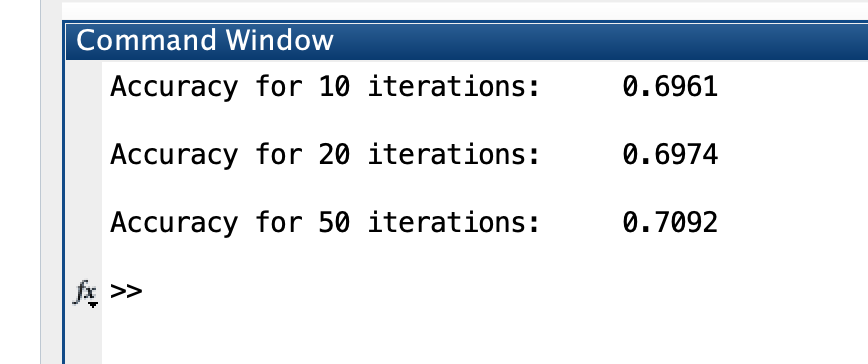
PART 3 outputs:



PART 4:

Suppose that we have three colored boxes r (red), b (blue), and g (green). Box r contains 3 apples, 4 oranges, and 3 limes, box b contains 1 apple, 1 orange, and 0 limes, and box g contains 3 apples, 3 oranges, and 4 limes. If a box is chosen at random with probabilities p(r) = 0.2, p(b) = 0.2, p(g) = 0.6, and a piece of fruit is removed from the box (with equal probability of selecting any of the items in the box), then what is the probability of selecting an apple?

p(a) = p(a|r)\*p(r) + p(a|b)\*p(b) + p(a|g)\*p(g) = 0.3 \* 0.2 + 0.5 \* 0.2 + 0.3 \* 0.6 = 0.34

If we observe that the selected fruit is in fact an orange, what is the probability that it came from the green box?

p(g|o) = p(g,o) / p(o)

p(g,o) = p(o|g)\*p(g) = 0.3 \* 0.6 = 0.18

p(o) = 0.4 \* 0.2 + 0.5 \* 0.2 + 0.3 \* 0.6 = 0.36

p(g|o) = 0.18 / 0.36 = 0.5