CptS 540 Artificial Intelligence
hw11
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1.

a.

Iteration	U(1, 1)	U(1, 2)	U(1, 3)	U(2, 1)	U(2, 3)	U(3, 1)
0	0	0	0	0	0	0
1	-0.04	-0.04	-0.04	-0.04	-0.04	0.68
2	-0.08	-0.08	-0.08	0.44	-0.08	0.74
3	0.26	-0.11	-0.11	0.57	-0.11	0.79
4	0.38	0.13	-0.14	0.63	-0.14	0.8
5	0.46	0.26	0.03	0.65	-0.17	0.81

b.

Iteration	Q(1, 1, right)	Q(2, 1, right)	Q(3, 1, up)
0	0	0	0
1	-0.04	-0.04	0.77
2	-0.07	0.58	0.85
3	0.43	0.71	0.86
4	0.58	0.73	0.86
5	0.61	0.73	0.86
6	0.62	0.73	0.86
7	0.62	0.73	0.86

2.

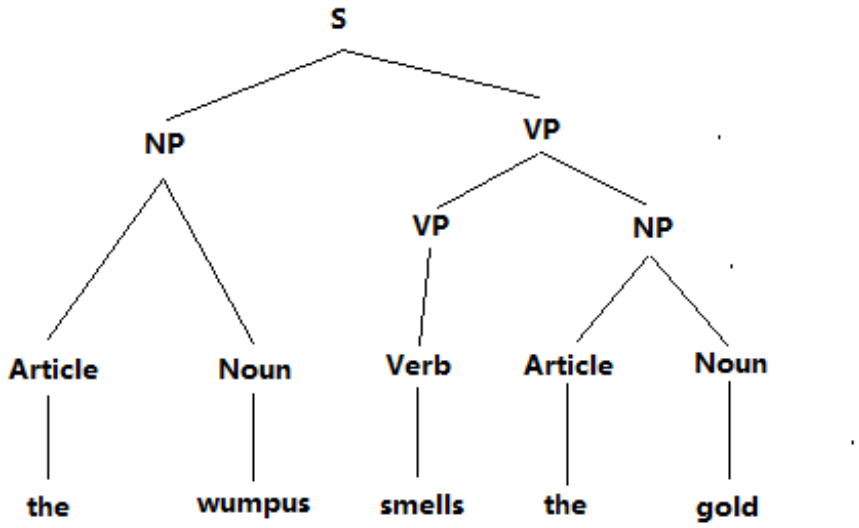
a. $P(\text{"}the\ wumpus\ smells\ the\ gold\text{"})$
$= P(wumpus|the)P(smells|wumpus)P(the|smells)P(gold|the)$
$= \frac{P(the\ wumpus)}{P(the)} * \frac{P(wumpus\ smells)}{P(wumpus)} * \frac{P(smells\ the)}{P(smells)} * \frac{P(the\ gold)}{P(the)}$
$= 0.5 * 0.45 * 0.67 * 0.13$
$= 0.02$

b. $P(\text{"}the\ wumpus\ is\ dead\text{"})$
$= P(wumpus|the)P(is|wumpus)P(dead|is)$
$= \frac{P(the\ wumpus)}{P(the)} * \frac{P(wumpus\ is)}{P(wumpus)} * \frac{P(is\ deas)}{P(is)}$
$= 0.5 * 0.55 * 1$
$= 0.28$

3.

a. “the wumpus smells the gold”

