

Question

S --> NP VP	0.9
S --> VP	0.1
VP --> V NP	0.5
VP --> V	0.1
VP --> V IN	0.3
VP --> V PP	0.1
NP --> NP NP	0.1
NP --> NP PP	0.2
NP --> N	0.7
PP --> P NP	1
IN --> NP PP	1

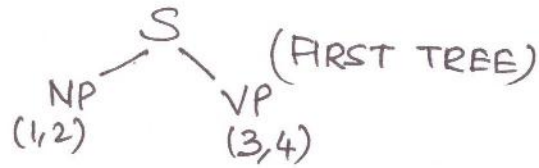
N --> People	0.5
N --> Fish	0.2
N --> Tanks	0.2
N --> rods	0.1
V --> People	0.1
V --> Fish	0.6
V --> Tanks	0.3
P --> with	1

Sentence

FISH PEOPLE FISH TANKS

	FISH	PEOPLE	FISH	TANKS
FISH	<p>N → fish (0.2)</p> <p>V → fish (0.6)</p> <p>NP → N (0.7 × 0.2 = 0.14)</p> <p>VP → V (0.6 × 0.1 = 0.06)</p> <p>S → VP (0.06 × 0.1 = 0.006)</p>	<p>VP → V NP (0.6 × 0.35 × 0.5 = 0.105)^v</p> <p>NP → NP NP (0.14 × 0.35 × 0.1 = 0.0049)</p> <p>S → NP VP // S → VP (0.0105)^v</p> <p>(0.14 × 0.01 × 0.9 = 0.00126)</p>	<p>VP → V NP max(0.6 × 0.0049 × 0.5) = 0.00147</p> <p>NP → NP NP (0.0049 × 0.14 × 0.1) = 0.0000686</p> <p>S → NP VP (0.9 × 0.14 × 0.007 = 0.0002646)</p>	
PEOPLE	*	<p>N → people (0.5)</p> <p>V → people (0.1)</p> <p>NP → N (0.5 × 0.7 = 0.35)</p> <p>VP → V (0.1 × 0.1 = 0.01)</p> <p>S → VP (0.1 × 0.1 = 0.001)</p>	<p>VP → V NP (0.1 × 0.14 × 0.5 = 0.007)^x</p> <p>NP → NP NP (0.35 × 0.14 × 0.1 = 0.0049)</p> <p>S → NP VP // S → VP (0.0007)^x</p> <p>(0.35 × 0.06 × 0.9 = 0.0189)^v</p>	
FISH	*	*	<p>COPY</p> <p>N → fish (0.2)</p> <p>V → fish (0.6)</p> <p>NP → N (0.14)</p> <p>VP → V (0.06)</p> <p>S → VP (0.006)</p>	<p>VP → V NP (0.6 × 0.14 × 0.5 = 0.042)^v</p> <p>NP → NP NP (0.14 × 0.14 × 0.1 = 0.00196)</p> <p>S → NP VP // S → VP (0.0042)^v</p> <p>(0.14 × 0.03 × 0.9 = 0.00378)</p>
TANKS	*	*	*	<p>N → tanks (0.2)</p> <p>V → tanks (0.3)</p> <p>NP → N (0.2 × 0.7 = 0.14)</p> <p>VP → V (0.3 × 0.1 = 0.03)</p> <p>S → VP (0.03 × 0.1 = 0.003)</p>

	FISH	PEOPLE	FISH	TANKS
FISH	<p>N → fish (0.2) V → fish (0.6) ----- NP → N (0.7 × 0.2 = 0.14) VP → V (0.6 × 0.1 = 0.06) ----- S → VP (0.06 × 0.1 = 0.006)</p>	<p>VP → V NP (0.6 × 0.35 × 0.5 = 0.105)^v NP → NP NP (0.14 × 0.35 × 0.1 = 0.0049) S → NP VP // S → VP (0.0105)^v (0.14 × 0.01 × 0.9 = 0.00126)</p>	<p>VP → V NP Max(0.6 × 0.0049 × 0.5) = 0.00147 NP → NP NP (0.0049 × 0.14 × 0.1) = 0.0000686 S → NP VP (0.9 × 0.14 × 0.007 = 0.0002646)</p>	
PEOPLE	*	<p>N → people (0.5) V → people (0.1) ----- NP → N (0.5 × 0.7 = 0.35) VP → V (0.1 × 0.1 = 0.01) ----- S → VP (0.1 × 0.1 = 0.001)</p>	<p>VP → V NP (0.1 × 0.14 × 0.5 = 0.007)^x NP → NP NP (0.35 × 0.14 × 0.1 = 0.0049) S → NP VP // S → VP (0.007)^x (0.35 × 0.06 × 0.9 = 0.0189)^v</p>	<p>VP → V NP (0.1 × 0.00196 × 0.5 = 0.000098) NP → NP NP (0.35 × 0.00196 × 0.1 = 0.0000686) S → NP VP (0.35 × 0.042 × 0.9 = 0.0001323)</p>
FISH	*	*	<p>COPY N → fish (0.2) V → fish (0.6) ----- NP → N (0.14) VP → V (0.06) ----- S → VP (0.006)</p>	<p>VP → V NP (0.6 × 0.14 × 0.5 = 0.042)^v NP → NP NP (0.14 × 0.14 × 0.1 = 0.00196) S → NP VP // S → VP (0.0042)^v (0.14 × 0.03 × 0.9 = 0.00378)</p>
TANKS	*	*	*	<p>N → tanks (0.2) V → tanks (0.3) NP → N (0.2 × 0.7 = 0.14) VP → V (0.3 × 0.1 = 0.03) S → VP (0.03 × 0.1 = 0.003)</p>



