CS 1622 – Homework 2
Due: Tuesday, February 27, 2018 at the start of class

Please submit a typewritten document. I'd prefer you draw your DFA on the computer, but if this is a challenge, you may hand draw them neatly on the paper by hand.
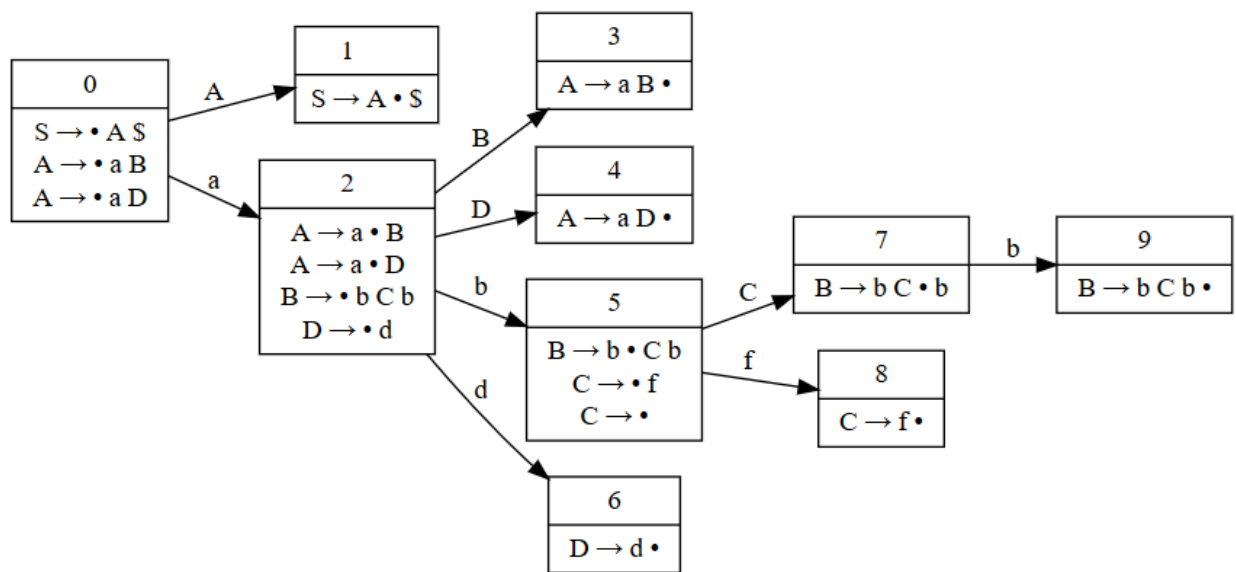
1.) Construct the DFA of LR(0) items for the following grammar:

$$A \rightarrow a\ B\ |\ a\ D$$

$$B \rightarrow b\ C\ b$$

$$C \rightarrow \varepsilon\ |\ f$$

$$D \rightarrow d$$

2.) Build the SLR parse table for the above grammar. Show the Follow sets you built to determine the reduce actions.

FOLLOW

A	$
B	$
C	b
D	$

STATE	a	b	f	d	$	A	B	D	C
0	s2					g1			
1					a				
2		s5		s6			g3	g4	
3					r($A \rightarrow$ a B)				
4					r($A \rightarrow$ a D)				
5		r($C \rightarrow \varepsilon$)	s8						g7
6					r($D \rightarrow$ d)				
7		s9							
8		r($C \rightarrow$ f)							
9					r($B \rightarrow$ b C b)				

3.) Show an SLR parse for the input:

    a b b

Show the stack, input, and actions in an action table as was done in the slides.

Stack	Input	Action
$ s0	a b b $	Shift state 2
$ s0 a s2	b b $	Shift state 5
$ s0 a s2 b s5	b $	Reduce by $C \rightarrow \varepsilon$
$ s0 a s2 b s5 C	b $	Goto state 7
$ s0 a s2 b s5 C s7	b $	Shift state 9
$ s0 a s2 b s5 C s7 b s9	$	Reduce by $B \rightarrow$ b C b
$ s0 a s2 B	$	Goto state 3
$ s0 a s2 B s3	$	Reduce $A \rightarrow$ a B
$ s0 A	$	Goto state 1
$ s0 A s1	$	**Accept**