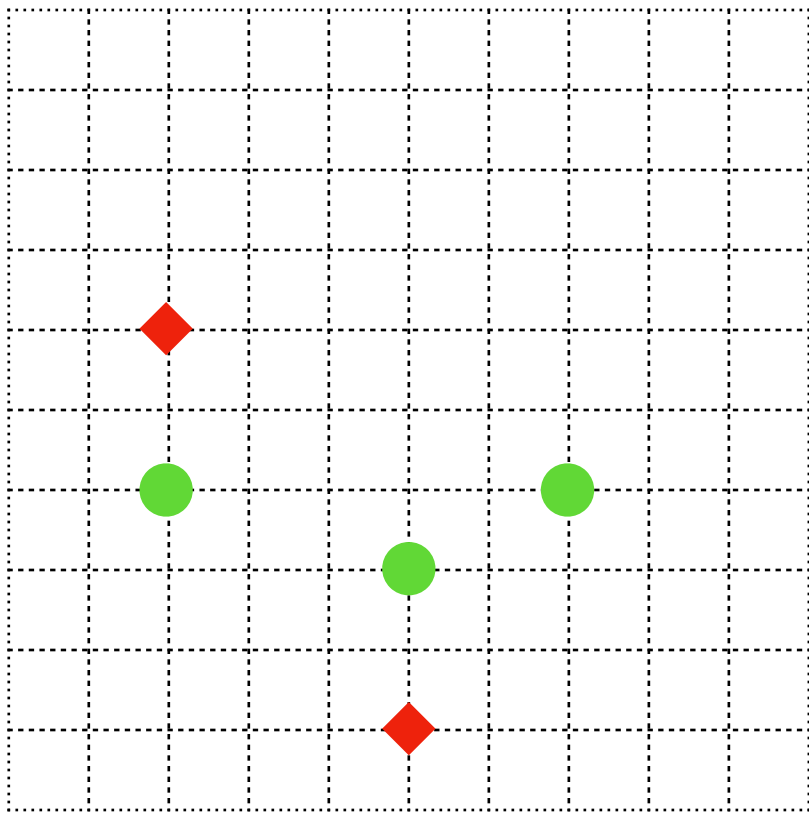
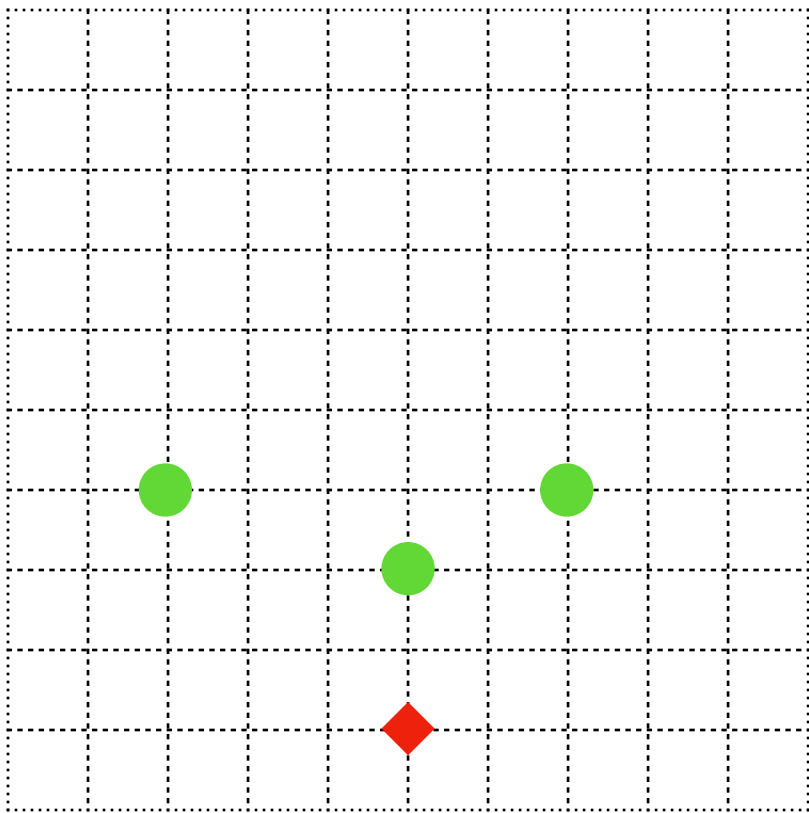
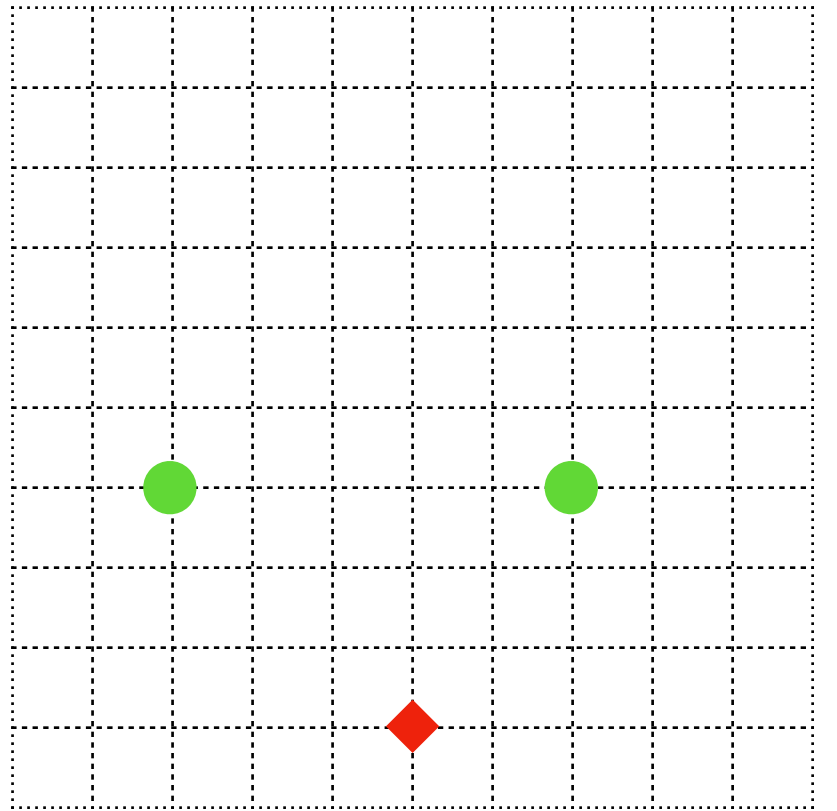
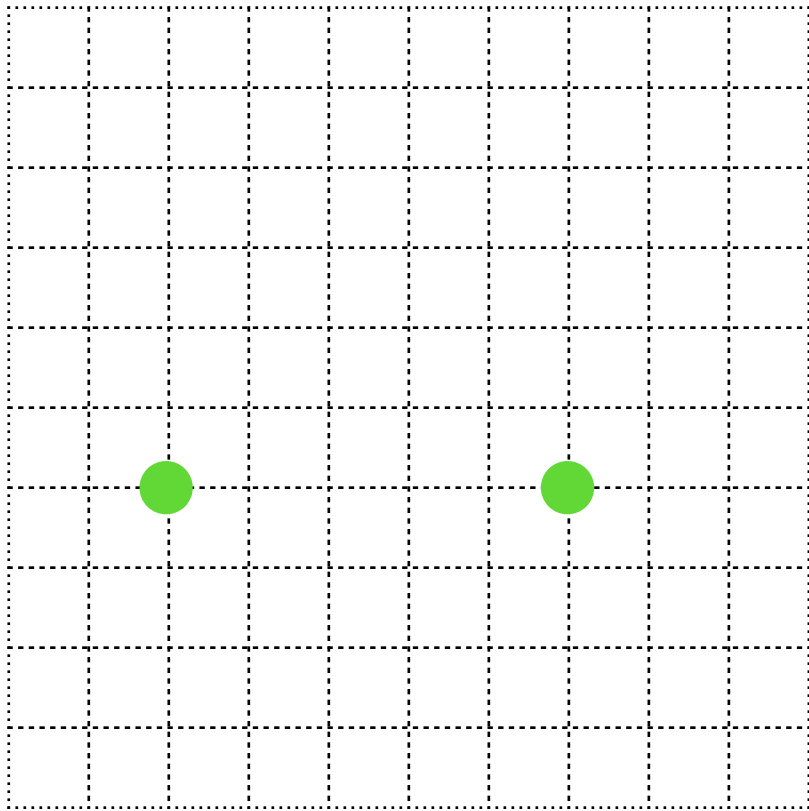
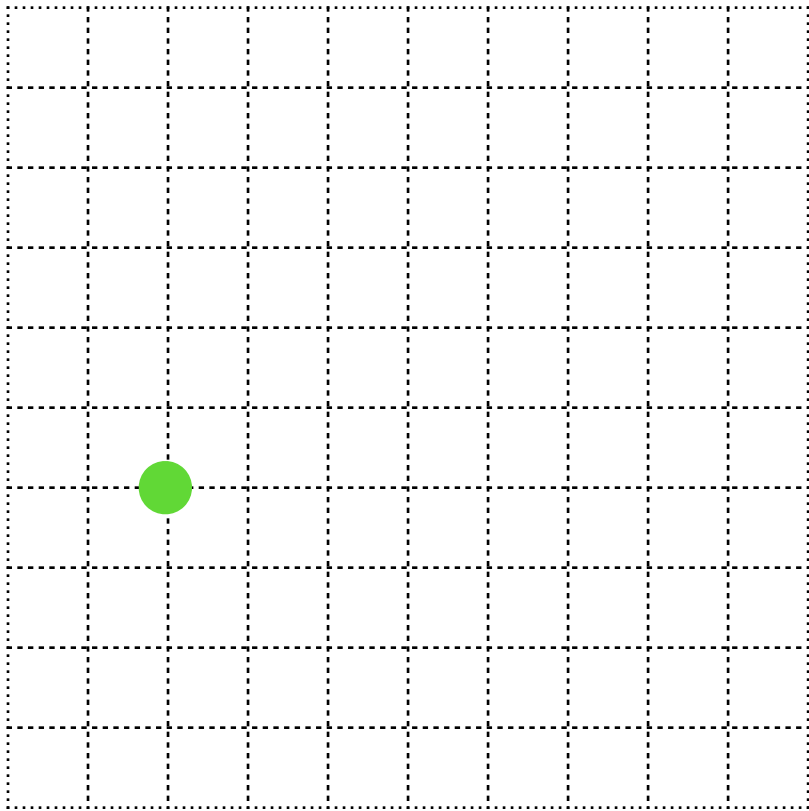
(5,1) 0

(5,3) 1

(2,6) 0

(6,5) 1





# Exercise

- Consider again the space of rectangles ( $a \leq x \leq b \wedge c \leq y \leq d$ ) on the  $[0,10] \times [0,10]$  grid, and the positive ● and negative ◆ training examples in the figure.
- What are the G and S boundaries of the version space? Write them down and draw them on the grid.
- Imagine the learner can ask the teacher to label a specific point as next training example. Suggest a point that would guarantee to shrink the version space independently of its label, and one that wouldn't.
- What is the smallest number of examples for which CANDIDATE-ELIMINATION can precisely learn any specific rectangle, say,  $(2 \leq x \leq 8 \wedge 3 \leq y \leq 5)$ ?

