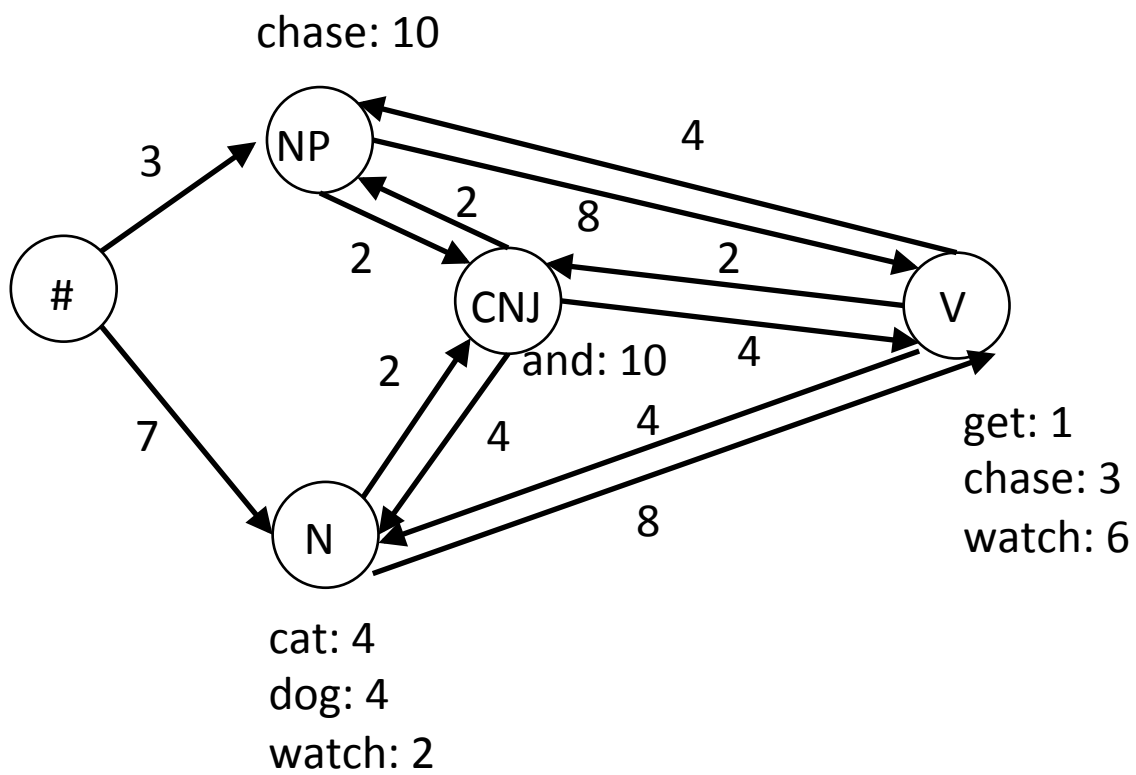


Programming Drill: Hidden Markov Model

1 A part of speech model

Make up some sentences following paths through this graph, starting at “#”. Score each sentence by adding transition and observation scores.



2 Viterbi

Assume that unseen (U) is -10 .

Fill in the table, calculating $\text{Score} = \text{currScore} + \text{transitionScore} + \text{observationScore}$.

The winning nextScore for a state at one observation is used as its currScore when propagating to the next observation.

#	observation	nextState	currState	nextScore	winner?	backtrace
start	n/a	#	n/a	0	Y	
0	chase	N	start	$0 + 7 - 10 = -3$	Y	
		NP	start	$0 + 3 + 10 = 13$	Y	
1	watch					
2	dog					
3	chase					
4	watch					

3 Training

Listing 1: Training Data

```
1 cat/N chase/V dog/N
2 cat/N watch/V chase/NP
3 chase/NP get/V watch/N
4 chase/NP watch/V dog/N and/CNJ cat/N
5 dog/N watch/V cat/N watch/V dog/N
6 cat/N watch/V watch/N and/CNJ chase/NP
7 dog/N watch/V and/CNJ chase/V chase/NP
```

3.1 Emission map

tag \ word	and	cat	chase	dog	get	watch	normalize by
CNJ	3	0	0	0	0	0	3
N							
NP							
V							

3.2 Transmission map

From \ To	CNJ	N	NP	V	normalize by
#	0	5	2	0	7
CNJ					
N					
NP					
V					