

# AbhijitMandal\_DSC540\_Week1-2Ex

March 27, 2021

DSC 540 Week 1-2

Abhijit Mandal

```
[32]: import random
import pandas as pd
import matplotlib.pyplot as pyplot

%matplotlib inline
```

1. Create a list, iterate over the list and sort your results, generate random numbers, add to the list, and then print your results.

```
[33]: #Creating a List
my_list = [10, 19, 3, 11, 2, 7, 9]

# iterate over the list and print
for item in my_list:
    print(item)

#Sort the list
my_list.sort()

# iterate over the list and print
print('\n List in ascending order \n')
print(my_list)
```

10  
19  
3  
11  
2  
7  
9

List in ascending order

[2, 3, 7, 9, 10, 11, 19]

```
[34]: # Generate Random numbers and add to list
```

```
for i in range(0, 5):  
    n = random.randint(20,90)  
    my_list.append(n)
```

```
# Print result
```

```
print(my_list)
```

[2, 3, 7, 9, 10, 11, 19, 68, 30, 43, 51, 21]

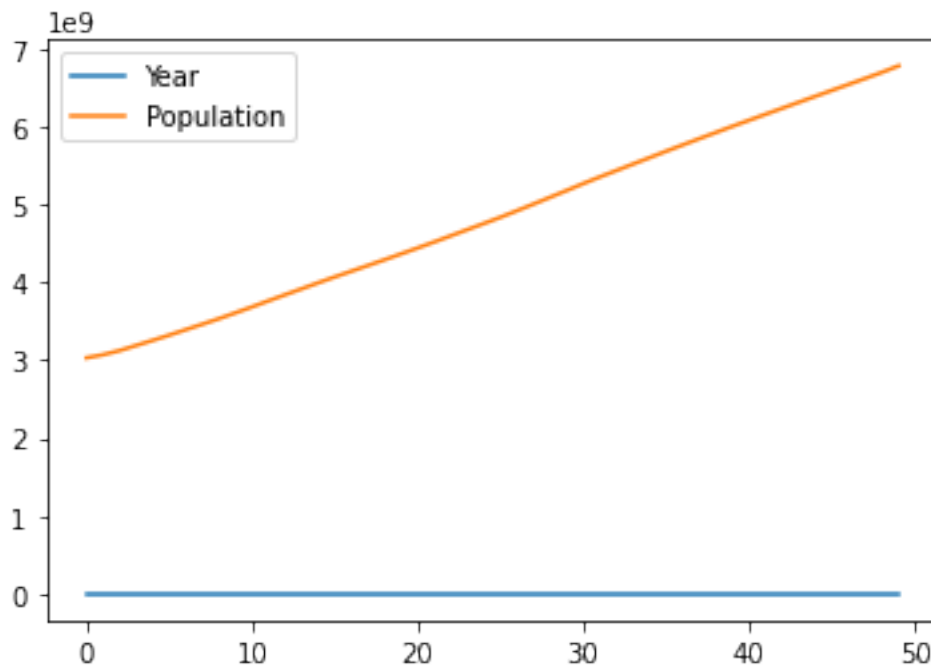
2. Create a line chart with Matplotlib and the following data file.

```
[35]: # Read the file and plot
```

```
fileDF = pd.read_excel('../world-population.xlsm')
```

```
fileDF.plot()
```

```
pyplot.show()
```



3.a. Data Wrangling with Python: Activity 1 page 17 - Create a list of 100 random numbers.

- Create a new list from this random list, with numbers that are divisible by 3. - Calculate the length of these two lists and store the difference in a new variable. - Using a loop, perform steps 2 and 3 and find the difference variable three times. - Find the arithmetic mean of these three difference values.

```
[36]: def list_calculation(limit,divisibleby):
```

```
    random_list = [random.randint(0, limit) for x in range(0, limit)]
```

```

divisible_by_3_list = [a for a in random_list if a % divisibleby == 0]
print('\n List data \n')
print(random_list)
print('\n Divisible by 3 \n')
print(divisible_by_3_list)
random_list_length = len(random_list)
random_list_Divby3_length = len(divisible_by_3_list)
diffofList = random_list_length - random_list_Divby3_length
return diffofList

```

```

[37]: diffofList = list_calculation(100,3)

print('\n Difference of List \n')
print(diffofList)

repeatCount = 3

diff_list = []
for i in range(0, repeatCount):
    diff_list.append(list_calculation(100,3))

print('\n Difference of List \n')
print(diff_list)

avg_diff = sum(diff_list) / float(len(diff_list))

print('\n Average of difference \n')
print(avg_diff)

```

List data

```

[85, 85, 71, 37, 21, 42, 90, 29, 12, 76, 71, 7, 18, 54, 28, 3, 69, 50, 67, 46,
67, 18, 55, 71, 34, 12, 68, 75, 54, 19, 8, 9, 93, 33, 79, 17, 16, 29, 53, 52,
38, 45, 85, 50, 37, 37, 39, 20, 70, 52, 65, 35, 24, 46, 41, 35, 99, 65, 8, 3,
60, 67, 66, 18, 46, 58, 10, 34, 65, 74, 25, 96, 52, 65, 41, 67, 61, 29, 47, 90,
76, 0, 83, 44, 7, 69, 88, 42, 7, 47, 31, 87, 2, 35, 68, 33, 72, 28, 75, 0]

```

Divisible by 3

```

[21, 42, 90, 12, 18, 54, 3, 69, 18, 12, 75, 54, 9, 93, 33, 45, 39, 24, 99, 3,
60, 66, 18, 96, 90, 0, 69, 42, 87, 33, 72, 75, 0]

```

Difference of List

List data

```
[47, 85, 86, 96, 38, 54, 97, 24, 72, 55, 82, 54, 43, 3, 57, 73, 76, 44, 74, 70, 2, 57, 58, 14, 28, 29, 99, 58, 70, 74, 66, 100, 46, 45, 7, 46, 10, 24, 46, 33, 86, 51, 17, 12, 46, 29, 41, 34, 38, 56, 38, 54, 52, 22, 6, 17, 6, 65, 51, 39, 11, 39, 61, 35, 44, 2, 5, 67, 3, 66, 30, 1, 37, 85, 59, 38, 47, 72, 90, 51, 76, 0, 29, 4, 55, 7, 79, 10, 30, 13, 78, 29, 27, 94, 81, 42, 91, 62, 83, 51]
```