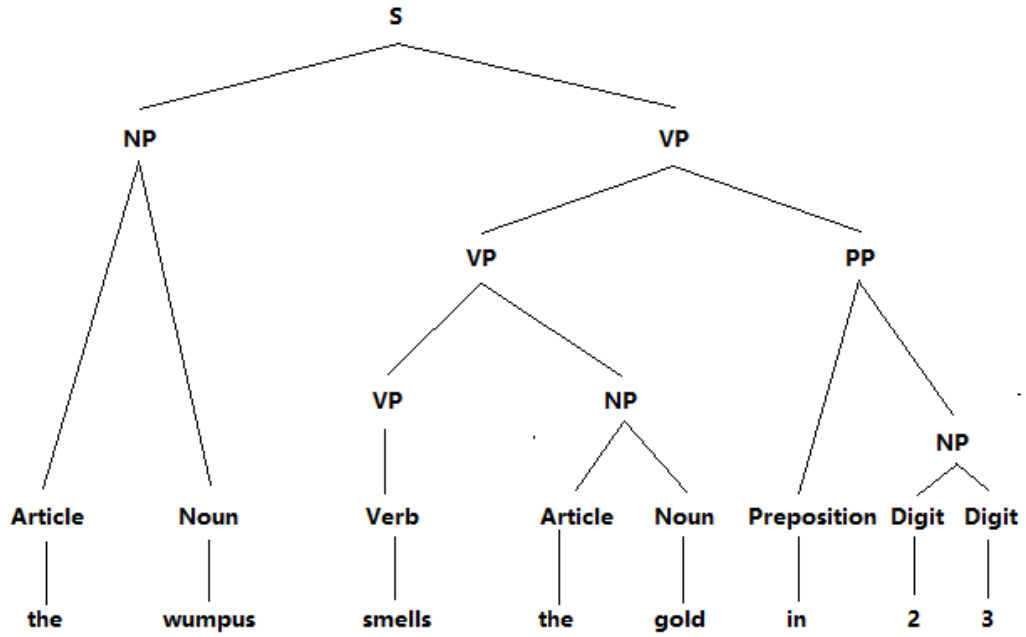
Only have one parse tree



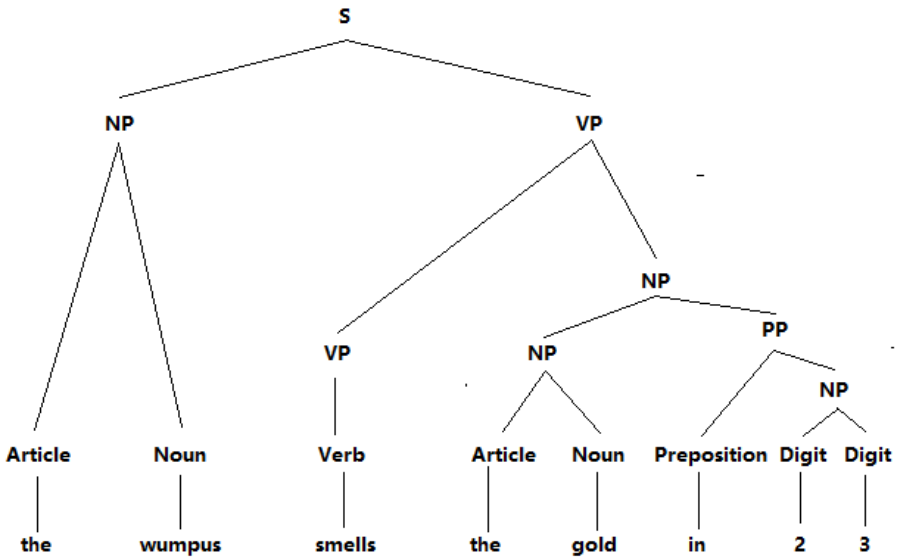
b. “the wumpus smells the gold in 2 3”

Have two possible parse trees:

