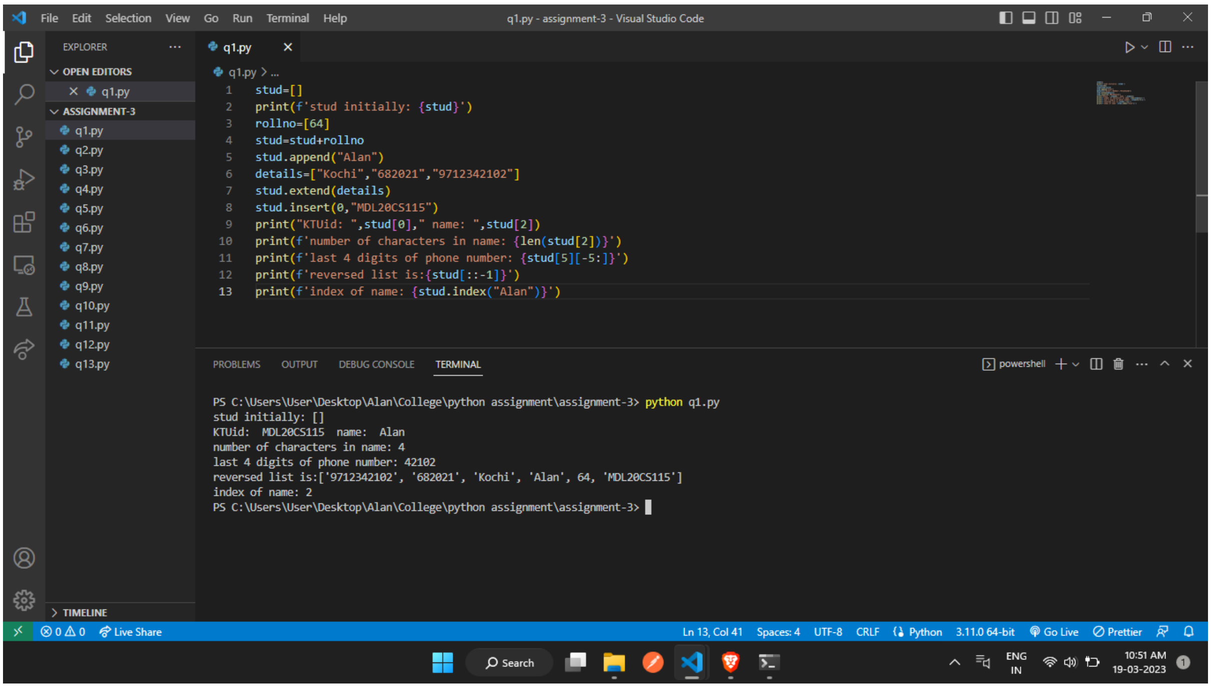
Programming in Python CST 362
Assignment 3

ALAN GEORGE MATHEWS
ROLL NO: 11

Learning outcome: Learn list, tuple and set
Date of submission:15-March-2023 before 10am
Note: Create a pdf file with program and output. Submit the printout

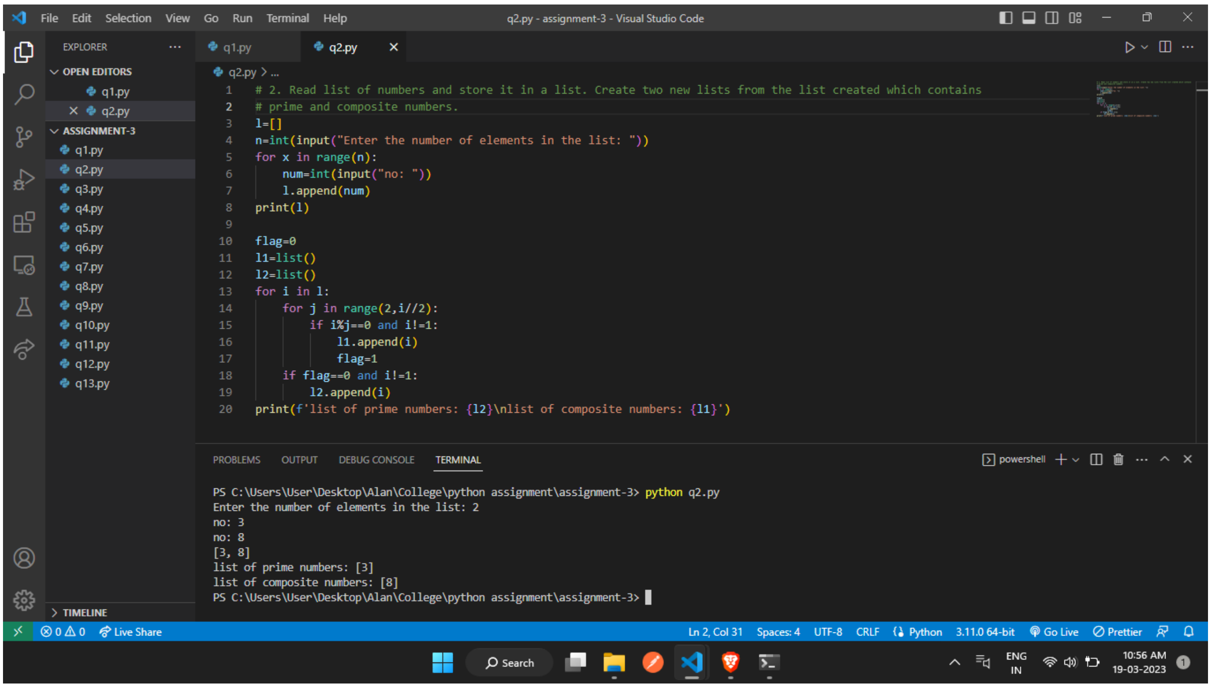
1. Write commands for the following
a. Create an empty list (stud)
b. Add your roll number to the list (use + operator)
c. Append your name (use append)
d. Extend the list with your place and pin and mobile number (extend)
e. Insert your KTU-ID at stud [0]
f. Print your KTU-ID and name
g. Print the number of characters in your name.
h. Print last 5 digit of the phone number
I.Reverse the stud list
j.Find the index of your name.


