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19BCE245
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Practical 8

Joint Probability

- **Definition :** Scan an integer n from the user. Scan n sentences (no special character, punctuation, all lower case letters). Each sentence's sentiment is either positive or negative. Scan 5 words- a, b, c, d and e from the user. a, b, c, d, and e should be words from the set of distinct words constructed from n sentences. a, b, c, d, and e need not to be distinct words. Write a program to estimate (i) the joint probability of sampling a, b, c, d, and e from positive sentences. Assume that events of sampling a word are independent and the probability of sampling any word remains constant over different trials of sampling events.

- **Code :**

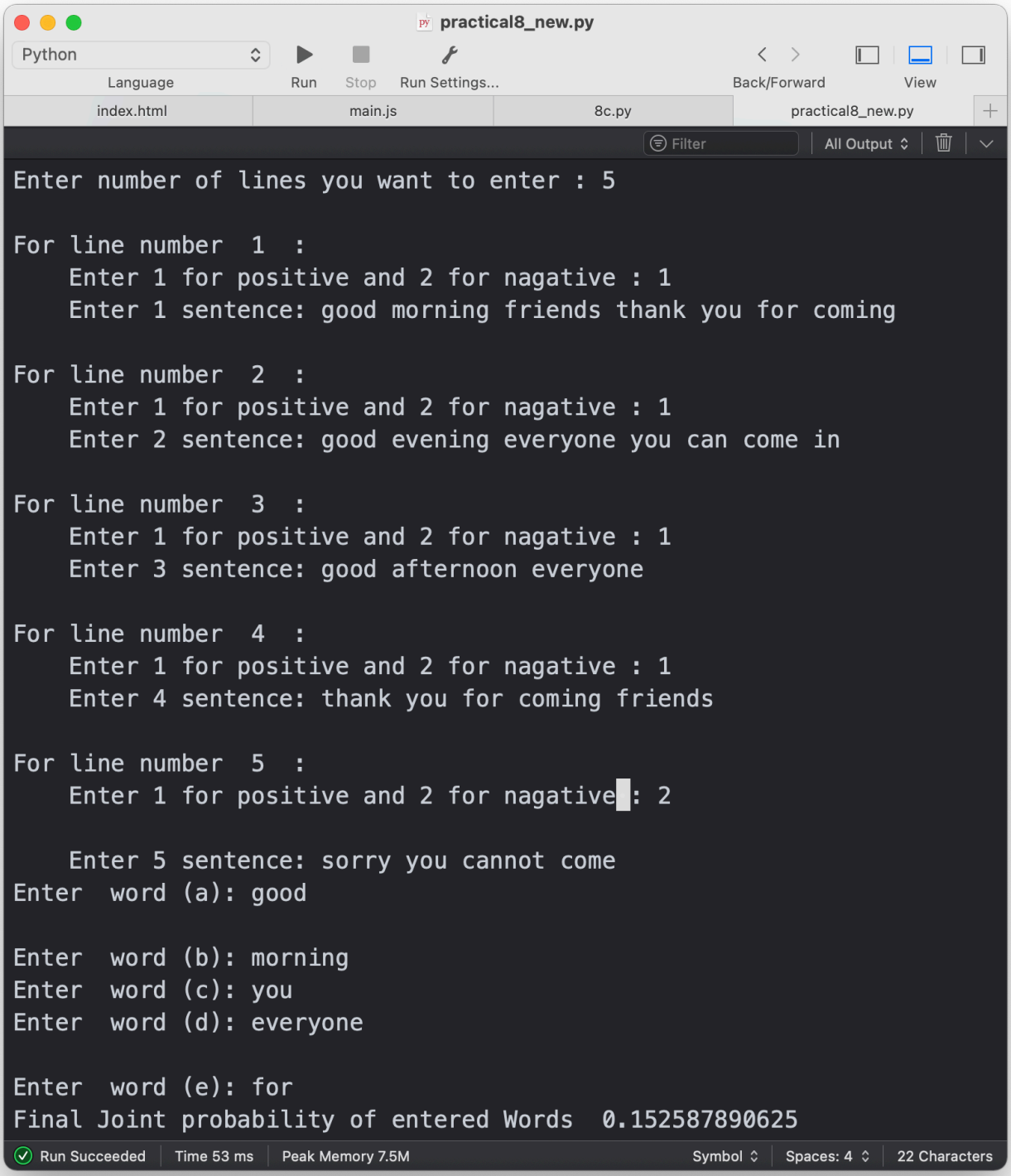
```
positive_sentiments = []
positive_words = []
neg_sent = []
neg_word = []

# take number of lines
n = int(input('Enter number of lines you want to enter : '))
i = 0

# take the sentances from given constraints
while (i < n):
    print("\nFor line number ",i+1," : ")
    choice = int(input("\tEnter 1 for positive and 2 for nagative : "))
    if (choice == 1):
        s = input(f"\tEnter {i + 1} sentence: ");
        positive_sentiments.append(s)
        positive_words.append(s.split(" "))
    elif (choice == 2):
        s = input(f"\tEnter {i + 1} sentence: ");
```

```
            neg_sent.append(s)
            neg_word.append(s.split(" "))
        else:
            print("Invaild input")
            i -= 1
        i += 1


# print(pos_sent)
# print(neg_sent)
# print(pos_word)
# print(neg_word)

uniqueofp = []
for word in positive_words:
    if word not in uniqueofp:
        uniqueofp.append(word)

# take the word a,b,c,d,e

a = input("Enter  word (a): ")
b = input("Enter  word (b): ")
c = input("Enter  word (c): ")
d = input("Enter  word (d): ")
e = input("Enter  word (e): ")

# for count y in all sentences
total_ac = 0
pos_ac = 0

total_bc = 0
pos_bc = 0

total_cc = 0
pos_cc = 0

total_dc = 0
pos_dc = 0

total_ec = 0
pos_ec = 0

