

FEDERAL INSTITUTE OF SCIENCE AND TECHNOLOGY (FISAT)TM

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'FOCUS ON EXCELLENCE'

LABORATORY RECORD

20MCA131 - PROGRAMMING LAB

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FEDERAL INSTITUTE OF SCIENCE AND TECHNOLOGY
(FISAT)TM

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‘FOCUS ON EXCELLENCE’

CERTIFICATE

This is to certify that this is a Bonafide record of the Practical work done by Emmanuel Jose (FIT21MCA-2056) in the 20MCA131 PROGRAMMING Laboratory towards the partial fulfilment for the award of the Master Of Computer Applications during the academic year 2021-2022.

Signature of Staff in Charge

Signature of H.O.D

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Date:

Date of University practical examination

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External Examinee

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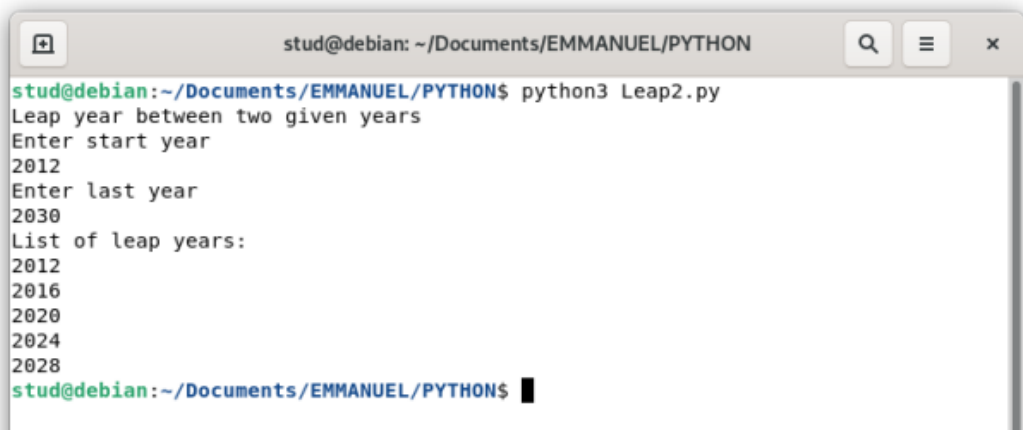
COURSE OUTCOME 1**CO1 Q-1**

Display future leap years from current year to a final year entered by user.

Program Code:

```
print("Print leap year between two given years")
print("Enter start year")
start Year=int(input())
print("Enter last year")
end Year=int(input())
print("List of leap years:")
for year in range(start Year, end Year):
    if(0==year%4)and(0!=year%100)or(0==year%400):
        print(year)
```

Output:



```
stud@debian: ~/Documents/EMMANUEL/PYTHON
stud@debian:~/Documents/EMMANUEL/PYTHON$ python3 Leap2.py
Leap year between two given years
Enter start year
2012
Enter last year
2030
List of leap years:
2012
2016
2020
2024
2028
stud@debian:~/Documents/EMMANUEL/PYTHON$
```

CO2 Q-2

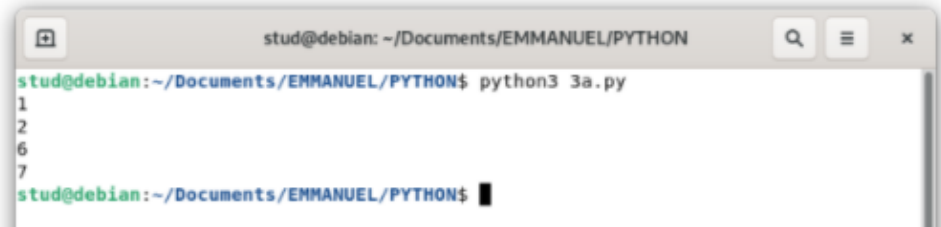
List Comprehensions:

a) Generate positive list of numbers from a given list of integers.

Program Code:

```
list=[1,-2,67,45,-5]
for num in list:
    if num>0:
        print(num)
```

Output:



```
stud@debian: ~/Documents/EMMANUEL/PYTHON
stud@debian:~/Documents/EMMANUEL/PYTHON$ python3 3a.py
1
2
6
7
stud@debian:~/Documents/EMMANUEL/PYTHON$
```

b) Square of N numbers.

Program code:

```
list=[5,8,-1,-2]
for num in list:
    print(num * num)
```

Output:



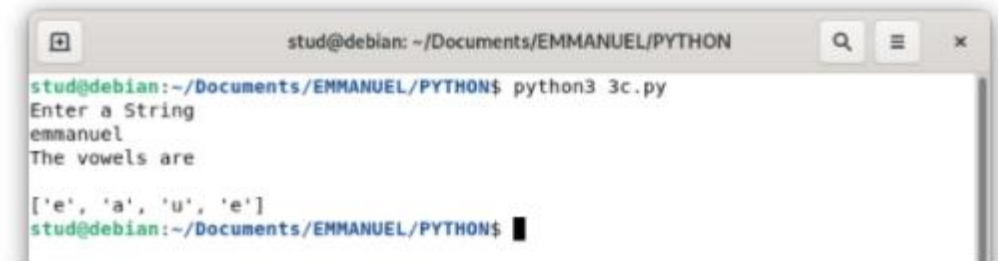
```
stud@debian: ~/Documents/EMMANUEL/PYTHON
stud@debian:~/Documents/EMMANUEL/PYTHON$ python3 3b.py
1
4
9
16
25
stud@debian:~/Documents/EMMANUEL/PYTHON$
```

c) Form a list of vowels selected from a given word.

Program Code:

```
stringA="emmanuel"
print("Given String:\n",stringA)
vowels="AaEeIiOoUu"
li=[]
for r in stringA:
    if r in vowels:
        li.append(r)
print(li)
```


Output:



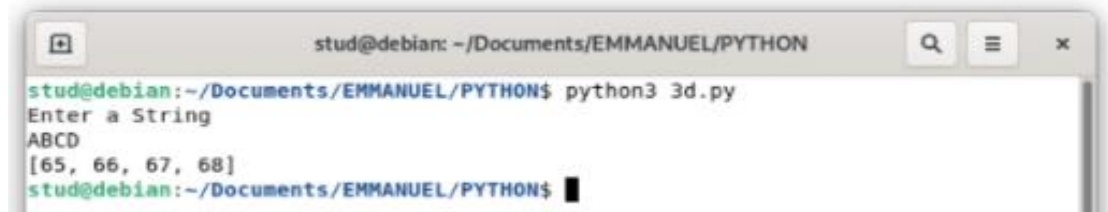
```
stud@debian: ~/Documents/EMMANUEL/PYTHON
stud@debian:~/Documents/EMMANUEL/PYTHON$ python3 3c.py
Enter a String
emmanuel
The vowels are
['e', 'a', 'u', 'e']
stud@debian:~/Documents/EMMANUEL/PYTHON$
```

d)List ordinal value of each element of a word.

Program code:

```
stringp="ABCD"
'''for c in stringp:
    print(ord(c))'''
s=[ord(p)for p in stringp]
    print(s)
```

Output:



```
stud@debian: ~/Documents/EMMANUEL/PYTHON
stud@debian:~/Documents/EMMANUEL/PYTHON$ python3 3d.py
Enter a String
ABCD
[65, 66, 67, 68]
stud@debian:~/Documents/EMMANUEL/PYTHON$
```

CO1 Q-3

Count the occurrences of each word in a line of text.

