EL-Shorouk Academy
Higher Institute of Engineering
Communication and Computer Engineering Department

Assignment 1

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Section:2

Year: 4th year

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Sheet 1

Q1) write a python function that take two numbers then return the maximum of the two numbers.

Assignment.py

```
a=int(input("Enter a number: "))
b=int(input("Enter a number: "))
if a>b:
    print(f'{a} is a maximum number')
else:
    print(f'{b} is a maximum number')
```

```
Run: Assignment
C:\Users\document\PycharmProjects\Abdelmagid\venv\Scripts\python.exe C:/Users/document/PycharmProjects/Abdelmagid/venv/Assignment.py
Enter a number: 7
Enter a number: 11
11 is a maximum number

Process finished with exit code 0
```

Q2) write a python function that take integer number then print the factorial of this number.

Assignment.py

```
num = int(input("Enter a number: "))

factorial = 1

if num < 0:
   print("Sorry, factorial does not exist for negative numbers")
elif num == 0:
   print("The factorial of 0 is 1")
else:
   for i in range(1,num + 1):
       factorial = factorial*i
   print("The factorial of",num,"is",factorial)
```

```
Assignment
C:\Users\document\PycharmProjects\Abdelmagid\venv\Scripts\python.exe
Enter a number: 4
The factorial of 4 is 24

Process finished with exit code 0
```

Q3) write a python function that take a list as a parameter and return this array in reverse by three ways

1)

```
Assignment.py

def Reverse(list):
    list.reverse()
    return list
list = [7, 8, 9, 10, 11, 22]
print("the reversed list is ",Reverse(list))
```

```
Run: Assignment
C:\Users\document\PycharmProjects\Abdelmagid\venv\Scripts\python.exe C:/User
the reversed list is  [22, 11, 10, 9, 8, 7]

Process finished with exit code 0
```

2)

```
Assignment.py

my_list = [7,8,9,10,11]

my_list2 = my_list[::-1]

print("The Reversed list is: ",my_list2)
```

```
Assignment
C:\Users\document\PycharmProjects\Abdelmagid\venv\Scripts\python.exe C:/Use
The Reversed list is:  [11, 10, 9, 8, 7]

Process finished with exit code 0
```

3)

```
Assignment.py
1  my_list = [7,8,9,10,11]
2
3  my_list2 = list(reversed(my_list))
4
5  print("The Reversed list is: ",my_list2)
6
```

```
Assignment
C:\Users\document\PycharmProjects\Abdelmagid\venv\Scripts\python.exe C:/Users/
The Reversed list is:  [11, 10, 9, 8, 7]

Process finished with exit code 0
```

Q4) write a python function that take a list from user and print this list in ascending and descending order.

```
Assignment.py
1  nums = [1, 5, 3, 4, 2, 10, 6, 8, 7, 9]
2  nums.sort()
3  print('List in Ascending Order: ', nums)
4
5  nums.sort(reverse=True)
6  print('List in Descending Order: ', nums)
7
```

```
Run:  Assignment
C:\Users\document\PycharmProjects\Abdelmagid\venv\Scripts\python.exe C:/User
List in Ascending Order:  [1, 2, 3, 4, 5, 6, 7, 8, 9, 10]
List in Descending Order:  [10, 9, 8, 7, 6, 5, 4, 3, 2, 1]

Process finished with exit code 0
```

Q5) write a python function that take a list of tuples each tuple contain three elements and return the max number in each tuple.

Assignment.py

```
def max_element_per_tuple(tuple_list):
    maximum = []

    for item in tuple_list:
        maximum.append(max(item))


    return maximum

tuple_list = [(-1,0,4), (60,70,50), (100,200,25), (55,75,65)]
print("the maximum number in each tuple : ",max_element_per_tuple(tuple_list))
```

Assignment

```
C:\Users\document\PycharmProjects\Abdelmagid\venv\Scripts\python.exe C:
the maximum number in each tuple :  [4, 70, 200, 75]

Process finished with exit code 0
```

Q6) write a python function that take “list , item and index “ as parameters then this function will insert this item in the index which passed to function .

Assignment.py

```
def insert(list,position,value):
    new_list=list [:position]+[value]+list[position:]
    return new_list

list= [7,8,9,11]
x= int(input("Enter the Position "))
y= int(input("Enter the Value "))
print("The list is: ",insert(list,x,y))
```

Assignment

```
C:\Users\document\PycharmProjects\Abdelmagid\venv\Scripts\python.exe
Enter the Position 3
Enter the Value 10
The list is:  [7, 8, 9, 10, 11]

Process finished with exit code 0
```

Q7) write a python function take a list and return the length of this array.