File Edit Selection View Go Run Terminal Help
q1.py - assignment-3 - Visual Studio Code
EXPLORER
OPEN EDITORS
q1.py
ASSIGNMENT-3
q1.py
q2.py
q3.py
q4.py
q5.py
q6.py
q7.py
q8.py
q9.py
q10.py
q11.py
q12.py
q13.py
TIMELINE
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
powershell
Ln 13, Col 41 Spaces: 4 UTF-8 CRLF Python 3.11.0 64-bit Go Live Prettier
Live Share
Search
ENG IN
10:51 AM
19-03-2023

```python
stud=[]
print(f'stud initially: {stud}')
rollno=[64]
stud=stud+rollno
stud.append("Alan")
details=["Kochi","682021","9712342102"]
stud.extend(details)
stud.insert(0,"MDL20CS115")
print("KTUid: ",stud[0]," name: ",stud[2])
print(f'number of characters in name: {len(stud[2])}')
print(f'last 4 digits of phone number: {stud[5][-5:]}')
print(f'reversed list is:{stud[::-1]}')
print(f'index of name: {stud.index("Alan")}')
```

```
PS C:\Users\User\Desktop\Alan\College\python assignment\assignment-3> python q1.py
stud initially: []
KTUid:  MDL20CS115  name:  Alan
number of characters in name: 4
last 4 digits of phone number: 42102
reversed list is:['9712342102', '682021', 'Kochi', 'Alan', 64, 'MDL20CS115']
index of name: 2
PS C:\Users\User\Desktop\Alan\College\python assignment\assignment-3>
```

**2. Read list of numbers and store it in a list. Create two new lists from the list created which contains
prime and composite numbers.**

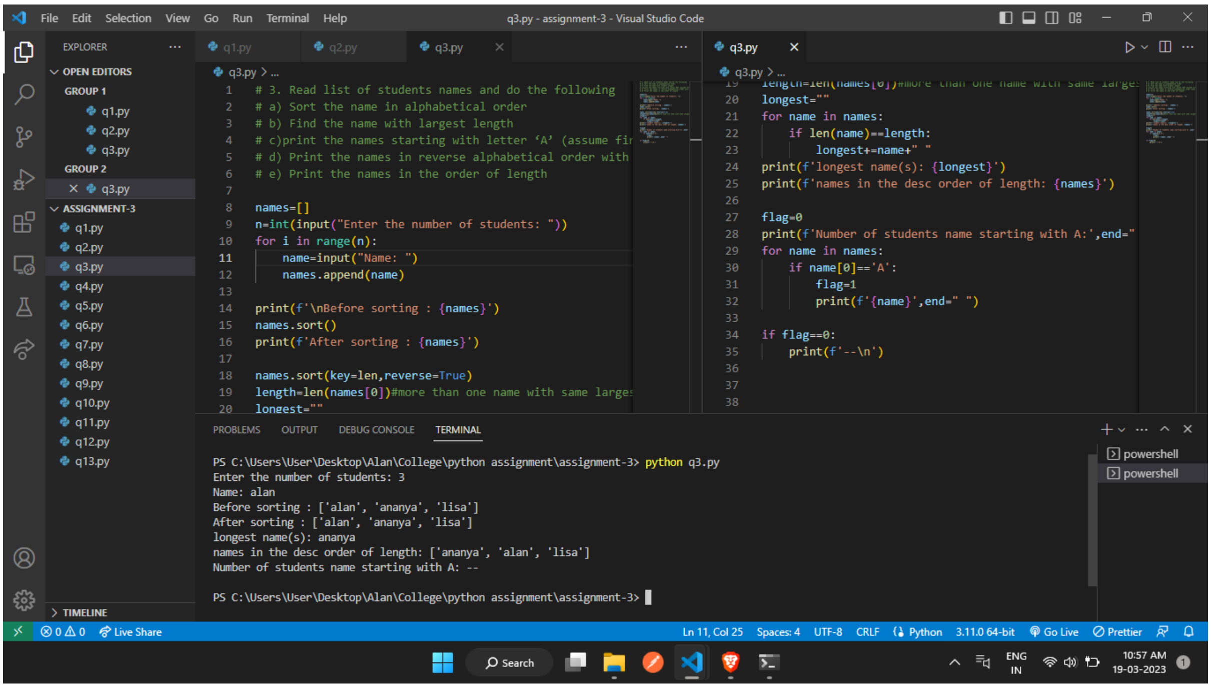


File Edit Selection View Go Run Terminal Help
q2.py - assignment-3 - Visual Studio Code
EXPLORER
OPEN EDITORS
q1.py
q2.py
ASSIGNMENT-3
q1.py
q2.py
q3.py
q4.py
q5.py
q6.py
q7.py
q8.py
q9.py
q10.py
q11.py
q12.py
q13.py
TIMELINE
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
powershell
Ln 2, Col 31 Spaces: 4 UTF-8 CRLF Python 3.11.0 64-bit Go Live Prettier
Live Share
Search
ENG IN
10:56 AM
19-03-2023

```python
# 2. Read list of numbers and store it in a list. Create two new lists from the list created which contains
# prime and composite numbers.
l=[]
n=int(input("Enter the number of elements in the list: "))
for x in range(n):
    num=int(input("no: "))
    l.append(num)
print(l)

flag=0
l1=list()
l2=list()
for i in l:
    for j in range(2,i//2):
        if i%j==0 and i!=1:
            l1.append(i)
            flag=1
    if flag==0 and i!=1:
        l2.append(i)
print(f'list of prime numbers: {l2}\nlist of composite numbers: {l1}')
```

```
PS C:\Users\User\Desktop\Alan\College\python assignment\assignment-3> python q2.py
Enter the number of elements in the list: 2
no: 3
no: 8
[3, 8]
list of prime numbers: [3]
list of composite numbers: [8]
PS C:\Users\User\Desktop\Alan\College\python assignment\assignment-3>
```

