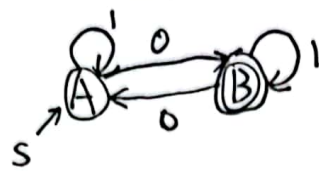
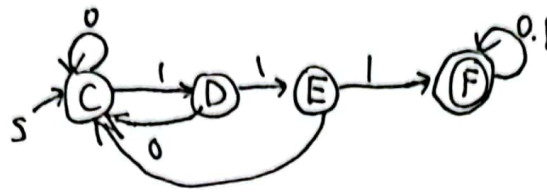


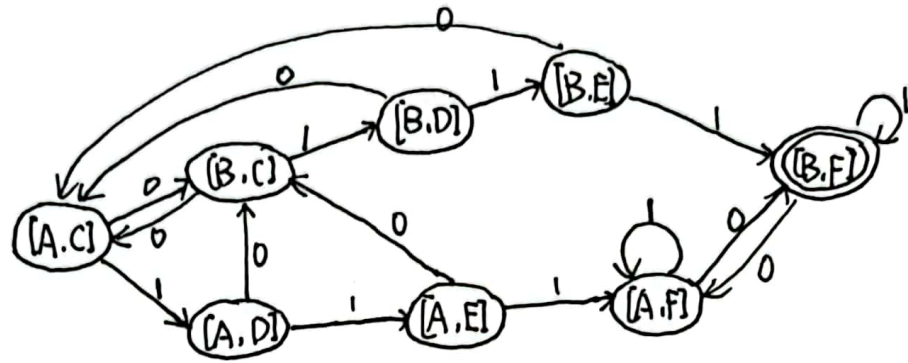
1. 满足条件①②的DFA₁:



满足条件①③的DFA₂:



DFA₁与DFA₂的乘积DFA
满足条件①②③



2. 文法G对应的 $L(G) = \{ (00)^n 011^n \mid n \geq 0 \} = \{ 0^{2n+1} 1^{n+1} \}$

证: 假设 $L(G)$ 为正则语言

取 $z = 0^{2N+1} 1^{N+1}$

设 $v = 0^k$, $k \geq 1$

此时有 $z = uvw$, $u = 0^{2N+1-k-j}$, $v = 0^k$, $w = 0^j 1^{N+1}$

$$uv^i w = 0^{2N+1-k-j} (0^k)^i 0^j 1^{N+1} = 0^{2N+1+(i-1)k} 1^{N+1}$$

当 $i=2$ 时, $uv^2 w = 0^{2N+1+k} 1^{N+1}$

又 $\because k \geq 1$

$\therefore uv^2 w \notin L$, 与泵引理矛盾

$\therefore L(G)$ 不是正则语言

