Problem Draw a finite state machine diagram to accept binary strings in which the number of 1's is divisible by three. So, 0, 111 and 01101 are to be accepted and 001, 1111 and 011011 are to be rejected.

Solution The diagram is shown in figure 1. A string with n 1's lands up in state labeled i if the remainder of n divided by 3 is i (i.e., $n \bmod 3 = i$).
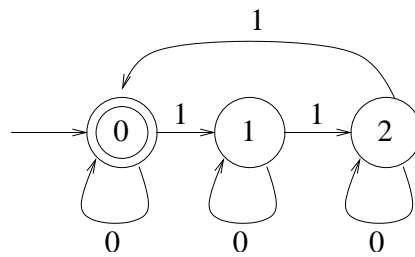

Figure 1: Accept binary strings in which the number of 1s is divisible by three