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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.

**Ans: n = int(input())**

**divBy7 = [i for i in range(0, n) if (i % 7 == 0)]**

**print(divBy7)**

**def divChecker(n):**

**for i in range(n):**

**if i % 7 == 0:**

**value = True**

**else:**

**value = False**

**print(i, value)**

**divChecker(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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| between:1 |
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| choosing:1 |
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| or:2 |
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to:1

**Ans: import operator**

**text\_line = input("Type in: ")**

**freq\_dict = {}**

**for i in text\_line.split(' '):**

**if i.isalpha():**

**if i not in freq\_dict:**

**freq\_dict[i] = 1**

**elif i in freq\_dict:**

**freq\_dict[i] = freq\_dict[i] + 1**

**else:**

**pass**

**sorted\_freq\_dict = sorted(freq\_dict.items(), key = operator.itemgetter(0))**

**print(sorted\_freq\_dict)**

**for i in sorted\_freq\_dict:**

**print(i[0], i[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.

**Ans: class Person(object):**

**def getGender( self ):**

**return "Unknown"**

**class Male( Person ):**

**def getGender( self ):**

**return "Male"**

**class Female( Person ):**

**def getGender( self ):**

**return "Female"**

**aMale = Male()**

**aFemale= Female()**

**print aMale.getGender()**

**print aFemale.getGender()**

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"].

**Ans: subjects=["I", "You"]**

**verbs=["Play", "Love"]**

**objects=["Hockey","Football"]**

**res = [[i, j, k] for i in subjects**

**for j in verbs**

**for k in objects]**

**for x in res:**

**print(" ".join(x))**

**Out:**

**I Play Hockey**

**I Play Football**

**I Love Hockey**

**I Love Football**

**You Play Hockey**

**You Play Football**

**You Love Hockey**

**You Love Football**

Question 5:

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

**Ans: import zlib**

**s = 'hello world!hello world!hello world!hello world!'**

**t = zlib.compress(s)**

**print t**

**print zlib.decompress(t)**

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.

**Ans: import math**

**def bin\_search(li, element):**

**bottom = 0**

**top = len(li)-1**

**index = -1**

**while top>=bottom and index==-1:**

**mid = int(math.floor((top+bottom)/2.0))**

**if li[mid]==element:**

**index = mid**

**elif li[mid]>element:**

**top = mid-1**

**else:**

**bottom = mid+1**

**return index**

**li=[2,5,7,9,11,17,222]**

**print bin\_search(li,11)**

**print bin\_search(li,12)**