Program code:

```
s="HI hello, i am mia and i am dia"
l=s.split()
d={x:l.count(x) for x in l}
print(d)
```

Output:

```
{'HI': 1, 'hello,': 1, 'i': 2, 'am': 2, 'mia': 1, 'and': 1, 'dia': 1}
```

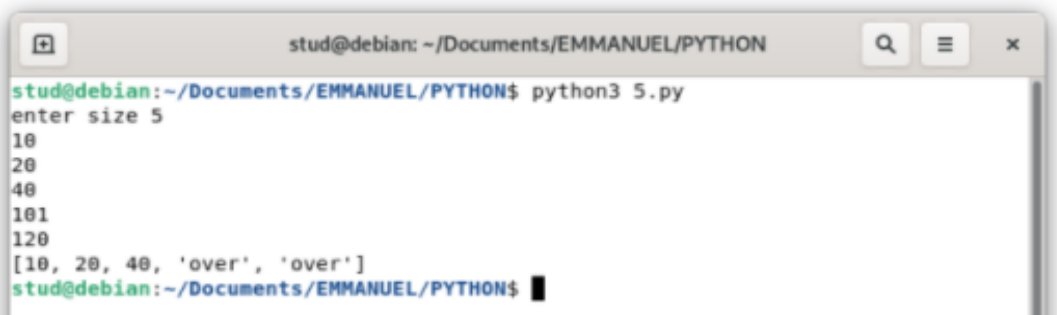
CO1 Q-4

Prompt the user for a list of integers. For all values greater than 100 store “over” instead.

Program code:

```
x=int(input("enter size"))
li=[]
for i in range(0,x):
    el=int(input())
    if(el>=100):
        li.append("over")
    else:
        li.append(el)
print(li)
```

Output:



```
stud@debian: ~/Documents/EMMANUEL/PYTHON
stud@debian:~/Documents/EMMANUEL/PYTHON$ python3 5.py
enter size 5
10
20
40
101
120
[10, 20, 40, 'over', 'over']
stud@debian:~/Documents/EMMANUEL/PYTHON$
```

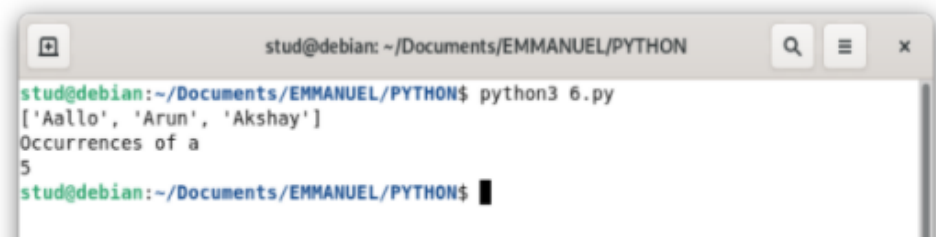
CO1 Q-5

Store the list of first names. Count the occurrence of “a” within the list

Program code:

```
list=['Aallo','Arun','Akshay']
count=0
print(list)
for i in list:
    for k in i:
        if(k=='a'):
            count=count+1
print(count)
```

Output:



```
stud@debian: ~/Documents/EMMANUEL/PYTHON
stud@debian:~/Documents/EMMANUEL/PYTHON$ python3 6.py
['Aallo', 'Arun', 'Akshay']
Occurrences of a
5
stud@debian:~/Documents/EMMANUEL/PYTHON$
```

CO1 Q-6

Enter 2 list of integers. Check (a) Whether list are of same length (b) whether list sums to same value (c) whether any value occur in both.

Program code:

```
l1=[2,4,6,8,10]
```

```
l2=[3,5,7,9,10]
```

```
print(l1)
```

```
print(l2)
```

```
if len(l1)==len(l2):
```

```
print("Lists are of same length")
```

```
else:
```

```
print("Lists are of different length")
```

```
s1=0
```

```
s2=0
```

```
for i in range(len(l1)):
```

```
s1=s1+l1[i]
```

```
print("Sum of first list is",s1)
```

```
for j in range(len(l2)):
```

```
s2=s2+l2[j]
```

```
print("Sum of second list is",s2)
```

```
if (s1==s2):
```

```
print("Sum of lists is same")
```

```
else:
```

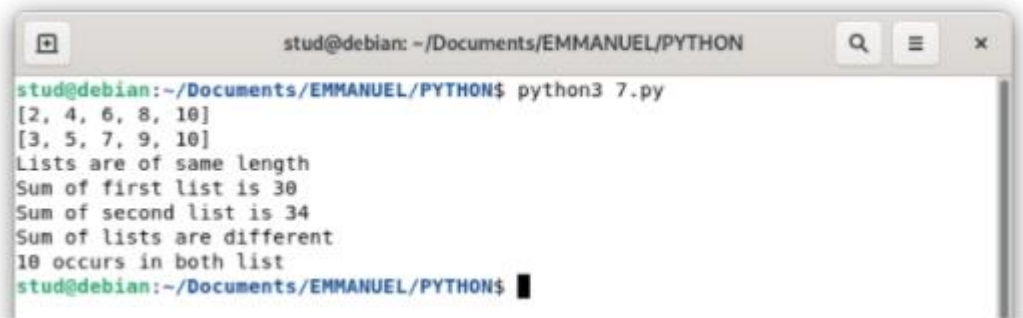
```
print("Sum of lists are different")
```

```
for i in l1:
```

```
if i in l2:
```

```
print(i,"occurs in both list")
```

Output:



```
stud@debian: ~/Documents/EMMANUEL/PYTHON
stud@debian:~/Documents/EMMANUEL/PYTHON$ python3 7.py
[2, 4, 6, 8, 10]
[3, 5, 7, 9, 10]
Lists are of same length
Sum of first list is 30
Sum of second list is 34
Sum of lists are different
10 occurs in both list
stud@debian:~/Documents/EMMANUEL/PYTHON$
```

CO1 Q-7

Get a string from an input string where all occurrences of first character replaced with "\$", except first character.

[eg: onion->oni\$n]

Program code:

```
s=input("enter a string\n")
print("entered string is:",s)
a=s[0]
str=s.replace(a,"$")
strl=a+str[1:]
print(strl)
```

Output:



```
stud@debian: ~/Documents/EMMANUEL/PYTHON
stud@debian:~/Documents/EMMANUEL/PYTHON$ python3 8.py
Enter a string: onion
Original string: onion
String: oni$n
stud@debian:~/Documents/EMMANUEL/PYTHON$
```

CO1 Q-8

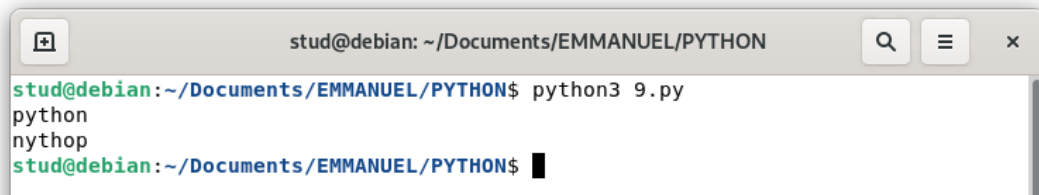
Create a string from given string where first and last characters exchanged.

[eg: python->nythop].

Program code:

```
a=input("enter a string")
print(a)
a1=a[0]
a2=a[-1]
print(a1)
print(a2)
rev=(a2+a[1:len(a)-1]+a1)
print(rev)
```

Output:

A terminal window titled 'stud@debian: ~/Documents/EMMANUEL/PYTHON'. The prompt is 'stud@debian:~/Documents/EMMANUEL/PYTHON\$'. The user enters 'python3 9.py'. The output is 'python' followed by 'nythop' on the next line. The prompt returns to 'stud@debian:~/Documents/EMMANUEL/PYTHON\$' with a cursor.

```
stud@debian:~/Documents/EMMANUEL/PYTHON$ python3 9.py
python
nythop
stud@debian:~/Documents/EMMANUEL/PYTHON$
```

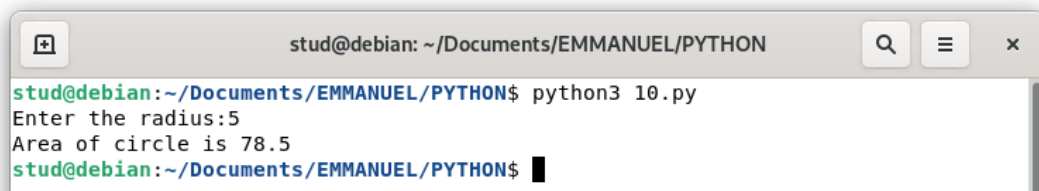
CO1 Q-9

Accept the radius from user and find area of circle.

