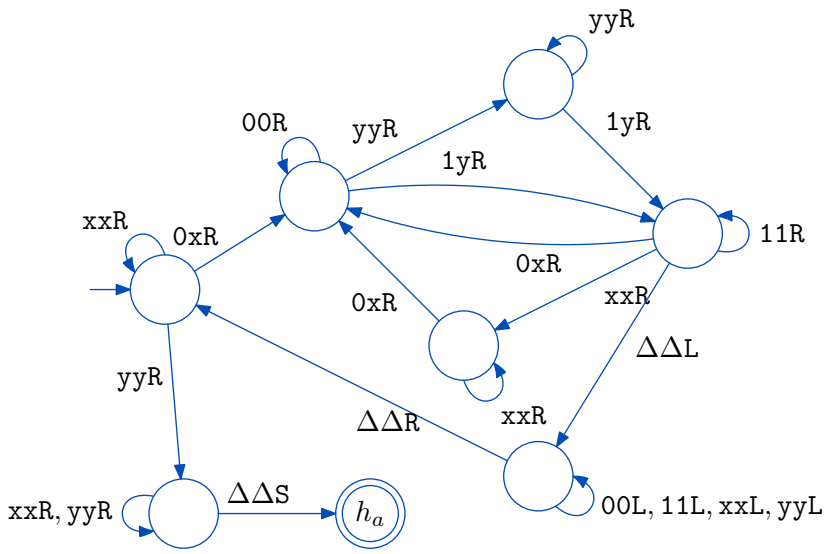
Supplemental Questions on: Turing Machines

E1: Draw a TM for the language $\{\, 0^m 1^n : n \leq m \leq 2n \,\}$.

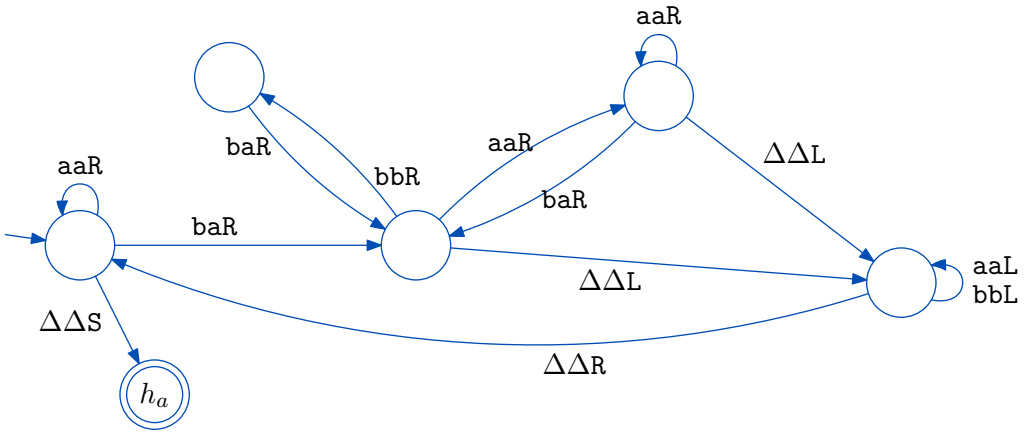
E2: Draw a TM for the function $f(x) = 3x$ on binary input.
For example, if the input is `101`, then the output is `1111`.

E3: Consider the following TM. What language does it accept?



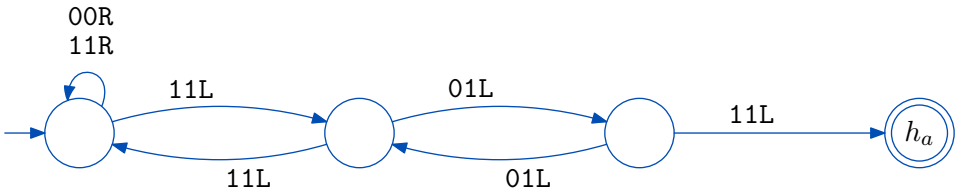
E4: Draw a TM that accepts the set of binary strings that have length a multiple of 3 and have equal numbers of 0's and 1's.

E5: Consider the following TM.



(a) Give one string of length 4 that it accepts.
(b) Give one string of length 4 that it rejects.
(c) What is the language of this TM?

E6: Consider the following nondeterminstic TM.



(a) Give one string of length 3 the machine accepts.
(b) Give one string of length 3 the machine rejects.
(c) Give a succint English-ish description of the language of the TM.