Assignment.py

```
def length(list):
    new_list= len(list)
    return new_list

list= [7,8,9,11]
print("The length of the list is: ",length(list))
```

Assignment

```
C:\Users\document\PycharmProjects\Abdelmagid\venv
The length of the list is:  4

Process finished with exit code 0
```

Q8) write a python function that take an item and list then check if this item in this list or not.

Assignment.py

```
def check(list,value):
    if value in list:
        print("this item is found in the list")
    else:
        print("this item is  not found in the list")

list= [7,8,9,11]
value= int(input("Enter the item you want to check : "))
check(list,value)
```

Assignment

```
C:\Users\document\PycharmProjects\Abdelmagid\v
Enter the item you want to check : 7
this item is found in the list
```

Assignment

```
C:\Users\document\PycharmProjects\Abdelmagid\v
Enter the item you want to check : 22
this item is  not found in the list
```

Q9) write a python program that calculate “y” from this equation
y = x2 + 4x + 3 as values of x from (-4 to 4).

Assignment.py

```
def calculate(x):
    result = x * x  + 4 * x + 3
    print("y= ({} ^ 2) + (4 * {}) + 3 = {}".format(x, x,result))
elements = [-4, -3, -2, -1, 0, 1, 2, 3, 4]
for i in elements:
    calculate(i)
```

Assignment

```
C:\Users\document\PycharmProjects\Abdelmagid\venv\Scripts\python
y= (-4 ^ 2) + (4 * -4) + 3 = 3
y= (-3 ^ 2) + (4 * -3) + 3 = 0
y= (-2 ^ 2) + (4 * -2) + 3 = -1
y= (-1 ^ 2) + (4 * -1) + 3 = 0
y= (0 ^ 2) + (4 * 0) + 3 = 3
y= (1 ^ 2) + (4 * 1) + 3 = 8
y= (2 ^ 2) + (4 * 2) + 3 = 15
y= (3 ^ 2) + (4 * 3) + 3 = 24
y= (4 ^ 2) + (4 * 4) + 3 = 35

Process finished with exit code 0
```

Q10) write a python function that take a list and return the average of this list.

Assignment.py

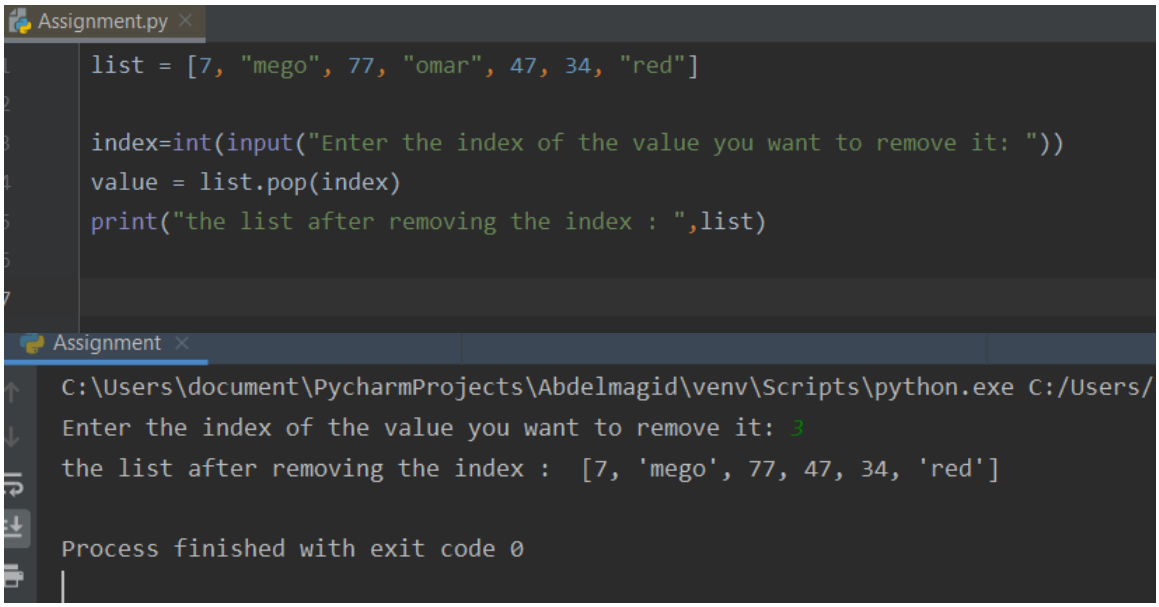
```
def average(list):
    result=0
    for x in list:
        result +=x
    print("Average = ",result/len(list))

list= [2,4,6]
print(average(list))
```