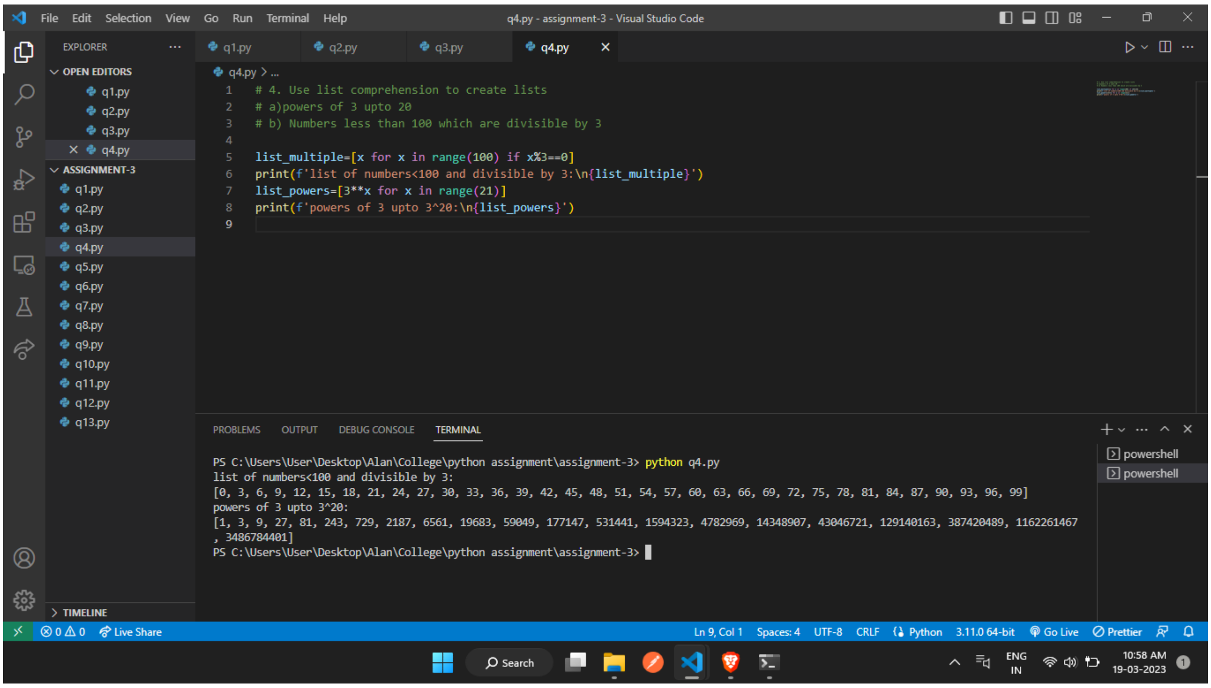
**3. Read list of students names and do the following
a) Sort the name in alphabetical order
b) Find the name with largest length
c)print the names starting with letter ‘A’ (assume first letter capital)
d) Print the names in reverse alphabetical order with all names converted to capital letters.
e) Print the names in the order of length**



```python
# 3. Read list of students names and do the following
# a) Sort the name in alphabetical order
# b) Find the name with largest length
# c)print the names starting with letter ‘A’ (assume fir
# d) Print the names in reverse alphabetical order with
# e) Print the names in the order of length

names=[]
n=int(input("Enter the number of students: "))
for i in range(n):
    name=input("Name: ")
    names.append(name)

print(f'\nBefore sorting : {names}')
names.sort()
print(f'After sorting : {names}')

names.sort(key=len,reverse=True)
length=len(names[0])#more than one name with same larges
longest=""
for name in names:
    if len(name)==length:
        longest+=name+" "
print(f'longest name(s): {longest}')
print(f'names in the desc order of length: {names}')

flag=0
print(f'Number of students name starting with A:',end="
for name in names:
    if name[0]=='A':
        flag=1
        print(f'{name}',end=" ")

if flag==0:
    print(f'--\n')
```

```
PS C:\Users\User\Desktop\Alan\College\python assignment\assignment-3> python q3.py
Enter the number of students: 3
Name: alan
Before sorting : ['alan', 'ananya', 'lisa']
After sorting : ['alan', 'ananya', 'lisa']
longest name(s): ananya
names in the desc order of length: ['ananya', 'alan', 'lisa']
Number of students name starting with A: --

PS C:\Users\User\Desktop\Alan\College\python assignment\assignment-3>
```

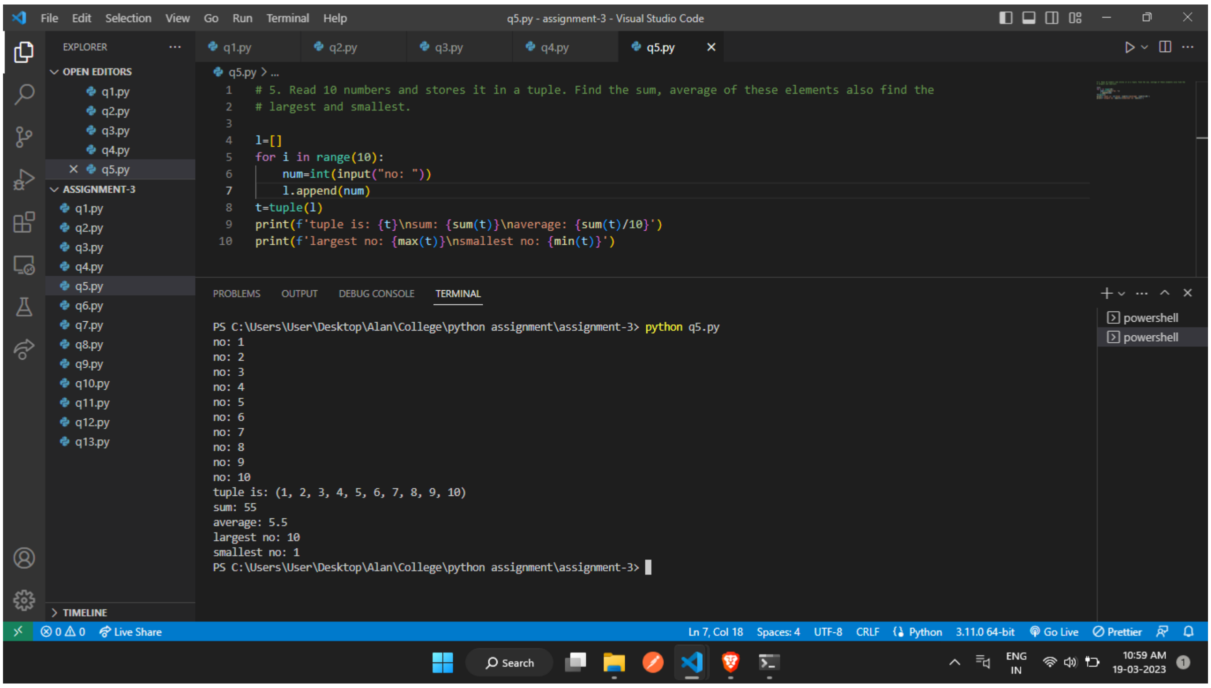
4. Use list comprehension to create lists
a)powers of 3 upto 20
b) Numbers less than 100 which are divisible by 3


