1. **Implement a simple stochastic part-of-speech tagging algorithm using a basic probabilistic model to assign POS tags using python**

**Aim:**

To implement a simple stochastic part-of-speech tagging algorithm using a basic probabilistic model to assign POS tags using python

**Code:**

import nltk

from nltk.corpus import treebank

from collections import Counter, defaultdict

nltk.download('treebank')

tagged\_sentences = treebank.tagged\_sents()

word\_tag\_counts = defaultdict(Counter)

for sentence in tagged\_sentences:

for word, tag in sentence:

word\_tag\_counts[word.lower()][tag] += 1

def stochastic\_pos\_tagger(sentence):

tokens = sentence.split()

tagged\_sentence = []

for token in tokens:

if token.lower() in word\_tag\_counts:

best\_tag = word\_tag\_counts[token.lower()].most\_common(1)[0][0]

else:

best\_tag = 'NN'

tagged\_sentence.append((token, best\_tag))

return tagged\_sentence

text = input("Enter a sentence: ")

print("POS Tagged Output:", stochastic\_pos\_tagger(text))

**Input:**

Enter a sentence: The cat sleeps on the mat.

**Output:**

POS Tagged Output: [('The', 'DT'), ('cat', 'NNP'), ('sleeps', 'NN'), ('on', 'IN'), ('the', 'DT'), ('mat.', 'NN')]

