LAB-1

STRINGS

1. **Updating a string**

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

Ans: Updated String :Hello Python

2. **String formatting operator**

One of Python's coolest features is the string format operator **%**. This operator is unique to strings and makes up for the pack of having functions f rom C's printf() family. Following is a simple example:

print("My name is %s and weight is %d kg!" % ('Abay', 55))

My name is Abay and weight is 55 kg!

3. **Built–in String methods**

capitalize() , the first character of the string is converted to upper case.

str = "this is string example wow!!!";

print (str.capitalize())

Ans: This is string example wow!!!

count(), counts the number of times a specific 'substring', occurrence in the main string

str = "this is string example....wow!!!";

str.count('s')

Ans: 3 # three times's', appears in str.

find() , will locate the position of searching 'substring', (index)

Str.find('example')

Ans: 15 #at 15th index, the substring 'example' is placed.

lower(),returns a copy of the string in which all case–based characters have been lowercased.

str = "THIS IS STRING EXAMPLE....WOW!!!";
print (str.lower())

this is string example.... wow!!!

replace(), this method returns a copy of the string with all occurrences of substring old replaced by new.

str = "this is string example....wow!!! this is really string";

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

Ans: thwas was string example....wow!!! thwas was really string

swapcase(), this method returns a copy of the string in which all the case–based characters have had their case swapped.

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

Ans: THIS IS STRING EXAMPLE.... WOW!!!"

title(),returns a copy of the string in which first characters of all the words are capitalized.

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

Ans: This Is String Example....Wow!!!

OUTPUT:

```
~/Python$ cd Aditya_21095216
bash: cd: Aditya_21095216: No such file or director
~/Python$ cd Aditya_210905216
~/Python/Aditya_210905216$ python sample.py
Updated String : Hello Python
~/Python/Aditya_210905216$ python sample.py
My name is Abay and weight is 55 kg!
~/Python/Aditya_210905216$ python sample.py
This is string example wow!!!
~/Python/Aditya_210905216$ python sample.py
  File "/home/runner/Python/Aditya_210905216/sample.py"
, line 2
    str.count( ‘s’)
               ^
SyntaxError: invalid character '‘' (U+2018)
~/Python/Aditya_210905216$ python sample.py
~/Python/Aditya_210905216$ python sample.py
3
~/Python/Aditya_210905216$ python sample.py
15
~/Python/Aditya_210905216$ python sample.py
this is string example...wow!!!
~/Python/Aditya_210905216$ python sample.py
thwas was string example ...wow!!! thwas was really str
ing
~/Python/Aditya_210905216$ python sample.py
THIS IS STRING EXAMPLE ...WOW!!!
~/Python/Aditya_210905216$ python sample.py
This Is String Example ...Wow!!!
~/Python/Aditya_210905216$
```

LIST

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

Looping & Conditional Branches in Python

Eg.1

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

Eg.2

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

Eg.3

```
x=5
print('Before 5')
if x==5:
        print ('this is 5')
        print('still 5')
print('After 5')
print('Before 6')
if x==6:
        print('this is 6')
print ('After 6')
```

list.count('physics')

Ans: 1

list.pop (), will remove and return the last item from the list.

list = ['physics', 'chemistry', 1997, 2000];

list.pop()

Ans: ['physics', 'chemistry', 1997]

list.insert() , will insert an item in the specified index

list = ['physics', 'chemistry', 1997, 2000];

list.insert (2, 'maths')

Ans: ['physics', 'chemistry', 'maths', 1997, 2000];

list = ['physics', 'chemistry', 1997, 2000];

list.remove('chemistry'), will remove the item specified.

Ans: = ['physics', 1997, 2000];

list = ['physics', 'chemistry', 1997, 2000];

list.reverse(), will reverse the objects of the list in place.

Ans: [2000, 1997, 'chemistry','physics']

OUTPUT

```
~/Python/Aditya_210905216$ python sample.py
['abcd', 786, 2.23, 'john', 70.2]
abcd
[786, 2.23]
['abcd', 786, 2.23, 'john', 70.2, 123, 'john']
~/Python/Aditya_210905216$ python sample.py
['physics', 'chemistry', 1997, 2000, 'maths']
~/Python$ cd Aditya_210905216
~/Python/Aditya_210905216$ python sample.py
['physics', 'chemistry', 1997, 2000, 'maths']

 Count:

1

 Pop:

['physics', 'chemistry', 1997]

 Insert:

['physics', 'chemistry', 'maths', 1997, 2000]

 Remove:

['physics', 1997, 2000]

 Reverse:

[2000, 1997, 'chemistry', 'physics']
~/Python/Aditya_210905216$
```