File Edit Selection View Go Run Terminal Help
q4.py - assignment-3 - Visual Studio Code
EXPLORER
OPEN EDITORS
q1.py
q2.py
q3.py
q4.py
ASSIGNMENT-3
q1.py
q2.py
q3.py
q4.py
q5.py
q6.py
q7.py
q8.py
q9.py
q10.py
q11.py
q12.py
q13.py
TIMELINE
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
powershell
powershell
Ln 9, Col 1 Spaces: 4 UTF-8 CRLF Python 3.11.0 64-bit Go Live Prettier
Live Share
Search
ENG IN
10:58 AM 19-03-2023

```python
# 4. Use list comprehension to create lists
# a)powers of 3 upto 20
# b) Numbers less than 100 which are divisible by 3

list_multiple=[x for x in range(100) if x%3==0]
print(f'list of numbers<100 and divisible by 3:\n{list_multiple}')
list_powers=[3**x for x in range(21)]
print(f'powers of 3 upto 3^20:\n{list_powers}')
```

```
PS C:\Users\User\Desktop\Alan\College\python assignment\assignment-3> python q4.py
list of numbers<100 and divisible by 3:
[0, 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 39, 42, 45, 48, 51, 54, 57, 60, 63, 66, 69, 72, 75, 78, 81, 84, 87, 90, 93, 96, 99]
powers of 3 upto 3^20:
[1, 3, 9, 27, 81, 243, 729, 2187, 6561, 19683, 59049, 177147, 531441, 1594323, 4782969, 14348907, 43046721, 129140163, 387420489, 1162261467
, 3486784401]
PS C:\Users\User\Desktop\Alan\College\python assignment\assignment-3>
```

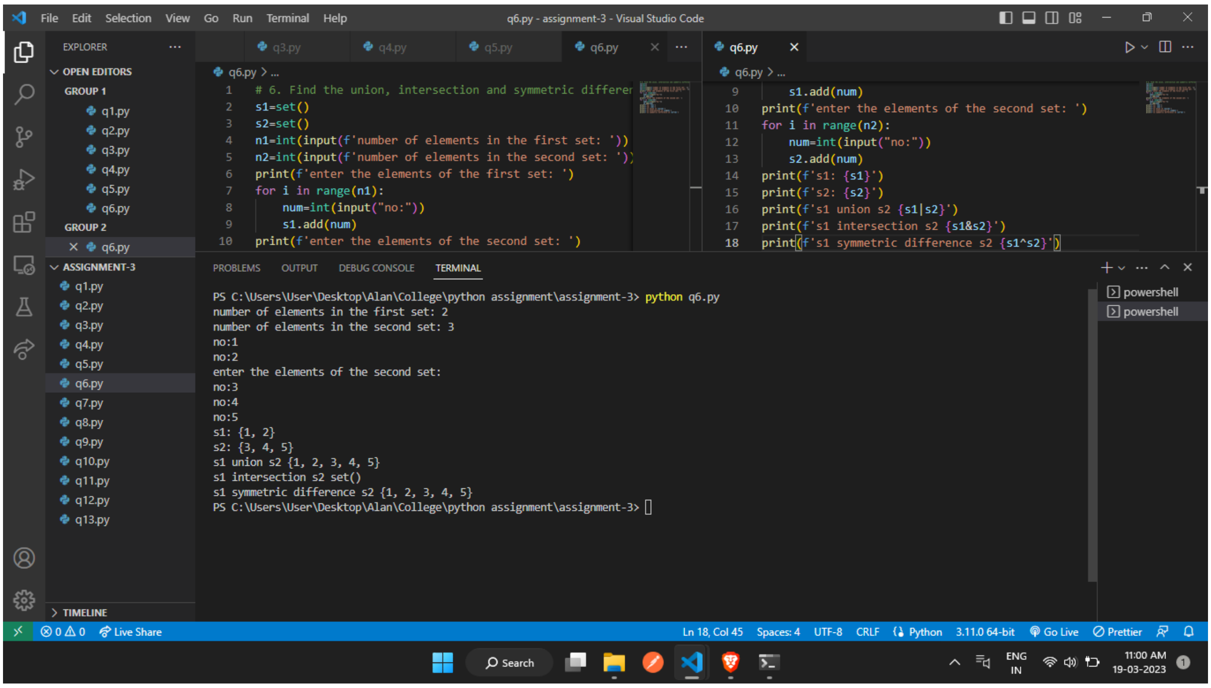
5. Read 10 numbers and stores it in a tuple. Find the sum, average of these elements also find the
largest and smallest.


File Edit Selection View Go Run Terminal Help
q5.py - assignment-3 - Visual Studio Code
EXPLORER
OPEN EDITORS
q1.py
q2.py
q3.py
q4.py
q5.py
ASSIGNMENT-3
q1.py
q2.py
q3.py
q4.py
q5.py
q6.py
q7.py
q8.py
q9.py
q10.py
q11.py
q12.py
q13.py
TIMELINE
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
powershell
powershell
Ln 7, Col 18 Spaces: 4 UTF-8 CRLF Python 3.11.0 64-bit Go Live Prettier
Live Share
Search
ENG IN
10:59 AM 19-03-2023

```python
# 5. Read 10 numbers and stores it in a tuple. Find the sum, average of these elements also find the
# largest and smallest.

l=[]
for i in range(10):
    num=int(input("no: "))
    l.append(num)
t=tuple(l)
print(f'tuple is: {t}\nsum: {sum(t)}\naverage: {sum(t)/10}')
print(f'largest no: {max(t)}\nsmallest no: {min(t)}')
```

```
PS C:\Users\User\Desktop\Alan\College\python assignment\assignment-3> python q5.py
no: 1
no: 2
no: 3
no: 4
no: 5
no: 6
no: 7
no: 8
no: 9
no: 10
tuple is: (1, 2, 3, 4, 5, 6, 7, 8, 9, 10)
sum: 55
average: 5.5
largest no: 10
smallest no: 1
PS C:\Users\User\Desktop\Alan\College\python assignment\assignment-3>
```