Divisible by 3

```
[96, 54, 24, 72, 54, 3, 57, 57, 99, 66, 45, 24, 33, 51, 12, 54, 6, 6, 51, 39, 39, 3, 66, 30, 72, 90, 51, 0, 30, 78, 27, 81, 42, 51]
```

List data

```
[6, 15, 70, 49, 41, 24, 56, 64, 89, 37, 1, 98, 0, 29, 30, 20, 83, 27, 96, 59, 29, 32, 17, 97, 47, 37, 87, 43, 24, 50, 20, 97, 7, 56, 52, 78, 5, 58, 28, 34, 21, 9, 100, 6, 93, 32, 57, 13, 7, 8, 22, 53, 8, 2, 83, 30, 100, 35, 70, 64, 83, 76, 51, 55, 64, 66, 48, 9, 9, 46, 8, 94, 23, 51, 81, 61, 6, 0, 95, 70, 12, 88, 38, 22, 32, 90, 26, 66, 76, 65, 21, 8, 6, 25, 21, 20, 28, 68, 14, 1]
```

Divisible by 3

```
[6, 15, 24, 0, 30, 27, 96, 87, 24, 78, 21, 9, 6, 93, 57, 30, 51, 66, 48, 9, 9, 51, 81, 6, 0, 12, 90, 66, 21, 6, 21]
```

List data

```
[38, 89, 25, 70, 75, 42, 10, 19, 99, 65, 29, 26, 58, 70, 98, 8, 39, 73, 62, 57, 9, 21, 19, 46, 83, 36, 89, 42, 38, 37, 99, 41, 80, 58, 7, 63, 38, 91, 12, 62, 88, 93, 31, 78, 23, 46, 32, 13, 87, 88, 94, 7, 87, 86, 45, 33, 9, 65, 0, 46, 1, 16, 96, 37, 76, 70, 44, 97, 25, 54, 10, 100, 71, 66, 15, 6, 87, 24, 70, 31, 27, 20, 100, 41, 5, 50, 1, 51, 99, 92, 76, 75, 51, 68, 27, 63, 85, 10, 10, 13]
```

Divisible by 3

```
[75, 42, 99, 39, 57, 9, 21, 36, 42, 99, 63, 12, 93, 78, 87, 87, 45, 33, 9, 0, 96, 54, 66, 15, 6, 87, 24, 27, 51, 99, 75, 51, 27, 63]
```

Difference of List

```
[66, 69, 66]
```

Average of difference

67.0

3.b. Data Wrangling with Python: Activity 2 page 31 - Create a multiline\_text

variable by copying the text from the first chapter of Pride and Prejudice. Note The first chapter of Pride and Prejudice by Jane Austen has been made available on the GitHub repository at <https://github.com/TrainingByPackt/Data-Wrangling-with-Python/blob/master/Chapter01/Activity02/>. - Find the type and length of the `multiline_text` string using the commands `type` and `len`. - Remove all new lines and symbols using the `replace` function. - Find all of the words in `multiline_text` using the `split` function. - Create a list from this list that will contain only the unique words. - Count the number of times the unique word has appeared in the list using the key and value in dict. - Find the top 25 words from the unique words that you have found using the `slice` function.

```
[38]: multiline_text = """It is a truth universally acknowledged, that a single man in
    ↪possession of a good fortune, must be in want of a wife.

    However little known the feelings or views of such a man may be on his first
    ↪entering a neighbourhood, this truth is so well fixed in the minds of the
    ↪surrounding families, that he is considered the rightful property of some
    ↪one or other of their daughters.

    "My dear Mr. Bennet," said his lady to him one day, "have you heard that
    ↪Netherfield Park is let at last?"

    Mr. Bennet replied that he had not.

    "But it is," returned she; "for Mrs. Long has just been here, and she told me
    ↪all about it."

    Mr. Bennet made no answer.

    "Do you not want to know who has taken it?" cried his wife impatiently.

    "You want to tell me, and I have no objection to hearing it."

    This was invitation enough.

    "Why, my dear, you must know, Mrs. Long says that Netherfield is taken by a
    ↪young man of large fortune from the north of England; that he came down on
    ↪Monday in a chaise and four to see the place, and was so much delighted with
    ↪it, that he agreed with Mr. Morris immediately; that he is to take
    ↪possession before Michaelmas, and some of his servants are to be in the
    ↪house by the end of next week."

    "What is his name?"

    "Bingley."

    "Is he married or single?"
```

"Oh! Single, my dear, to be sure! A single man of large fortune; four or five,  
→thousand a year. What a fine thing for our girls!"

"How so? How can it affect them?"

"My dear Mr. Bennet," replied his wife, "how can you be so tiresome! You must,  
→know that I am thinking of his marrying one of them."

"Is that his design in settling here?"

"Design! Nonsense, how can you talk so! But it is very likely that he may fall,  
→in love with one of them, and therefore you must visit him as soon as he,  
→comes."

"I see no occasion for that. You and the girls may go, or you may send them by,  
→themselves, which perhaps will be still better, for as you are as handsome,  
→as any of them, Mr. Bingley may like you the best of the party."

"My dear, you flatter me. I certainly have had my share of beauty, but I do not,  
→pretend to be anything extraordinary now. When a woman has five grown-up,  
→daughters, she ought to give over thinking of her own beauty."

"In such cases, a woman has not often much beauty to think of."

"But, my dear, you must indeed go and see Mr. Bingley when he comes into the,  
→neighbourhood."

"It is more than I engage for, I assure you."

"But consider your daughters. Only think what an establishment it would be for,  
→one of them. Sir William and Lady Lucas are determined to go, merely on that,  
→account, for in general, you know, they visit no newcomers. Indeed you must,  
→go, for it will be impossible for us to visit him if you do not."

"You are over-scrupulous, surely. I dare say Mr. Bingley will be very glad to,  
→see you; and I will send a few lines by you to assure him of my hearty,  
→consent to his marrying whichever he chooses of the girls; though I must,  
→throw in a good word for my little Lizzy."

"I desire you will do no such thing. Lizzy is not a bit better than the others;  
→and I am sure she is not half so handsome as Jane, nor half so good-humoured,  
→as Lydia. But you are always giving her the preference."

"They have none of them much to recommend them," replied he; "they are all,  
→silly and ignorant like other girls; but Lizzy has something more of,  
→quickness than her sisters."