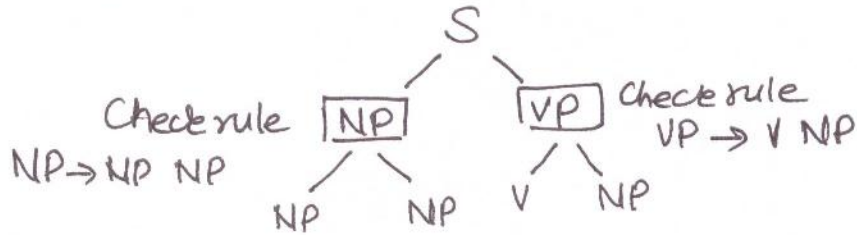
Selected cells for
 $S \rightarrow NP \quad VP$
 (1,2) (3,4)

3

	FISH 1	PEOPLE 2	FISH 3	TANKS 4
FISH 1	$N \rightarrow \text{fish} (0.2)$ $V \rightarrow \text{fish} (0.6)$ $NP \rightarrow N (0.7 \times 0.2 = 0.14)$ $VP \rightarrow V (0.6 \times 0.1 = 0.06)$ $S \rightarrow VP (0.06 \times 0.1 = 0.006)$	$VP \rightarrow V NP \quad \bullet \bullet$ $(0.6 \times 0.35 \times 0.5 = 0.105)^{\sim}$ $NP \rightarrow NP NP$ $(0.14 \times 0.35 \times 0.1 = 0.0049)$ $S \rightarrow NP VP \parallel S \rightarrow VP (0.0105)^{\sim}$ $(0.14 \times 0.01 \times 0.9 = 0.00126)$	$VP \rightarrow V NP$ $\text{Max}(0.6 \times 0.0049 \times 0.5)$ $= 0.00147$ $NP \rightarrow NP NP$ $(0.0049 \times 0.14 \times 0.1)$ $= 0.0000686$ $S \rightarrow NP VP$ $(0.9 \times 0.14 \times 0.007 = 0.0002646)$	$VP \rightarrow V NP$ $(0.6 \times 0.0000686 \times 0.5)$ $= 0.00002058$ $NP \rightarrow NP NP$ $(0.14 \times 0.0000686 \times 0.1 = 0.000009604)$ $(0.0049 \times 0.00196 \times 0.1 = 0.000009604)$ $(0.0000686 \times 0.14 \times 0.1 = 0.000009604)$ $S \rightarrow NP VP (0.14 \times 0.000098 \times 0.9)^{\times}$
PEOPLE 2	*	$N \rightarrow \text{people} (0.5)$ $V \rightarrow \text{people} (0.1)$ $NP \rightarrow N (0.5 \times 0.7 = 0.35)$ $VP \rightarrow V (0.1 \times 0.1 = 0.01)$ $S \rightarrow VP (0.1 \times 0.1 = 0.001)$	$VP \rightarrow V NP$ $(0.1 \times 0.14 \times 0.5 = 0.007)^{\times}$ $NP \rightarrow NP NP$ $(0.35 \times 0.14 \times 0.1 = 0.0049)$ $S \rightarrow NP VP \parallel S \rightarrow VP (0.0007)^{\times}$ $(0.35 \times 0.06 \times 0.9 = 0.0189)^{\sim}$	$VP \rightarrow V NP$ $(0.1 \times 0.00196 \times 0.5)$ $= 0.000098$ $NP \rightarrow NP NP$ $(0.35 \times 0.00196 \times 0.1)$ $= 0.0000686$ $S \rightarrow NP VP$ $(0.35 \times 0.042 \times 0.9 = 0.0001323)$
FISH 3	*	*	COPY $N \rightarrow \text{fish} (0.2)$ $V \rightarrow \text{fish} (0.6)$ $NP \rightarrow N (0.14)$ $VP \rightarrow V (0.06)$ $S \rightarrow VP (0.006)$	$VP \rightarrow V NP \quad \bullet \bullet$ $(0.6 \times 0.14 \times 0.5 = 0.042)^{\sim}$ $NP \rightarrow NP NP$ $(0.14 \times 0.14 \times 0.1 = 0.00196)$ $S \rightarrow NP VP \parallel S \rightarrow VP (0.0042)^{\sim}$ $(0.14 \times 0.03 \times 0.9 = 0.00378)$
TANKS 4	*	*	*	$N \rightarrow \text{tanks} (0.2)$ $V \rightarrow \text{tanks} (0.3)$ $NP \rightarrow N (0.2 \times 0.7 = 0.14)$ $VP \rightarrow V (0.3 \times 0.1 = 0.03)$ $S \rightarrow VP (0.03 \times 0.1 = 0.003)$

$(0.000098 \times 0.9)^{\times}$
 \downarrow
 $(0.0049 \times 0.9)^{\times}$
 \downarrow
 $(0.0042 \times 0.9)^{\times}$
 \downarrow
 $(0.0018522)^{\times}$
 \downarrow
 $(0.0000686 \times 0.9)^{\times}$
 \downarrow
 $(0.03 \times 0.9)^{\times}$
 \downarrow
 $(0.000018)^{\times}$

SECOND TREE



THIRD TREE

