Quiz 11: Turing Machine outcomes

CS 212 Nature of Computation

Habib University — Fall 2023

Total Marks: 10
Duration: 15 minutes

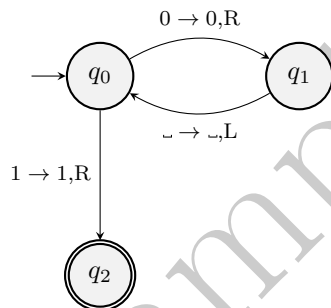Date: November 1, 2023
Time: 830–845h

Student ID: _____

Student Name: _____

1. (a) (4 points) Provide the state diagram of a Turing machine, M, that halts for some inputs and loops for others.

   (b) (1 point) Provide a string, v, such that M halts on input v.

   (c) (5 points) Provide a string, w, such that M loops on input w.

Solution:

(a)

(b) $v = 1$

(c) $w = 0$