"Mr. Bennet, how can you abuse your own children in such a way? You take  
↳delight in vexing me. You have no compassion for my poor nerves."

"You mistake me, my dear. I have a high respect for your nerves. They are my  
↳old friends. I have heard you mention them with consideration these last  
↳twenty years at least."

"Ah, you do not know what I suffer."

"But I hope you will get over it, and live to see many young men of four  
↳thousand a year come into the neighbourhood."

"It will be no use to us, if twenty such should come, since you will not visit  
↳them."

"Depend upon it, my dear, that when there are twenty, I will visit them all."

Mr. Bennet was so odd a mixture of quick parts, sarcastic humour, reserve, and  
↳caprice, that the experience of three-and-twenty years had been insufficient  
↳to make his wife understand his character. Her mind was less difficult to  
↳develop. She was a woman of mean understanding, little information, and  
↳uncertain temper. When she was discontented, she fancied herself nervous.  
↳The business of her life was to get her daughters married; its solace was  
↳visiting and news. ""

```
[39]: type(mutiline_text)
```

```
[39]: str
```

```
[40]: len(mutiline_text)
```

```
[40]: 4475
```

```
[41]: mutiline_text = mutiline_text.replace('\n', "")
```

```
[42]: mutiline_text
```

```
[42]: 'It is a truth universally acknowledged, that a single man in possession of a  
good fortune, must be in want of a wife.However little known the feelings or  
views of such a man may be on his first entering a neighbourhood, this truth is  
so well fixed in the minds of the surrounding families, that he is considered  
the rightful property of some one or other of their daughters."My dear Mr.  
Bennet," said his lady to him one day, "have you heard that Netherfield Park is  
let at last?"Mr. Bennet replied that he had not."But it is," returned she; "for  
Mrs. Long has just been here, and she told me all about it."Mr. Bennet made no  
answer."Do you not want to know who has taken it?" cried his wife
```

impatiently. "You want to tell me, and I have no objection to hearing it." This was invitation enough. "Why, my dear, you must know, Mrs. Long says that Netherfield is taken by a young man of large fortune from the north of England; that he came down on Monday in a chaise and four to see the place, and was so much delighted with it, that he agreed with Mr. Morris immediately; that he is to take possession before Michaelmas, and some of his servants are to be in the house by the end of next week." "What is his name?" "Bingley." "Is he married or single?" "Oh! Single, my dear, to be sure! A single man of large fortune; four or five thousand a year. What a fine thing for our girls!" "How so? How can it affect them?" "My dear Mr. Bennet," replied his wife, "how can you be so tiresome! You must know that I am thinking of his marrying one of them." "Is that his design in settling here?" "Design! Nonsense, how can you talk so! But it is very likely that he may fall in love with one of them, and therefore you must visit him as soon as he comes." "I see no occasion for that. You and the girls may go, or you may send them by themselves, which perhaps will be still better, for as you are as handsome as any of them, Mr. Bingley may like you the best of the party." "My dear, you flatter me. I certainly have had my share of beauty, but I do not pretend to be anything extraordinary now. When a woman has five grown-up daughters, she ought to give over thinking of her own beauty." "In such cases, a woman has not often much beauty to think of." "But, my dear, you must indeed go and see Mr. Bingley when he comes into the neighbourhood." "It is more than I engage for, I assure you." "But consider your daughters. Only think what an establishment it would be for one of them. Sir William and Lady Lucas are determined to go, merely on that account, for in general, you know, they visit no newcomers. Indeed you must go, for it will be impossible for us to visit him if you do not." "You are over-scrupulous, surely. I dare say Mr. Bingley will be very glad to see you; and I will send a few lines by you to assure him of my hearty consent to his marrying whichever he chooses of the girls; though I must throw in a good word for my little Lizzy." "I desire you will do no such thing. Lizzy is not a bit better than the others; and I am sure she is not half so handsome as Jane, nor half so good-humoured as Lydia. But you are always giving her the preference." "They have none of them much to recommend them," replied he; "they are all silly and ignorant like other girls; but Lizzy has something more of quickness than her sisters." "Mr. Bennet, how can you abuse your own children in such a way? You take delight in vexing me. You have no compassion for my poor nerves." "You mistake me, my dear. I have a high respect for your nerves. They are my old friends. I have heard you mention them with consideration these last twenty years at least." "Ah, you do not know what I suffer." "But I hope you will get over it, and live to see many young men of four thousand a year come into the neighbourhood." "It will be no use to us, if twenty such should come, since you will not visit them." "Depend upon it, my dear, that when there are twenty, I will visit them all." Mr. Bennet was so odd a mixture of quick parts, sarcastic humour, reserve, and caprice, that the experience of three-and-twenty years had been insufficient to make his wife understand his character. Her mind was less difficult to develop. She was a woman of mean understanding, little information, and uncertain temper. When she was discontented, she fancied herself nervous. The business of her life was to get her daughters married; its solace was



visiting and news. '

```
[43]: # remove special chars, punctuation etc.
cleaned_text = ""
for char in mutiline_text:
    if char == " ":
        cleaned_text += char
    elif char.isalnum():
        cleaned_text += char
    else:
        cleaned_text += " "
cleaned_text
```

[43]: 'It is a truth universally acknowledged that a single man in possession of a good fortune must be in want of a wife However little known the feelings or views of such a man may be on his first entering a neighbourhood this truth is so well fixed in the minds of the surrounding families that he is considered the rightful property of some one or other of their daughters My dear Mr Bennet said his lady to him one day have you heard that Netherfield Park is let at last Mr Bennet replied that he had not But it is returned she for Mrs Long has just been here and she told me all about it Mr Bennet made no answer Do you not want to know who has taken it cried his wife impatiently You want to tell me and I have no objection to hearing it This was invitation enough Why my dear you must know Mrs Long says that Netherfield is taken by a young man of large fortune from the north of England that he came down on Monday in a chaise and four to see the place and was so much delighted with it that he agreed with Mr Morris immediately that he is to take possession before Michaelmas and some of his servants are to be in the house by the end of next week What is his name Bingley Is he married or single Oh Single my dear to be sure A single man of large fortune four or five thousand a year What a fine thing for our girls How so How can it affect them My dear Mr Bennet replied his wife how can you be so tiresome You must know that I am thinking of his marrying one of them Is that his design in settling here Design Nonsense how can you talk so But it is very likely that he may fall in love with one of them and therefore you must visit him as soon as he comes I see no occasion for that You and the girls may go or you may send them by themselves which perhaps will be still better for as you are as handsome as any of them Mr Bingley may like you the best of the party My dear you flatter me I certainly have had my share of beauty but I do not pretend to be anything extraordinary now When a woman has five grown up daughters she ought to give over thinking of her own beauty In such cases a woman has not often much beauty to think of But my dear you must indeed go and see Mr Bingley when he comes into the neighbourhood It is more than I engage for I assure you But consider your daughters Only think what an establishment it would be for one of them Sir William and Lady Lucas are determined to go merely on that account for in general you know they visit no newcomers Indeed you must go for it will be impossible for us to visit him if you do not You are over

