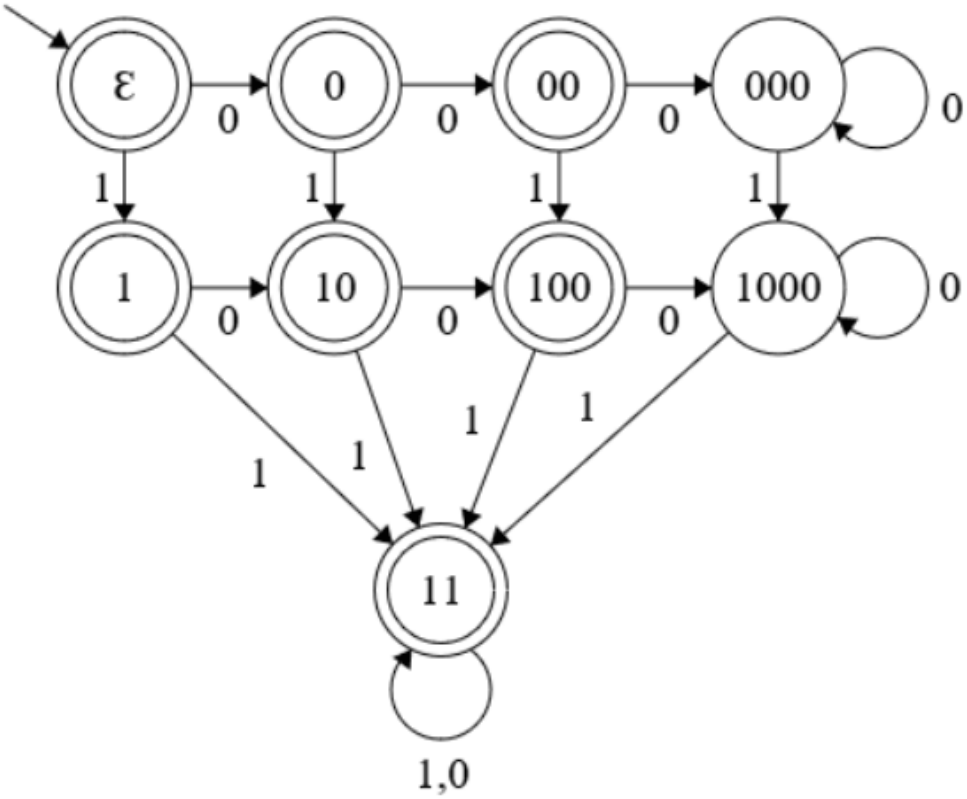
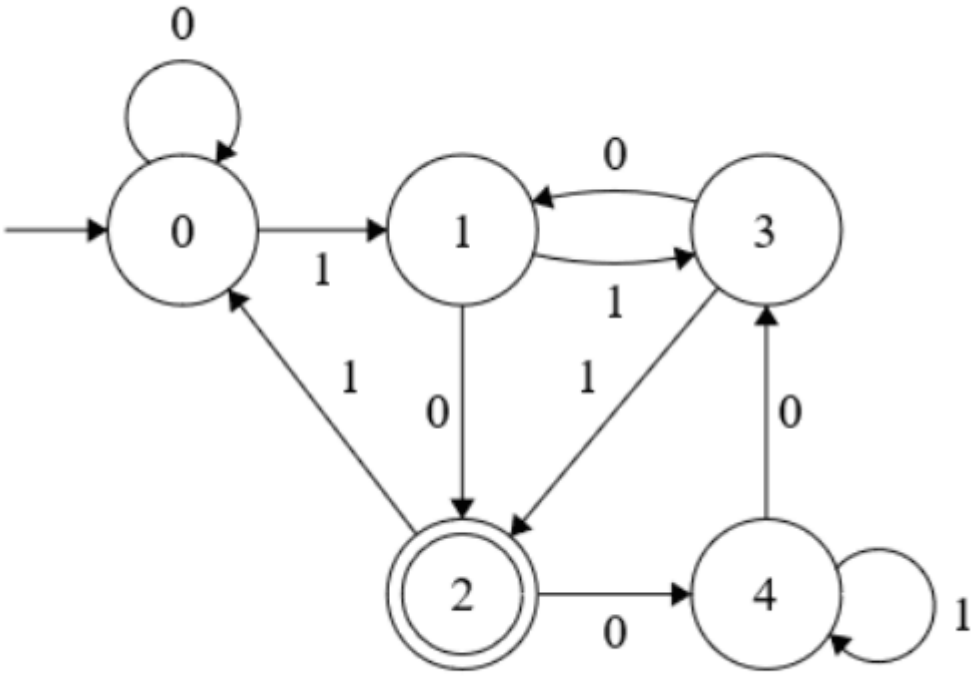
1.DFAs
(a)



Ɛ: start state, representing empty string

0: “0” **00**: ”00” **1**: ”1”
000: “0000*”
10: “10” or “01”
100: “001” or “010” or “100”
1000: “0000*10*” or “00100*” or “01000*” or “10000*”
11: any binary strings that has at least two 1’s

(b)



0: start state, binary strings that is congruent to 0 modulo 5
Such as “00”, “11001”(25), “100011”(35) etc.

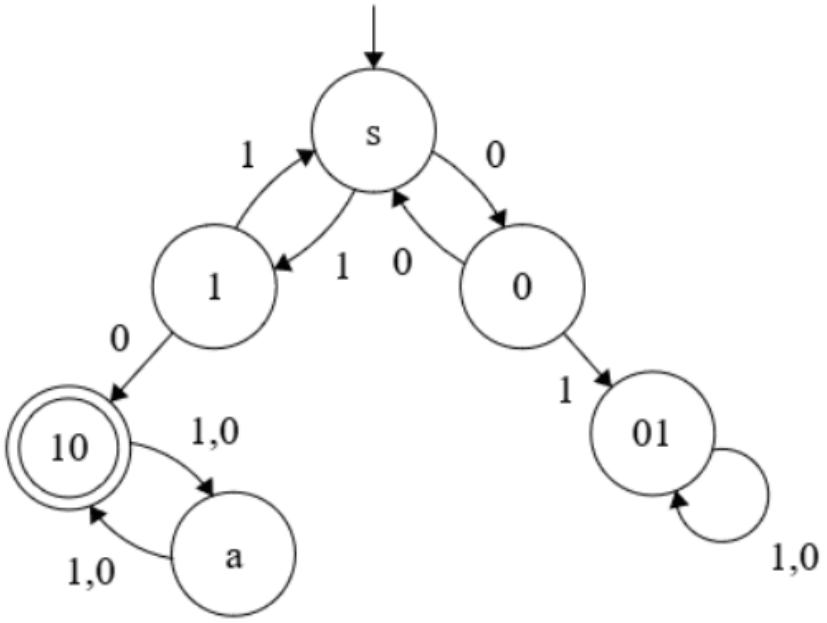
1: binary strings that is congruent to 1 modulo 5
Such as “01”, “10000”(16), “1011011011”(731) etc.

2: binary strings that is congruent to 2 modulo 5
Such as “10”, “111”, “10001110001”(1137) etc.

3: binary strings that is congruent to 3 modulo 5
Such as “11”, “1101”, “100001010101010101”(546133) etc.

4: binary strings that is congruent to 4 modulo 5
Such as “100”, “1110”, “100010010010010”(17554) etc.

(c)



S: start state, (11U00)*
1: (11U00)*1
0: (11U00)*0
01: (11U00)*01(0U1)*
10: (11U00)*10((1U0)(1U0))*
a: (11U00)*10((1U0)(1U0))*(1U0)