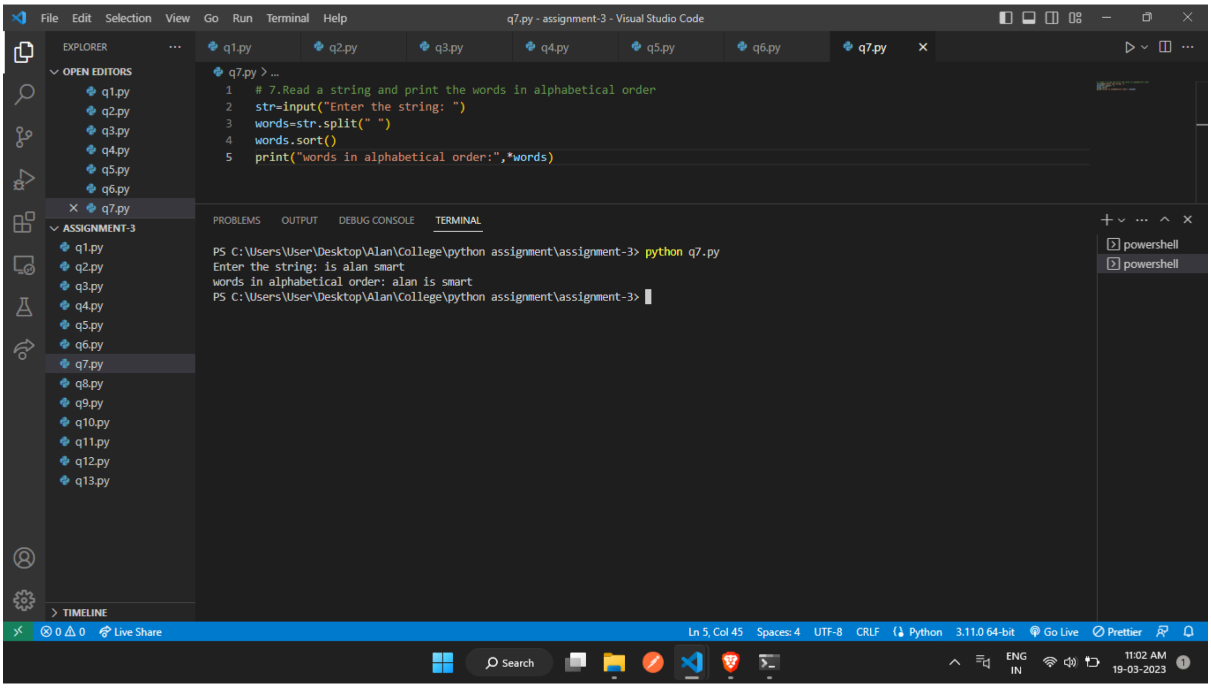
6. Find the union, intersection and symmetric difference of two sets A and B. Read the sets.



```python
# 6. Find the union, intersection and symmetric differen
s1=set()
s2=set()
n1=int(input(f'number of elements in the first set: '))
n2=int(input(f'number of elements in the second set: '))
print(f'enter the elements of the first set: ')
for i in range(n1):
    num=int(input("no:"))
    s1.add(num)
print(f'enter the elements of the second set: ')
for i in range(n2):
    num=int(input("no:"))
    s2.add(num)
print(f's1: {s1}')
print(f's2: {s2}')
print(f's1 union s2 {s1|s2}')
print(f's1 intersection s2 {s1&s2}')
print(f's1 symmetric difference s2 {s1^s2}')
```

```
PS C:\Users\User\Desktop\Alan\College\python assignment\assignment-3> python q6.py
number of elements in the first set: 2
number of elements in the second set: 3
no:1
no:2
enter the elements of the second set:
no:3
no:4
no:5
s1: {1, 2}
s2: {3, 4, 5}
s1 union s2 {1, 2, 3, 4, 5}
s1 intersection s2 set()
s1 symmetric difference s2 {1, 2, 3, 4, 5}
PS C:\Users\User\Desktop\Alan\College\python assignment\assignment-3>
```

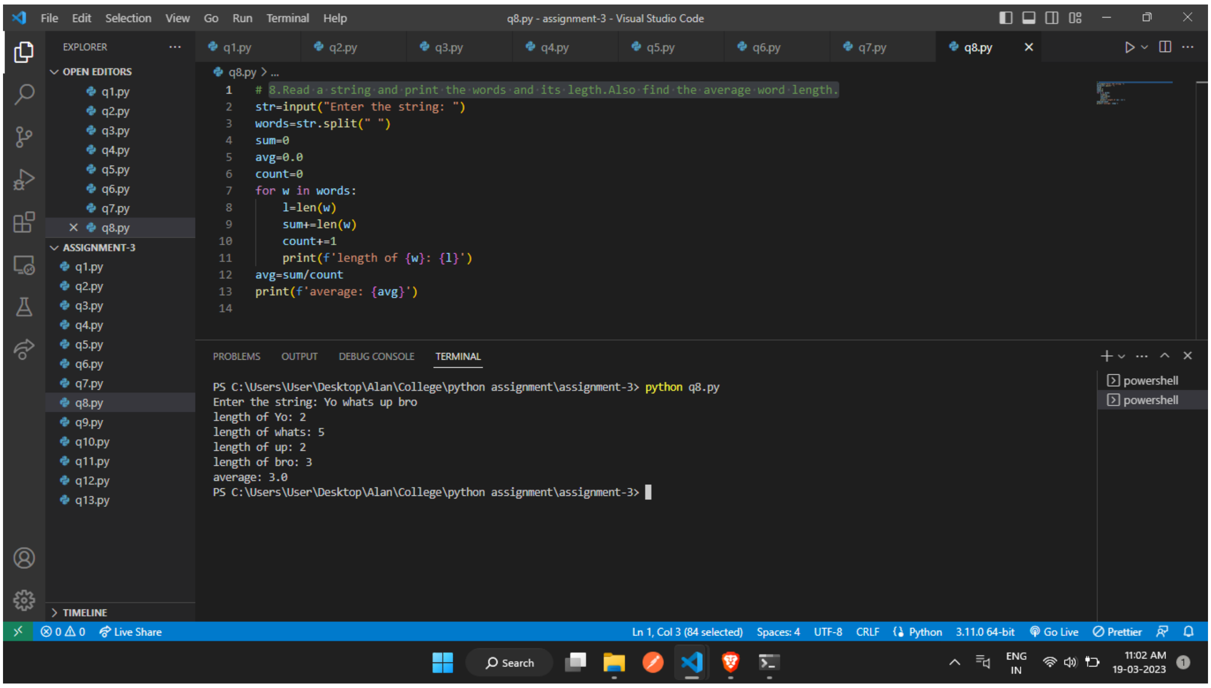
7.Read a string and print the words in alphabetical order



```python
# 7.Read a string and print the words in alphabetical order
str=input("Enter the string: ")
words=str.split(" ")
words.sort()
print("words in alphabetical order:",*words)
```

```
PS C:\Users\User\Desktop\Alan\College\python assignment\assignment-3> python q7.py
Enter the string: is alan smart
words in alphabetical order: alan is smart
PS C:\Users\User\Desktop\Alan\College\python assignment\assignment-3>
```

8.Read a string and print the words and its legth.Also find the average word length.

