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KUMARAGURU

COLLEGE OF TECHNOLOGY

LABORATORY WORKBOOK

Exercise/Experiment Number: 3

Lab Code / Lab **: U18CSI2201- PYTHON PROGRAMMING LAB**

Course / Branch **:B.E / BTech**

Title of the exercise/experiment **:** Implement range() function in python functions

---

STEP 1: INTRODUCTION

a) OBJECTIVE OF THE EXERCISE/EXPERIMENT

Develop simple Python program using range( ).

STEP 2: ACQUISITION

b) Facilities/material required to do the exercise/experiment:

Sl.No.	Facilities/material required	Quantity
1.	Anaconda SPYDER IDE	1

c) Procedure for doing the exercise/experiment:

1.Program to illustrate range()

```
>>>list(range(5, 10))

>>>list(range(-2, 2))
```

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>>> list(range(-100, -95))

>>> list(range(1, 20, 3))

>>> list(range(20, 10, -1))

>>> list(range(20, 10, -5))

Output of Above Codes:

```
In [1]: list(range(5,10))
Out[1]: [5, 6, 7, 8, 9]

In [2]: list(range(-2,2))
Out[2]: [-2, -1, 0, 1]

In [3]: list(range(1,20,3))
Out[3]: [1, 4, 7, 10, 13, 16, 19]

In [4]: list(range(-100,-95))
Out[4]: [-100, -99, -98, -97, -96]

In [5]: list(range(20,10,-1))
Out[5]: [20, 19, 18, 17, 16, 15, 14, 13, 12, 11]

In [6]: list(range(20,10,-5))
Out[6]: [20, 15]
```

using range(stop)

print(list(range(10)))

Output :

```
In [7]: runfile('C:/Users/Vibin/Python Scripts/Python Codes/
untitled0.py', wdir='C:/Users/Vibin/Python Scripts/Python Codes')
[0, 1, 2, 3, 4, 5, 6, 7, 8, 9]
```

using range(start, stop)

print(list(range(1, 10)))

Output :

```
In [8]: runfile('C:/Users/Vibin/Python Scripts/Python Codes/
untitled0.py', wdir='C:/Users/Vibin/Python Scripts/Python Codes')
[1, 2, 3, 4, 5, 6, 7, 8, 9]
```

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2. Create a list of even numbers between the given numbers using range()

Code:

```
print("To print Even Numbers between two limits:")
a=int(input("Enter the lower limit:"))
b=int(input("Enter the upper limit:"))
for i in range(a,b+1):       #range function used
   if (i%2==0):
      print (i,end=' ')
```

Output:

```
In [11]: runfile('C:/Users/Vibin/Python Scripts/Python Codes/
untitled0.py', wdir='C:/Users/Vibin/Python Scripts/Python Codes')
To print Even Numbers between two limits:

Enter the lower limit:19

Enter the upper limit:76
20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66
68 70 72 74 76
```

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LABORATORY WORK BOOK

Exercise/Experiment Number: 4

Lab Code / Lab	**:**	**U18CSI2201- PYTHON PROGRAMMING LAB**
Course / Branch	**:**	**B.E / BTech**
Title of the exercise/experiment	**:**	Control statements

1. Write a program that takes cost price and selling price as input and displays whether the transaction is a Profit or a Loss or Neither.

INPUT FORMAT

The first line contains the cost price.
The second line contains the selling price.

OUTPUT FORMAT

Print "Profit" if the transaction is a profit or "Loss" if it is a loss. If it is neither profit nor loss, print "Neither". (You must **not** have quotes in your output)

Sample input-Output:

Test Case 1	20 30	Profit
Test Case 2	20 10	Loss
Test Case 3	20 20	Neither

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Solution:

```
cp=eval(input("Enter the Cost Price:Rs."))
sp=eval(input("Enter the Selling Price:Rs."))
print("Cost Price=",cp)
print("Selling Price=",sp)
if(sp>cp):
   print("Profit")
elif(cp>sp):
   print("Loss")
else:
   print("Neither")
```

Output:

```
In [15]: runfile('C:/Users/Vibin/Python Scripts/Python Codes/
untitled0.py', wdir='C:/Users/Vibin/Python Scripts/Python Codes')

Enter the Cost Price:Rs.45.70

Enter the Selling Price:Rs.45
Cost Price= 45.7
Selling Price= 45
Loss

In [16]: runfile('C:/Users/Vibin/Python Scripts/Python Codes/
untitled0.py', wdir='C:/Users/Vibin/Python Scripts/Python Codes')

Enter the Cost Price:Rs.20

Enter the Selling Price:Rs.30
Cost Price= 20
Selling Price= 30
Profit

In [17]: runfile('C:/Users/Vibin/Python Scripts/Python Codes/
untitled0.py', wdir='C:/Users/Vibin/Python Scripts/Python Codes')

Enter the Cost Price:Rs.15

Enter the Selling Price:Rs.15.0
Cost Price= 15
Selling Price= 15.0
Neither
```

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2. Write a program to check whether the given number is even or odd.