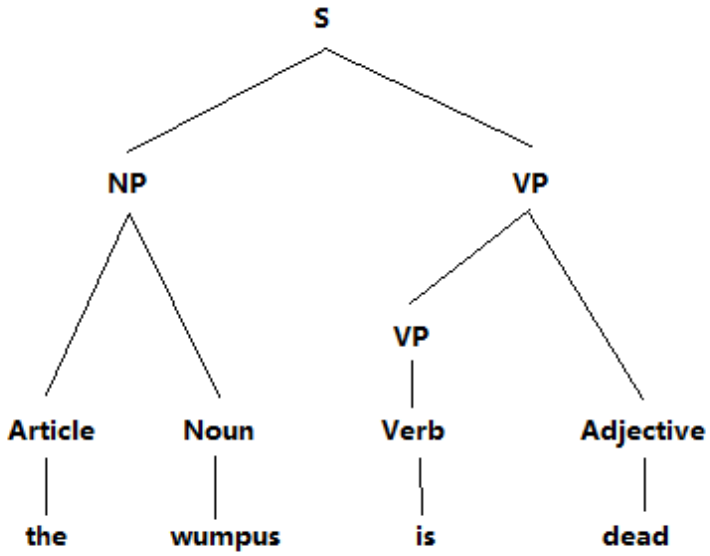
- “in 2 3” refers to the wumpus



- “in 2 3” refers to the gold

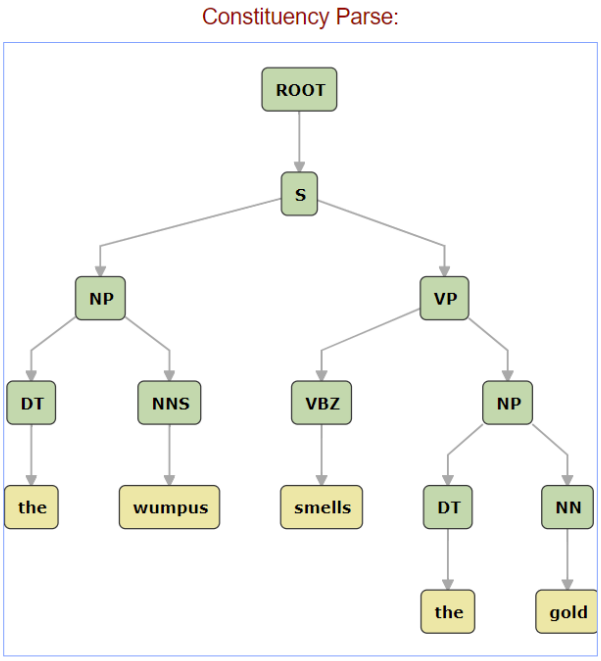


c. “the wumpus is dead”

