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| Question 1: |
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Define a class with a generator which can iterate the numbers, which are divisible by 7, between a given range 0 and n.

Question 2:

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| Write a program to compute the frequency of the words from the input. The output should output after sorting the key alphanumerically. |
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| Suppose the following input is supplied to the program: |
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| New to Python or choosing between Python 2 and Python 3? Read Python 2 or Python 3. |
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| --- |
| Then, the output should be: |
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| 2:2 |
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| 3.:1 |
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| --- |
| 3?:1 |
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| --- |
| New:1 |
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| Python:5 |
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| --- |
| Read:1 |
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| and:1 |
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| between:1 |
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| choosing:1 |
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| or:2 |
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to:1

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| Question 3: |
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Define a class Person and its two child classes: Male and Female. All classes have a method "getGender" which can print "Male" for Male class and "Female" for Female class.

Question 4:

Please write a program to generate all sentences where subject is in ["I", "You"] and verb is in ["Play", "Love"] and the object is in ["Hockey","Football"].

Question 5:

Please write a program to compress and decompress the string "hello world!hello world!hello world!hello world!".

Question 6:

Please write a binary search function which searches an item in a sorted list. The function should return the index of element to be searched in the list.

Solutions :

**1.Define a class with a generator which can iterate the numbers, which are divisible by 7, between a given range 0 and n. ?**

In [1]:

**class** div\_generator:

**def** \_\_init\_\_(self,in\_num):

self**.**in\_num **=** in\_num

**def** get\_numbers(self):

**for** ele **in** range(0,self**.**in\_num**+**1):

**if** ele**%7** == 0:

**yield** ele

output **=** div\_generator(350)

**for** ele **in** output**.**get\_numbers():

print(ele,end**=**' ')

0 7 14 21 28 35 42 49 56 63 70 77 84 91 98 105 112 119 126 133 140 147 154 161 168 175 182 189 196 203 210 217 224 231 238 245 252 259 266 273 280 287 294 301 308 315 322 329 336 343 350

**2.Write a program to compute the frequency of the words from the input. The output should output after sorting the key alphanumerically.**

Suppose the following input is supplied to the program:  
New to Python or choosing between Python 2 and Python 3? Read Python 2 or Python 3.  
Then, the output should be:  
2:2 3.:1 3?:1 New:1 Python:5 Read:1 and:1 between:1 choosing:1 or:2 to:1

In [2]:

**def** checkFrequency():

in\_string **=** input("Enter the Input String: ")

frequency **=** {}

**for** ele **in** in\_string**.**split(" "):

**if**(frequency**.**get(ele) **==** **None**):

frequency[ele] **=** 1

**else**:

frequency[ele] **+=** 1

**for** ele **in** sorted(frequency):

print(f'{ele}:{frequency[ele]}',end**=**" ")

checkFrequency()

Enter the Input String: New to Python or choosing between Python 2 and Python 3? Read Python 2 or Python 3.

2:2 3.:1 3?:1 New:1 Python:5 Read:1 and:1 between:1 choosing:1 or:2 to:1

**3.Define a class Person and its two child classes: Male and Female. All classes have a method "getGender" which can print "Male" for Male class and "Female" for Female class. ?**

In [3]:

**class** Person():

**def** getGender():

**pass**

**class** Male(Person):

**def** getGender():

print("Male")

**class** Female(Person):

**def** getGender():

print("Female")

Male**.**getGender()

Female**.**getGender()

Male

Female

**4.Please write a program to generate all sentences where subject is in ["I", "You"] and verb is in ["Play", "Love"] and the object is in ["Hockey","Football"] ?**

In [4]:

**def** generateSentences():

subject **=** ['I','You']

verb **=** ['Play','Love']

object **=** ['Hockey','Football']

**for** s **in** subject:

**for** v **in** verb:

**for** o **in** object:

print(f'{s} {v} {o}')

generateSentences()

I Play Hockey

I Play Football

I Love Hockey

I Love Football

You Play Hockey

You Play Football

You Love Hockey

You Love Football

**5.Please write a program to compress and decompress the string "hello world!hello world!hello world!hello world!" ?**

In [5]:

**def** compress(in\_string):

output **=** in\_string[0]

count **=** 1

**for** ele **in** range(len(in\_string)**-**1):

**if** in\_string[ele] **==** in\_string[ele**+**1]:

count **+=**1

**else**:

**if** count **>** 1:

output **+=** str(count)

output **+=** in\_string[ele**+**1]

count **=** 1

**if** count **>** 1:

output **+=** str(count)

print(output)

**def** decompress(in\_string):

output **=** ''

**for** ele **in** range(len(in\_string)):

**if** in\_string[ele]**.**isdigit():

output **+=** output[**-**1]**\***(int(in\_string[ele])**-**1)

**else**:

output **+=** in\_string[ele]

print(output)

compress("hello world!hello world!hello world!hello world!")

decompress("hel2o world!hel2o world!hel2o world!hel2o world!")

compress('ineuron full stack datascience')

decompress('ineuron ful2 stack datascience')

hel2o world!hel2o world!hel2o world!hel2o world!

hello world!hello world!hello world!hello world!

ineuron ful2 stack datascience

ineuron full stack datascience

**6.Please write a binary search function which searches an item in a sorted list. The function should return the index of element to be searched in the list ?**

In [6]:

sorted\_list **=** [1,2,3,4,5,6,7,8,9,10]

**def** binary\_search(in\_list,in\_num):

low **=** 0

high **=** len(in\_list)**-**1

**while** low **<=** high:

mid **=** high**+**low**//**2

**if** in\_list[mid] **<** in\_num:

low **=** mid**+**1

**elif** in\_list[mid] **>** in\_num:

high **=** mid**-**1

**else**:

**return** mid

**else**:

**return** 'Input Element not in the list'

print(binary\_search(sorted\_list,8))

print(binary\_search(sorted\_list,100))

7

Input Element not in the list