LAB – 1
PYTHON BASIC PRACTICE – I

SATWIK SAURAV(210905272)

1. Assigning Values to Variables

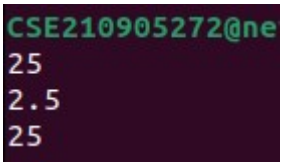
```
counter = 100 # An integer assignment
miles = 1000.0 # A floating point
name = "John" # A string
print (counter)
print (miles)
print (name)
```

2. Multiple Assignment

```
a=b=c=1
a, b, c = 1, 2, "john"
```

3. Python Numbers

```
a = 5 # integer assignment
b= 4.56 #floating point assignment
#mathematical operations with scalar variables
print (5*a)
print (a/2)
print(a**2)
```



4. NumPy

```
str = 'Hello World!'
print (str) # Prints complete string
print (str[0]) # Prints first character of the string
print (str[2:5]) # Prints characters starting from 3rd to 5th
print (str[2:]) # Prints string starting from 3rd character
print (str * 2) # Prints string two times
print (str + "TEST") # Prints concatenated string
```

```
CSE210905272@networklab:~/DistributedSystems/Lab1/sample$ python3 e1.py
100
1000.0
John
CSE210905272@networklab:~/DistributedSystems/Lab1/sample$ python3 e2.py
Hello World!
H
llo
llo World!
Hello World!Hello World!
Hello World!TEST
```

5. Updating a string

var1 = 'Hello World!'
print ("Updated String :", var1[:6] + 'Python')

6. String formatting operator

print("My name is %s and weight is %d kg!" % ('Satwik', 80))

```
$ /bin/python3 /home/CSE210905272/DistributedSystems/Lab1/sample/e3.py
Updated String : Hello Python
My name is Satwik and weight is 80 kg!
```

7. Built−in String methods

str = "this is string example...wow!!!";
print (str.capitalize())

str.count('s')

str.find('example')

print (str.lower())

print (str.replace("is", "was"))

print (str.swapcase())

print (str.title())

```
CSE210905272@networklab:~/Distribute
This is string example...wow!!!
this is string example...wow!!!
thwas was string example...wow!!!
THIS IS STRING EXAMPLE...WOW!!!
This Is String Example...Wow!!!
```

8. Python list

```
list = [ 'abcd', 786 , 2.23, 'john', 70.2 ]
tinylist = [123, 'john']
print (list) # Prints complete list
print (list[0]) # Prints first element of the list
print (list[1:3]) # Prints elements starting from 2nd till 3rd
print (list[2:]) # Prints elements starting from 3rd element
print (tinylist * 2) # Prints list two times
print (list + tinylist) # Prints concatenated lists

list = ['physics', 'chemistry', 1997, 2000]
list.append('maths')
print(list)

del list[2]

print(len(list))
print(list.count('physics'))

#will insert an item in the specified index
list = ['physics', 'chemistry', 1997, 2000];
list.insert (2, 'maths')
print(list)
```

```
CSE210905272@networklab:~/DistributedSystems/Lab1/
['abcd', 786, 2.23, 'john', 70.2]
abcd
[786, 2.23]
[2.23, 'john', 70.2]
[123, 'john', 123, 'john']
['abcd', 786, 2.23, 'john', 70.2, 123, 'john']
['physics', 'chemistry', 1997, 2000, 'maths']
4
1
['physics', 'chemistry', 1997]
['physics', 'chemistry', 'maths', 1997, 2000]
```

```
list.remove('chemistry') #will remove the item specified

list.reverse() #will reverse the objects of the list in place.
print(list)
```

```
CSE210905272@networklab:~/DistributedSystems/Lab1/
['abcd', 786, 2.23, 'john', 70.2]
abcd
[786, 2.23]
[2.23, 'john', 70.2]
[123, 'john', 123, 'john']
['abcd', 786, 2.23, 'john', 70.2, 123, 'john']
['physics', 'chemistry', 1997, 2000, 'maths']
4
1
['physics', 'chemistry', 1997]
['physics', 'chemistry', 'maths', 1997, 2000]
[2000, 1997, 'maths', 'physics']
```