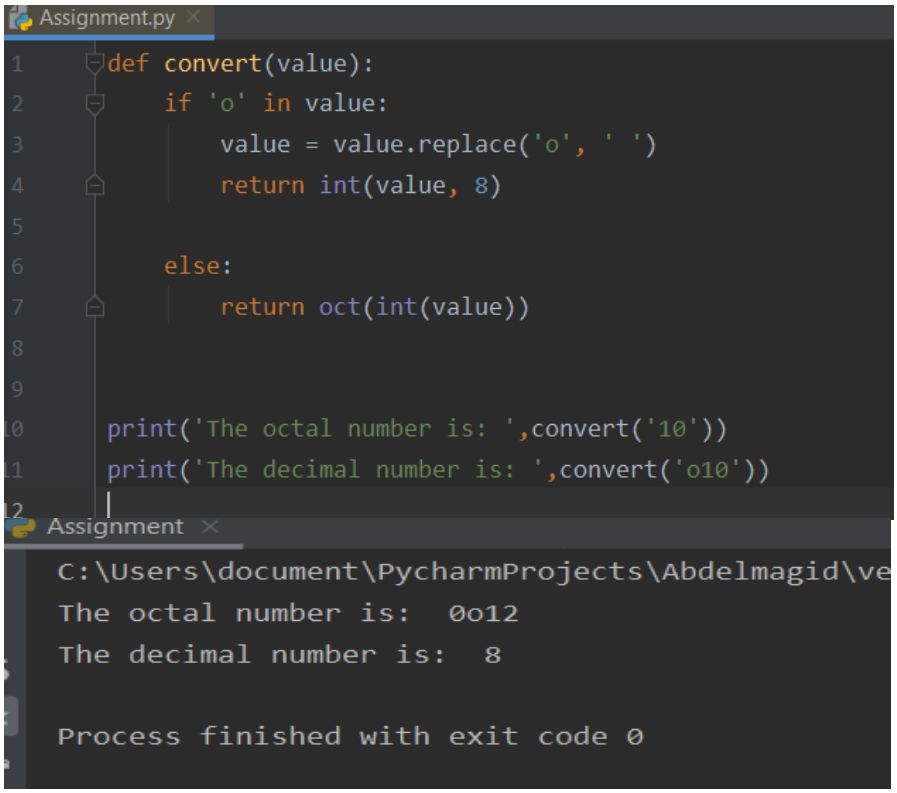
Assignment

```
C:\Users\document\PycharmProjects\Abdelmagid\venv\
Average =  4.0
```

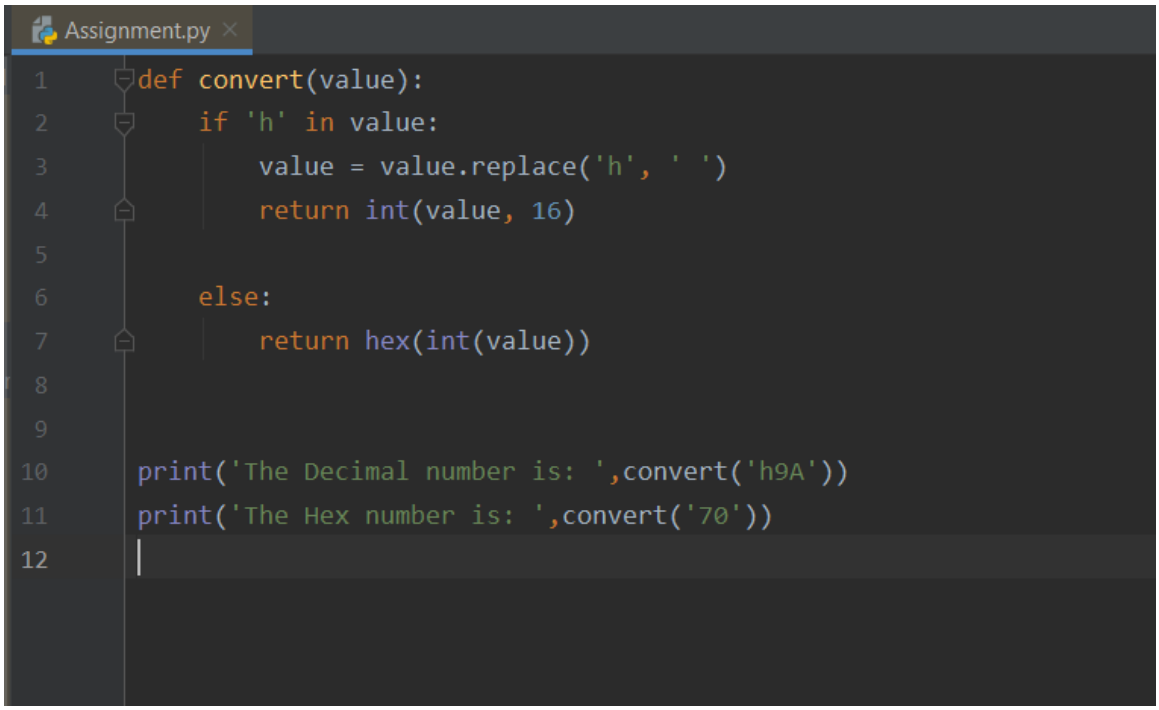
Q11) write a python function that take list and index then remove the value from list.

