

Data Wrangling Ch1 & 2

December 11, 2022

0.0.1 Exercise#2

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

```
[12]: # Create list for cars
car_brand = ['Tesla', 'Hyundai', 'Honda', 'GMC', 'Rivian', 'BMW']

# Sort List
car_brand.sort()

# Print List content
print(car_brand)
```

['BMW', 'GMC', 'Honda', 'Hyundai', 'Rivian', 'Tesla']

```
[13]: # Iterate over the list using FOR loop
for i in car_brand:
    print(i)
```

BMW
GMC
Honda
Hyundai
Rivian
Tesla

```
[14]: # Generate Random Number
import random
num = random.random()
car_brand.append(num)
print(car_brand)
```

['BMW', 'GMC', 'Honda', 'Hyundai', 'Rivian', 'Tesla', 0.8692567050279052]

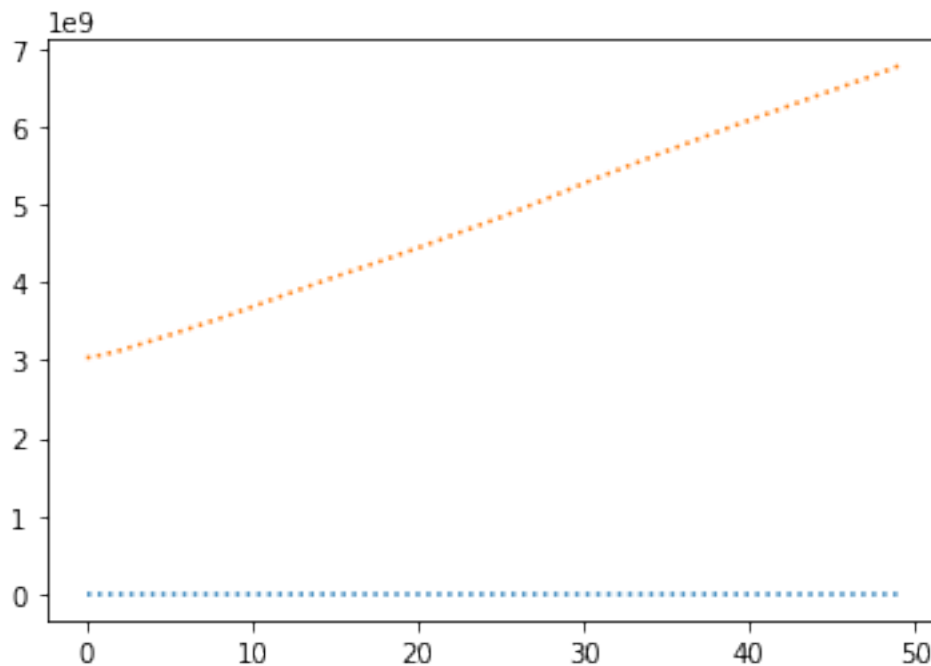
0.0.2 Exercise#3

Create a line chart with Matplotlib and the following data file. Data file: world-population.xlsm

```
[18]: import matplotlib.pyplot as plt
import pandas as pd

data = pd.read_excel('/Users/siddharthabhaumik/Downloads/world-population.xlsx')

[19]: plt.plot(data, linestyle = 'dotted')
plt.show()
```



0.0.3 Exercise#4.

Complete the following activities:

- Data Wrangling with Python: Activity 1 page 17
- Data Wrangling with Python: Activity 2 page 31
- Data Wrangling with Python: Activity 3 page 49
- Data Wrangling with Python: Activity 4 page 59

0.0.4 Activity#1

- 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.

```
[25]: # Create a list of 100 random numbers.
import random
my_rdm_list = random.sample(range(1, 150), 100)
print(my_rdm_list)
```

```
[124, 55, 53, 7, 6, 8, 108, 73, 22, 132, 4, 147, 50, 59, 36, 134, 2, 133, 11,
77, 111, 110, 109, 130, 99, 66, 43, 97, 69, 140, 129, 116, 64, 33, 128, 26, 67,
121, 120, 15, 126, 39, 49, 127, 122, 45, 89, 35, 104, 119, 137, 103, 38, 48,
112, 20, 62, 102, 27, 70, 85, 91, 46, 79, 25, 23, 58, 145, 32, 86, 68, 88, 131,
149, 141, 60, 9, 118, 93, 30, 3, 84, 81, 96, 14, 94, 90, 47, 135, 95, 138, 143,
52, 87, 44, 117, 139, 19, 21, 51]
```

```
[31]: # Create a new list from this random list, with numbers that are divisible by 3.
my_new_rdm_list = [i for i in my_rdm_list if i % 3 == 0]

print(my_new_rdm_list)
```

```
[6, 108, 132, 147, 36, 111, 99, 66, 69, 129, 33, 120, 15, 126, 39, 45, 48, 102,
27, 141, 60, 9, 93, 30, 3, 84, 81, 96, 90, 135, 138, 87, 117, 21, 51]
```

```
[32]: # Calculate the length of these two lists and store the difference in a new
      ↪ variable.
len_my_rdm_list = len(my_rdm_list)
len_my_new_rdm_list = len(my_new_rdm_list)

len_diff = len_my_rdm_list - len_my_new_rdm_list
print(len_diff)
```