Python TUPLE
Tuples are lists that cannot be edited

tuple = ('abcd', 786 , 2.23, 'john', 70.2)
list = ['abcd', 786 , 2.23, 'john', 70.2]
tuple[2] = 1000 # Invalid syntax with tuple

```
CSE210905272@networklab:~/DistributedSystems/Lab1/sample$ python3 e6.py
Traceback (most recent call last):
  File "/home/CSE210905272/DistributedSystems/Lab1/sample/e6.py", line 3,
dule>
    tuple[2] = 1000 # Invalid syntax with tuple
TypeError: 'tuple' object does not support item assignment
```

EXAMPLE 1:

```
num=float(input('Enter a number:'))
if num>0:
        print('pos number')
elif num==0:
        print('zero')
else:
        print('Neg number')
```

```
CSE210905272@networklab:~/DistributedSystems/Lab1/sample$ python3 eg1.py
Enter a number:3
pos number
CSE210905272@networklab:~/DistributedSystems/Lab1/sample$ python3 eg1.py
Enter a number:-1
Neg number
CSE210905272@networklab:~/DistributedSystems/Lab1/sample$ python3 eg1.py
Enter a number:0
zero
```

EXAMPLE 2:

```
x=float(input('Enter a number:'))
if x<10:
        print('smaller')
if x>20:
        print('bigger')
print('Finished')
```

```
CSE210905272@networklab:~/DistributedSystems/Lab1/sample$ python3 eg2.py
Enter a number:11
Finished
CSE210905272@networklab:~/DistributedSystems/Lab1/sample$ python3 eg2.py
Enter a number:9
smaller
Finished
CSE210905272@networklab:~/DistributedSystems/Lab1/sample$ python3 eg2.py
Enter a number:21
bigger
Finished
```

3

```
for i in range(5):
print(i)
if i>2:
print('Bigger than 2')
print('Done with i',i)
```

```
CSE210905272@networklab:~/DistributedSystems/Lab1/sample$ python3 eg3.py
0
1
2
3
Bigger than 2
Done with i 3
4
Bigger than 2
Done with i 4
```

4

```
x=int(input('Enter a number:'))
for i in range(1,x+1):
if x%i ==0:
print(i)
```

```
CSE210905272@networklab:~/D
Enter a number:10
1
2
5
10
```

5

```
from math import *
x= [9, 41, 12, 3, 74, 15]
Largest=-inf
for i in x:
if i>Largest:
Largest=i
print(Largest)
```

```
CSE210905272@networklab:~
9
41
74
```

6

```
from math import *
x= [9, 41, 12, 3, 74, 15]
smallest=inf
for i in x:
if i<smallest:
smallest=i
print(smallest)
```

```
CSE210905272@networklab:~
9
9
9
3
3
3
```

7

```
x= [9, 41, 12, 3, 74, 15]
count=sum=avg=0
for i in x:
count=count+1
sum=sum+i
avg=sum/count
print(count)
print(sum)
print(avg)
```

```
CSE210905272@networklab:~/DistributedSystems/Lab1/sample$ pyth
6
154
25.666666666666668
```

8

```
x= [9, 41, 12, 3, 74, 15]
for i in x:
if i>20:
print (i)
```

```
CSE210905272@networklab:~/Dis
41
74
```

9

```
sample > eg9.py > ...
1   x= [9, 41, 12, 3, 74, 15]
2   res=[]
3   for i in x:
4       if i>20:
5           res.append(i)
6   print(res)
```

```
CSE210905272@netwo
CSE210905272@networklab:
CSE210905272@networklab:
[41, 74]
CSE210905272@networklab:
```

10

```python
import numpy as np
x= [9, 41, 12, 3, 74, 15]
y=np.zeros(len(x))
for i in range(len(x)):
    if x[i]>20:
        y[i]=x[i]
print(y)
```

```
CSE210905272@networklab:~/Distribute
[ 0. 41.  0.  0. 74.  0.]
CSE210905272@networklab:~/Distribute
```

