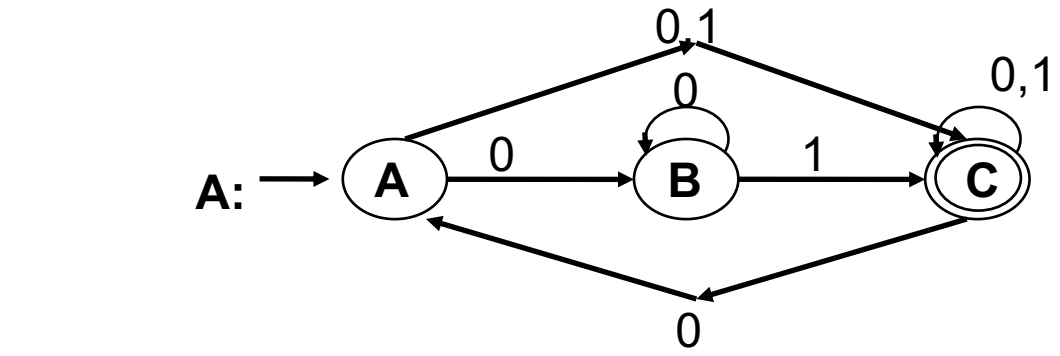
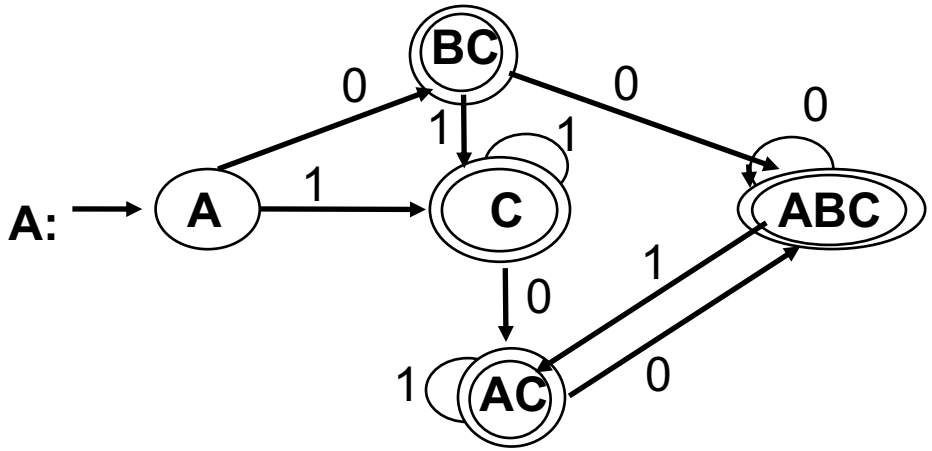
Assignment # 4.1 Key

Convert the following NFA to an equivalent DFA.





Yes, we know this can be reduced to 2 states.

Assignment # 4.2 Key (partial)

A = λ
C = A1 + BC1 + C1
BC = A0
AC = C0 + AC1 + ABC1
ABC = BC0 + AC0 + ABC0

BC = 0
C = 1+01+C1 = (1+01)1*
AC = (1+01)1*0 + ABC1 + AC1 = ((1+01)1*0 + ABC1)1* = ((1+01)1*01* + ABC1$^+$
ABC = 00 + (1+01)1*01*0 + ABC(1$^+$ + 0) = (00 + (1+01)1*01*0)(1$^+$+0)*
= (00 + (1+01)1*01*0)(1+0)*
AC = (1+01)1*01* + (00 + (1+01)1*01*0)(1+0)*1$^+$
L = 0 + (1+01)1* + (1+01)1*01* + (00 + (1+01)1*01*0)(1+0)*1$^+$
+ (00 + (1+01)1*01*0)(1+0)*
= 0 + (1+01)1* + (1+01)1*01* + (00 + (1+01)1*01*0)(1+0)*
= 0 + (00+1+01)(1+0)* // have to look at all possibilities covered above
=(0+1)$^+$ Language just says must start with 0 or 1

Assignment # 4.3

3. a.) Minimize the number of states in the following DFA, showing the determination of incompatible states (table on right).

	a	b	c
>1	4	6	2
2	5	2	1
3	4	6	4
4	5	4	3
5	3	6	1
6	5	6	3

2	4,5 X' 2,6 X'				
3	2,4	4,5 X' 2,6 X' 1,4 X"			
4	4,5 X' 4,6 X' 2,3	1,3	4,5 X' 4,6 X'		
5	X	X	X	X	
6	X	X	X	X	3,5 X 1,3
	>1	2	3	4	5

b.) States are: <1,3>, <2,4>, <5>, <6> (Can show DFA in Help Session)