P00: Diagram

Description automatically generated

So, the basic way I handle a palindrome is see what the first letter is in the alphabet so in this case a, b, or c and mark it then I move all the way to the blank symbol while keeping in mind for which state I am in what the first letter I saw was, then I get to that empty symbol. Then I move to the left one and see if that symbol matches the first one, I saw, if it does then I mark it and walk all the way back to the now marked start then move one to the right and repeat the process except for this time I move back to the left by one when I see the other marked symbol that was related to the first.

P02: A piece of paper with writing

Description automatically generated with medium confidence

So, the goal for counting the same amount of a’s b’s and c’s is that we simply see which one we see first at the start and give it a special mark which in my case is the letter and an “!” in order to signify it was one of the starting symbols. I then move down the tape and look for the other letters and if I see one, I make it as “@a” or “@b” to show that I have counted it before but that it was not the start. Then once I have marked the other two letters that are different from the start, I move back down the tape until I reach one of the ones marked with an “!” and then I find the next unmarked symbol and start from there. Again, I am using the states to store what symbols I have seen and what I am looking for. This only accepts if it is in the start state and sees the blank symbol other wise seeing the blank symbol leads to reject.

P03: I don’t have a drawing of this one, but we can treat the tape in this one just as a input into a DFA and we just read each symbol one at a time left to right and move the states around as we move forward with the end goal being to accept if we see the end symbol and we are in the state that would accept in a DFA but otherwise we reject if we see the end symbol in any other state. I also don’t change any of the read in symbols instead just keeping them the same to keep things easier.