11

sample > eg11.py > ...

```python
price = 100
if price > 100:
    print("price is greater than 100")
elif price == 100:
    print("price is 100")
elif price < 100:
    print("price is less than 100")
```

```
CSE21090527
CSE210905272@netw
price is 100
CSE210905272@netw
```

12

sample > eg12.py > ...

```python
# initialize the variable
i=1
n=5
# while loop from i = 1 to 5
while i <= n:
    print(i)
    i=i+1
```

```
CSE210905272@networkla
1
2
3
4
5
CSE210905272@networkla
```

13

sample > eg13.py > ...

```python
total = 0
number = int(input('Enter a number: '))
# add numbers until number is zero
while number != 0:
    total += number # total = total + number
# take integer input again
    number = int(input('Enter a number: '))
print('total =', total)
```

```
CSE210905272@network
Enter a number: 5
Enter a number: 6
Enter a number: 7
Enter a number: 8
Enter a number: 9
Enter a number: 0
total = 35
CSE210905272@network
```

Q1)Write a program to find the area of rectangle. Take input from user.

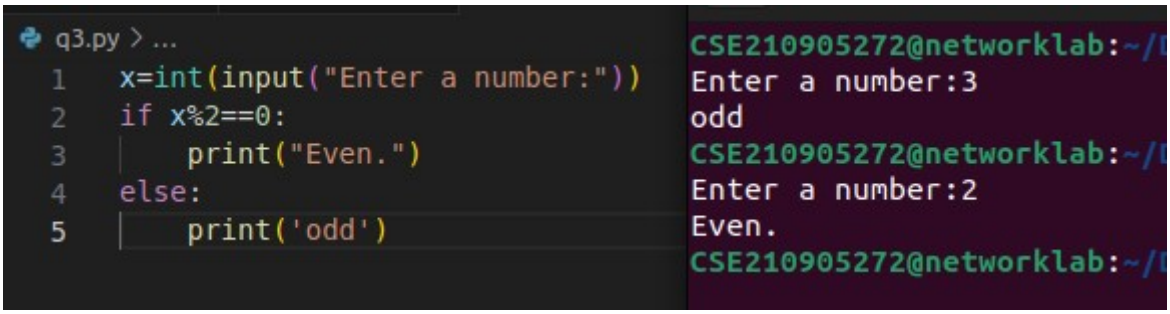
```
x=int(input("Enter a: "))
y=int(input("Enter b: "))
x=x*y
print('Area: ', x)
```

Q2) Write a program to swap

```
x=3
y=4
print('x: ',x , 'y: ',y)
temp=x
x=y
y=temp
print(' SWap x: ',x , 'y: ',y)
```

.

Q3) Write a program to find whether a number is even or odd.