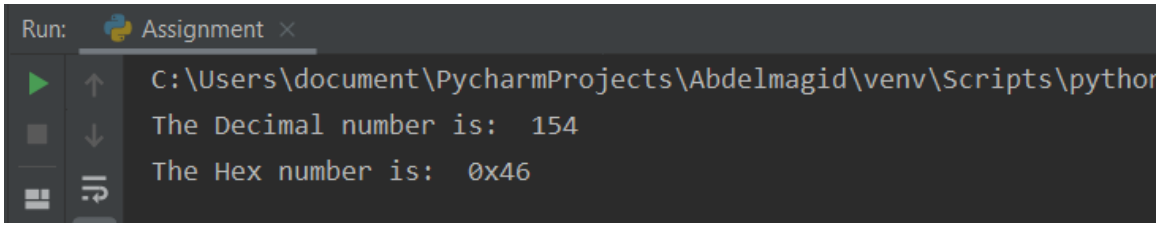


Q12) write a python function that take one parameter only this parameter may be number and may be number and one char, if the number contain letter ‘o’ this function should convert this number from Octal to decimal if not convert this number from decimal to Octal then print the result.



Q13) write a python function that take one parameter only this parameter may be number and may be number and one char ,if the number contain letter ‘h’ this function should convert this number from hexadecimal to decimal if not convert this number from decimal to hexadecimal then print the result.





Q14) write a python function that calculate the factorial of number by recursive way.

Assignment.py

```python
def recur_factorial(n):
    if n == 1:
        return n
    else:
        return n*recur_factorial(n-1)

num = int(input("Enter the value: "))

# check if the number is negative
if num < 0:
    print("Sorry, factorial does not exist for negative numbers")
elif num == 0:
    print("The factorial of 0 is 1")
else:
    print("The factorial of", num, "is", recur_factorial(num))
```

Assignment

```
C:\Users\document\PycharmProjects\Abdelmagid\ve
Enter the value: 7
The factorial of 7 is 5040
```

Q15) what is OOP?

Object-oriented programming (OOP) is a computer programming model that organizes software design around data, or objects, rather than functions and logic. An object can be defined as a data field that has unique attributes and behavior.

OOP focuses on the objects that developers want to manipulate rather than the logic required to manipulate them. This approach to programming is well-suited for programs that are large, complex and actively updated or maintained. This includes programs for manufacturing and design, as well as mobile applications; for example, OOP can be used for manufacturing system simulation software. The organization of an object-oriented program also makes the method beneficial to collaborative development, where projects are divided into groups. Additional benefits of OOP include code reusability, scalability and efficiency.

Q16) write a python class that implement the functions of Stack.

Assignment.py

```
class Stack:
    def __init__(self):
        self.elemnt = []

    def push(self, item):
        self.elemnt.append(item)

    def pop(self):
        return self.elemnt.pop()


stack = Stack()
stack.push(7)
stack.push(9)
stack.push(11)
print('top: ', stack.pop())
print('top: ', stack.pop())
print('top: ', stack.pop())
```

Assignment

```
C:\Users\document\PycharmProjects\Abdelmagid\venv\S
top:  11
top:  9
top:  7

Process finished with exit code 0
```

Q17) write a python class that implement the function of Queue.

Assignment.py

```
class Queue:
    def __init__(self):
        self.elements = []

    def queue(self, item):
        self.elements.insert(0, item)

    def dequeue(self):
        return self.elements.pop()


queue = Queue()
queue.queue(7)
queue.queue(9)
queue.queue(11)

print(queue.dequeue())
print(queue.dequeue())
print(queue.dequeue())

```

Assignment

```
C:\Users\document\PycharmProjects\Abdelmagid\venv\Scrip
7
9
11

Process finished with exit code 0
```