

COMP 335: Assignment 10

Fall 2019

Submission through Moodle is due by December 3 at 23:55

Note: Submit your solution to every question, however we will select only a subset of these questions for marking.

1. [15 points] Give transition diagrams for Standard Turing Machines that accept the following languages.

(a) $L = \{w \in \{a, b\}^* : n_a(w) = n_b(w)\}$

(b) $L = \{ww : w \in \{a, b\}^*\}$

(c) $L = \{a^n b^n c^m : n \leq m \leq 2n\}$

2. [15 points] Give transition diagrams for Standard Turing Machines that compute the following functions.

(a) $f(1^n) = 1^{3n+1}$

(b) $f(1^n) = 1^{\lceil n/2 \rceil}$

(c) $f(1^m 0 1^n) = 1^{2m-n}$