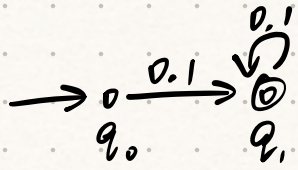
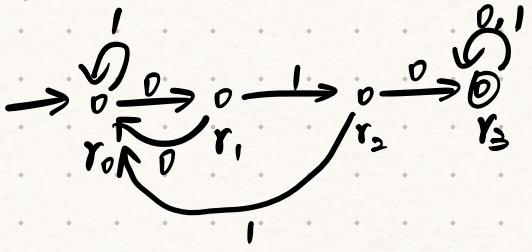
1.

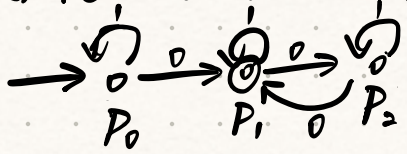
由题，条件①对应的DFA为：



条件②对应的DFA为：



条件③对应的DFA为：

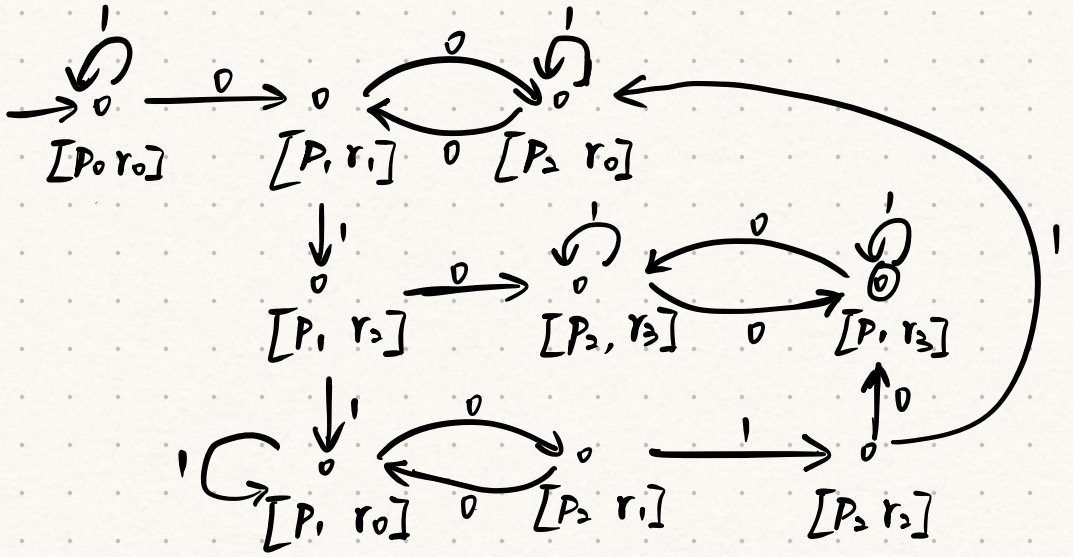


又∵ 满足条件②③的串必定满足条件①

∴ 要求出满足①②③的串

仅需求出条件②③对应的DFA的乘积DFA.

即：



2. 由题可知，文法 $G: S \to 00S1 \mid 01$

对应的语言 $L = \{0^{2n-1}1^n \mid n>1\}$，证明RL

证明：假设 L为RL，则 $z = 0^N 1^{\frac{N+1}{2}}$

此时有 $v = 0^k$，$k \geq 1$

$u = 0^{N-k-j}$，$w = 0^j 1^{\frac{N+1}{2}}$

$\Rightarrow uv^iw = 0^{N-k-j}(0^k)^i 0^j 1^{\frac{N+1}{2}}$

$= 0^{N+(i-1)k} 1^{\frac{N+1}{2}}$

当 $i=2$ 时

$$uv^2w = 0^{N+K}1^{\frac{N+1}{2}} \notin L$$

$\therefore$ L 不为 RL