Program code:

```
p=int(input("enter the radius"))
a=3.14*p*p
print(a)
```

Output:

A terminal window titled 'stud@debian: ~/Documents/EMMANUEL/PYTHON'. The prompt is 'stud@debian:~/Documents/EMMANUEL/PYTHON\$'. The user enters 'python3 10.py'. The output is 'Enter the radius:5' followed by 'Area of circle is 78.5' on the next line. The prompt returns to 'stud@debian:~/Documents/EMMANUEL/PYTHON\$' with a cursor.

```
stud@debian:~/Documents/EMMANUEL/PYTHON$ python3 10.py
Enter the radius:5
Area of circle is 78.5
stud@debian:~/Documents/EMMANUEL/PYTHON$
```

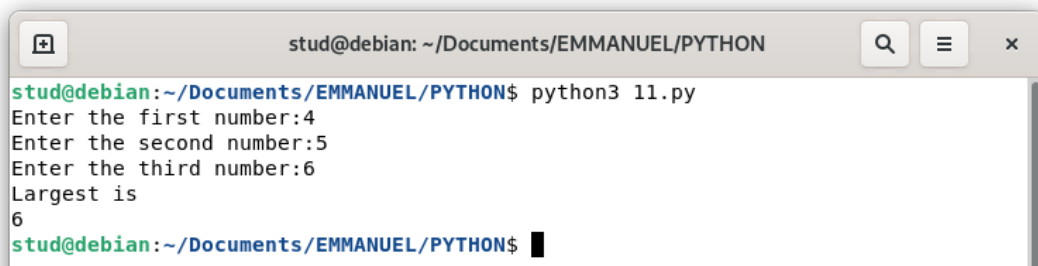
CO1 Q-10

Find biggest of 3 numbers entered.

Program code:

```
a=int(input("enter 1st number"))
b=int(input("enter 2nd number"))
c=int(input("enter 3rd number"))
ifa>b and a>c:
    print(a)
ifc>b and c>a:
    print(c)
else:
    print(b)
```

Output:



```

stud@debian: ~/Documents/EMMANUEL/PYTHON
stud@debian:~/Documents/EMMANUEL/PYTHON$ python3 11.py
Enter the first number:4
Enter the second number:5
Enter the third number:6
Largest is
6
stud@debian:~/Documents/EMMANUEL/PYTHON$

```

CO1 Q-11

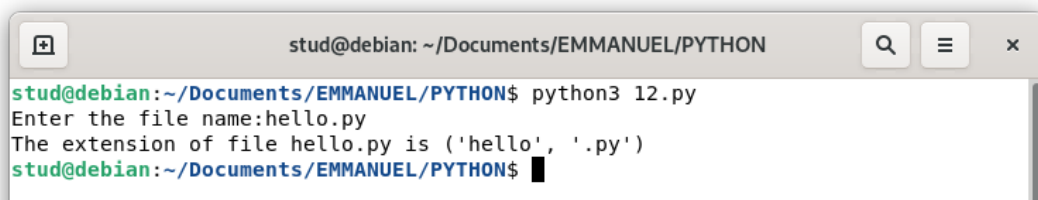
Accept a filename from user and print extension of that.
Program code:

```

Import os
a=input("Enter the filename\n")
print(os.path.splitext(a))

```

Output:



```

stud@debian: ~/Documents/EMMANUEL/PYTHON
stud@debian:~/Documents/EMMANUEL/PYTHON$ python3 12.py
Enter the file name:hello.py
The extension of file hello.py is ('hello', '.py')
stud@debian:~/Documents/EMMANUEL/PYTHON$

```

CO1 Q -12

Create a list of colors from comma-separated color names entered by user . Display First and last colors.

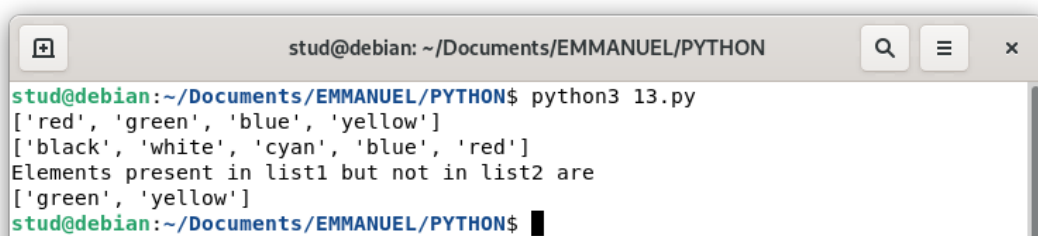
Program code:

```

list1=[]
string=input("Enter colors separated by comma:\n")
for I in string.split(","):
list1.append(i)
print("First and last colors in the list are",list1[0],"and",list1[-1])

```

Output:



```

stud@debian: ~/Documents/EMMANUEL/PYTHON
stud@debian:~/Documents/EMMANUEL/PYTHON$ python3 13.py
['red', 'green', 'blue', 'yellow']
['black', 'white', 'cyan', 'blue', 'red']
Elements present in list1 but not in list2 are
['green', 'yellow']
stud@debian:~/Documents/EMMANUEL/PYTHON$

```

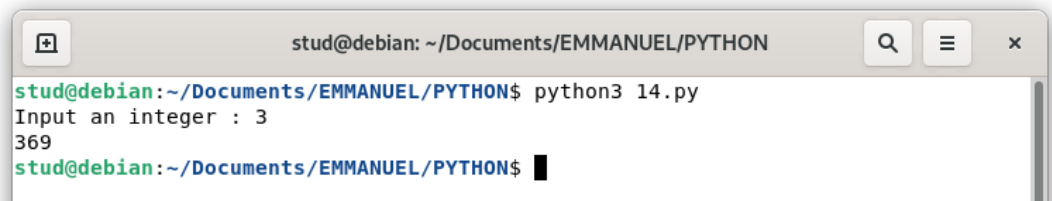
CO1 Q -13

Accept an integer n and compute $n+nn+nnn$.

Program code:

```
a=int(input("Input an integer:"))
n1=(a*1)
n2=(a*11)
n3=(a*111)
print(n1+n2+n3)
```

Output:



```
stud@debian: ~/Documents/EMMANUEL/PYTHON
stud@debian:~/Documents/EMMANUEL/PYTHON$ python3 14.py
Input an integer : 3
369
stud@debian:~/Documents/EMMANUEL/PYTHON$
```

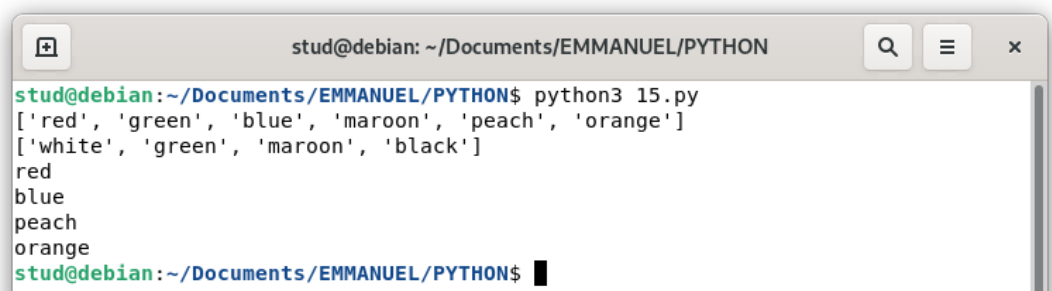
CO1 Q -14

Print out all colors from color- list1 not contained in color-list2.

