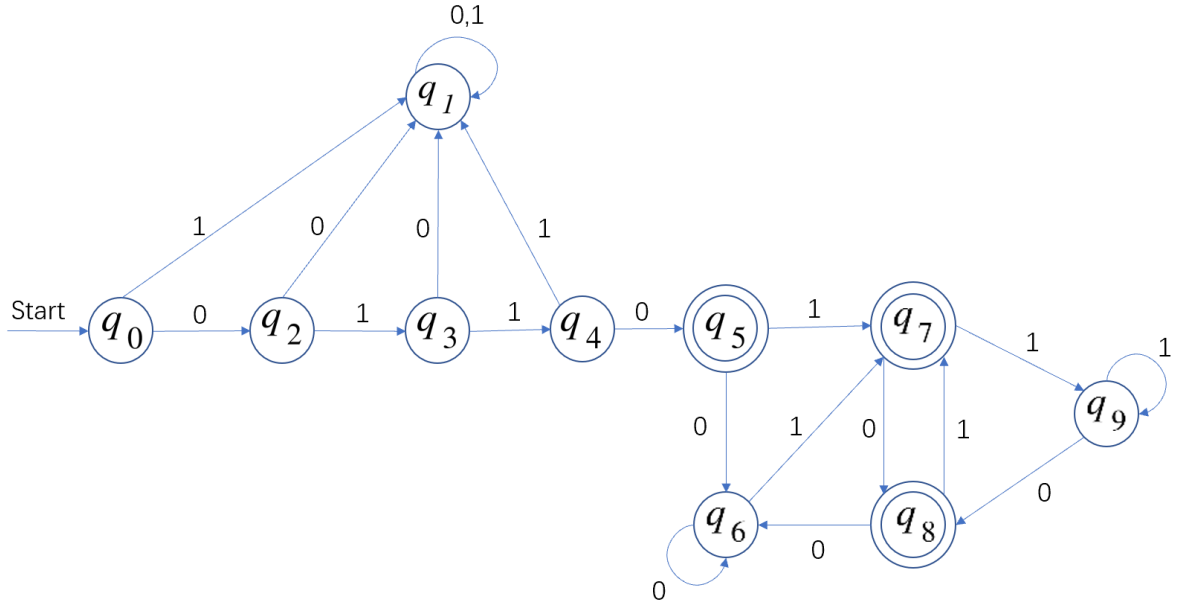1. 根据题意可得集合 $A = \{\varepsilon, \Phi, \{\Phi\}, \{\Phi, \Phi\}\}$ 的幂集如下

$$P(A) = \{\emptyset, \{\Phi\}, \{\varepsilon\}, \{\{\Phi\}\}, \{\{\Phi, \Phi\}\}, \{\varepsilon, \Phi\}, \{\varepsilon, \{\Phi\}\}, \{\varepsilon, \{\Phi, \Phi\}\}, \{\Phi, \{\Phi\}\},$$
$$\{\Phi, \{\Phi, \Phi\}\}, \{\{\Phi\}, \{\Phi, \Phi\}\}, \{\varepsilon, \Phi, \{\Phi\}\}, \{\varepsilon, \Phi, \{\Phi, \Phi\}\}, \{\varepsilon, \{\Phi\}, \{\Phi, \Phi\}\},$$
$$\{\Phi, \{\Phi\}, \{\Phi, \Phi\}\}, \{\varepsilon, \Phi, \{\Phi\}, \{\Phi, \Phi\}\}\}$$

2. 根据题意绘制出如下 DFA

3. 根据题意绘制出如下 DFA