Q.1] Write a python program to calculate average of numbers in given list

```
numbers=[1,2,3,4,5,6,7,8]
total_sum=sum(numbers)
count=len(numbers)
average=total_sum/count
print(f"the average of the number{numbers} in the list:{average}")
```

Q.2] Write a python program which accept 6 integer value and prints "DUPLICATES" if any of the value entered are duplicate otherwise it prints "ALL UNIQUE"

```
values=[]
print("Enter 6 integer values:")
for i in range (6):
   d=int(input(f"Enter value{i+1}:"))
   values.append(d)
   unique_values=set(values)
   print(unique_values)
   if len(unique_values)<len(values):
      print("DUPLICATES")
   else:
         print("ALL UNIQUE")
```

Q.3] Write a program to display following pattern

```
rows=int(input("Enter number of rows:"))
number=1
for i in range(1,rows+1):
   for j in range(1,i+1):
```

```
        print(number,end='')
        number+=1
    print()
```

```
Enter number of rows:5
1
23
456
78910
```

Q.2]Write a python program to create a list of tuples with the first element as the number & second element as the square of the number

```
T1=(1,2,3,4,5)
L1=[(1,1),(2,4)]
n=int(input("Enter range of the tuple:"))
T1=range(n+1)
L1=[]
print("tuple is",T1)
for i in T1:
    L1.append((i,i**2))
    print(L1)

rows=int(input("Enter the number of rows:"))
for i in range(0,rows+1):
    for j in range(rows-i,0,-1):
        print(j,end='')
    print()
```

output:

Enter the number of rows:5

54321

4321

321

21

1

1. What is the output of following program:

sets = {1, 2, 3, 4, 4}

print(sets)

2. Write a Python program to do iteration over sets.

3. Write a Python program to add and remove operation on set.

4. Write a Python program to find maximum and the minimum value in a set.

```
sets={1,2,3,4,5}
print(sets)
print("printing sets using iteration")
for i in sets:
   print(i)
print("using add method of sets")
sets.add(6)
sets.add(7)
sets.add(8)
print("sets=",sets)
print("using remove method")
sets.remove(3)
print(sets)
```

```
print("After removing 3",sets)
print("maximum value=",max(sets))
print("minimum value=",min(sets))
```

1. Write a Python program to combine two dictionary adding values for common keys.

Sample Dictionary:

d1={'a':100,'b':200,'c':300}

d2={'a':300,'b':200,'d':400}

Sample output: Counter({'a': 400, 'b': 400, 'd': 400, 'c': 300})

```
d1={'a':100,'b':200,'c':300}
d2={'a':300,'b':200,'d':400}
print("d1=",d1)
print("d2=",d2)
d3={}
for k,v in d1.items():
   d3[k]=v
for k,v in d2.items():
   if k in d3:
      d3[k]=d3[k]+v
   else:
      d3[k]=v
print("after merges &adding values")
print(d3)
```

2. Write a Python script to generate and print a dictionary that contains a number (Between 1 and n) in the form (x, x*x).

Sample Dictionary (n = 5)

Expected Output : {1: 1, 2: 4, 3: 9, 4: 16, 5: 25}

method 1:

```
n=int(input("Enter any number"))
sq_dict={}
for i in range(1,n+1):
   sq_dict[i]=i*i
print(sq_dict)
```

3. Write a Python program to create a dictionary from a string.

Sample-String:'W3resource'

Expected output: {'3': 1, 's': 1, 'r': 2, 'u': 1, 'w': 1, 'c': 1, 'e': 2, 'o': 1}

```
int_str=input("enter any string")
char_cnt={}
for c in int_str:
   c=c.lower()
   if c in char_cnt:
      char_cnt[c] +=1
   else:
      char_cnt[c]=1
print(char_cnt)
```

1. Write a python program to create an array of 5 integers and display the array elements.

Access individual elements through indexes

```
import array as arr
num_arr=arr.array('i',[])
n=int(input("how many elements="))
print("enter array elements")
```

```
for i in range (n):
    d=int(input(f"enter element{i+2}="))
    num_arr.append(d)
print("array is=")
for i in range(n):
    print(f"num_arr[{i}]={num_arr[i]}")
```

2. Write a python program to get the number of occurrences of specified elements in an array

```
import array as arr
num_arr=arr.array('i',[4,8,2,4,5,6,5,4,3,1])
n=int(input("enter elements to search="))
cnf=0
for x in num_arr:
    if x==n:
        cnf +=1
        print(f"element {n} occured{cnf}times")
```

3. Write a python program to reverse the order of the items in the array

```
import array as arr
num_arr=arr.array('i',[4,5,8,3,4,7,2,1,6])
rev_arr=num_arr[::-1]
print("original array",num_arr)
print("reverse array",rev_arr)
```

1. Write a python function to sum of all the elements in a list

```
def sum_list(L1):
```

```
    sum=0
    for x in L1:
        sum +=x
    return sum
L1=[1,2,3,5,7,9,8,5,3,1]
L1=list(range(10))
total_sum=sum_list(L1)
print("sum of elements in the list=",total_sum)
```

Write a python function to calculate the factorial of a number. the function accept the number as an argument.

```
def fact(n):
    f=1
    while(n>0):
        f=f*n
        n -=1

    return f
n=int(input("Enter any number="))
print("factorial of the number=",fact(n))
```

3. Write a python function to check whether a number falls within a given range

```
 def isInRange(start,end,num):
    if start<=num<=end:
        return True
    else:
        return False
```

```
start=int(input("enter start value of range="))
end=int(input("enter end value of the range="))
num=int(input("enter any number="))
if(isInRange(start,end,num)):
   print(f"{num} is in range{start}to {end}")
else:
   print(f"{num} is not in range{start}to {end}")
```

4. Write a python function that takes a list and returns a new list with distict elements from the first list

Sample list:[1, 2 , 2, 3, 3, 3, 3, 4, 5]

Unique list:[1, 2, 3, 4, 5]

```
def unique_list(list1):
   list2=[]
   for d in list1:
      if d not in list2:
         list2.append(d)
   return list2
org_list=[1,2,3,3,4,5,6,6,7]
unq_list=unique_list(org_list)
print("original list is=",org_list)
print("unique list=",unq_list)
```