

Assignment Instructions

Hello Innominion,

- Try to attempt all the questions in every possible way.
 - Some other topics are required to solve some questions. don't panic.
 - Those questions can be answered after the topics are taught.
-
- Join Mentoring Session for the Support/Doubts Resolving with Our Technical Mentors (2.00 PM - 6.00 PM Mon-Sat)

Happy Learning !!!

In []:

1

Strings - Exercise ¶

In [47]:

```
1 text = ""The University of Hawaii began using radio to send digital informa
2 Friedhelm Hillebrand conceptualised SMS in 1984 while working for Deutsche T
3 Hillebrand typed out random sentences and counted every letter, number, punc
4 Almost every time, the messages contained fewer than 160 characters, thus gi
5 limit one could type via text messaging. With Bernard Gillebaert of France
6 a proposal for the GSM (Groupe Spécial Mobile) meeting in February 1985 in O
7 The first technical solution evolved in a GSM subgroup under the leadership
8 It was further developed under the leadership of Kevin Holley and Ian Harris
9 SMS forms an integral part of SS7 (Signalling System No. 7). Under SS7, it i
10 coded in the ITU-T "T.56" text format, that has a "sequence lead in" to dete
11 and may have special character codes that permits, for example, sending simp
12 This was part of ISDN (Integrated Services Digital Network) and since GSM is
13 made its way to the mobile phone. Messages could be sent and received on ISD
14 and these can send SMS to any GSM phone. The possibility of doing something
15 implementing it another, but systems existed from 1988 that sent SMS message
```

Question: How many characters in text

In [48]:

```
1 # CODE HERE
2 len(text)
```

Out[48]: 1507

In []:

1

Question: How many words are there in the "text"

In [49]: 1 *# CODE HERE*

In [50]: 1 `t=len(text.split())`
2 `t`

Out[50]: 244

Question: How many unique words in the "text"

In [51]: 1 *# CODE HERE*

In [52]: 1 `unique_words=set(text.split())`
2 `u=len(unique_words)`
3 `u`

Out[52]: 174

Question: Find Lexical diversity

$\text{lexical_diversity} = (\text{number of words})/(\text{number of unique words})$

In [53]: 1 `ld=t/u`
2 `ld`

Out[53]: 1.4022988505747127

Question: Count how many "the" in text

In [54]: 1 *# CODE HERE*

In [63]: 1 `text.count("the")+text.count("The")`

Out[63]: 14

Question: Count how many "a" in text

In [64]: 1 text.count('a')+text.count('A')

Out[64]: 92

Question: Extract First 10 words in text

In [57]: 1 # CODE HERE

In [59]: 1 text1=text.split()
2 text2=text1[0:10]
3 s=" ".join(text2)
4 s

Out[59]: 'The University of Hawaii began using radio to send digital'

Question: Append " Innomatics Reseach Labs" after first 10 words in the text

In [26]: 1 # CODE HERE

In [62]: 1 k=" Innomatics Research Labs"
2 str(s)+str(k)

Out[62]: 'The University of Hawaii began using radio to send digital Innomatics Research Labs'

In [65]: 1

Out[65]: 'The University of Hawaii began using radio to send digital Innomatics Research Labs'

1 > `Question:` Extract First Fourteen (14) character in text

In [16]: 1 # CODE HERE

In [22]: 1 text[0:14]

Out[22]: 'The University'

1 > `Question:` Extract first Fourteen (14) words in text

In [18]: 1 # CODE HERE

```
In [67]: 1 a=text.split()
         2 b=a[0:14]
         3 b=" ".join(b)
         4 b
```

Out[67]: 'The University of Hawaii began using radio to send digital information as early as'

Question: Extract First 10 words in text

- Convert every letter into **upper** case
- Convert every letter into **lower** case

```
In [20]: 1 # CODE HERE
```

```
In [68]: 1 s.upper()
```

Out[68]: 'THE UNIVERSITY OF HAWAII BEGAN USING RADIO TO SEND DIGITAL'

```
In [22]: 1 # CODE HERE
```

```
In [69]: 1 s.lower()
```

Out[69]: 'the university of hawaii began using radio to send digital'

```
In [23]: 1
```

Out[23]: 'the university of hawaii began using radio to send digital'

Question: Find the list of letter starting with

- u
- o hint - You need to use for loop for this

```
In [24]: 1 # CODE HERE
```

```
In [97]: 1 for x in text.split(' '):
        2     y=x.startswith("u")
        3     print(y)
```

False
False
False
False
False
False
False
False
False
False
False
False
False
False

```
In [26]: 1
```

List of words staring with u is:
{'using', 'university', 'under'}

```
In [27]: 1
```

List of words staring with o is:
{'out', 'of', 'one', 'on', 'oslo.'}

Question: Find the list of letter ending with

- e
- n hint - You need to use for loop for this

```
In [28]: 1 # CODE HERE
```

```
In [29]: 1
```

```
In [30]: 1
```