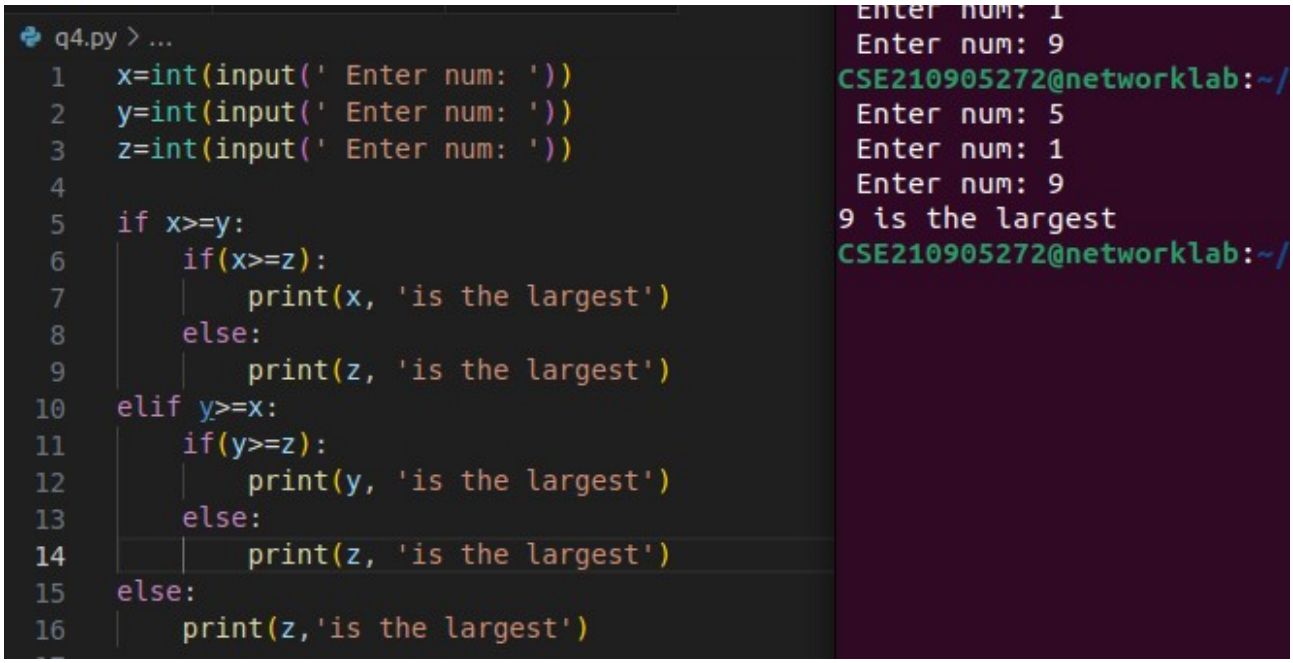
.

Q4)Write a program to check the largest among the given three numbers.

```
x=int(input(' Enter num: '))
```

```
y=int(input(' Enter num: '))
z=int(input(' Enter num: '))

if x>=y:
if(x>=z):
print(x, 'is the largest')
else:
print(z, 'is the largest')
elif y>=x:
if(y>=z):
print(y, 'is the largest')
else:
print(z, 'is the largest')
else:
print(z,'is the largest')
```



.

5.Write a program to demonstrate List functions and operations.

```
list = [ 'MIT', 12345 , 3.14, 'TTT', 69.2, 'MIT', 'CAT', 2323]
tinylist = [123, 'BALL']
print (list) # Prints complete list
print (list[0]) # Prints first element of the list
print (list[1:3]) # Prints elements starting from 2nd till 3rd
print (list[2:]) # Prints elements starting from 3rd element
print (tinylist * 2) # Prints list two times
print (list + tinylist) # Prints concatenated list
list.append('maths')
print(list)
del list[2]
print(len(list))
```

```
print('Number of times MIT occurs:' ,list.count('MIT'))
list.insert (2, 'maths')
print(list)
```

```
q5.py > ...
1   list = [ 'MIT', 12345 , 3.14, 'TTT', 69.2, 'MIT', 'CAT', 2323]
2   tinylist = [123, 'BALL']
3   print (list) # Prints complete list
4   print (list[0]) # Prints first element of the list
5   print (list[1:3]) # Prints elements starting from 2nd till 3rd
6   print (list[2:]) # Prints elements starting from 3rd element
7   print (tinylist * 2) # Prints list two times
8   print (list + tinylist) # Prints concatenated list
9   list.append('maths')
10  print(list)
11  del list[2]
12  print(len(list))
13  print('Number of times MIT occurs:' ,list.count('MIT'))
14  list.insert (2, 'maths')
15  print(list)
```

```
CSE210905272@networklab: ~/DistributedSystems/Lab1
CSE210905272@networklab:~/DistributedSystems/Lab1$ python3 q5.py
['MIT', 12345, 3.14, 'TTT', 69.2, 'MIT', 'CAT', 2323]
MIT
[12345, 3.14]
[3.14, 'TTT', 69.2, 'MIT', 'CAT', 2323]
[123, 'BALL', 123, 'BALL']
['MIT', 12345, 3.14, 'TTT', 69.2, 'MIT', 'CAT', 2323, 123, 'BALL']
['MIT', 12345, 3.14, 'TTT', 69.2, 'MIT', 'CAT', 2323, 'maths']
8
Number of time MIT occurs: 2
['MIT', 12345, 'maths', 'TTT', 69.2, 'MIT', 'CAT', 2323, 'maths']
CSE210905272@networklab:~/DistributedSystems/Lab1$
```

.

