**Question 2: POS Tagging Probabilities: Word Likelihoods**

**1: P(is|VBZ) and P(has|VBZ)**

**Found a match:**

['VBZ', 'VBZ']

Number of matches: **2**

Found a match:

[]

Number of matches: **0**

Transition Probability - **P(is|VBZ)** is: **0**

Found a match:

['VBZ', 'VBZ']

Number of matches: 2

Found a match:

['VBZ/ has']

Number of matches: 1

Count (VBZ) is: **2**

Count (has VBZ): **1**

Transition Probability - **P(has|VBZ)** is: **0.5**

**2: P(moon|NN) and P(earth|NN)**

**Found a match:**

['NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN']

Number of matches: 33

Found a match:

['NN/ moon', 'NN/ moon']

Number of matches: 2

Count (NN) is: 33

Count (has NN): 2

Transition Probability - **P(moon|NN)** is: **0.06**

**Found a match:**

['NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN', 'NN']

Number of matches: 33

Found a match:

['NN/ earth']

Number of matches: 1

Count (NN) is: **33**

Count (earth NN): **1**

Transition Probability - **P(earth|NN)** is: **0.03**

**3: P(small|JJ) and P(fragile|JJ)**

**Found a match:**

['JJ', 'JJ', 'JJ', 'JJ', 'JJ', 'JJ', 'JJ', 'JJ', 'JJ', 'JJ', 'JJ']

Number of matches: 11

Found a match:

['JJ/ small']

Number of matches: 1

Count (JJ) is: **11**

Count (small JJ): **1**

Transition Probability - **P(small|JJ)** is: **0.09**

**Found a match:**

['JJ', 'JJ', 'JJ', 'JJ', 'JJ', 'JJ', 'JJ', 'JJ', 'JJ', 'JJ', 'JJ']

Number of matches: 11

Found a match:

['JJ/ fragile']

Number of matches: 1

Count (JJ) is: 11

Count (fragile JJ): 1

Transition Probability - **P(fragile|JJ)** is: **0.09**

**4: P(one|CD) and P(six|CD)**

**Found a match:**

['CD', 'CD', 'CD', 'CD', 'CD', 'CD']

Number of matches: 6

Found a match:

['CD/ one', 'CD/ one']

Number of matches: 2

Count (CD) is: **6**

Count (one CD): **2**

Transition Probability - **P(one|CD)** is: **0.33**

**Found a match:**

['CD', 'CD', 'CD', 'CD', 'CD', 'CD']

Number of matches: 6

Found a match:

['CD/ six']

Number of matches: 1

Count (CD) is: **6**

Count (six CD): **1**

Transition Probability - **P(six|CD)** is: **0.17**

**5: P(Mr.|NNP) and P(Eagle|NNP)**

**Found a match:**

['NNP', 'NNP', 'NNP', 'NNP', 'NNP', 'NNP', 'NNP', 'NNP', 'NNP', 'NNP', 'NNP', 'NNP', 'NNP', 'NNP', 'NNP', 'NNP', 'NNP', 'NNP', 'NNP', 'NNP', 'NNP', 'NNP', 'NNP', 'NNP', 'NNP']

Number of matches: 25

Found a match:

['NNP/ Mr', 'NNP/ Mr']

Number of matches: 2

Count (NNP) is: **25**

Count (Mr NNP): **2**

Transition Probability - **P(Mr.|NNP)** is: **0.08**

**Found a match:**

['NNP', 'NNP', 'NNP', 'NNP', 'NNP', 'NNP', 'NNP', 'NNP', 'NNP', 'NNP', 'NNP', 'NNP', 'NNP', 'NNP', 'NNP', 'NNP', 'NNP', 'NNP', 'NNP', 'NNP', 'NNP', 'NNP', 'NNP', 'NNP', 'NNP']

Number of matches: 25

Found a match:

['NNP/ Eagle']

Number of matches: 1

Count (NNP) is: **25**

Count (Eagle NNP): **1**

Transition Probability - P(Eagle|NNP) is: **0.04**