

Name: _____

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CSE 355

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Mock Final

Will be discussed 4/25

1. Describe the form of Turing machines which actually are PDAs. (any type of TM that you find appropriate).
2. Construct a TM which finds the first occurrence of the string aa and replaces it with bb (over the alphabet $\{a, b\}$.)
3. Find a regular expression for the language accepted by the TM of Figure 1.

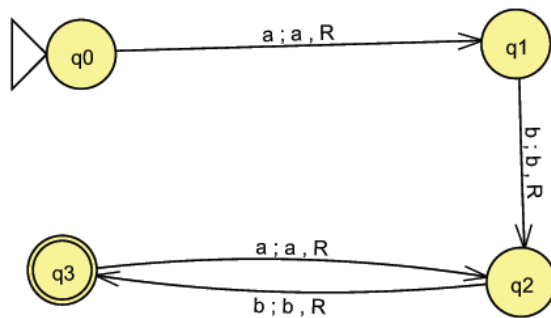


Figure 1: A TM.

The alphabet is $\{a, b\}$.

4. Design a TM which accepts $\mathbf{a^+b^*}$ by halting.
5. For the nondeterministic DFA of Figure 2, find an equivalent deterministic one.
6. Find a TM (any type you like) which enumerates lexicographically all strings of the form a^{2^i} .
7. Find a PDA accepting the language $L = \{w \mid w = a^i b b b^i; i \geq 0\}$.
8. Design a nondeterministic TM for the language $L = \mathbf{a^*bb} \cup \mathbf{b^+aa}$.
9. Show the state diagram for the TM with this encoding:

101101110110110011101101110111011

The encoding for L, R is 1 and 11, respectively.

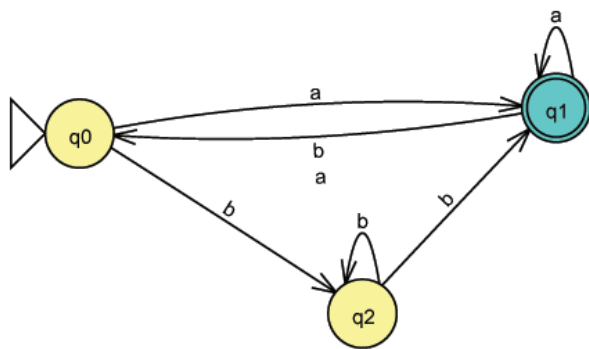


Figure 2: A nondeterministic DFA.