65

```
[35]: # Using a loop, perform steps 2 and 3 and find the difference variable three
      ↪ times.

diff_list = []
for i in range(0, 3):
    my_rdm_list = random.sample(range(1, 150), 100)
    my_new_rdm_list = [i for i in my_rdm_list if i % 3 == 0]

    len_my_rdm_list = len(my_rdm_list)
    len_my_new_rdm_list = len(my_new_rdm_list)

    len_diff = len_my_rdm_list - len_my_new_rdm_list
    diff_list.append(len_diff)
diff_list
```

[35]: [69, 67, 64]

```
[36]: # Find the arithmetic mean of these three difference values.
avg_diff = sum(diff_list) / float(len(diff_list))
print(avg_diff)
```

66.66666666666667

0.0.5 Activity 2: Analyze a Multiline String and Generate the Unique Word Count

In this activity, we will do the following:

1. Get multiline text and save it in a Python variable
2. Get rid of all new lines in it using string methods
3. Get all the unique words and their occurrences from the string
4. Repeat the step to find all unique words and occurrences, without considering case sensitivity

```
[46]: # Create a mutliline_text variable by copying the text from the first chapter
      ↪ of Pride and Prejudice

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. ""

```
[47]: # Find the type and length of the multiline_text string using the commands type_
→and len.
print(type(multiline_text))

print(len(multiline_text))
```

```
<class 'str'>
4475
```

```
[56]: # Remove all new lines and symbols using the replace function.
multiline_text = multiline_text.replace('\n', "")
```

```
[52]: print(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.

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```
[73]: # ''.join(i for i in multiline_text if i.isalnum())
```

```
import re
multiline_text_clean = re.sub('[^A-Za-z0-9]+', ' ', multiline_text)
```

```
[74]: # Find all of the words in multiline_text using the split function.
```

```
list_of_words = multiline_text_clean.split()
```

```
list_of_words
```

```
[74]: ['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']
```

```
[84]: # Create a list from this list that will contain only the unique words.
unique_words = dict.fromkeys(list_of_words)
len(list(unique_words.keys()))
```

[84]: 340

```
[85]: # Count the number of times the unique word has appeared in the list using the
      ↪key and value in dict.
```

```
for word in list_of_words:
    if unique_words[word] is None:
        unique_words[word] = 1
    else:
        unique_words[word] += 1

unique_words
```

```
[85]: {'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}

```

```

[88]: # Find the top 25 words from the unique words that you have found using the
      ↪ slice function.

```

```

sorted(unique_words.items())

```

```

top_words = sorted(unique_words.items(), key=lambda key_val_tuple:
      ↪ key_val_tuple[1], reverse=True)

```