Program code:

```
list1=["red","green","blue","yellow"]
list2=["black","white","cyan","blue","red"]
l3=[]
print(list1)
print(list2)
for i in list1:
    if i not in list2:
        l3.append(i)
print("Elements present in list1 but not in list2 are")
print(l3)
```

Output:



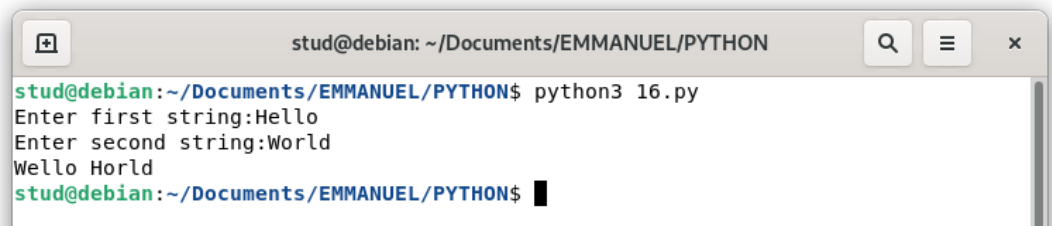
```
stud@debian:~/Documents/EMMANUEL/PYTHON$ python3 15.py
['red', 'green', 'blue', 'maroon', 'peach', 'orange']
['white', 'green', 'maroon', 'black']
red
blue
peach
orange
stud@debian:~/Documents/EMMANUEL/PYTHON$
```

CO1 Q -15

Create a single string separated with space from 2 strings swapping the character at position.

Program code:

```
str1=input("Enter string1:")
str2=input("Enter string2:")
temp=str1[0]
str1=str1.replace(str1[0],str2[0])
str2=str2.replace(str2[0],temp)
str=str1+" "+str2
print(str)
Output:
```



```
stud@debian: ~/Documents/EMMANUEL/PYTHON$ python3 16.py
Enter first string:Hello
Enter second string:World
Wello World
stud@debian: ~/Documents/EMMANUEL/PYTHON$
```

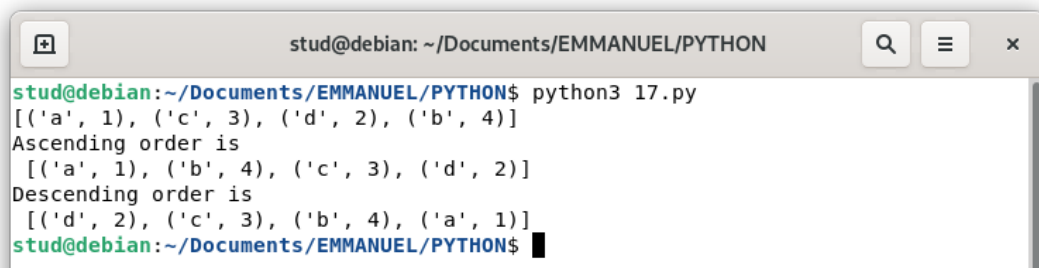
CO1 Q -16

Sort a dictionary in ascending and descending order

Program code:

```
d={ 1:2,3:4,4:3,2:1,0:0}
list1=list(d.items())
dict=dict(list1)
print("Dictionary=",dict)
list1.sort()
print('Ascending order is',list1)
list1=list(d.items())
list1.sort(reverse=True)
print('Descending order is',list1)
```


Output:



```

stud@debian: ~/Documents/EMMANUEL/PYTHON
stud@debian:~/Documents/EMMANUEL/PYTHON$ python3 17.py
[('a', 1), ('c', 3), ('d', 2), ('b', 4)]
Ascending order is
[('a', 1), ('b', 4), ('c', 3), ('d', 2)]
Descending order is
[('d', 2), ('c', 3), ('b', 4), ('a', 1)]
stud@debian:~/Documents/EMMANUEL/PYTHON$

```

CO1 Q -17

```

dict1={"Name":"Emmanuel","Age":21}

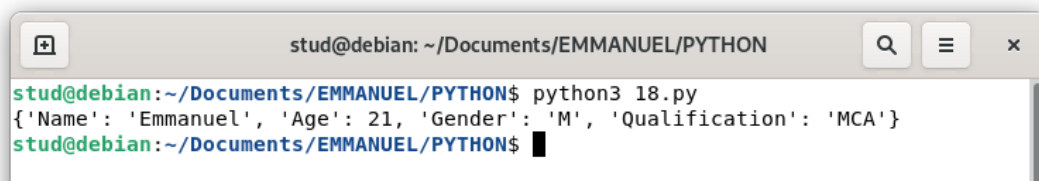
dict2={"Gender":"M","Qualification":"MCA"}

dict1.update(dict2)

print(dict1)

```

Output:



```

stud@debian: ~/Documents/EMMANUEL/PYTHON
stud@debian:~/Documents/EMMANUEL/PYTHON$ python3 18.py
{'Name': 'Emmanuel', 'Age': 21, 'Gender': 'M', 'Qualification': 'MCA'}
stud@debian:~/Documents/EMMANUEL/PYTHON$

```

PROGRAM-18

Find gcd of 2 numbers

Program code:

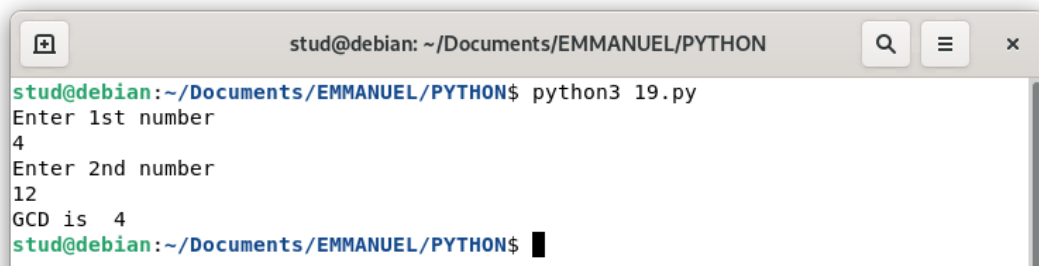
```

a=int(input("enter 1st number"))

b=int(input("enter 2nd number"))
z=min(a,b)
for I in range(1,z+1):
if((a % i== 0)and(b % i==0)):
gcd=i
print("gcd is=",gcd)

```

Output:



```
stud@debian: ~/Documents/EMMANUEL/PYTHON
stud@debian:~/Documents/EMMANUEL/PYTHON$ python3 19.py
Enter 1st number
4
Enter 2nd number
12
GCD is 4
stud@debian:~/Documents/EMMANUEL/PYTHON$
```

PROGRAM-19

From a list of integers, create a list removing even numbers.

Program code:

```
list=[12,13,14,15,16,21]
```

```
l1=[]
```

```
print(list)
```

```
print("New list")
```

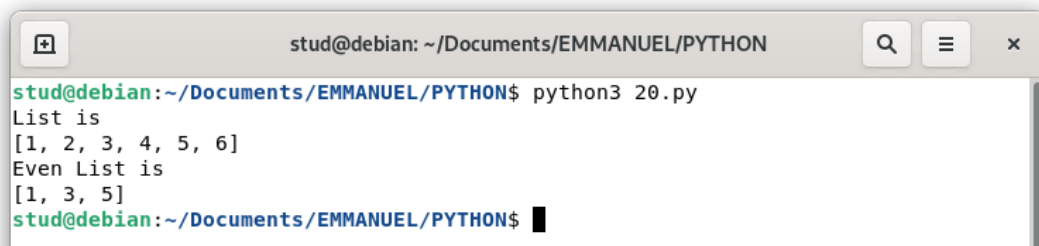
```
for i in list:
```

```
    if i%2!=0:
```

```
        l1.append(i)
```

```
print(l1)
```

Output:



```
stud@debian: ~/Documents/EMMANUEL/PYTHON
stud@debian:~/Documents/EMMANUEL/PYTHON$ python3 20.py
List is
[1, 2, 3, 4, 5, 6]
Even List is
[1, 3, 5]
stud@debian:~/Documents/EMMANUEL/PYTHON$
```