Solution:

```
n=int(input("Enter a Number to check for odd or even:"))
if (n%2==0):
   print("Even Number")
else:
   print("Odd Number")
```

Output:

```
In [18]: runfile('C:/Users/Vibin/Python Scripts/Python Codes/
untitled0.py', wdir='C:/Users/Vibin/Python Scripts/Python Codes')

Enter a Number to check for odd or even:10
Even Number

In [19]: runfile('C:/Users/Vibin/Python Scripts/Python Codes/
untitled0.py', wdir='C:/Users/Vibin/Python Scripts/Python Codes')

Enter a Number to check for odd or even:29
Odd Number
```

---

3. Write a program to find the largest of three numbers.

Solution:

```
a,b,c=(input("Enter three Numbers to find the greatest among three:")).split()
a,b,c=eval(a),eval(b),eval(c)
if (a>b):
   if(a>c):
      print(a,"is the Greatest")
   else:
      print(c,"is the Greatest")
else:
   if(b>c):
      print(b,"is the Greatest")
   else:
      print(c,"is the Greatest")
```

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Output:

```
In [25]: runfile('C:/Users/Vibin/Python Scripts/Python Codes/
untitled0.py', wdir='C:/Users/Vibin/Python Scripts/Python Codes')

Enter three Numbers to find the greatest among three:25 46 75
75 is the Greatest
```

4. Write a program to check whether the entered number is divisible by 5 and 7.

Solution:

```
a=int(input("Enter a Number:"))
if((a%5==0)and(a%7==0)):
   print("The Number is divisible by both 5 and 7")
else:
   print("The Number is not divisible by both 5 and 7")
```

Output:

```
In [30]: runfile('C:/Users/Vibin/Python Scripts/Python Codes/
untitled0.py', wdir='C:/Users/Vibin/Python Scripts/Python Codes')

Enter a Number:70
The Number is divisible by both 5 and 7

In [31]: runfile('C:/Users/Vibin/Python Scripts/Python Codes/
untitled0.py', wdir='C:/Users/Vibin/Python Scripts/Python Codes')

Enter a Number:21
The Number is not divisible by both 5 and 7
```

5. Write a program to prompt (input) year and check if it is a leap year.

Solution:

```
yr=int(input("Enter a year to check for leap year or not:"))
if (yr%4==0):
   print(yr,"is a leap year")
else:
   print(yr,"is not a leap year")
```

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Output:

```
Enter a year to check for leap year or not:1987
1987 is not a leap year

In [33]: runfile('C:/Users/Vibin/Python Scripts/Python Codes/
untitled0.py', wdir='C:/Users/Vibin/Python Scripts/Python Codes')

Enter a year to check for leap year or not:2012
2012 is a leap year
```

6. Write a program to calculate an Internet browsing bill. Use the conditions specified as follows:

a. Upto ½ Hour – Rs. 10
b. Upto 1 Hour – Rs. 20
c. Greater than 1 Hour – Rs.100

The owner should enter the number of hours spent on browsing.

Solution:

```
h=eval(input("Enter the No. of Hours spent on Browsing\nIn terms of mins type 0.no.of mins for eg.0.15 ,0.30\nFor 1 hr just type 1\n"))
if ((h>0)and(h<=0.30)):
   print("Rs.10")
elif((h>0.30)and(h<=1.0)):
   print("Rs.20")
else:
   print("Rs.100")
```

Output:

```
In [37]: runfile('C:/Users/Vibin/Python Scripts/Python Codes/
untitled0.py', wdir='C:/Users/Vibin/Python Scripts/Python Codes')

Enter the No. of Hours spent on Browsing
In terms of mins type 0.no.of mins for eg.0.15 ,0.30
For 1 hr just type 1
0.24
Rs.10

In [38]: runfile('C:/Users/Vibin/Python Scripts/Python Codes/
untitled0.py', wdir='C:/Users/Vibin/Python Scripts/Python Codes')

Enter the No. of Hours spent on Browsing
In terms of mins type 0.no.of mins for eg.0.15 ,0.30
For 1 hr just type 1
0.54
Rs.20
```

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7. Write a program to calculate the square of only those numbers whose least significant digit is 5.
Example: Enter the number: 25
Square: 25*25 = 625