```

[89]: top_words

```

```

[89]: [('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),
      ('have', 7),

```

('no', 7),
('You', 7),
('as', 7),
('Bennet', 6),
('But', 6),
('she', 6),
('or', 5),
('such', 5),
('may', 5),
('one', 5),
('has', 5),
('me', 5),
('know', 5),
('see', 5),
('visit', 5),
('her', 5),
('man', 4),
('wife', 4),
('daughters', 4),
('him', 4),
('by', 4),
('with', 4),
('Bingley', 4),
('girls', 4),
('can', 4),
('go', 4),
('do', 4),
('twenty', 4),
('It', 3),
('single', 3),
('good', 3),
('fortune', 3),
('want', 3),
('little', 3),
('on', 3),
('neighbourhood', 3),
('My', 3),
('replied', 3),
('had', 3),
('all', 3),
('four', 3),
('much', 3),
('how', 3),
('beauty', 3),
('woman', 3),
('over', 3),
('than', 3),

('your', 3),
('Lizzy', 3),
('truth', 2),
('possession', 2),
('some', 2),
('other', 2),
('heard', 2),
('Netherfield', 2),
('at', 2),
('last', 2),
('Mrs', 2),
('Long', 2),
('been', 2),
('here', 2),
('taken', 2),
('young', 2),
('large', 2),
('take', 2),
('What', 2),
('Is', 2),
('married', 2),
('sure', 2),
('five', 2),
('thousand', 2),
('year', 2),
('thing', 2),
('How', 2),
('am', 2),
('thinking', 2),
('marrying', 2),
('very', 2),
('comes', 2),
('send', 2),
('better', 2),
('handsome', 2),
('like', 2),
('but', 2),
('When', 2),
('own', 2),
('think', 2),
('when', 2),
('into', 2),
('more', 2),
('assure', 2),
('what', 2),
('they', 2),
('us', 2),

('if', 2),
('half', 2),
('They', 2),
('nerves', 2),
('years', 2),
('get', 2),
('come', 2),
('universally', 1),
('acknowledged', 1),
('However', 1),
('known', 1),
('feelings', 1),
('views', 1),
('first', 1),
('entering', 1),
('this', 1),
('well', 1),
('fixed', 1),
('minds', 1),
('surrounding', 1),
('families', 1),
('considered', 1),
('rightful', 1),
('property', 1),
('their', 1),
('said', 1),
('lady', 1),
('day', 1),
('Park', 1),
('let', 1),
('returned', 1),
('just', 1),
('told', 1),
('about', 1),
('made', 1),
('answer', 1),
('Do', 1),
('who', 1),
('cried', 1),
('impatiently', 1),
('tell', 1),
('objection', 1),
('hearing', 1),
('This', 1),
('invitation', 1),
('enough', 1),
('Why', 1),

('says', 1),
('from', 1),
('north', 1),
('England', 1),
('came', 1),
('down', 1),
('Monday', 1),
('chaise', 1),
('place', 1),
('delighted', 1),
('agreed', 1),
('Morris', 1),
('immediately', 1),
('before', 1),
('Michaelmas', 1),
('servants', 1),
('house', 1),
('end', 1),
('next', 1),
('week', 1),
('name', 1),
('Oh', 1),
('Single', 1),
('A', 1),
('fine', 1),
('our', 1),
('affect', 1),
('tiresome', 1),
('design', 1),
('settling', 1),
('Design', 1),
('Nonsense', 1),
('talk', 1),
('likely', 1),
('fall', 1),
('love', 1),
('therefore', 1),
('soon', 1),
('occasion', 1),
('themselves', 1),
('which', 1),
('perhaps', 1),
('still', 1),
('any', 1),
('best', 1),
('party', 1),
('flatter', 1),

('certainly', 1),
('share', 1),
('pretend', 1),
('anything', 1),
('extraordinary', 1),
('now', 1),
('grown', 1),
('up', 1),
('ought', 1),
('give', 1),
('In', 1),
('cases', 1),
('often', 1),
('indeed', 1),
('engage', 1),
('consider', 1),
('Only', 1),
('an', 1),
('establishment', 1),
('would', 1),
('Sir', 1),
('William', 1),
('Lady', 1),
('Lucas', 1),
('determined', 1),
('merely', 1),
('account', 1),
('general', 1),
('newcomers', 1),
('Indeed', 1),
('impossible', 1),
('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),
('desire', 1),
('bit', 1),

('others', 1),
('Jane', 1),
('nor', 1),
('humoured', 1),
('Lydia', 1),
('always', 1),
('giving', 1),
('preference', 1),
('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),
('mistake', 1),
('high', 1),
('respect', 1),
('old', 1),
('friends', 1),
('mention', 1),
('consideration', 1),
('these', 1),
('least', 1),
('Ah', 1),
('suffer', 1),
('hope', 1),
('live', 1),
('many', 1),
('men', 1),
('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)]
```

0.0.6 Activity 3: Permutation, Iterator, Lambda, List

These steps will guide you to solve this activity:

1. Look up the definition of permutations and `dropwhile` from `itertools`.
2. Write an expression to generate all the possible three-digit numbers using 0, 1, and 2.
3. 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.
4. 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.
5. Check the actual type that `dropwhile` returns.
6. 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.

```
[92]: # Look up the definition of permutations and dropwhile from itertools.
      from itertools import permutations, dropwhile

      permutations?
```

```
[93]: dropwhile?
```

```
[94]: # Write an expression to generate all the possible three-digit numbers using 0,
      ↪ 1, and 2.
      permutations(range(3))
```

```
[94]: <itertools.permutations at 0x11edbe750>
```

```
[99]: # 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.
      for num_tuple_typ in permutations(range(3)):
          print(num_tuple_typ)
          assert isinstance(num_tuple_typ, tuple)
```

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

```
[101]: # Write the loop again using dropwhile with a lambda expression to drop any
      ↪ leading zeros from the tuples.
      for num_tuple_typ in permutations(range(3)):
          print(list(dropwhile(lambda x: x <= 0, num_tuple_typ)))
```

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

```
[102]: # 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.
```

```
import math
def whole_num(num_of_stack):
    final_number = 0
    for i in range(0, len(num_of_stack)):
        final_number += (num_of_stack.pop() * (math.pow(10, i)))
    return final_number
```

```
[104]: for num_tuple_typ in permutations(range(3)):
        num_of_stack = list(dropwhile(lambda x: x <= 0, num_tuple_typ))
        print(whole_num(num_of_stack))
```

```
12.0
21.0
102.0
120.0
201.0
210.0
```

0.0.7 Activity 4: Design Your Own CSV Parser

1. Import `zip_longest` from `itertools`. Create a function to zip header, line and `fillvalue=None`.
2. 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.
3. Read the first line and use string methods to generate a list of all the column names.
4. Start reading the file. Read it line by line.
5. 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`.

```
[105]: from itertools import zip_longest
```

```
[106]: 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
```

```
[110]: with open("/Users/siddharthabhaumik/Downloads/sales_record.csv", "r") as fd:
        first_line = fd.readline()
        header = first_line.replace("\n", "").split(",")
        for i, line in enumerate(fd):
            # Sample 10 rows
            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"}
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