COURSE OUTCOME 2**CO2 Q -20**

Program to find the factorial of a number

Program code:

```
fact=1

n=int(input('enter the value'))

for i in range(1,n+1):

    fact=fact*i

print(fact)
```

Output:

A screenshot of a code editor window. The code is for calculating the factorial of a number. It includes a play button icon on the left, a green checkmark with '5s' below it, and a toolbar with icons for undo, redo, search, settings, and other functions. The code is as follows:

```
n=int(input("Enter a number:"))
fact=1
for i in range(1,n+1):
    fact=fact*i
print(fact)
```

Below the code, the input and output are shown:

```
Enter a number:5
120
```

CO2 Q -21

Generate Fibonacci series of N terms

Program code:

```
f1=0
f2=1
n=int(input('enter the number'))

print(f1)
print(f2)

for i in range(2,n):

    f3=f1+f2
    print(f3)

    f1=f2
    f2=f3
```

Output:

```

n=int(input("Enter a number:"))
f1=0
f2=1
print(f1)
print(f2)
for i in range(0,n-2):
    f3=f1+f2
    print(f3)
    f1=f2
    f2=f3

```

Enter a number:5
0
1
1
2
3

CO2 Q --22

Find the sum of all items in list?

Program code:

```
list=[1,2,3,4,5,6,7,8,9,10]
```

```
sum=0
```

```
for i in list:
```

```
    sum=sum +int(i)
```

```
print("sum:" ,sum)
```

Output:

```

list1=[1,2,3,4,5]
sum=0
for i in list1:
    sum=sum+i
print(sum)

```

15

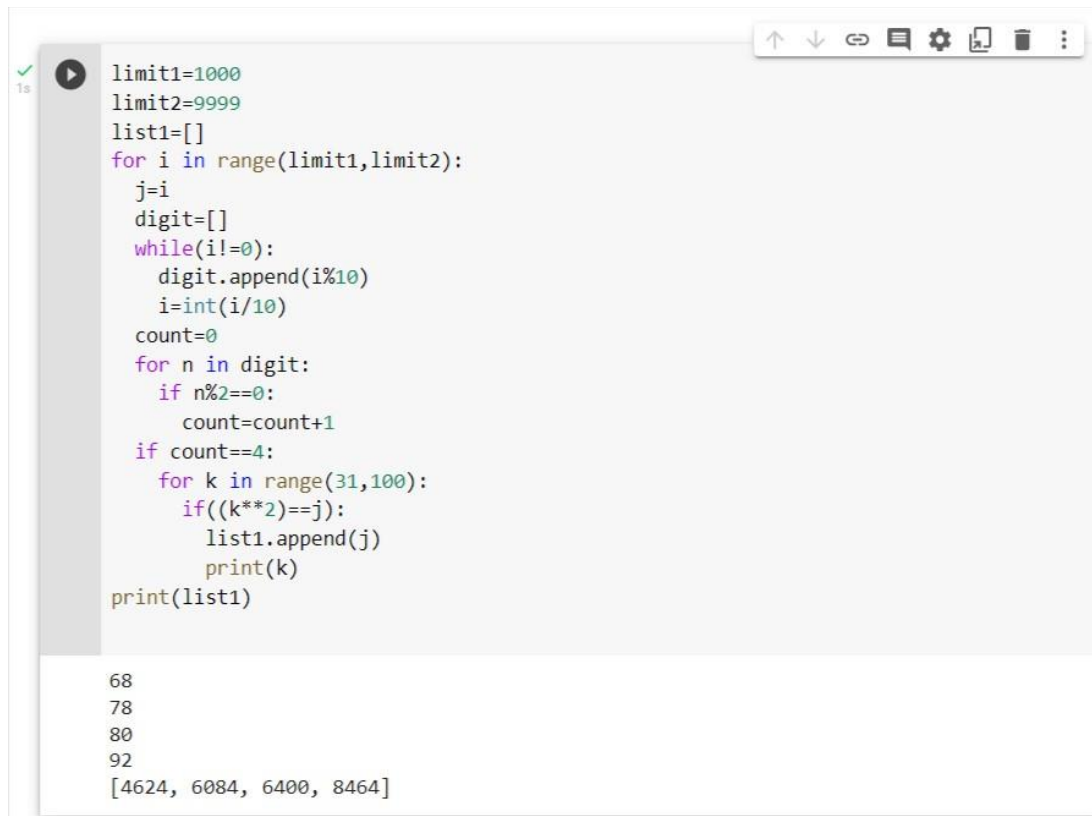
CO2 Q --23

Generate a list of four digit numbers in a given range with all their digits even and the number is a perfect square.

Program code:

```
limit1=1000
limit2=9999
list1=[]
for i in range(limit1,limit2):
    j=i
    digit=[]
    while(i!=0):
        digit.append(i%10)
        i=int(i/10)
    count=0
    for n in digit:
        if n%2==0:
            count=count+1
    if count==4:
        for k in range(31,100):
            if((k**2)==j):
                list1.append(j)
                print(k)
print(list1)
```

Output:



```

limit1=1000
limit2=9999
list1=[]
for i in range(limit1,limit2):
    j=i
    digit=[]
    while(i!=0):
        digit.append(i%10)
        i=int(i/10)
    count=0
    for n in digit:
        if n%2==0:
            count=count+1
    if count==4:
        for k in range(31,100):
            if((k**2)==j):
                list1.append(j)
                print(k)
print(list1)

```

68
78
80
92
[4624, 6084, 6400, 8464]

CO2 Q --24

Display the given pyramid with step number accepted from user.

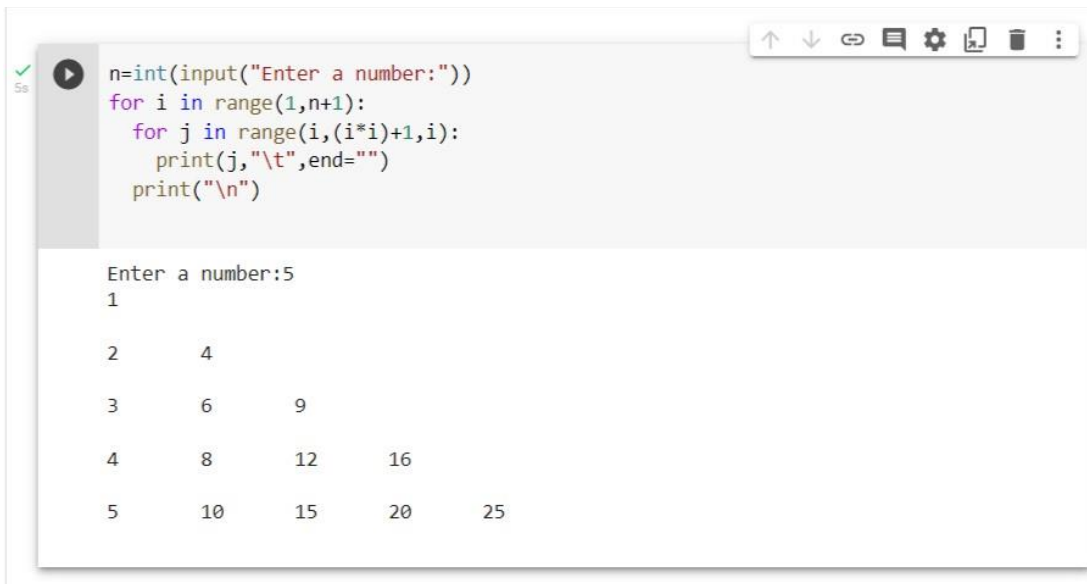
Program code:

```

l=int(input('Enter the limit:'))
for i in range(1,l+1):
    for j in range(1,i+1):
        c=i*j
        print(c,end=" ")
    print("\n")

```

Output:



```

n=int(input("Enter a number:"))
for i in range(1,n+1):
    for j in range(i,(i*i)+1,i):
        print(j,"\t",end="")
    print("\n")

```

Enter a number:5

```

1
2      4
3      6      9
4      8      12     16
5     10     15     20     25

```

CO2 Q --25

Count the number of characters (character frequency) in a string.

