Consider a 4 POS tag system

N: common noun OR proper noun  
A: adjective  
P: preposition  
D: determiner (the,this,that)

Here are three classes of noun phrases. For each,
1. Write a rule system that can parse all of them as the nonterminal N'  
   (called “N-bar” in “x-bar” syntactic theory)  
2. Write the parse tree for each of the given tag sequences

Class 1

N  car  
AN red car  
AAN big red car  
ANN full cabinet drawer  

…

(A >= 0 times) (N >=1 times)  
a.k.a.  A* N+

Make sure to exclude:  
[bad!] NA  
[bad!] NAAN  
[bad!] A

Class 2

NPN  car with passengers  
ANPN red car with zest  
NPAN car with awesome crap  

...  
A* N+ P A* N+

Make sure to exclude:
[bad!] NPPN  
[bad!] NPA  
[bad!] APN

Class 3

NPDN soup with the salad  
NPDAN soup with the good salad  

...  

Make sure to exclude:
[bad!] NPDDN  
[bad!] NPDAADN