Solution:

```
n=int(input("Enter a Number:"))
if(n%10==5):
   print("The Sqaure of",n,"is",n*n)
else:
   print("Please enter a number with LSD=5")
```

Output:

```
In [41]: runfile('C:/Users/Vibin/Python Scripts/Python Codes/
untitled0.py', wdir='C:/Users/Vibin/Python Scripts/Python Codes')

Enter a Number:74
Please enter a number with LSD=5

In [42]: runfile('C:/Users/Vibin/Python Scripts/Python Codes/
untitled0.py', wdir='C:/Users/Vibin/Python Scripts/Python Codes')

Enter a Number:55
The Sqaure of 55 is 3025
```

---

8. Use if-elif-else statements to print the appropriate message depending on the value of the variables temperature and humidity as given as follows. Assume that the temperature can only be warm and cold and the humidity can only be dry and humid.

if temperature is	*if humidity is*	*print this activity*
warm	dry	"play tennis"
warm	humid	"swim"
cold	dry	"play basketball"
cold	humid	"watch TV"

Sample input-Output:
Enter the temperature:(a) warm (b) cold: cold
Enter humidity: (a) humid (b) dry: humid
Watch TV

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Solution:

```
tem=input("Enter the temperature-warm or cold:")
hum=input("Enter the humidity-dry or humid:")
if((tem=="warm")and(hum=="dry")):
   print('Play Tennis')
elif((tem=="warm")and(hum=="humid")):
   print("Swim")
elif((tem=="cold")and(hum=="humid")):
   print("Watch TV")
elif((tem=="cold")and(hum=="dry")):
   print("Play Basketball")
else:
   print("Wrong Input")
```

Output:

```
In [46]: runfile('C:/Users/Vibin/Python Scripts/Python Codes/
untitled0.py', wdir='C:/Users/Vibin/Python Scripts/Python Codes')

Enter the temperature-warm or cold:cold

Enter the humidity-dry or humid:humid
Watch TV

In [47]: runfile('C:/Users/Vibin/Python Scripts/Python Codes/
untitled0.py', wdir='C:/Users/Vibin/Python Scripts/Python Codes')

Enter the temperature-warm or cold:warm

Enter the humidity-dry or humid:dry
Play Tennis
```

9. Consider the scenario of retail store management again. The store provides discount for all bill amounts based on the criteria below

Bill Amount	Discount Percentage
>=1000	5
>=500 and <1000	2
>0 and <500	1

Write a Python program to find the net bill amount after discount. Assume that bill amount will be always greater than zero.

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Solution:

```
b=eval(input("Enter the Bill Amount:"))
if((b>0)and(b<500)):
   print("Cash to be Paid=",b-1/100*b)
elif((b>=500)and(b<1000)):
   print("Cash to be Paid=",b-2/100*b)
else:
   print("Cash to be paid=",b-5/100*b)
```

Output:

```
In [1]: runfile('C:/Users/Vibin/Python Scripts/Python Codes/Pro 2_1.py',
wdir='C:/Users/Vibin/Python Scripts/Python Codes')

Enter the Bill Amount:1050
Cash to be paid= 997.5

In [2]: runfile('C:/Users/Vibin/Python Scripts/Python Codes/Pro 2_1.py',
wdir='C:/Users/Vibin/Python Scripts/Python Codes')

Enter the Bill Amount:660
Cash to be Paid= 646.8
```

10. Write a program that asks for input n and prints a sequence of powers of 5 from 5^0 to 5^n in separate lines.

Solution:

```
n=int(input("Enter the numbers of powers of 5 to be displayed:"))
for i in range(0,n+1):
   print(5**i)
```

Output:

```
Enter the numbers of powers of 5 to be displayed:7
1
5
25
125
625
3125
15625
78125
```

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11. Write a program to display the numbers of the series 1,4,9,16,25,..n using for loop.

Solution:

```
n=int(input("Enter the Number upto which you want to display the squares:"))
for i in range(1,n+1):
   print(i*i,end=",")
```

Output:

```
In [10]: runfile('C:/Users/Vibin/Python Scripts/Python Codes/Pro 2_1.py',
wdir='C:/Users/Vibin/Python Scripts/Python Codes')

Enter the Number upto which you want to display the squares:15
1,4,9,16,25,36,49,64,81,100,121,144,169,196,225,
```

12. Write a program using the while loop which prints the sum of every fifth number from 0 to 500 (including both 0 and 500).