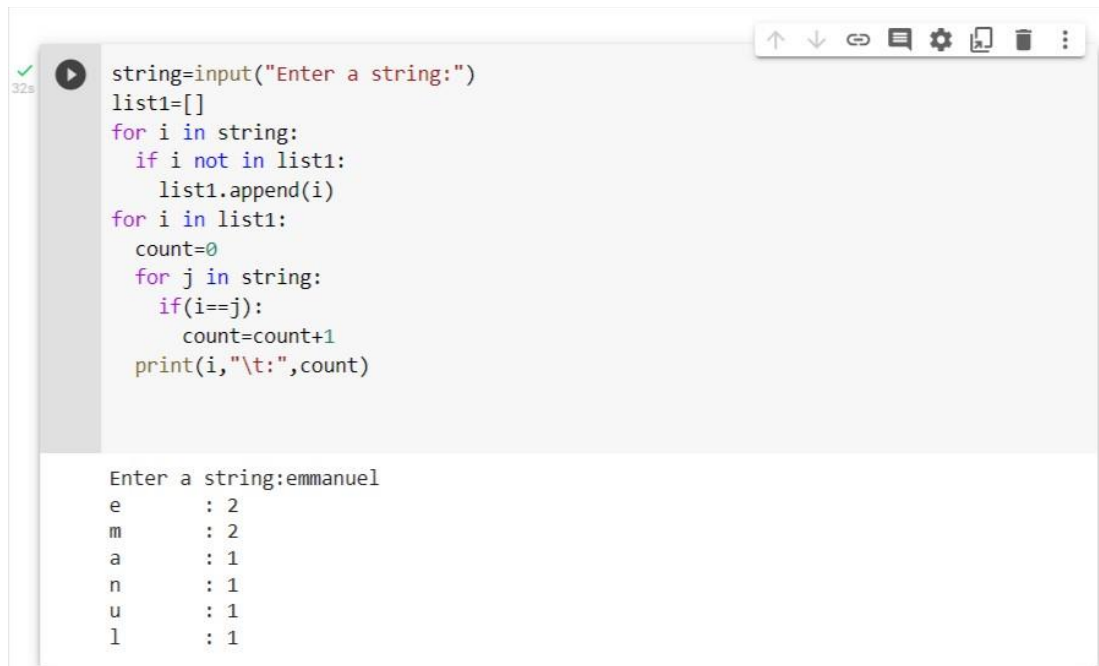
Program code:

```

string=input("Enter a string:")
list1=[]
for i in string:
    if i not in list1:
        list1.append(i)
for i in list1:
    count=0
    for j in string:
        if(i==j):
            count=count+1
    print(i,"\t:",count)

```

Output:



```

string=input("Enter a string:")
list1=[]
for i in string:
    if i not in list1:
        list1.append(i)
for i in list1:
    count=0
    for j in string:
        if(i==j):
            count=count+1
    print(i,"\t:",count)

```

Enter a string:emmanuel

e	: 2
m	: 2
a	: 1
n	: 1
u	: 1
l	: 1

CO2 Q -26

Add 'ing' at the end of a given string.If it already ends with 'ing', then add 'ly'

Program code:

```

string=input("Enter a string:")
if(string[-3:]=="ing"):
    string+="ly"
else:
    string+="ing"
print(string)

```


Output:



```

string=input("Enter a string:")
if(string[-3:]=="ing"):
    string+="ly"
else:
    string+="ing"
print(string)

```

Enter a string:work
working

CO2 Q -27

Accept a list of words and return length of longest word.

Program code:

```

lis=[]
n=int(input("Enter the range:"))
print("Enter the words:")
for i in range(0,n):
    lis.append(input())
longest=lis[0]
for i in range(1,n):
    if(len(lis[i])>len(longest)):
        longest=lis[i]
print("Length of longest word is",len(longest))

```

Output:



```

lis=[]
n=int(input("Enter the range:"))
print("Enter the words:")
for i in range(0,n):
    lis.append(input(""))
longest=lis[0]
for i in range(1,n):
    if(len(lis[i])>len(longest)):
        longest=lis[i]
print("Length of longest word is",len(longest))

```

Enter the range:5
Enter the words:
Hello
World
How
Are
You
Length of longest word is 5

CO2 Q -28

Construct following patterns using nested loop

```

*

* *

* * *

* * * *

* * * * *

* * * *

* * *

* *

*

*

```

Program Code:

```

for i in range(1,6):
    for j in range(1,i+1):
        print("*",end=" ")
    print("\n")

```

```
for i in range(4,0,-1):  
    for j in range(1,i+1):  
        print("*",end=" ")  
    print("\n")
```

Output:



The screenshot shows a code editor window with a toolbar at the top containing icons for undo, redo, search, settings, and other functions. The code is as follows:

```
for i in range(1,6):  
    for j in range(1,i+1):  
        print("*",end=" ")  
    print("\n")  
for i in range(4,0,-1):  
    for j in range(1,i+1):  
        print("*",end=" ")  
    print("\n")
```

The output of the code is a pattern of asterisks arranged in two parts. The first part is a right-angled triangle of 5 rows, and the second part is an inverted right-angled triangle of 4 rows.

```
*  
* *  
* * *  
* * * *  
* * * * *  
* * * * *  
* * * *  
* * *  
* *  
*
```


CO2 Q -29

Generate all factors of a number.

Program code:

```
n=int(input("Enter a number:"))
print("Factors are")
for i in range(1,n+1):
    if(n%i==0):
        print(i)
```

Output:

A screenshot of a Python code editor window. The code is as follows:

```
n=int(input("Enter a number:"))
print("Factors are")
for i in range(1,n+1):
    if(n%i==0):
        print(i)
```

The output of the program is displayed below the code:

```
Enter a number:12
Factors are
1
2
3
4
6
12
```

COURSE OUTCOME 3**CO3 Q -30**

Work with built-in packages

Create a package graphics with modules rectangle, circle and sub package 3D (td) - graphics with modules cuboid & sphere. Include methods to find area and perimeter of respective figures in each module. Write programs that finds area and perimeter of figures by different importing statements (Include selective import of modules and import * statements).

Program code:

Circle.py

```
from math import pi
def area_circle(radius):
    return pi*radius*radius
def perimeter_circle(radius):
    return 2*pi*radius
```

rectangle.py

```
def area_rec(length,width):
    return length*width
def perimeter_rec(length,width):
    return 2*(length+width)
```

sphere.py

```
from math import pi
def area_sphere(radius):
    return 4*(pi*radius*radius)
def perimeter_sphere(radius):
    return 2*pi*radius
```

cuboid.py

```
def area_cuboid(l,b,h):
    return 2*(l*h + b*h + l*b)
def volume_cuboid(l,b,h):
    return l*b*h
```

driver1.py

```
import Graphics1
from Graphics1 import circle,rectangle
from Graphics1.tdgraphics import cuboid,sphere
from Graphics1.circle import *
print("Area of a circle with radius 10 is : ",circle.area_circle(10))
print("Perimeter of a circle with radius 10 is ",circle.perimeter_circle(10))
print("\n")
print("Area of a Rectangle with length and width 10 is : ",rectangle.area_rec(10,10))
print("Perimeter of a Rectangle with length and width 10 is : ",rectangle.perimeter_rec(10,10))
print("\n")
```

```

print("Area of a cuboid with length,width,height 10 is :
",cuboid.area_cuboid(10,10,10))
print("Volume of a cuboid with length,width,height 10 is :
",cuboid.volume_cuboid(10,10,10))
print("\n")
print("Area of a spere with radius 10 is : ",sphere.area_sphere(10))
print("Permeter of a spere with radius 10 is ",sphere.perimeter_sphere(10))

```

Output:

```

C:\ Command Prompt
Microsoft Windows [Version 10.0.19044.1466]
(c) Microsoft Corporation. All rights reserved.

C:\Users\ASUS>cd Desktop
C:\Users\ASUS\Desktop>cd python
C:\Users\ASUS\Desktop\python>md Graphics1
C:\Users\ASUS\Desktop\python>cd graphics1
C:\Users\ASUS\Desktop\python\Graphics1>notepad circle.py
C:\Users\ASUS\Desktop\python\Graphics1>notepad rectangle.py
C:\Users\ASUS\Desktop\python\Graphics1>md tdgraphics
C:\Users\ASUS\Desktop\python\Graphics1>cd tdgraphics
C:\Users\ASUS\Desktop\python\Graphics1\tdgraphics>notepad cuboid.py
C:\Users\ASUS\Desktop\python\Graphics1\tdgraphics>notepad sphere.py
C:\Users\ASUS\Desktop\python\Graphics1\tdgraphics>cd..
C:\Users\ASUS\Desktop\python\Graphics1>cd..

