Problem 1:

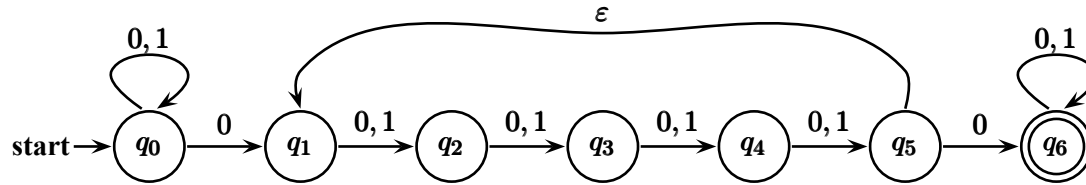**Problem 2:**

The DFA is shown below; the stated colored red are accepting states.