

CS 1511 Homework 4

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Assume the definition in (b) is true. Then for a recursively enumerable language L , there exists a Turing machine M with a read/write tape that is initially empty and a write-only output tape, such that only elements of L are written to the output tape, and every element of L is eventually written to the output tape.

Now construct a Turing machine M' .

$M' =$ "On input w :

1. Run M until it produces a new output on its output tape.
2. Check if w was the item written onto the output tape. If yes, accept.
3. Otherwise, go to step 1. If M is halted, loop indefinitely.