LOOPING AND CONDITIONAL BRANCHING

Looping & Conditional Branches in Python

Eg.1
```
num=float(input('Enter a number:'))
if num>0:
   print('pos number')
elif num==0:
   print('zero')
else:
   print('Neg number')
```

Eg.2
```
x=float(input('Enter a number:'))
if x<10:
   print('smaller')
if x>20:
   print('bigger')
print('Finished')
```

Eg.3
```
x=5
print('Before 5')
if x==5:
        print ('this is 5')
        print('still 5')
print('After 5')
print('Before 6')
if x==6:
        print('this is 6')
print ('After 6')
```

Eg.4: which will never print?

```
x=float(input('Enter a number:'))
if x<20:
   print('Below 20')
elif x<10:
   print('Below 10')
else:
   print('something else')
```

Ans: Below 10

Eg.5: Nested Decisions

```
x=42
if x>1:
        print('above one')
        if x<100:
                print('less than 100')
print('All done')
```

Eg.6: Ternary operator
```
age=15
b=('kid' if age<18 else 'adult')
print(b)        #this will print 'kid'
```

OUTPUT:

```
cd "Aditya_210905216"
~/Python/Aditya_210905216$ python sample.py
Enter a number:55
pos number
~/Python/Aditya_210905216$ python sample.py
Enter a number:33
bigger
Finished
~/Python/Aditya_210905216$ python sample.py
Before 5
this is 5
still 5
After 5
Before 6
After 6
~/Python/Aditya_210905216$ python sample.py
Enter a number:33
something else
~/Python/Aditya_210905216$ python sample.py
above one
below 100
all done
~/Python/Aditya_210905216$ python sample.py
kid
~/Python/Aditya_210905216$
```

FOR LOOPS

Looping & Conditional Branches in Python

Eg.1
```
num=float(input('Enter a number:'))
if num>0:
   print('pos number')
elif num==0:
   print('zero')
else:
   print('Neg number')
```

Eg.2
```
x=float(input('Enter a number:'))
if x<10:
   print('smaller')
if x>20:
   print('bigger')
print('Finished')
```

Eg.3
```
x=5
print('Before 5')
if x==5:
        print ('this is 5')
        print('still 5')
print('After 5')
print('Before 6')
if x==6:
        print('this is 6')
print ('After 6')
```

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

Eg.4: Calculate factors of a number
```
x=int(input('Enter a number:'))
for  i  in  range(1,x+1):
        if x%i ==0:
                print(i)
x=10
1,2,5,10
```

Eg.5: Calculate largest number in an array
```
from math import *
Let x= [9, 41, 12, 3, 74, 15]
Largest=-inf
for i in x:
        if i>Largest:
                Largest=i
Print(Largest)
```

Eg.6: Calculate smallest number in an array
```
from math import *
Let x= [9, 41, 12, 3, 74, 15]
smallest=inf
for i  in  x:
        if i<smallest:
                smallest=i
print(smallest)
```

Eg.7: Calculate the count, sum and average of numerical array
```
Let x= [9, 41, 12, 3, 74, 15]

count=sum=avg=0

for  i  in  x:
        count=count+1
        sum=sum+1
avg=sum/count
print(count)
print(sum)
print(avg)
```

Eg.4: which will never print?
```
x=float(input('Enter a number:'))
if x<20:
   print('Below 20')
elif x<10:
   print('Below 10')
else:
   print('something else')
```

Ans: Below 10

Eg.5: Nested Decisions
```
x=42
if x>1:
        print('above one')
        if x<100:
                print('less than 100')
print('All done')
```

Eg.6: Ternary operator
```
age=15
b=('kid' if age<18 else 'adult')
print(b)        #this will print 'kid'
```

Usage of For-loop

Eg.1
```
for  val  in [5,4,3,2,1]:
        print(val)
 print ('Done')
```

Eg.2
```
stud=['Ram','Vijay','Nithya','Anu','Ramesh','suja']
for k in stud:
        print('Hello:', k)
print('done')
```

Eg.3

Eg.8: Filtering in a loop (print all numbers >20)
```
Let x= [9, 41, 12, 3, 74, 15]

for  i  in  x:
        if i>20:
                print (i)
```

Eg.9: For the above problem, instead of printing the result, store the elements in a variable (object)
```
Let x= [9, 41, 12, 3, 74, 15]
res=[]
for  i  in  x:
        if i>20:
                res.append(i)
```