```

```
for i in positive_words:
    total_ac = total_ac + i.count(a)
    pos_ac = pos_ac + i.count(a)

for i in neg_word:
    total_ac = total_ac + i.count(a)

for i in positive_words:
    total_bc = total_bc + i.count(b)
    pos_bc = pos_bc + i.count(b)

for i in neg_word:
    total_bc = total_bc + i.count(b)

for i in positive_words:
    total_cc = total_cc + i.count(c)
    pos_cc = pos_cc + i.count(c)

for i in neg_word:
    total_cc = total_cc + i.count(c)

for i in positive_words:
    total_dc = total_dc + i.count(d)
    pos_dc = pos_dc + i.count(d)

for i in neg_word:
    total_dc = total_dc + i.count(d)

for i in positive_words:
    total_ec = total_ec + i.count(e)
    pos_c_e = pos_ec + i.count(e)

for i in neg_word:
    total_ec = total_ec + i.count(e)

pofa = ((pos_ac + 1) / (len(positive_words) +
  len(uniqueofp)))
pofb = ((pos_bc + 1) / (len(positive_words) +
  len(uniqueofp)))
pofc = ((pos_cc + 1) / (len(positive_words) +
  len(uniqueofp)))
pofd = ((pos_dc + 1) / (len(positive_words) +
  len(uniqueofp)))
```

```
pofe = ((pos_ec + 1) / (len(positive_words) +
  len(uniqueofp)))

final_probability = (
        (pofa * pofb * pofc * pofd * pofe *
  (len(positive_words) / n)) /
        (
                (total_ac / (len(positive_words) +
  len(neg_word))) *
                ((total_bc / (len(positive_words) +
  len(neg_word)))) *
                ((total_cc / (len(positive_words) +
  len(neg_word)))) *
                ((total_dc / (len(positive_words) +
  len(neg_word)))) *
                ((total_ec / (len(positive_words) +
  len(neg_word))))
        )
)

print("Final Joint probability of entered Words
  ",final_probability)
```

- **Sample I/O :**


practical8_new.py
Python
Language
Run
Stop
Run Settings...
Back/Forward
View
index.html
main.js
8c.py
practical8_new.py
Filter
All Output
Enter number of lines you want to enter : 5
For line number 1 :
Enter 1 for positive and 2 for nagative : 1
Enter 1 sentence: good morning friends thank you for coming
For line number 2 :
Enter 1 for positive and 2 for nagative : 1
Enter 2 sentence: good evening everyone you can come in
For line number 3 :
Enter 1 for positive and 2 for nagative : 1
Enter 3 sentence: good afternoon everyone
For line number 4 :
Enter 1 for positive and 2 for nagative : 1
Enter 4 sentence: thank you for coming friends
For line number 5 :
Enter 1 for positive and 2 for nagative: 2
Enter 5 sentence: sorry you cannot come
Enter word (a): good
Enter word (b): morning
Enter word (c): you
Enter word (d): everyone
Enter word (e): for
Final Joint probability of entered Words 0.152587890625
Run Succeeded
Time 53 ms
Peak Memory 7.5M
Symbol
Spaces: 4
22 Characters