```

```

C:\Users\ASUS\Desktop\python>notepad driver1.py
C:\Users\ASUS\Desktop\python>python driver1.py
Area of a circle with radius 10 is : 314.1592653589793
Permeter of a circle with radius 10 is 62.83185307179586

Area of a Rectangle with length and width 10 is : 100
Permeter of a Rectangle with length and width 10 is : 40

Area of a cuboid with length,width,height 10 is : 600
Volume of a cuboid with length,width,height 10 is : 1000

Area of a spere with radius 10 is : 1256.6370614359173
Permeter of a spere with radius 10 is 62.83185307179586
C:\Users\ASUS\Desktop\python>

```

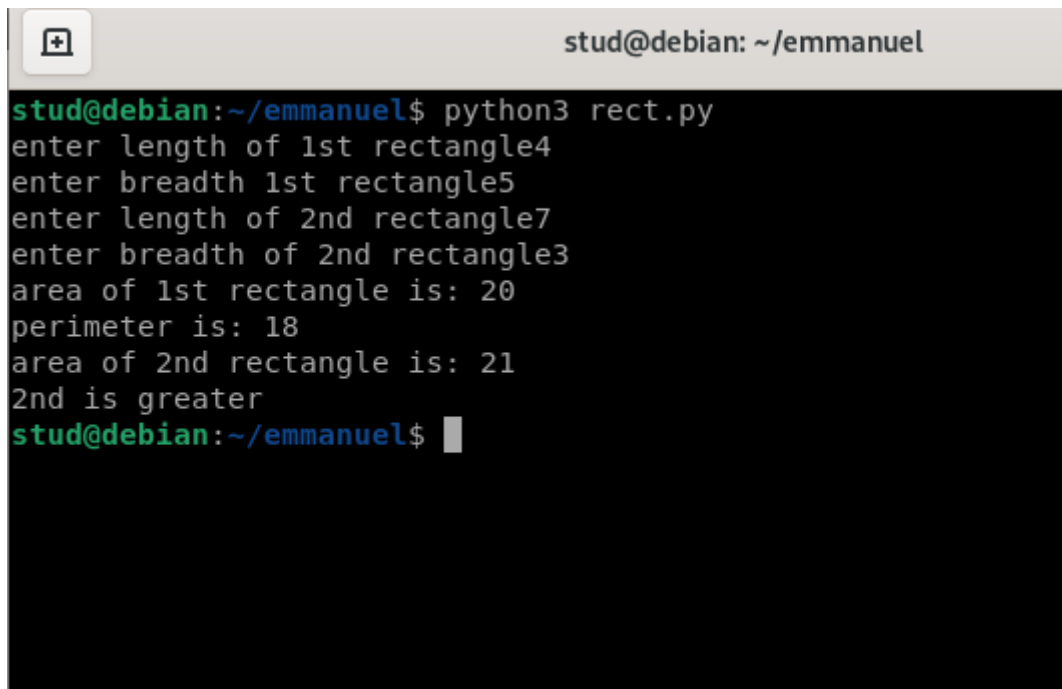
COURSE OUTCOME 4**CO4 Q -31**

Create Rectangle class with attributes length and breadth and methods to find area and perimeter. Compare two Rectangle objects by their area.

Program code:

```
class Rectangle:
def __init__(self,length,breadth):
self.length = length
self.breadth = breadth
def area(self):
return self.length * self.breadth
def perimeter(self):
return 2*(self.length + self.breadth)
c=int(input("enter length of 1st rectangle"))
d=int(input("enter breadth 1st rectangle"))
u=int(input("enter length of 2nd rectangle"))
v=int(input("enter breadth of 2nd rectangle"))
r1= Rectangle(c,d)
r3= Rectangle(u,v)
a=r1.area()
b=r3.area()
print("area of 1st rectangle is:",a)
print("perimeter is:",r1.perimeter())
print("area of 2nd rectangle is:",b)
if (a>b):
print("1st is greater")
else:
    print("2nd is greater")
```

Output:



```
stud@debian: ~/emmanuel
stud@debian:~/emmanuel$ python3 rect.py
enter length of 1st rectangle4
enter breadth 1st rectangle5
enter length of 2nd rectangle7
enter breadth of 2nd rectangle3
area of 1st rectangle is: 20
perimeter is: 18
area of 2nd rectangle is: 21
2nd is greater
stud@debian:~/emmanuel$
```

CO4 Q -32

Create a Bank account with members account number, name, type of account and balance. Write constructor and methods to deposit at the bank and withdraw an amount from the bank.

Program code:

```
class Bank:
def __init__(self,acc_no,name,type_of_acc,balance):
self.acc_no= acc_no
self.name=name
self.type_of_acc=type_of_acc
self.balance=balance
def deposit(self,x):
self.balance=self.balance+x
print("balance after deposit is=",self.balance)
def withdraw(self,y):
self.balance=self.balance-y
print("balance after withdrawal is=",self.balance)
x=int(input("amount to be deposited"))
y=int(input("amount to withdraw"))
ob1=Bank(1,"aaa","ccc",300000)
ob2=Bank(2,"bbb","ccc",500000)
ob1.deposit(x)
ob1.withdraw(y)
ob2.deposit(x)
ob2.withdraw(y)
```

Output:

```
amount to be deposited20000
amount to withdraw30000
balance after deposit is= 320000
balance after withdrawal is= 290000
balance after deposit is= 520000
balance after withdrawal is= 490000
```

