NLP (CSCE-689) – REPORT (Programming Assignment #3)

Name – Shiva Kumar Pentyala
UIN - 127003995

---

1. Compile and Execution

I have used python 2. Follow the below Steps –

1. Unzip the file.
2. cd into this folder
3. python cky.py grammar_rules.txt sents.txt
4. Output will get printed on the terminal
5. Output – 2 things
    a. All final and intermediate probabilities generated during the parsing process
    b. **Extra** – I'm also printing level order traversal of the tree

2. Results and Analysis

PROCESSING SENTENCE: fish people fish tanks

SPAN: fish
P(N) = 0.2
P(V) = 0.6
P(VP) = 0.06 (BackPointer = V)
P(NP) = 0.14 (BackPointer = N)
P(S) = 0.006 (BackPointer = VP)
SPAN: people
P(N people) = 0.5
P(V people) = 0.1
P(VP) = 0.01 (BackPointer = V)
P(NP) = 0.35 (BackPointer = N)
P(S) = 0.001 (BackPointer = VP)
SPAN: fish
P(N fish) = 0.2
P(V fish) = 0.6
P(VP) = 0.06 (BackPointer = V)
P(NP) = 0.14 (BackPointer = N)
P(S) = 0.006 (BackPointer = VP)
SPAN: tanks
P(N tanks) = 0.2
P(V tanks) = 0.3
P(VP) = 0.03 (BackPointer = V)
P(NP) = 0.14 (BackPointer = N)
P(S) = 0.003 (BackPointer = VP)
SPAN: fish people
P(NP) = 0.0049 (BackPointer = (1, NP, NP))

P(VP) = 0.105 (BackPointer = (1, V, NP))
P(S) = 0.0105 (BackPointer = VP)
SPAN: people fish
P(NP) = 0.0049 (BackPointer = (2, NP, NP))
P(S) = 0.0189 (BackPointer = (2, NP, VP))
SPAN: fish tanks
P(NP) = 0.00196 (BackPointer = (3, NP, NP))
P(VP) = 0.042 (BackPointer = (3, V, NP))
P(S) = 0.0042 (BackPointer = VP)
SPAN: fish people fish
P(NP) = 0.0000686 (BackPointer = (1, NP, NP))
P(VP) = 0.00147 (BackPointer = (1, V, NP))
P(S) = 0.000882 (BackPointer = (1, NP, VP))
SPAN: people fish tanks
P(NP) = 0.0000686 (BackPointer = (3, NP, NP))
P(VP) = 0.000098 (BackPointer = (2, V, NP))
P(S) = 0.01323 (BackPointer = (2, NP, VP))
SPAN: fish people fish tanks
P(NP) = 0.0000009604 (BackPointer = (1, NP, NP))
P(VP) = 0.00002058 (BackPointer = (1, V, NP))
P(S) = 0.00018522 (BackPointer = (2, NP, VP))

Level order Traversal of the Tree is as below :
S
NP VP
NP NP V NP
N N N

3. Limitations for this program –

1. order of printing is little different like p(NP) is printed after p(VP) but the values are the same as that of the sample output given.

4. Extra work:

1. At the end, I'm also printing the Level order Traversal of the parse tree.

Thank you