scrupulous surely I dare say Mr Bingley will be very glad to see you and I will send a few lines by you to assure him of my hearty consent to his marrying whichever he chooses of the girls though I must throw in a good word for my little Lizzy I desire you will do no such thing Lizzy is not a bit better than the others and I am sure she is not half so handsome as Jane nor half so good humoured as Lydia But you are always giving her the preference They have none of them much to recommend them replied he they are all silly and ignorant like other girls but Lizzy has something more of quickness than her sisters Mr Bennet how can you abuse your own children in such a way You take delight in vexing me You have no compassion for my poor nerves You mistake me my dear I have a high respect for your nerves They are my old friends I have heard you mention them with consideration these last twenty years at least Ah you do not know what I suffer But I hope you will get over it and live to see many young men of four thousand a year come into the neighbourhood It will be no use to us if twenty such should come since you will not visit them Depend upon it my dear that when there are twenty I will visit them all Mr Bennet was so odd a mixture of quick parts sarcastic humour reserve and caprice that the experience of three and twenty years had been insufficient to make his wife understand his character Her mind was less difficult to develop She was a woman of mean understanding little information and uncertain temper When she was discontented she fancied herself nervous The business of her life was to get her daughters married its solace was visiting and news '

```
[44]: list_of_words = cleaned_text.split()  
list_of_words
```

```
[44]: ['It',  
      'is',  
      'a',  
      'truth',  
      'universally',  
      'acknowledged',  
      'that',  
      'a',  
      'single',  
      'man',  
      'in',  
      'possession',  
      'of',  
      'a',  
      'good',  
      'fortune',  
      'must',  
      'be',  
      'in',  
      'want',
```

'of',  
'a',  
'wife',  
'However',  
'little',  
'known',  
'the',  
'feelings',  
'or',  
'views',  
'of',  
'such',  
'a',  
'man',  
'may',  
'be',  
'on',  
'his',  
'first',  
'entering',  
'a',  
'neighbourhood',  
'this',  
'truth',  
'is',  
'so',  
'well',  
'fixed',  
'in',  
'the',  
'minds',  
'of',  
'the',  
'surrounding',  
'families',  
'that',  
'he',  
'is',  
'considered',  
'the',  
'rightful',  
'property',  
'of',  
'some',  
'one',  
'or',  
'other',

'of',  
'their',  
'daughters',  
'My',  
'dear',  
'Mr',  
'Bennet',  
'said',  
'his',  
'lady',  
'to',  
'him',  
'one',  
'day',  
'have',  
'you',  
'heard',  
'that',  
'Netherfield',  
'Park',  
'is',  
'let',  
'at',  
'last',  
'Mr',  
'Bennet',  
'replied',  
'that',  
'he',  
'had',  
'not',  
'But',  
'it',  
'is',  
'returned',  
'she',  
'for',  
'Mrs',  
'Long',  
'has',  
'just',  
'been',  
'here',  
'and',  
'she',  
'told',  
'me',

'all',  
'about',  
'it',  
'Mr',  
'Bennet',  
'made',  
'no',  
'answer',  
'Do',  
'you',  
'not',  
'want',  
'to',  
'know',  
'who',  
'has',  
'taken',  
'it',  
'cried',  
'his',  
'wife',  
'impatiently',  
'You',  
'want',  
'to',  
'tell',  
'me',  
'and',  
'I',  
'have',  
'no',  
'objection',  
'to',  
'hearing',  
'it',  
'This',  
'was',  
'invitation',  
'enough',  
'Why',  
'my',  
'dear',  
'you',  
'must',  
'know',  
'Mrs',  
'Long',

'says',  
'that',  
'Netherfield',  
'is',  
'taken',  
'by',  
'a',  
'young',  
'man',  
'of',  
'large',  
'fortune',  
'from',  
'the',  
'north',  
'of',  
'England',  
'that',  
'he',  
'came',  
'down',  
'on',  
'Monday',  
'in',  
'a',  
'chaise',  
'and',  
'four',  
'to',  
'see',  
'the',  
'place',  
'and',  
'was',  
'so',  
'much',  
'delighted',  
'with',  
'it',  
'that',  
'he',  
'agreed',  
'with',  
'Mr',  
'Morris',  
'immediately',  
'that',

'he',  
'is',  
'to',  
'take',  
'possession',  
'before',  
'Michaelmas',  
'and',  
'some',  
'of',  
'his',  
'servants',  
'are',  
'to',  
'be',  
'in',  
'the',  
'house',  
'by',  
'the',  
'end',  
'of',  
'next',  
'week',  
'What',  
'is',  
'his',  
'name',  
'Bingley',  
'Is',  
'he',  
'married',  
'or',  
'single',  
'Oh',  
'Single',  
'my',  
'dear',  
'to',  
'be',  
'sure',  
'A',  
'single',  
'man',  
'of',  
'large',  
'fortune',

'four',  
'or',  
'five',  
'thousand',  
'a',  
'year',  
'What',  
'a',  
'fine',  
'thing',  
'for',  
'our',  
'girls',  
'How',  
'so',  
'How',  
'can',  
'it',  
'affect',  
'them',  
'My',  
'dear',  
'Mr',  
'Bennet',  
'replied',  
'his',  
'wife',  
'how',  
'can',  
'you',  
'be',  
'so',  
'tiresome',  
'You',  
'must',  
'know',  
'that',  
'I',  
'am',  
'thinking',  
'of',  
'his',  
'marrying',  
'one',  
'of',  
'them',  
'Is',