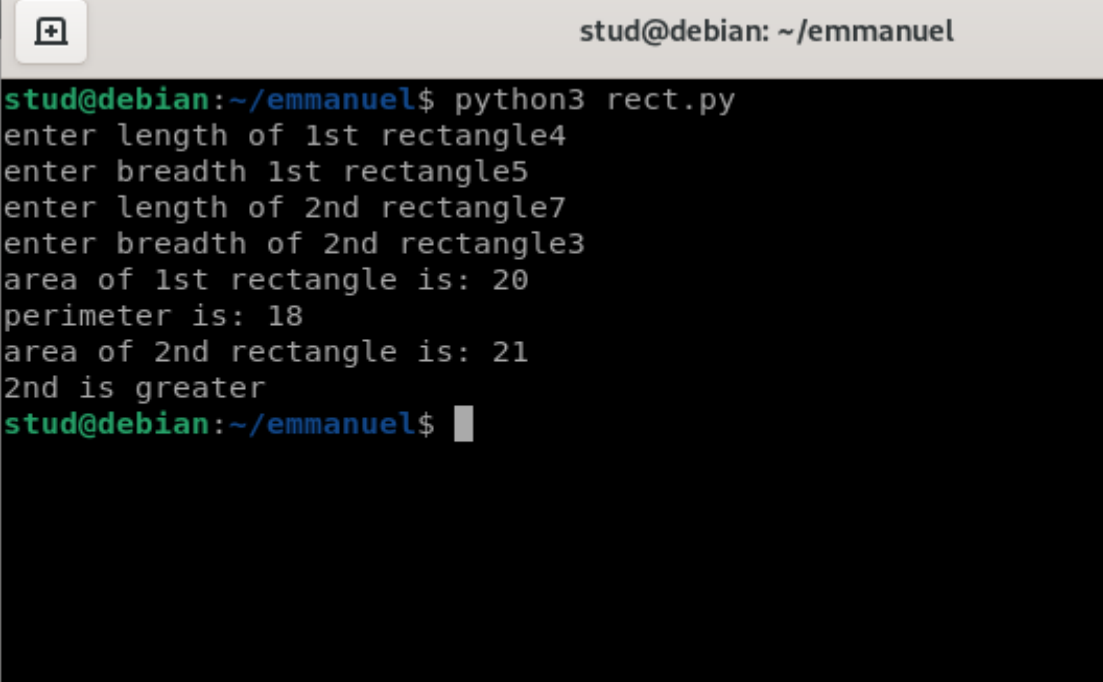

CO4 Q -33

Create a class Rectangle with private attributes length and width. Overload '<' operator to compare the area of 2 rectangles.

Program code:

```
class Rectangle:
def __init__(self,length,breadth):
self.length = length
self.breadth = breadth
def area(self):
return self.length * self.breadth
def perimeter(self):
return 2*(self.length + self.breadth)
def __lt__(self,rr):
if (self.length >rr .length and self.breadth > rr.breadth):
print("Area of first rectangle is greater")
else:
    print("Area of second rectangle is greater")
c=int(input("enter length of 1st rectangle"))
d=int(input("enter breadth 1st rectangle"))
u=int(input("enter length of 2nd rectangle"))
v=int(input("enter breadth of 2nd rectangle"))
r1= Rectangle(c,d)
r3= Rectangle(u,v)
a=r1.area()
b=r3.area()
print("area of 1st rectangle is:",a)
print("perimeter is:",r1.perimeter())
print("area of 2nd rectangle is:",b)
    r1 < r3
```

Output:



```
stud@debian: ~/emmanuel
stud@debian:~/emmanuel$ python3 rect.py
enter length of 1st rectangle4
enter breadth 1st rectangle5
enter length of 2nd rectangle7
enter breadth of 2nd rectangle3
area of 1st rectangle is: 20
perimeter is: 18
area of 2nd rectangle is: 21
2nd is greater
stud@debian:~/emmanuel$
```

CO4 Q -34

Create a class Time with private attributes hour, minute and second. Overload '+' operator to find sum of 2 time.

Program code:

```
class Time:
def __init__(self,hr,min,sec):
self.hr=hr
self.min=min
self.sec=sec
def __add__(self,t):
return(self.hr+t.hr,self.min+t.min,self.sec+t.sec)
t1=Time(3,20,35)
t2=Time(2,25,40)
print(t1+t2)
```

Output:

```
(5, 45, 75)
```

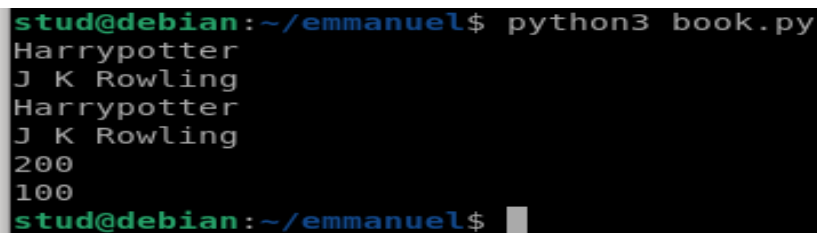
CO4 Q -35

Create a class Publisher (name). Derive class Book from Publisher with attributes title and author. Derive class Python from Book with attributes price and no_of_pages. Write a program that displays information about a Python book. Use base class constructor invocation and method overriding.

Program code:

```
class Publisher(object):
    def __init__(self,name):
        self.name=name
    def display1(self):
        print(self.title)
        print(self.author)
class Book(Publisher):
    def __init__(self,name,title,author):
        super().__init__(name)
        self.title=title
        self.author=author
    def display2(self):
        super().display1()
        print(self.title)
        print(self.author)
class Python(Book):
    def __init__(self,name,title,author,price,no_of_pages):
        super().__init__(name,title,author)
        self.price=price
        self.no_of_pages=no_of_pages
    def display3(self):
        super().display2()
        print(self.price)
        print(self.no_of_pages)
p=Python("abc Publications","Harrypotter","J K Rowling",200,100)
p.display3()
```

Output:



```
stud@debian:~/emmanuel$ python3 book.py
Harrypotter
J K Rowling
Harrypotter
J K Rowling
200
100
stud@debian:~/emmanuel$
```

COURSE OUTCOME 5**CO5 Q -36**

Write a python program to read a file line by line and store it into a list.

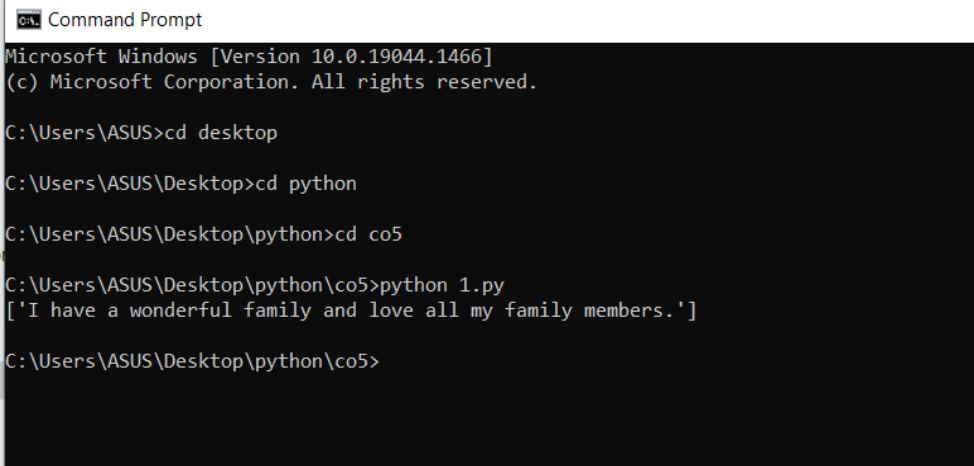
Program code:

```
fp=open("text.txt",'r')
lines=[]
for line in fp:
    lines.append(line.strip())
print(lines)
```

text.txt

I have a wonderful family and love all my family members.

Output:



```

C:\Users\ASUS>cd desktop
C:\Users\ASUS\Desktop>cd python
C:\Users\ASUS\Desktop\python>cd co5
C:\Users\ASUS\Desktop\python\co5>python 1.py
['I have a wonderful family and love all my family members.']
C:\Users\ASUS\Desktop\python\co5>
  
```

CO5 Q -37

Write a python program to read each row from a given csv file and print a list of strings

Program code:

```
import csv
with open('work.csv', 'r') as file:
    reader = csv.reader(file)
    for row in reader:
        print(row)
```

work.csv

	A	B	C	D
1	Name	Age	Profession	
2	Das	40	Manager	
3	Vinu	38	Ass.Manager	
4	Manu	35	Staff	
5	Janaki	30	Nurse	
5				

Output:

```

C:\> Command Prompt
Microsoft Windows [Version 10.0.19044.1466]
(c) Microsoft Corporation. All rights reserved.

C:\Users\ASUS>cd desktop

C:\Users\ASUS\Desktop>cd python

C:\Users\ASUS\Desktop\python>cd co5

C:\Users\ASUS\Desktop\python\co5>python 2.py
['Name', 'Age', 'Profession']
['Das', '40', 'Manager']
['Vinu', '38', 'Ass.Manager']
['Manu', '35', 'Staff']
['Janaki', '30', 'Nurse']

C:\Users\ASUS\Desktop\python\co5>

```