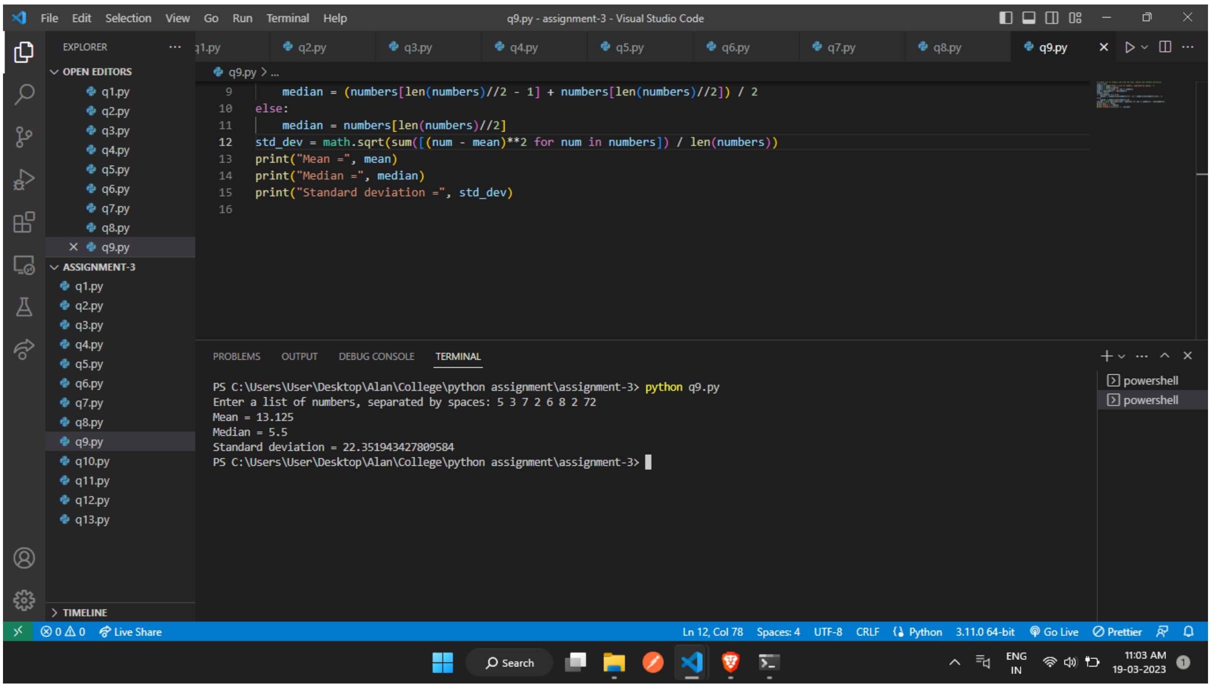


q8.py - assignment-3 - Visual Studio Code
File Edit Selection View Go Run Terminal Help
EXPLORER
OPEN EDITORS
ASSIGNMENT-3
TIMELINE
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
powershell
Ln 1, Col 3 (84 selected) Spaces: 4 UTF-8 CRLF Python 3.11.0 64-bit Go Live Prettier
Live Share
11:02 AM
19-03-2023

```python
# 8.Read a string and print the words and its legth.Also find the average word length.
str=input("Enter the string: ")
words=str.split(" ")
sum=0
avg=0.0
count=0
for w in words:
    l=len(w)
    sum+=len(w)
    count+=1
    print(f'length of {w}: {l}')
avg=sum/count
print(f'average: {avg}')
```

```
PS C:\Users\User\Desktop\Alan\College\python assignment\assignment-3> python q8.py
Enter the string: Yo whats up bro
length of Yo: 2
length of whats: 5
length of up: 2
length of bro: 3
average: 3.0
PS C:\Users\User\Desktop\Alan\College\python assignment\assignment-3>
```

9.Read list of numbers and find the mean, median and standard deviation.

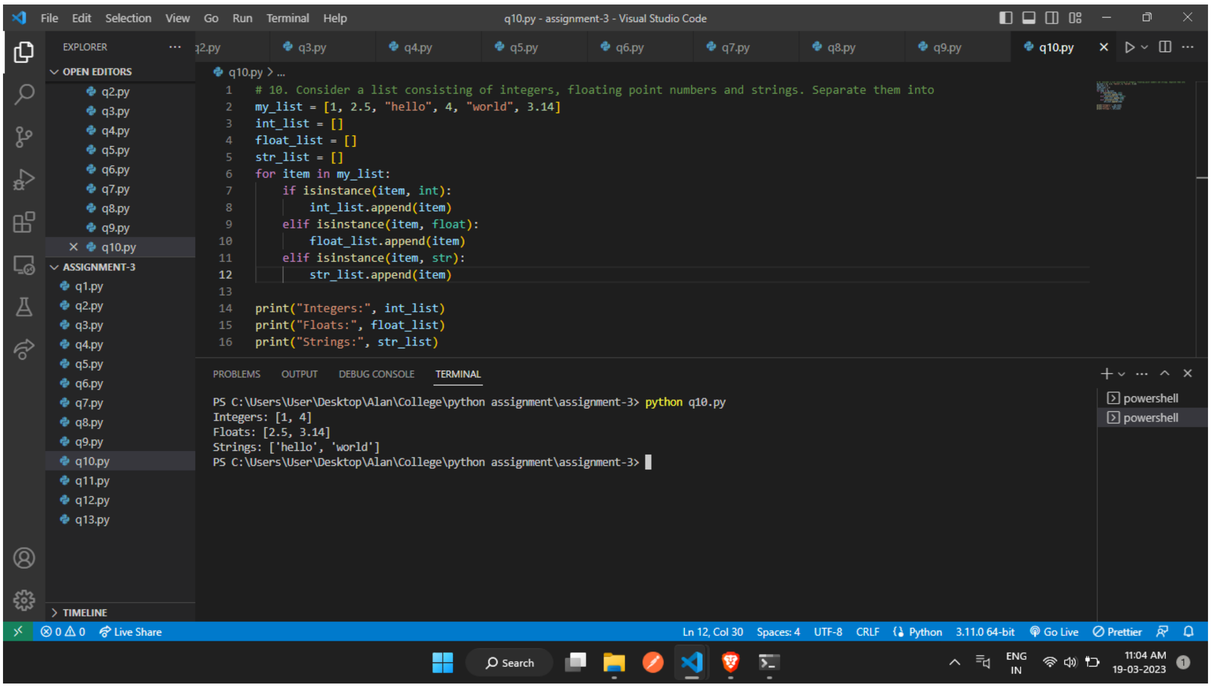


q9.py - assignment-3 - Visual Studio Code
File Edit Selection View Go Run Terminal Help
EXPLORER
OPEN EDITORS
ASSIGNMENT-3
TIMELINE
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
powershell
Ln 12, Col 78 Spaces: 4 UTF-8 CRLF Python 3.11.0 64-bit Go Live Prettier
Live Share
11:03 AM
19-03-2023

```python
    median = (numbers[len(numbers)//2 - 1] + numbers[len(numbers)//2]) / 2
else:
    median = numbers[len(numbers)//2]
std_dev = math.sqrt(sum([(num - mean)**2 for num in numbers]) / len(numbers))
print("Mean =", mean)
print("Median =", median)
print("Standard deviation =", std_dev)
```

```
PS C:\Users\User\Desktop\Alan\College\python assignment\assignment-3> python q9.py
Enter a list of numbers, separated by spaces: 5 3 7 2 6 8 2 72
Mean = 13.125
Median = 5.5
Standard deviation = 22.351943427809584
PS C:\Users\User\Desktop\Alan\College\python assignment\assignment-3>
```