'that',  
'his',  
'design',  
'in',  
'settling',  
'here',  
'Design',  
'Nonsense',  
'how',  
'can',  
'you',  
'talk',  
'so',  
'But',  
'it',  
'is',  
'very',  
'likely',  
'that',  
'he',  
'may',  
'fall',  
'in',  
'love',  
'with',  
'one',  
'of',  
'them',  
'and',  
'therefore',  
'you',  
'must',  
'visit',  
'him',  
'as',  
'soon',  
'as',  
'he',  
'comes',  
'I',  
'see',  
'no',  
'occasion',  
'for',  
'that',  
'You',  
'and',

'the',  
'girls',  
'may',  
'go',  
'or',  
'you',  
'may',  
'send',  
'them',  
'by',  
'themselves',  
'which',  
'perhaps',  
'will',  
'be',  
'still',  
'better',  
'for',  
'as',  
'you',  
'are',  
'as',  
'handsome',  
'as',  
'any',  
'of',  
'them',  
'Mr',  
'Bingley',  
'may',  
'like',  
'you',  
'the',  
'best',  
'of',  
'the',  
'party',  
'My',  
'dear',  
'you',  
'flatter',  
'me',  
'I',  
'certainly',  
'have',  
'had',  
'my',

'share',  
'of',  
'beauty',  
'but',  
'I',  
'do',  
'not',  
'pretend',  
'to',  
'be',  
'anything',  
'extraordinary',  
'now',  
'When',  
'a',  
'woman',  
'has',  
'five',  
'grown',  
'up',  
'daughters',  
'she',  
'ought',  
'to',  
'give',  
'over',  
'thinking',  
'of',  
'her',  
'own',  
'beauty',  
'In',  
'such',  
'cases',  
'a',  
'woman',  
'has',  
'not',  
'often',  
'much',  
'beauty',  
'to',  
'think',  
'of',  
'But',  
'my',  
'dear',

'you',  
'must',  
'indeed',  
'go',  
'and',  
'see',  
'Mr',  
'Bingley',  
'when',  
'he',  
'comes',  
'into',  
'the',  
'neighbourhood',  
'It',  
'is',  
'more',  
'than',  
'I',  
'engage',  
'for',  
'I',  
'assure',  
'you',  
'But',  
'consider',  
'your',  
'daughters',  
'Only',  
'think',  
'what',  
'an',  
'establishment',  
'it',  
'would',  
'be',  
'for',  
'one',  
'of',  
'them',  
'Sir',  
'William',  
'and',  
'Lady',  
'Lucas',  
'are',  
'determined',

'to',  
'go',  
'merely',  
'on',  
'that',  
'account',  
'for',  
'in',  
'general',  
'you',  
'know',  
'they',  
'visit',  
'no',  
'newcomers',  
'Indeed',  
'you',  
'must',  
'go',  
'for',  
'it',  
'will',  
'be',  
'impossible',  
'for',  
'us',  
'to',  
'visit',  
'him',  
'if',  
'you',  
'do',  
'not',  
'You',  
'are',  
'over',  
'scrupulous',  
'surely',  
'I',  
'dare',  
'say',  
'Mr',  
'Bingley',  
'will',  
'be',  
'very',  
'glad',

'to',  
'see',  
'you',  
'and',  
'I',  
'will',  
'send',  
'a',  
'few',  
'lines',  
'by',  
'you',  
'to',  
'assure',  
'him',  
'of',  
'my',  
'hearty',  
'consent',  
'to',  
'his',  
'marrying',  
'whichever',  
'he',  
'chooses',  
'of',  
'the',  
'girls',  
'though',  
'I',  
'must',  
'throw',  
'in',  
'a',  
'good',  
'word',  
'for',  
'my',  
'little',  
'Lizzy',  
'I',  
'desire',  
'you',  
'will',  
'do',  
'no',  
'such',

'thing',  
'Lizzy',  
'is',  
'not',  
'a',  
'bit',  
'better',  
'than',  
'the',  
'others',  
'and',  
'I',  
'am',  
'sure',  
'she',  
'is',  
'not',  
'half',  
'so',  
'handsome',  
'as',  
'Jane',  
'nor',  
'half',  
'so',  
'good',  
'humoured',  
'as',  
'Lydia',  
'But',  
'you',  
'are',  
'always',  
'giving',  
'her',  
'the',  
'preference',  
'They',  
'have',  
'none',  
'of',  
'them',  
'much',  
'to',  
'recommend',  
'them',  
'replied',

'he',  
'they',  
'are',  
'all',  
'silly',  
'and',  
'ignorant',  
'like',  
'other',  
'girls',  
'but',  
'Lizzy',  
'has',  
'something',  
'more',  
'of',  
'quickness',  
'than',  
'her',  
'sisters',  
'Mr',  
'Bennet',  
'how',  
'can',  
'you',  
'abuse',  
'your',  
'own',  
'children',  
'in',  
'such',  
'a',  
'way',  
'You',  
'take',  
'delight',  
'in',  
'vexing',  
'me',  
'You',  
'have',  
'no',  
'compassion',  
'for',  
'my',  
'poor',  
'nerves',



'You',  
'mistake',  
'me',  
'my',  
'dear',  
'I',  
'have',  
'a',  
'high',  
'respect',  
'for',  
'your',  
'nerves',  
'They',  
'are',  
'my',  
'old',  
'friends',  
'I',  
'have',  
'heard',  
'you',  
'mention',  
'them',  
'with',  
'consideration',  
'these',  
'last',  
'twenty',  
'years',  
'at',  
'least',  
'Ah',  
'you',  
'do',  
'not',  
'know',  
'what',  
'I',  
'suffer',  
'But',  
'I',  
'hope',  
'you',  
'will',  
'get',  
'over',

'it',  
'and',  
'live',  
'to',  
'see',  
'many',  
'young',  
'men',  
'of',  
'four',  
'thousand',  
'a',  
'year',  
'come',  
'into',  
'the',  
'neighbourhood',  
'It',  
'will',  
'be',  
'no',  
'use',  
'to',  
'us',  
'if',  
'twenty',  
'such',  
'should',  
'come',  
'since',  
'you',  
'will',  
'not',  
'visit',  
'them',  
'Depend',  
'upon',  
'it',  
'my',  
'dear',  
'that',  
'when',  
'there',  
'are',  
'twenty',  
'I',  
'will',