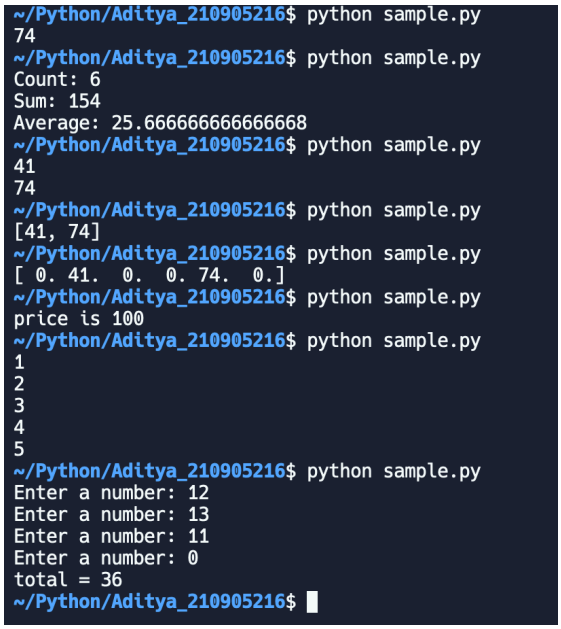
Eg.10: For the above x, replace all elements <20 into zero. Store the result in different variable (object)
```
y=np.zeros(len(x))
for  i  in  range(len(x)):
        if x[i]>20:
                y[i]=x[i]
print(y)
```

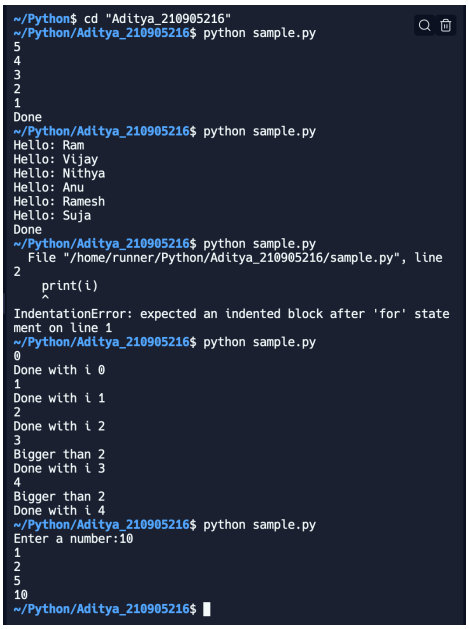
Eg. 11: Program using elif to check more than one condition.
```
price = 100

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")
```

Eg. 12: Program using while loop -
program to display numbers from 1 to 5
```
 # initialize the variable
 i = 1
 n = 5

 # while loop from i = 1 to 5

 while i <= n:
 print(i)
  i = i + 1
```

Eg. 13:Take input from user , until user enters zero and calculate the sum of entered numbers.
```
        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)
```

OUTPUT:


~/Python/Aditya_210905216$ python sample.py
74
~/Python/Aditya_210905216$ python sample.py
Count: 6
Sum: 154
Average: 25.666666666666668
~/Python/Aditya_210905216$ python sample.py
41
74
~/Python/Aditya_210905216$ python sample.py
[41, 74]
~/Python/Aditya_210905216$ python sample.py
[0. 41. 0. 0. 74. 0.]
~/Python/Aditya_210905216$ python sample.py
price is 100
~/Python/Aditya_210905216$ python sample.py
1
2
3
4
5
~/Python/Aditya_210905216$ python sample.py
Enter a number: 12
Enter a number: 13
Enter a number: 11
Enter a number: 0
total = 36
~/Python/Aditya_210905216$


~/Python$ cd "Aditya_210905216"
~/Python/Aditya_210905216$ python sample.py
5
4
3
2
1
Done
~/Python/Aditya_210905216$ python sample.py
Hello: Ram
Hello: Vijay
Hello: Nithya
Hello: Anu
Hello: Ramesh
Hello: Suja
Done
~/Python/Aditya_210905216$ python sample.py
File "/home/runner/Python/Aditya_210905216/sample.py", line
2
print(i)
^
IndentationError: expected an indented block after 'for' state
ment on line 1
~/Python/Aditya_210905216$ python sample.py
0
Done with i 0
1
Done with i 1
2
Done with i 2
3
Bigger than 2
Done with i 3
4
Bigger than 2
Done with i 4
~/Python/Aditya_210905216$ python sample.py
Enter a number:10
1
2
5
10
~/Python/Aditya_210905216$