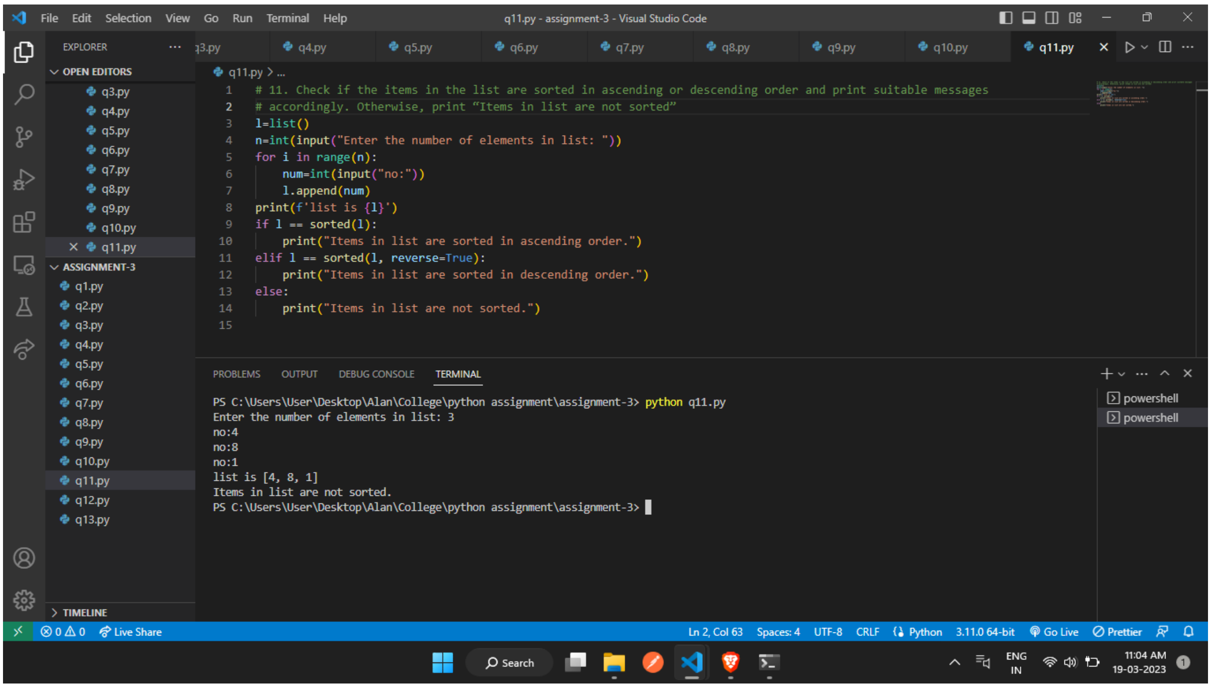
10. Consider a list consisting of integers, floating point numbers and strings. Separate them into
different lists depending on the data types.



```python
# 10. Consider a list consisting of integers, floating point numbers and strings. Separate them into
my_list = [1, 2.5, "hello", 4, "world", 3.14]
int_list = []
float_list = []
str_list = []
for item in my_list:
    if isinstance(item, int):
        int_list.append(item)
    elif isinstance(item, float):
        float_list.append(item)
    elif isinstance(item, str):
        str_list.append(item)

print("Integers:", int_list)
print("Floats:", float_list)
print("Strings:", str_list)
```

```
PS C:\Users\User\Desktop\Alan\College\python assignment\assignment-3> python q10.py
Integers: [1, 4]
Floats: [2.5, 3.14]
Strings: ['hello', 'world']
PS C:\Users\User\Desktop\Alan\College\python assignment\assignment-3>
```

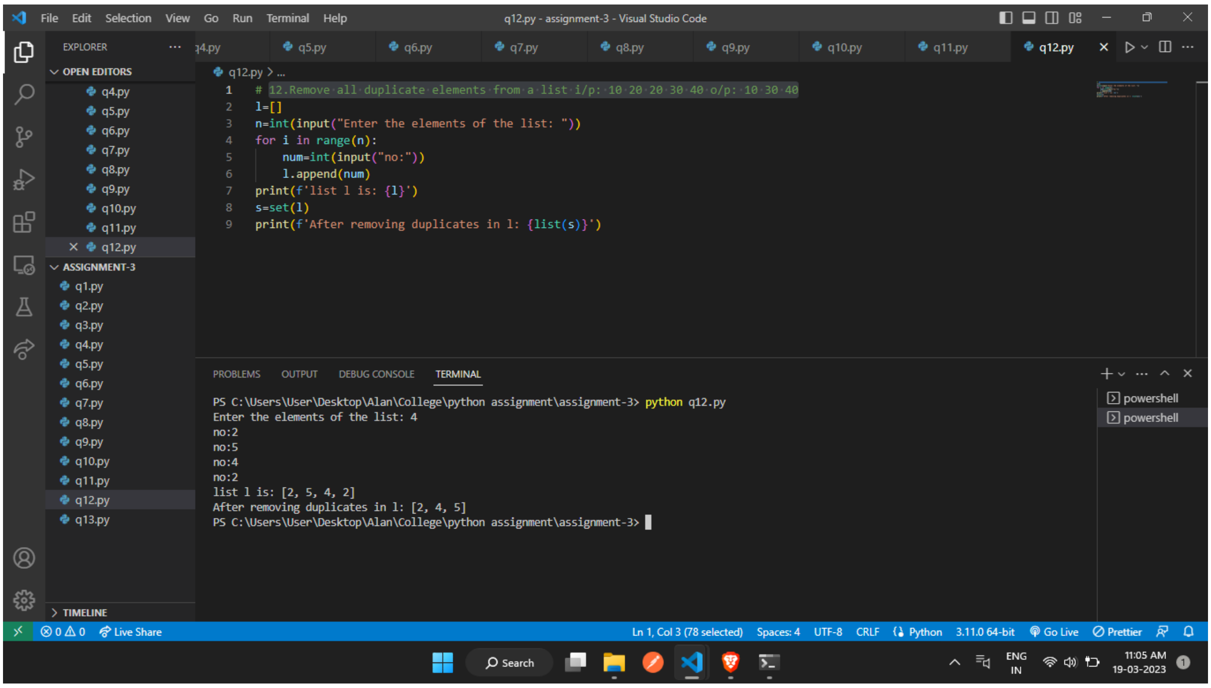
11. Check if the items in the list are sorted in ascending or descending order and print suitable messages
accordingly. Otherwise, print “Items in list are not sorted”



```python
# 11. Check if the items in the list are sorted in ascending or descending order and print suitable messages
# accordingly. Otherwise, print “Items in list are not sorted”
l=list()
n=int(input("Enter the number of elements in list: "))
for i in range(n):
    num=int(input("no:"))
    l.append(num)
print(f'list is {l}')
if l == sorted(l):
    print("Items in list are sorted in ascending order.")
elif l == sorted(l, reverse=True):
    print("Items in list are sorted in descending order.")
else:
    print("Items in list are not sorted.")
```

```
PS C:\Users\User\Desktop\Alan\College\python assignment\assignment-3> python q11.py
Enter the number of elements in list: 3
no:4
no:8
no:1
list is [4, 8, 1]
Items in list are not sorted.
PS C:\Users\User\Desktop\Alan\College\python assignment\assignment-3>
```