'visit',  
'them',  
'all',  
'Mr',  
'Bennet',  
'was',  
'so',  
'odd',  
'a',  
'mixture',  
'of',  
'quick',  
'parts',  
'sarcastic',  
'humour',  
'reserve',  
'and',  
'caprice',  
'that',  
'the',  
'experience',  
'of',  
'three',  
'and',  
'twenty',  
'years',  
'had',  
'been',  
'insufficient',  
'to',  
'make',  
'his',  
'wife',  
'understand',  
'his',  
'character',  
'Her',  
'mind',  
'was',  
'less',  
'difficult',  
'to',  
'develop',  
'She',  
'was',  
'a',  
'woman',

```
'of',
'mean',
'understanding',
'little',
'information',
'and',
'uncertain',
'temper',
'When',
'she',
'was',
'discontented',
'she',
'fancied',
'herself',
'nervous',
'The',
'business',
'of',
'her',
'life',
'was',
'to',
'get',
'her',
'daughters',
'married',
'its',
'solace',
'was',
'visiting',
'and',
'news']
```

```
[45]: len(list_of_words)
```

```
[45]: 852
```

```
[46]: # Use dict to get unique words
unique_words_dict = dict.fromkeys(list_of_words)
len(list(unique_words_dict.keys()))
```

```
[46]: 340
```

```
[47]: for word in list_of_words:
        if unique_words_dict[word] is None:
            unique_words_dict[word] = 1
```

```
        else:
            unique_words_dict[word] += 1
unique_words_dict
```

```
[47]: {'It': 3,
      'is': 12,
      'a': 20,
      'truth': 2,
      'universally': 1,
      'acknowledged': 1,
      'that': 15,
      'single': 3,
      'man': 4,
      'in': 11,
      'possession': 2,
      'of': 29,
      'good': 3,
      'fortune': 3,
      'must': 7,
      'be': 11,
      'want': 3,
      'wife': 4,
      'However': 1,
      'little': 3,
      'known': 1,
      'the': 17,
      'feelings': 1,
      'or': 5,
      'views': 1,
      'such': 5,
      'may': 5,
      'on': 3,
      'his': 11,
      'first': 1,
      'entering': 1,
      'neighbourhood': 3,
      'this': 1,
      'so': 8,
      'well': 1,
      'fixed': 1,
      'minds': 1,
      'surrounding': 1,
      'families': 1,
      'he': 11,
      'considered': 1,
      'rightful': 1,
      'property': 1,
```

'some': 2,  
'one': 5,  
'other': 2,  
'their': 1,  
'daughters': 4,  
'My': 3,  
'dear': 8,  
'Mr': 10,  
'Bennet': 6,  
'said': 1,  
'lady': 1,  
'to': 22,  
'him': 4,  
'day': 1,  
'have': 7,  
'you': 24,  
'heard': 2,  
'Netherfield': 2,  
'Park': 1,  
'let': 1,  
'at': 2,  
'last': 2,  
'replied': 3,  
'had': 3,  
'not': 9,  
'But': 6,  
'it': 11,  
'returned': 1,  
'she': 6,  
'for': 12,  
'Mrs': 2,  
'Long': 2,  
'has': 5,  
'just': 1,  
'been': 2,  
'here': 2,  
'and': 17,  
'told': 1,  
'me': 5,  
'all': 3,  
'about': 1,  
'made': 1,  
'no': 7,  
'answer': 1,  
'Do': 1,  
'know': 5,  
'who': 1,

'taken': 2,  
'cried': 1,  
'impatiently': 1,  
'You': 7,  
'tell': 1,  
'I': 17,  
'objection': 1,  
'hearing': 1,  
'This': 1,  
'was': 8,  
'invitation': 1,  
'enough': 1,  
'Why': 1,  
'my': 10,  
'says': 1,  
'by': 4,  
'young': 2,  
'large': 2,  
'from': 1,  
'north': 1,  
'England': 1,  
'came': 1,  
'down': 1,  
'Monday': 1,  
'chaise': 1,  
'four': 3,  
'see': 5,  
'place': 1,  
'much': 3,  
'delighted': 1,  
'with': 4,  
'agreed': 1,  
'Morris': 1,  
'immediately': 1,  
'take': 2,  
'before': 1,  
'Michaelmas': 1,  
'servants': 1,  
'are': 8,  
'house': 1,  
'end': 1,  
'next': 1,  
'week': 1,  
'What': 2,  
'name': 1,  
'Bingley': 4,  
'Is': 2,

'married': 2,  
'Oh': 1,  
'Single': 1,  
'sure': 2,  
'A': 1,  
'five': 2,  
'thousand': 2,  
'year': 2,  
'fine': 1,  
'thing': 2,  
'our': 1,  
'girls': 4,  
'How': 2,  
'can': 4,  
'affect': 1,  
'them': 11,  
'how': 3,  
'tiresome': 1,  
'am': 2,  
'thinking': 2,  
'marrying': 2,  
'design': 1,  
'settling': 1,  
'Design': 1,  
'Nonsense': 1,  
'talk': 1,  
'very': 2,  
'likely': 1,  
'fall': 1,  
'love': 1,  
'therefore': 1,  
'visit': 5,  
'as': 7,  
'soon': 1,  
'comes': 2,  
'occasion': 1,  
'go': 4,  
'send': 2,  
'themselves': 1,  
'which': 1,  
'perhaps': 1,  
'will': 9,  
'still': 1,  
'better': 2,  
'handsome': 2,  
'any': 1,  
'like': 2,



'best': 1,  
'party': 1,  
'flatter': 1,  
'certainly': 1,  
'share': 1,  
'beauty': 3,  
'but': 2,  
'do': 4,  
'pretend': 1,  
'anything': 1,  
'extraordinary': 1,  
'now': 1,  
'When': 2,  
'woman': 3,  
'grown': 1,  
'up': 1,  
'ought': 1,  
'give': 1,  
'over': 3,  
'her': 5,  
'own': 2,  
'In': 1,  
'cases': 1,  
'often': 1,  
'think': 2,  
'indeed': 1,  
'when': 2,  
'into': 2,  
'more': 2,  
'than': 3,  
'engage': 1,  
'assure': 2,  
'consider': 1,  
'your': 3,  
'Only': 1,  
'what': 2,  
'an': 1,  
'establishment': 1,  
'would': 1,  
'Sir': 1,  
'William': 1,  
'Lady': 1,  
'Lucas': 1,  
'determined': 1,  
'merely': 1,  
'account': 1,  
'general': 1,