6) Consider the tuple(1,3,5,7,9,2,4,6,8,10). Write a program to print half its values in one line and
the other half in the next line.

```
q6.py > ...
1   tuple=(1,2,3,4,5,6,7,8,10)
2
3   x=len(tuple)//2
4
5   print(tuple[:x])
6   print(tuple[x:])
```

```
CSE210905272@networklab:
(1, 2, 3, 4)
(5, 6, 7, 8, 10)
CSE210905272@networklab:
```

.

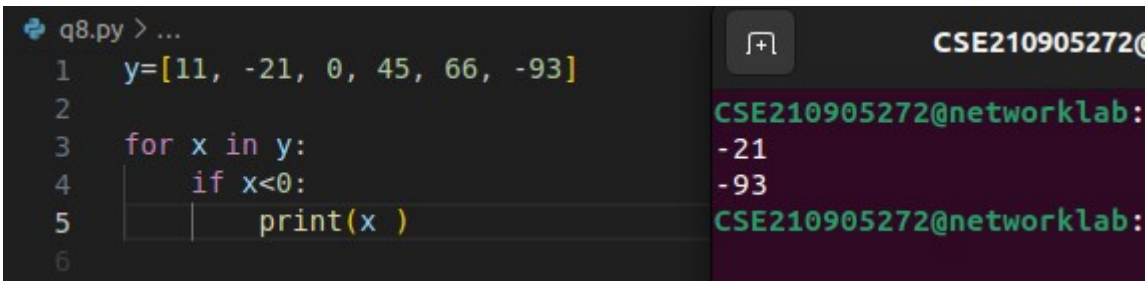
7) Consider the tuple (12, 7, 38, 56, 78). Write a program to print another tuple whose values are even number in the given tuple.

```
q7.py > ...
1   tuple=(12, 7, 38, 56, 78)
2
3   tri=[x for x in tuple if x%2==0]
4   print(tri)
```

```
CSE210905272@networklab:
[12, 38, 56, 78]
CSE210905272@networklab:
```

.

8) Write a Python program to print negative Numbers in a List using for loop. Eg. [11, −21, 0, 45, 66, −93].



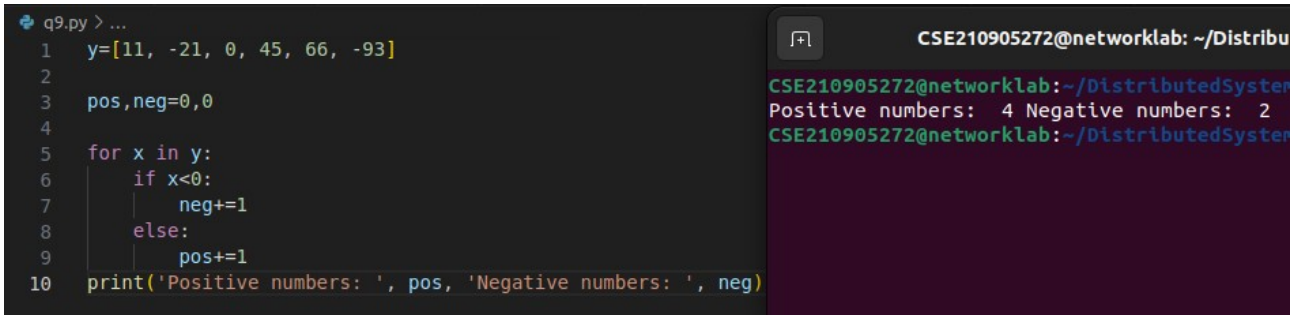
.

9) Write a Python program to count positive and negative numbers in a List.

```
y=[11, -21, 0, 45, 66, -93]

pos,neg=0,0

for x in y:
if x<0:
neg+=1
else:
pos+=1
print('Positive numbers: ', pos, 'Negative numbers: ', neg)
```



.

10)Write a Python program to remove all even elements from a list.