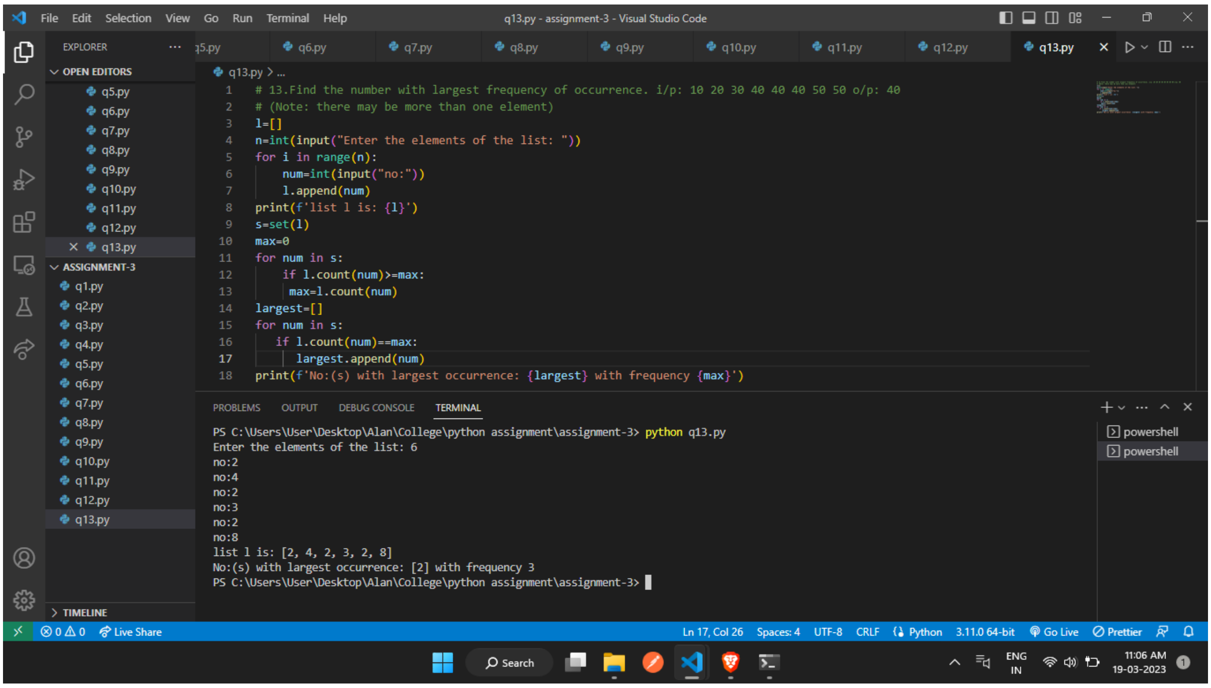
12.Remove all duplicate elements from a list i/p:10 20 20 30 40 o/p:10 30 40


File Edit Selection View Go Run Terminal Help
q12.py - assignment-3 - Visual Studio Code
EXPLORER
OPEN EDITORS
ASSIGNMENT-3
q12.py > ...
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
powershell
TIMELINE
Ln 1, Col 3 (78 selected) Spaces: 4 UTF-8 CRLF Python 3.11.0 64-bit Go Live Prettier
11:05 AM
19-03-2023

```python
# 12.Remove all duplicate elements from a list i/p: 10 20 20 30 40 o/p: 10 30 40
l=[]
n=int(input("Enter the elements of the list: "))
for i in range(n):
    num=int(input("no:"))
    l.append(num)
print(f'list l is: {l}')
s=set(l)
print(f'After removing duplicates in l: {list(s)}')
```

```
PS C:\Users\User\Desktop\Alan\College\python assignment\assignment-3> python q12.py
Enter the elements of the list: 4
no:2
no:5
no:4
no:2
list l is: [2, 5, 4, 2]
After removing duplicates in l: [2, 4, 5]
PS C:\Users\User\Desktop\Alan\College\python assignment\assignment-3>
```

13.Find the number with largest frequency of occurrence. i/p:10 20 30 40 40 40 50 50 o/p:40
(Note: there may be more than one element)


File Edit Selection View Go Run Terminal Help
q13.py - assignment-3 - Visual Studio Code
EXPLORER
OPEN EDITORS
ASSIGNMENT-3
q13.py > ...
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
powershell
TIMELINE
Ln 17, Col 26 Spaces: 4 UTF-8 CRLF Python 3.11.0 64-bit Go Live Prettier
11:06 AM
19-03-2023

```python
# 13.Find the number with largest frequency of occurrence. i/p: 10 20 30 40 40 40 50 50 o/p: 40
# (Note: there may be more than one element)
l=[]
n=int(input("Enter the elements of the list: "))
for i in range(n):
    num=int(input("no:"))
    l.append(num)
print(f'list l is: {l}')
s=set(l)
max=0
for num in s:
    if l.count(num)>=max:
     max=l.count(num)
largest=[]
for num in s:
   if l.count(num)==max:
      largest.append(num)
print(f'No:(s) with largest occurrence: {largest} with frequency {max}')
```

```
PS C:\Users\User\Desktop\Alan\College\python assignment\assignment-3> python q13.py
Enter the elements of the list: 6
no:2
no:4
no:2
no:3
no:2
no:8
list l is: [2, 4, 2, 3, 2, 8]
No:(s) with largest occurrence: [2] with frequency 3
PS C:\Users\User\Desktop\Alan\College\python assignment\assignment-3>
```