Student name: Đinh Vũ Ngọc Linh

Student ID: ITDSIU21095

1

In [1]:
```
num = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20]
print('the 3rd number is', num[2])
print('the first five numbers is',num[:5])
print('the 1st half of the list is',num[:len(num)//2])
print('the last 5 number', num[-5:])
print('every other number',num[::2])
print('The numbers in reverse order',num[::-1])
print('The third last number',num[-3])
```

```
the 3rd number is 3
the first five numbers is [1, 2, 3, 4, 5]
the 1st half of the list is [1, 2, 3, 4, 5, 6, 7, 8, 9, 10]
the last 5 number [16, 17, 18, 19, 20]
every other number [1, 3, 5, 7, 9, 11, 13, 15, 17, 19]
The numbers in reverse order [20, 19, 18, 17, 16, 15, 14, 13, 12, 11, 10, 9, 8, 7, 6,
5, 4, 3, 2, 1]
The third last number 18
```

2

In [5]:
```
def sub_fb(num1,num2,num3):
    num4 = num2 +num3
    num5 = num3 + num4
    num6 = num4 + num5
    return num4, num5, num6
```

3

In [8]:
```
alist = [23,34,67,87,22,43,34,87,23,33,22,34]
def unique(alist):
    set_list = set(alist)
    unique_list = list(set_list)
    for i in unique_list:
       newlist = [i for i in unique_list]
    print('the new list is',*newlist)
unique(alist)
```

```
the new list is 33 34 67 43 23 22 87
```

4

In [4]:
```

```

5

In [3]:
```
def Pun(string):
    new_string = ""
    reverse_string = ""
    pun = '''!@#$%^&*()_+-={}[]:";'<>?,./ ~`'''
    for i in string.lower():
        if i in pun:
            string = string.replace(i, "")
            new_string = string + new_string
            reverse_string = string + reverse_string
    print(string.lower())
    if new_string[::-1]==reverse_string:
        return True
    return False

print(Pun("rA;da. .R"))
print(Pun('rader'))
Pun(string)
```

```
radar
False
rader
True
radar
```
Out[3]:
```
False
```

6

In [9]:
```
import string

key = "Give me my key please! Don't hesitate to generate one now."

lower = key.lower() #remove the capital
remove_space = lower.replace(" ",'')
new_string = remove_space.translate(str.maketrans('', '', string.punctuation)) #remove
#remove duplication and add the remain letters of the aplphabet:
alphabet = list(string.ascii_lowercase)
p = "" # The Encryption key

for char in new_string:
    if char not in p:
        p = p + char
for ele in alphabet:
    if ele not in new_string:
        p = p + ele
print('The Encrytion key is:', p)
```

```
The Encrytion key is: givemykplasdonthrwbcfjquxz
```

7

In [ ]:
```

```

8

In [10]:
```
import collections
alist = []

#develope function
def insertion_sort(*args):
    for i in args:
        alist.append(i)
    for i in range(0,len(alist)-1):
        for j in range(i+1,len(alist)):
            if (alist[i]>alist[j]):
                alist[i],alist[j] = alist[j],alist[i]
    return alist

def is_sorted():
    if collections.Counter(insertion_sort()) == collections.Counter(sorted(alist)):
        return 'True'
    else:
        return 'False'


#function call:
print(insertion_sort(24,45,78,98,25,67,41))
print(is_sorted())
```

```
[24, 25, 41, 45, 67, 78, 98]
True
```

9

In [ ]:
```

```

10

In [6]:
```
# use filter, map and sum
numbers = list(range(1,11))
even_num= list(filter(lambda x: x%2 == 0, numbers))
triples = list(map(lambda x: x*3, numbers))
total = sum(triples)
# use list comprehensions
numbers = list(range(1,11))
even_num = [x for x in numbers if x%2==0]
triples = [x*3 for x in numbers]
total = sum(triples)
```

11

In [6]:
```
listname = [('Hang','Trinh'),('Hang','Dinh'),('Tram','Nguyen'),('Long','Hoang'),
            ('Binh','Le'),('Linh','Dinh'),('Sang','Nguyen'),('My','Le')]
```

```
name = list(filter(lambda x: 'Nguyen' in x, listname))
print(*name)
```

```
('Tram', 'Nguyen') ('Sang', 'Nguyen')
```