Homework 1

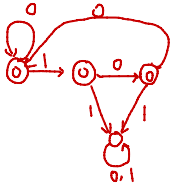
Give DFAs for following languages (1- 4) over the alphabet { 0,1}.
(Notice : give diagram notation for DFA)

1. $L = \{w \in \{0, 1\}^* \mid w \text{ does not end with } 10\}$
2. The set of all strings such that each block of three consecutive symbols contains at least two 0's.
3. The set of strings such that the number of 0's is divisible by 3, and the number of 1's is divisible by 2.
4. $L = \{w \in \{0, 1\}^* \mid w = 0^n1^m0^n,\ m \geq 0,\ 0 \leq n \leq 2\}$
5. Give nondeterministic finite automata to accept the following language. Try to take advantage of non-determinism as much as possible.

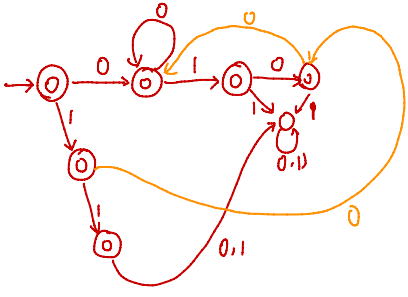
   The set of strings over alphabet {0, 1,..., 9} such that the final digit has appeared before.
6. Design an ε-NFA for the following language. Try to use ε-transitions to simplify your design.

   The set of strings consisting of zero or more a's followed by zero or more b's, followed by zero or more c's.

2.



"11"是否应该接收?



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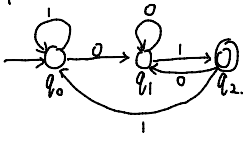
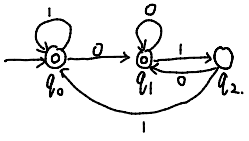
解：先创建一个接收以01结尾的DFA



然后把q_0，q_1设为接收，q_2为普通



1. L= {w ∈ {0, 1}* | w does not end with 10 }

2. The set of all strings such that each block of three consecutive symbols contains at least two 0's.

3. The set of strings such that the number of 0's is divisible by 3