'they': 2,  
'newcomers': 1,  
'Indeed': 1,  
'impossible': 1,  
'us': 2,  
'if': 2,  
'scrupulous': 1,  
'surely': 1,  
'dare': 1,  
'say': 1,  
'glad': 1,  
'few': 1,  
'lines': 1,  
'hearty': 1,  
'consent': 1,  
'whichever': 1,  
'chooses': 1,  
'though': 1,  
'throw': 1,  
'word': 1,  
'Lizzy': 3,  
'desire': 1,  
'bit': 1,  
'others': 1,  
'half': 2,  
'Jane': 1,  
'nor': 1,  
'humoured': 1,  
'Lydia': 1,  
'always': 1,  
'giving': 1,  
'preference': 1,  
'They': 2,  
'none': 1,  
'recommend': 1,  
'silly': 1,  
'ignorant': 1,  
'something': 1,  
'quickness': 1,  
'sisters': 1,  
'abuse': 1,  
'children': 1,  
'way': 1,  
'delight': 1,  
'vexing': 1,  
'compassion': 1,  
'poor': 1,

'nerves': 2,  
'mistake': 1,  
'high': 1,  
'respect': 1,  
'old': 1,  
'friends': 1,  
'mention': 1,  
'consideration': 1,  
'these': 1,  
'twenty': 4,  
'years': 2,  
'least': 1,  
'Ah': 1,  
'suffer': 1,  
'hope': 1,  
'get': 2,  
'live': 1,  
'many': 1,  
'men': 1,  
'come': 2,  
'use': 1,  
'should': 1,  
'since': 1,  
'Depend': 1,  
'upon': 1,  
'there': 1,  
'odd': 1,  
'mixture': 1,  
'quick': 1,  
'parts': 1,  
'sarcastic': 1,  
'humour': 1,  
'reserve': 1,  
'caprice': 1,  
'experience': 1,  
'three': 1,  
'insufficient': 1,  
'make': 1,  
'understand': 1,  
'character': 1,  
'Her': 1,  
'mind': 1,  
'less': 1,  
'difficult': 1,  
'develop': 1,  
'She': 1,  
'mean': 1,

```

'understanding': 1,
'information': 1,
'uncertain': 1,
'temper': 1,
'discontented': 1,
'fancied': 1,
'herself': 1,
'nervous': 1,
'The': 1,
'business': 1,
'life': 1,
'its': 1,
'solace': 1,
'visiting': 1,
'news': 1}

```

```

[49]: top_25_words = sorted(unique_words_dict.items(), key=lambda key_val_tuple:
    ↪key_val_tuple[1], reverse=True)
top_25_words[:25]

```

```

[49]: [('of', 29),
('you', 24),
('to', 22),
('a', 20),
('the', 17),
('and', 17),
('I', 17),
('that', 15),
('is', 12),
('for', 12),
('in', 11),
('be', 11),
('his', 11),
('he', 11),
('it', 11),
('them', 11),
('Mr', 10),
('my', 10),
('not', 9),
('will', 9),
('so', 8),
('dear', 8),
('was', 8),
('are', 8),
('must', 7)]

```

3.c. Data Wrangling with Python: Activity 3 page 49 - Look up the definition of permutations

and `dropwhile` from `itertools`. - Write an expression to generate all the possible three-digit numbers using 0, 1, and 2. - Loop over the iterator expression you generated before. Print each element that's returned by the iterator. Use `assert` and `isinstance` to make sure that the elements are of the tuple type. - Write the loop again using `dropwhile` with a `lambda` expression to drop any leading zeros from the tuples. As an example, (0, 1, 2) will become [0, 2]. Also, cast the output of `dropwhile` to a list. - Check the actual type that `dropwhile` returns. - Combine the preceding code into one block, and this time write a separate function where you will pass the list generated from `dropwhile`, and the function will return the whole number contained in the list. As an example, if you pass [1, 2] to the function, it will return 12. Make sure that the return type is indeed a number and not a string. Although this task can be achieved using other tricks, we require that you treat the incoming list as a stack in the function and generate the number by reading the individual digits from the stack.

```
[50]: from itertools import permutations, dropwhile
```

```
[51]: permutations?
```

```
[52]: dropwhile?
```

```
[53]: permutations(range(3))
```

```
[53]: <itertools.permutations at 0x7f980038d270>
```

```
[54]: for num_tuple in permutations(range(3)):
      print(num_tuple)
      assert isinstance(num_tuple, tuple)
```

```
(0, 1, 2)
(0, 2, 1)
(1, 0, 2)
(1, 2, 0)
(2, 0, 1)
(2, 1, 0)
```

```
[55]: for num_tuple in permutations(range(3)):
      print(list(dropwhile(lambda x: x <= 0, num_tuple)))
```

```
[1, 2]
[2, 1]
[1, 0, 2]
[1, 2, 0]
[2, 0, 1]
[2, 1, 0]
```

```
[56]: import math
      def convert_to_number(number_stack):
          final_number = 0
          for i in range(0, len(number_stack)):
```

```

        final_number += (number_stack.pop() * (math.pow(10, i)))
    return final_number

```

```

[57]: for num_tuple in permutations(range(3)):
        num_stack = list(dropwhile(lambda x: x <= 0, num_tuple))
        print(convert_to_number(num_stack))

```

```

12.0
21.0
102.0
120.0
201.0
210.0

```

3.d. Data Wrangling with Python: Activity 4 page 59 - Import zip\_longest from itertools. Create a function to zip header, line and fillvalue=None. - Open the accompanying sales\_record.csv file from the GitHub link by using r mode inside a with block and first check that it is opened. - Read the first line and use string methods to generate a list of all the column names. - Start reading the file. Read it line by line. - Read each line and pass that line to a function, along with the list of the headers. The work of the function is to construct a dict out of these two and fill up the key:values. Keep in mind that a missing value should result in None.

```

[58]: from itertools import zip_longest

```

```

[59]: def return_dict_from_csv_line(header, line):
        # Zip them
        zipped_line = zip_longest(header, line, fillvalue=None)
        # Use dict comprehension to generate the final dict
        ret_dict = {kv[0]: kv[1] for kv in zipped_line}
        return ret_dict

