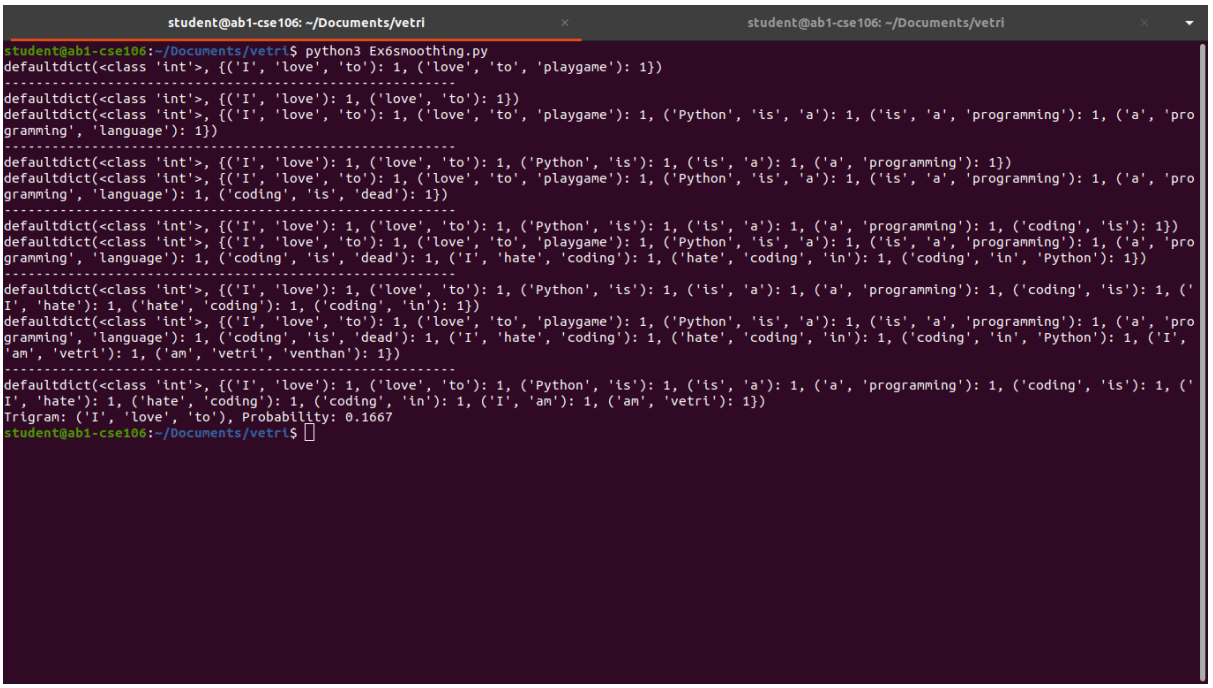
```
#Ex6smoothing

from collections import defaultdict

def calculate_ngram_probabilities(corpus):
    ngrams = defaultdict(int)
    context = defaultdict(int)

    for sentence in corpus:
        words = sentence.split()

        for i in range(len(words)-2):
            trigram = tuple(words[i:i+3])
            ngrams[trigram] += 1
            context[trigram[:2]] += 1
        print(ngrams)
        print("-----------------------------------------------------------")
        print(context)
        probabilities = defaultdict(float)
    for trigram, count in ngrams.items():
        context_count = context[trigram[:2]]
        probabilities[trigram] = (count+1)/(context_count + len(ngrams))
        return probabilities
corpus=[
    "I love to playgame",
    "Python is a programming language",
    "coding is dead",
    "I hate coding in Python",
    "I am vetri venthan"
    ]
trigram_probabilities = calculate_ngram_probabilities(corpus)
for trigram, probability in trigram_probabilities.items():
    print(f"Trigram: {trigram}, Probability: {probability:.4f}")
```

Output:


student@ab1-cse106: ~/Documents/vetri
student@ab1-cse106: ~/Documents/vetri
student@ab1-cse106:~/Documents/vetri$ python3 Ex6smoothing.py
defaultdict(<class 'int'>, {('I', 'love', 'to'): 1, ('love', 'to', 'playgame'): 1})
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defaultdict(<class 'int'>, {('I', 'love', 'to'): 1, ('love', 'to', 'playgame'): 1, ('Python', 'is', 'a'): 1, ('is', 'a', 'programming'): 1, ('a', 'programming', 'language'): 1})
defaultdict(<class 'int'>, {('I', 'love'): 1, ('love', 'to'): 1, ('Python', 'is'): 1, ('is', 'a'): 1, ('a', 'programming'): 1})
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defaultdict(<class 'int'>, {('I', 'love'): 1, ('love', 'to'): 1, ('Python', 'is'): 1, ('is', 'a'): 1, ('a', 'programming'): 1, ('coding', 'is'): 1, ('I', 'hate'): 1, ('hate', 'coding'): 1, ('coding', 'in'): 1, ('I', 'am'): 1, ('am', 'vetri'): 1})
Trigram: ('I', 'love', 'to'), Probability: 0.1667
student@ab1-cse106:~/Documents/vetri$