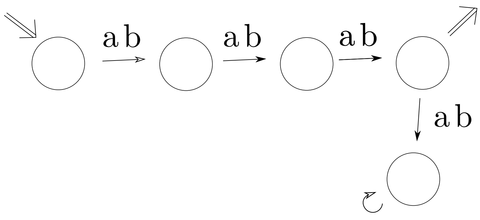
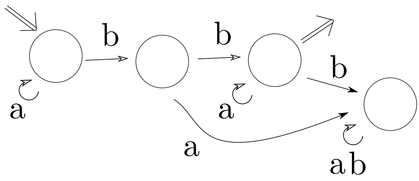
task 1: Accept words of length 3



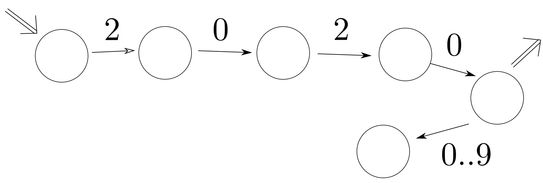
task 2: Machine which accepts the regular expression

a*bba*

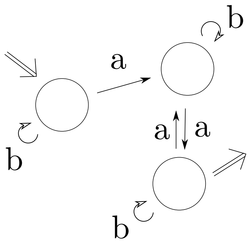
abba, abbaaaa,
bb, bbaaaa



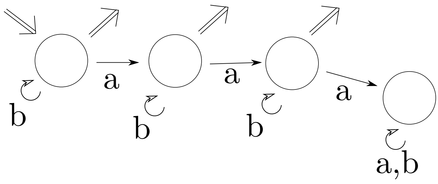
task 3: Machine which accepts pin number - pls use “2020”



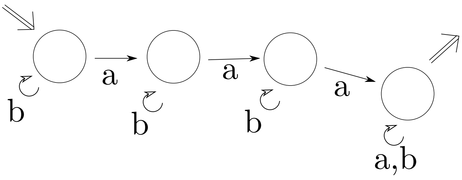
task 4: Accept even amounts of “a”.



task 5: Accept if number of a’s is less than 3.

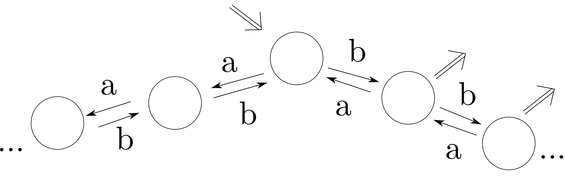


task 6: Question:
How do you make a machine accepting the
inverse of all words of another machine?



By inverting the "accepting" states (not accepting states become accepting in the new machine and former accepting states become non accepting).

task 7: (bonus) Can we build a State Machine
which would accept words with less a's than b’s?



No, we need a Turing Machine.