List of words ends with e is:
{'be', 'these', 'deutsche', 'one', 'made', 'he', 'message', 'type', 'mobile',
'(compare', 'france', 'determine', '(see', 'have', '(groupe', 'while', 'since',
'"sequence', 'simple', 'language', 'the'}

In [31]:

1

List of words ends with n is:

```
{'kevin', 'than', 'in', 'ian', 'an', 'solution', 'finn', 'on', 'can', 'informat  
ion', 'isdn', 'began'}
```

Question: Extract first 10 words of text and Capitalize first letter of each word

In [32]:

1

CODE HERE

In [72]:

1

```
text1=text.split()
```

2

```
text2=text1[0:10]
```

3

```
s=" ".join(text2)
```

4

```
i=s.title()
```

5

```
i
```

Out[72]: 'The University Of Hawaii Began Using Radio To Send Digital'

In [33]:

1

Out[33]: 'The University Of Hawaii Began Using Radio To Send Digital'

Question: Replace the word "University" with name "Innomatics" in text

In [34]:

1

CODE HERE

In [73]: 1 text.replace('University','Innomatics')

Out[73]: 'The Innomatics of Hawaii began using radio to send digital information as early as 1971,using ALOHAnet. \nFriedhelm Hillebrand conceptualised SMS in 1984 while working for Deutsche Telekom. Sitting at a typewriter at home, \nHillebrand typed out random sentences and counted every letter, number, punctuation, and space. \nAlmost every time, the messages contained fewer than 160 characters, thus giving the basis for the \nlimit one could type via text messaging. With Bernard Ghillebaert of France Télécom, he developed \na proposal for the GSM (Groupe Spécial Mobile) meeting in February 1985 in Oslo. \nThe first technical solution evolved in a GSM subgroup under the leadership of Finn Trosby. \nIt was further developed under the leadership of Kevin Holley and Ian Harris (see Short Message Service). \nSMS forms an integral part of SS7 (Signalling System No. 7). Under SS7, it is a "state" with a 160 character data, \ncoded in the ITU-T "T.56" text format, that has a "sequence lead in" to determine different language codes, \nand may have special character codes that permits, for example, sending simple graphs as text. \nThis was part of ISDN (Integrated Services Digital Network) and since GSM is based on this, \nmade its way to the mobile phone. Messages could be sent and received on ISDN phones, \nand these can send SMS to any GSM phone. The possibility of doing something is one thing, \nimplementing it another, but systems existed from 1988 that sent SMS messages to mobile phones (compare ND-NOTIS).'

In [35]: 1

The Innomatics of Hawaii began using radio to send digital information as early as 1971,using ALOHAnet.
Friedhelm Hillebrand conceptualised SMS in 1984 while working for Deutsche Telekom. Sitting at a typewriter at home,
Hillebrand typed out random sentences and counted every letter, number, punctuation, and space.
Almost every time, the messages contained fewer than 160 characters, thus giving the basis for the
limit one could type via text messaging. With Bernard Ghillebaert of France Télécom, he developed
a proposal for the GSM (Groupe Spécial Mobile) meeting in February 1985 in Oslo.
The first technical solution evolved in a GSM subgroup under the leadership of Finn Trosby.
It was further developed under the leadership of Kevin Holley and Ian Harris (see Short Message Service).
SMS forms an integral part of SS7 (Signalling System No. 7). Under SS7, it is a "state" with a 160 character data,
coded in the ITU-T "T.56" text format, that has a "sequence lead in" to determine different language codes,
and may have special character codes that permits, for example, sending simple graphs as text.
This was part of ISDN (Integrated Services Digital Network) and since GSM is based on this,
made its way to the mobile phone. Messages could be sent and received on ISDN phones,
and these can send SMS to any GSM phone. The possibility of doing something is one thing,
implementing it another, but systems existed from 1988 that sent SMS messages to mobile phones (compare ND-NOTIS).

