Jacques Garrigue, 2013/12/5

Surveys in Mathematical Sciences IV (Fall 2013)
Report for Part 2

Report delivery and deadline

You should deliver your report either to the support office (支援室) or to `garrigue@math.nagoya-u.ac.jp` by Thursday 2013/12/26.

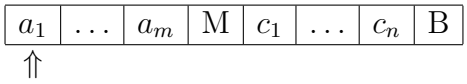
You can write your report either in English or Japanese, but English is prefered.

Task

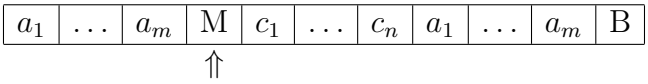
You should solve **both** problems A and B.

Problem A

Define a Turing machine which copies the contents of the tape between the current position and a marks M on its right, to the right end of the tape (i.e. starting at the first blank position). At the beginning, the head is in front of a_1, and you may assume that there is no other M on the tape:



At the end, the head is in front of M:



Write the transition function δ for this machine.

Problem B

Write the lambda-term computing the n^{th} power of m. I.e., define c_{pow} such that

$$\mathsf{c}_{\text{pow}}\ \mathsf{c}_m\ \mathsf{c}_n \to \ldots \to \mathsf{c}_{m^n}$$