Student ID :
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Automata Teory Course Quiz-3a (2016-2017Fall)

(Please use free space for draft and fit your answer to boxes.)

1. (50*P*) For language L used Σ={a, b} alphabet, pair of 'aa' shows that a word ends and another begins. Without adding any symbol to Γ alphabet, prepare a Turing function that writes the second tape 'a' letters as much as number of words in the first tape.

q_0 a# → q_1 aa RR
q_0 b# → q_1 ba RR
q_0 ## → q_{accept}

q_1 a# → q_2 a# RN
q_1 b# → q_1 b# RN
q_1 ## → q_{accept}

q_2 a# → q_1 aa RR
q_2 b# → q_1 b# RN
q_2 ## → q_{accept}

2. (50*P*) L = { $a^{2^n}b^n$ | $n \geq 0$ } then comment language L in view of enumerability.

- Since *n* shows repetition number of symbols, it can be only natural number.
- By using natural number *n*, we can enumerate all strings in L.
  L = { a , aab , aaaabb , aaaaaaaabbb , … }
  0 1 2 3 …
- So L is enumerable.