Question: Convert the "text" into sentences and store those into one variable called "sentence"

```
In [ ]: 1 # CODE HERE
```

```
In [77]: 1 sentence=text.split('.')
        2 sentence
```

```
Out[77]: ['The University of Hawaii began using radio to send digital information as early as 1971,using ALOHAnet',
        '\nFriedhelm Hillebrand conceptualised SMS in 1984 while working for Deutsche Telekom',
        '\nSitting at a typewriter at home, \nHillebrand typed out random sentences and counted every letter, number, punctuation, and space',
        '\nAlmost every time, the messages contained fewer than 160 characters, thus giving the basis for the \nlimit one could type via text messaging',
        '\nWith Bernard Ghillebaert of France Télécom, he developed \na proposal for the GSM (Groupe Spécial Mobile) meeting in February 1985 in Oslo',
        '\nThe first technical solution evolved in a GSM subgroup under the leadership of Finn Trosby',
        '\nIt was further developed under the leadership of Kevin Holley and Ian Harris (see Short Message Service)',
        '\nSMS forms an integral part of SS7 (Signalling System No',
        '7)',
        '\nUnder SS7, it is a "state" with a 160 character data, \ncoded in the ITU-T "T",
        '56" text format, that has a "sequence lead in" to determine different language codes, \nand may have special character codes that permits, for example, sending simple graphs as text',
        '\nThis was part of ISDN (Integrated Services Digital Network) and since GSM is based on this, \nmade its way to the mobile phone',
        '\nMessages could be sent and received on ISDN phones, \nand these can send SMS to any GSM phone',
        '\nThe possibility of doing something is one thing, \nimplementing it another, but systems existed from 1988 that sent SMS messages to mobile phones (compare ND-NOTIS)',
        '']
```


In [2]:

1

```
Out[2]: ['The University of Hawaii began using radio to send digital information as early as 1971,using ALOHAnet',
        '\nFriedhelm Hillebrand conceptualised SMS in 1984 while working for Deutsche Telekom',
        '\nSitting at a typewriter at home, \nHillebrand typed out random sentences and counted every letter, number, punctuation, and space',
        '\nAlmost every time, the messages contained fewer than 160 characters, thus giving the basis for the \nlimit one could type via text messaging',
        '\nWith Bernard Ghillebaert of France Télécom, he developed \na proposal for the GSM (Groupe Spécial Mobile) meeting in February 1985 in Oslo',
        '\nThe first technical solution evolved in a GSM subgroup under the leadership of Finn Trosby',
        '\nIt was further developed under the leadership of Kevin Holley and Ian Harris (see Short Message Service)',
        '\nSMS forms an integral part of SS7 (Signalling System No',
        '7)',
        '\nUnder SS7, it is a "state" with a 160 character data, \ncoded in the ITU-T "T",
        '56" text format, that has a "sequence lead in" to determine different language codes, \nand may have special character codes that permits, for example, sending simple graphs as text',
        '\nThis was part of ISDN (Integrated Services Digital Network) and since GSM is based on this, \nmade its way to the mobile phone',
        '\nMessages could be sent and received on ISDN phones, \nand these can send SMS to any GSM phone',
        '\nThe possibility of doing something is one thing, \nimplementing it another, but systems existed from 1988 that sent SMS messages to mobile phones (compare ND-NOTIS)',
        '']
```

Question:

1.From the above sentence remove '\n'

```
In [94]: 1 y=x.split('\n')
         2 y
```

```
Out[94]: ['The University of Hawaii began using radio to send digital information as early as 1971,using ALOHAnet ',
          'Friedhelm Hillebrand conceptualised SMS in 1984 while working for Deutsche Telekom Sitting at a typewriter at home, ',
          'Hillebrand typed out random sentences and counted every letter, number, punctuation, and space ',
          'Almost every time, the messages contained fewer than 160 characters, thus giving the basis for the ',
          'limit one could type via text messaging With Bernard Ghillebaert of France Télécom, he developed ',
          'a proposal for the GSM (Groupe Spécial Mobile) meeting in February 1985 in Oslo ',
          'The first technical solution evolved in a GSM subgroup under the leadership of Finn Trosby ',
          'It was further developed under the leadership of Kevin Holley and Ian Harris (see Short Message Service) ',
          'SMS forms an integral part of SS7 (Signalling System No 7) Under SS7, it is a "state" with a 160 character data, ',
          'coded in the ITU-T "T 56" text format, that has a "sequence lead in" to determine different language codes, ',
          'and may have special character codes that permits, for example, sending simple graphs as text ',
          'This was part of ISDN (Integrated Services Digital Network) and since GSM is based on this, ',
          'made its way to the mobile phone Messages could be sent and received on ISDN phones, ',
          'and these can send SMS to any GSM phone The possibility of doing something is one thing, ',
          'implementing it another, but systems existed from 1988 that sent SMS messages to mobile phones (compare ND-NOTIS) ']
```

2. From the above sentence print the first word from each sentence

```
In [95]: 1 for x in text.split('. '):
          2     y=x.split(" ")
          3     print(y[0])
```

The

Friedhelm
Sitting

Almost
With

The

It

SMS
7)
Under

This
Messages
The

3. From the above sentence print even positioned sentences

```
In [ ]: 1
```

```
In [ ]: 1
```

Question: If the following string is given as input to the program:

- H1e2l3l4o5w6o7r8l9d

Output: Then, the output of the program should be:

- Helloworld

```
In [5]: 1 # CODE HERE
```

Helloworld

```
In [ ]: 1
```

Innomatics Research Labs (<https://innomatics.in/>)

[www.innomatics.in](https://innomatics.in) (<https://innomatics.in/>)

In []:

1	
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