```

```

[61]: with open("../sales_data.csv", "r") as fd:
        first_line = fd.readline()
        header = first_line.replace("\n", "").split(",")
        for i, line in enumerate(fd):
            # looping over the first 10 lines in order to not to make the output_
            ↪ too big
            line = line.replace("\n", "").split(",")
            d = return_dict_from_csv_line(header, line)
            print(d)
            if i > 10:
                break

```

```

{'Region': '"Central America and the Caribbean', 'Country': 'Antigua and Barbuda ', 'Item Type': 'Baby Food', 'Sales Channel': 'Online', 'Order Priority': 'M', 'Order Date': '12/20/2013', 'Order ID': '957081544', 'Ship Date': '1/11/2014', 'Units Sold': '552', 'Unit Price': '255.28', 'Unit Cost': '159.42', 'Total Revenue': '140914.56', 'Total Cost': '87999.84', 'Total

```

```

Profit": '52914.72"}
{"Region": "Central America and the Caribbean", 'Country': 'Panama', 'Item
Type': 'Snacks', 'Sales Channel': 'Offline', 'Order Priority': 'C', 'Order
Date': '7/5/2010', 'Order ID': '301644504', 'Ship Date': '7/26/2010', 'Units
Sold': '2167', 'Unit Price': '152.58', 'Unit Cost': '97.44', 'Total Revenue':
'330640.86', 'Total Cost': '211152.48', 'Total Profit": '119488.38"}
{"Region": "Europe", 'Country': 'Czech Republic', 'Item Type': 'Beverages',
'Sales Channel': 'Offline', 'Order Priority': 'C', 'Order Date': '9/12/2011',
'Order ID': '478051030', 'Ship Date': '9/29/2011', 'Units Sold': '4778', 'Unit
Price': '47.45', 'Unit Cost': '31.79', 'Total Revenue': '226716.10', 'Total
Cost': '151892.62', 'Total Profit": '74823.48"}
{"Region": "Asia", 'Country': 'North Korea', 'Item Type': 'Cereal', 'Sales
Channel': 'Offline', 'Order Priority': 'L', 'Order Date': '5/13/2010', 'Order
ID': '892599952', 'Ship Date': '6/15/2010', 'Units Sold': '9016', 'Unit Price':
'205.70', 'Unit Cost': '117.11', 'Total Revenue': '1854591.20', 'Total Cost':
'1055863.76', 'Total Profit": '798727.44"}
{"Region": "Asia", 'Country': 'Sri Lanka', 'Item Type': 'Snacks', 'Sales
Channel': 'Offline', 'Order Priority': 'C', 'Order Date': '7/20/2015', 'Order
ID': '571902596', 'Ship Date': '7/27/2015', 'Units Sold': '7542', 'Unit Price':
'152.58', 'Unit Cost': '97.44', 'Total Revenue': '1150758.36', 'Total Cost':
'734892.48', 'Total Profit": '415865.88"}
{"Region": "Middle East and North Africa", 'Country': 'Morocco', 'Item Type':
'Personal Care', 'Sales Channel': 'Offline', 'Order Priority': 'L', 'Order
Date': '11/8/2010', 'Order ID': '412882792', 'Ship Date': '11/22/2010', 'Units
Sold': '48', 'Unit Price': '81.73', 'Unit Cost': '56.67', 'Total Revenue':
'3923.04', 'Total Cost': '2720.16', 'Total Profit": '1202.88"}
{"Region": "Australia and Oceania", 'Country': 'Federated States of
Micronesia', 'Item Type': 'Clothes', 'Sales Channel': 'Offline', 'Order
Priority': 'H', 'Order Date': '3/28/2011', 'Order ID': '932776868', 'Ship Date':
'5/10/2011', 'Units Sold': '8258', 'Unit Price': '109.28', 'Unit Cost': '35.84',
'Total Revenue': '902434.24', 'Total Cost': '295966.72', 'Total Profit":
'606467.52"}
{"Region": "Europe", 'Country': 'Bosnia and Herzegovina', 'Item Type':
'Clothes', 'Sales Channel': 'Online', 'Order Priority': 'M', 'Order Date':
'10/14/2013', 'Order ID': '919133651', 'Ship Date': '11/4/2013', 'Units Sold':
'927', 'Unit Price': '109.28', 'Unit Cost': '35.84', 'Total Revenue':
'101302.56', 'Total Cost': '33223.68', 'Total Profit": '68078.88"}
{"Region": "Middle East and North Africa", 'Country': 'Afghanistan', 'Item
Type': 'Clothes', 'Sales Channel': 'Offline', 'Order Priority': 'M', 'Order
Date': '8/27/2016', 'Order ID': '579814469', 'Ship Date': '10/5/2016', 'Units
Sold': '8841', 'Unit Price': '109.28', 'Unit Cost': '35.84', 'Total Revenue':
'966144.48', 'Total Cost': '316861.44', 'Total Profit": '649283.04"}
{"Region": "Sub-Saharan Africa", 'Country': 'Ethiopia', 'Item Type': 'Baby
Food', 'Sales Channel': 'Online', 'Order Priority': 'M', 'Order Date':
'4/13/2015', 'Order ID': '192993152', 'Ship Date': '5/7/2015', 'Units Sold':
'9817', 'Unit Price': '255.28', 'Unit Cost': '159.42', 'Total Revenue':
'2506083.76', 'Total Cost': '1565026.14', 'Total Profit": '941057.62"}
{"Region": "Middle East and North Africa", 'Country': 'Turkey', 'Item Type':

```

```
'Office Supplies', 'Sales Channel': 'Offline', 'Order Priority': 'C', 'Order
Date': '9/25/2013', 'Order ID': '557156026', 'Ship Date': '10/15/2013', 'Units
Sold': '3704', 'Unit Price': '651.21', 'Unit Cost': '524.96', 'Total Revenue':
'2412081.84', 'Total Cost': '1944451.84', 'Total Profit": '467630.00"'}
{"Region": "Middle East and North Africa", 'Country': 'Oman', 'Item Type':
'Cosmetics', 'Sales Channel': 'Online', 'Order Priority': 'M', 'Order Date':
'5/12/2013', 'Order ID': '741101920', 'Ship Date': '5/17/2013', 'Units Sold':
'7382', 'Unit Price': '437.20', 'Unit Cost': '263.33', 'Total Revenue':
'3227410.40', 'Total Cost': '1943902.06', 'Total Profit": '1283508.34"'}

```

[ ]: