

Theory of Computation, CSCI 438 spring 2022
Variations of Turing Machines, pg. 176, March 24th

1. Consider a machine that is similar to a TM but has three possible moves: left, right or stay. Show that this type of Turing machine recognizes the class of Turing-recognizable languages.

2. Consider a machine that is similar to a TM but has an infinite tape in both directions. Say that the entire tape is blank, except for the input which is in contiguous cells with the read/write head pointed at the leftmost input symbol. Show that this type of Turing machine recognizes the class of Turing-recognizable languages. (Exercise 3.11)

3. Prove the following theorem.

Theorem: A language is Turing-recognizable iff some Turing Machine with reset (and no left move) recognizes it.