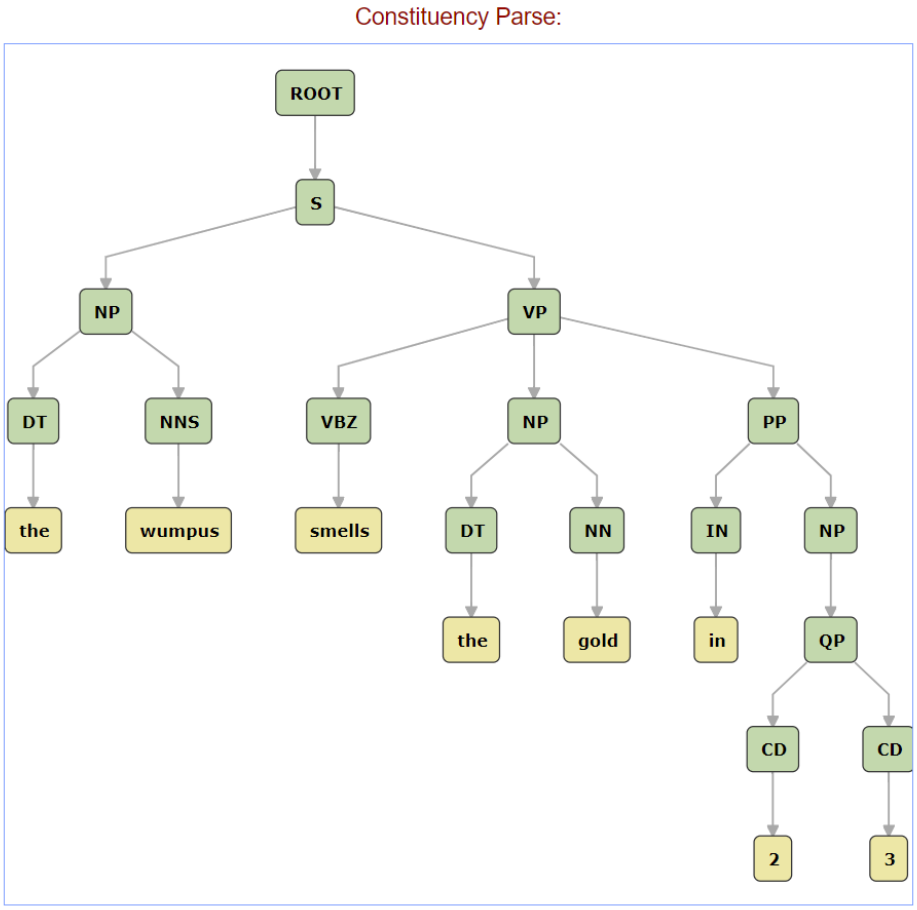


4.

a.

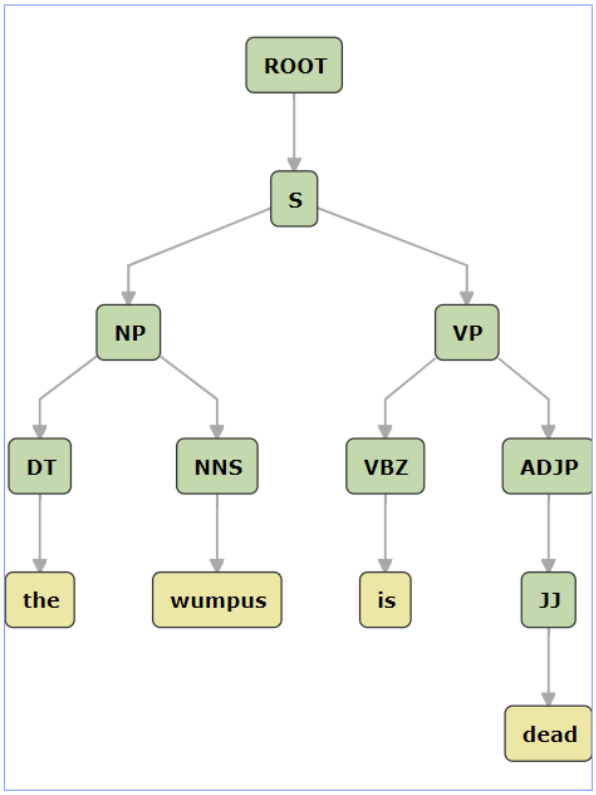

Constituency Parse:
ROOT
S
NP
VP
DT
NNS
VBZ
NP
the
wumpus
smells
DT
NN
the
gold

b.


Constituency Parse:
ROOT
S
NP
VP
DT
NNS
VBZ
NP
PP
the
wumpus
smells
DT
NN
IN
NP
the
gold
in
QP
CD
CD
2
3

c.

Constituency Parse:



5.

Iteration	U(1, 1)	U(1, 2)	U(1, 3)	U(2, 1)	U(2, 3)	U(3, 1)
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3	0.26	-0.11	-0.11	0.57	-0.11	0.79
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5	0.46	0.26	0.03	0.65	-0.17	0.81
6	0.49	0.34	0.13	0.66	-0.05	0.81
7	0.51	0.37	0.21	0.66	0.04	0.81
8	0.51	0.39	0.25	0.66	0.12	0.81
9	0.52	0.4	0.28	0.66	0.18	0.81
10	0.52	0.41	0.3	0.66	0.19	0.81
11	0.52	0.41	0.3	0.66	0.21	0.81
12	0.52	0.41	0.3	0.66	0.21	0.81