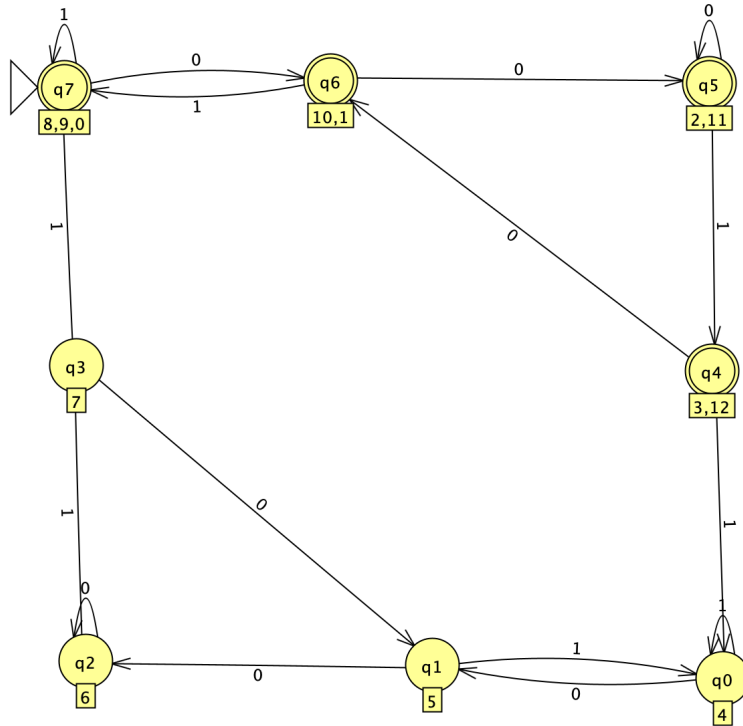# Week 3 HW, credit tasks

a)

From the DFA constructed for W2 Pass f) or Credit c), we can construct a regex which doesn't contain '011' as substring as

$$1^*(0^*|1 \cdot 0)^*$$

b)

After the resubmission of W2 Distinction tasks, the DFA is ready.

DFA obtained for W2 D_2a

The regex for this graph can be obtained by listing out states:

- $q_7 = \epsilon|q_6 1|q_3 1|q_7 1$
- $q_6 = q_7 0|q_4 0$
- $q_5 = q_6 0|q_5 0$
- $q_4 = q_5 1$
- $q_0 = q_4 1|q_0 1|q_1 1$
- $q_1 = q_3 0|q_0 0$

- $q_2 = q_1 0 | q_2 0$
- $q_3 = q_2 1$

After collapsing states and solving simultaneously, we can obtain a final regex, in multiple rows

$$(1|01|000^*1(000*1)^*01|000^*1(000^*1)^*11^*0(11^*0)^*01^*1(0(11^*0)^*01^*1)^*1)^* \cdot$$

$$(\epsilon|0|000^*|000^*1(000^*1)^*(\epsilon|0|000^*))$$