Python Basic Programming Assignment - 14

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 [9]:
```
n=int(input("Enter n: "))
div_by_7=[i for i in range(0,n) if i%7==0]
# div_by_7=list(filter(lambda i:i%7==0,range(n)))
print(div_by_7)
```

```
[0, 7, 14, 21, 28, 35, 42, 49, 56, 63, 70, 77, 84, 91, 98, 105, 112, 119, 126, 13
3, 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, 357, 36
4, 371, 378, 385, 392, 399, 406, 413, 420, 427, 434, 441, 448, 455, 462, 469, 476,
483, 490, 497, 504, 511, 518, 525, 532, 539, 546, 553, 560, 567, 574, 581, 588, 59
5, 602, 609, 616, 623, 630, 637, 644, 651, 658, 665, 672, 679, 686, 693, 700, 707,
714, 721, 728, 735, 742, 749, 756, 763, 770, 777, 784, 791, 798, 805, 812, 819, 82
6, 833, 840, 847, 854, 861, 868, 875, 882, 889, 896, 903, 910, 917, 924, 931, 938,
945, 952, 959, 966, 973, 980, 987, 994, 1001, 1008, 1015, 1022, 1029, 1036, 1043,
1050, 1057, 1064, 1071, 1078, 1085, 1092, 1099, 1106, 1113, 1120, 1127, 1134, 114
1, 1148]
```

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

In [14]:
```
a=[i for i in input("Enter any sentence: ").split(" ")]
b={}
for i in a:
    if i in b.keys():
        b[i]+=1
    else:
        b[i]=1
for i in (sorted(b.keys())):
    print(str(i)+": "+str(b[i]))
```

```
Please: 1
The: 1
a: 2
an: 1
be: 1
binary: 1
element: 1
function: 2
in: 2
index: 1
item: 1
list.: 2
of: 1
return: 1
search: 1
searched: 1
searches: 1
should: 1
sorted: 1
the: 2
to: 1
which: 1
write: 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 [1]:
```
class Person(object):
    def __init__(self):
        self.gender = "unknown"

    def getGender(self):
        print(self.gender)

class Male(Person):
    def __init__(self):
        self.gender = "Male"

class Female(Person):
    def __init__(self):
        self.gender = "Female"

aditya=Male()
divya=Female()

aditya.getGender()
divya.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 [2]:
```
subjects=["I", "You"]
verbs=['Play', "Love"]
objects=["Hockey","Football"]
```

```
for i in subjects:
    for j in verbs:
        for k in objects:
            print("{} {} {}".format(i,j,k))
```

```
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 [8]:
```
import zlib
s = b'hello world!hello world!hello world!hello world!'
t = zlib.compress(s)
print(t)
print(zlib.decompress(t))
```

```
b'x\x9c\xcbH\xcd\xc9\xc9W(\xcf/\xcaIQ\xcc \x82\r\x00\xbd[\x11\xf5'
b'hello world!hello world!hello world!hello world!'
```

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 [ ]:
```
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

a=[4,6,8,13,17,23,67,74]
ele=int(input("Enter number to search: "))
print(bin_search(a,ele))
```

```
2
```