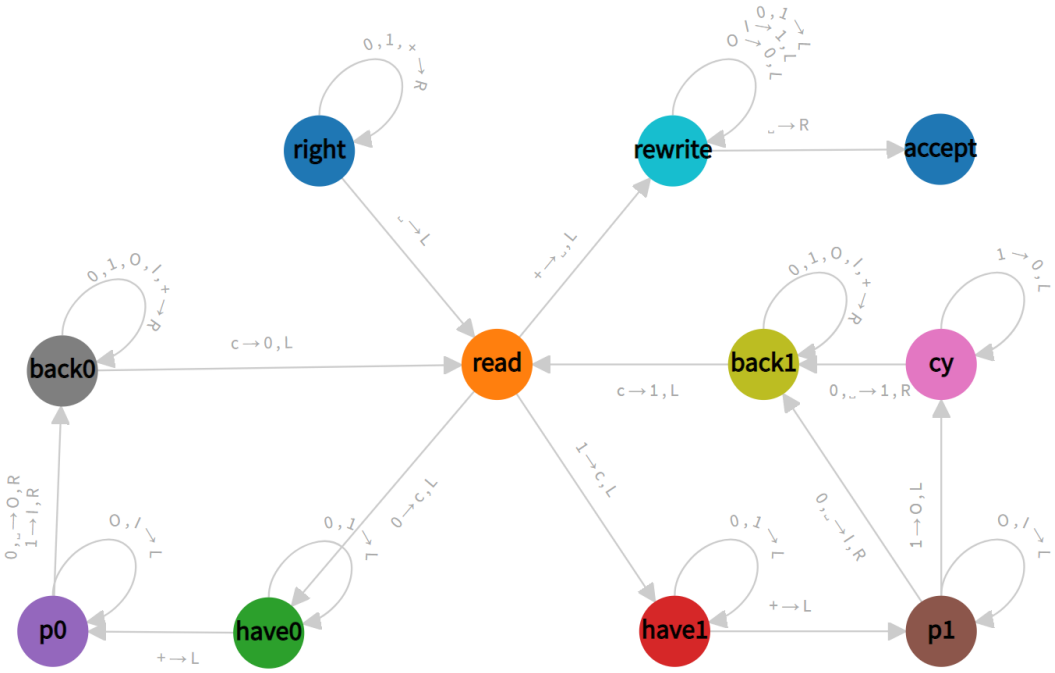
Assignment 2

Consider Turing machine *M1* with the following state diagram:



Note: The reject state and the transitions going to the reject state are not shown in the state diagram. The transitions occur implicitly whenever a state lacks an outgoing transition for a particular symbol. For completeness, we say that the head moves right in each of these transitions to the reject state.

The input alphabet of this Turing machine is **{0, 1, +}**, the start state is $\mathbf{q_{right}}$. Answer follow questions:

1. [2pts] (True or False) If language set L = $\{\omega^R \mid \omega \in \{x, xy, xyz\}\}$, then L is prefix-free.
2. [2pts] (True or False) If the computation process of the TM never halting, there are infinite states in its set of states Q.
3. [2pts] What are the state set and tape alphabet of Turing machine *M1*?

4. [2pts] If the start configuration is q_{right}101+10, Turing machine *M1* will enter _____. (accept state, reject state, never halting). If M1 enter accept state or reject state, what is the halting configuration?
5. [2pts] If the start configuration is q_{right}10110, Turing machine *M1* will enter _____. (accept state, reject state, never halting). If M1 enter accept state or reject state, what is the halting configuration?