Sample input-Output:
Sum = 25250

Solution:

```
In [9]: s=0

In [10]: i=0

In [11]: while(i<=500):
    ...:     s+=i
    ...:     i+=5
    ...: print("Sum=",s)
Sum= 25250
```

13. Write a program using while loop to read a positive integer and count the number of decimal digits in it.

Solution:

```
n=int(input("Enter any number greater than 0:"))
i=0
```

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```
while(n!=0):
   i+=1
   n=n//10
print("No. of decimal digits=",i)
```

Output:

```
In [3]: runfile('C:/Users/Vibin/Python Scripts/Python Codes/Pro 2_1.py',
wdir='C:/Users/Vibin/Python Scripts/Python Codes')

Enter any number greater than 0:3728992
No. of decimal digits= 7

In [4]: runfile('C:/Users/Vibin/Python Scripts/Python Codes/Pro 2_1.py',
wdir='C:/Users/Vibin/Python Scripts/Python Codes')

Enter any number greater than 0:278
No. of decimal digits= 3
```

14. Write a program to read the password from the user. If the user types the correct password, i.e. "python", then display the message "Welcome to Python Programming" and an error message otherwise. The number of attempts to be restricted to three.

Sample input-Output:

Please Enter the Password:qwep
Wrong one!! Please enter it once
Please Enter the Password:puty
Wrong one!! Please enter it once
Please Enter the Password:Python
Welcome to Python Programming

Solution:

```
for i in range(3,0,-1):
   password=input("Please Enter the Correct Password-Only {0} attempts left:".format(i))
   if(password=='python'):
      print("Welcome to Python Programming")
      break
   else:
      print("Wrong One:Please Enter again")
```

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Output:

```
In [7]: runfile('C:/Users/Vibin/Python Scripts/Python Codes/Pro 2_1.py',
wdir='C:/Users/Vibin/Python Scripts/Python Codes')

Please Enter the Correct Password-Only 3 attempts left:qiqetgi
Wrong One:Please Enter again

Please Enter the Correct Password-Only 2 attempts left:etywo
Wrong One:Please Enter again

Please Enter the Correct Password-Only 1 attempts left:python
Welcome to Python Programming
```

15. Write a program to compute the series $1+X+X^2+ X^3+.....+X^n$

Solution:

```
n=int(input("Enter a value for n:"))
x=int(input("Enter the value of x:"))
s=1
for i in range(1,n+1):
    s=s+x**i
print("The Sum of the Series is :",s)
```

Output:

```
In [1]: runfile('C:/Users/Vibin/Python Scripts/Python Codes/Pro 2_1.py',
wdir='C:/Users/Vibin/Python Scripts/Python Codes')

Enter a value for n:10

Enter the value of x:5
The Sum of the Series is : 12207031
```

16. Write a program to compute the factorial of a given number.

Sample input-Output:

Test Case	**1**	**2**	**3**	**4**
Input	**8**	**1**	**0**	**-5**
Output	**40320**	**1**	**1**	**Invalid**

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Solution:

```
a=int(input("Enter any number:"))
f=1
if (a<0):
   print("invalid!!")
else:
   for i in range(1,a+1):
      f=f*i
   print("Factorial of {0} is {1}".format(a,f))
```

Output:

```
In [5]: runfile('C:/Users/Vibin/Python Scripts/Python Codes/Pro 2_1.py',
wdir='C:/Users/Vibin/Python Scripts/Python Codes')

Enter any number:7
Factorial of 7 is 5040

In [6]: runfile('C:/Users/Vibin/Python Scripts/Python Codes/Pro 2_1.py',
wdir='C:/Users/Vibin/Python Scripts/Python Codes')

Enter any number:1
Factorial of 1 is 1

In [7]: runfile('C:/Users/Vibin/Python Scripts/Python Codes/Pro 2_1.py',
wdir='C:/Users/Vibin/Python Scripts/Python Codes')

Enter any number:0
Factorial of 0 is 1

In [8]: runfile('C:/Users/Vibin/Python Scripts/Python Codes/Pro 2_1.py',
wdir='C:/Users/Vibin/Python Scripts/Python Codes')

Enter any number:-10
invalid!!
```

17. Generate the prime numbers in the range of 100 to 200.

Solution:

```
print("Prime Numbers in the range of 100 to 200 are:")
for i in range(100,201):
   for j in range(2,i):
      f=0
      if (i%j==0):
         break
      else:
         f=1
```

```
    if(f==1):
        print(i)
```

Output:

```
In [9]: runfile('C:/Users/Vibin/Python Scripts/Python Codes/Pro 2_1.py',
wdir='C:/Users/Vibin/Python Scripts/Python Codes')
Prime Numbers in the range of 100 to 200 are:
101
103
107
109
113
127
131
137
139
149
151
157
163
167
173
179
181
191
193
197
199
```

18. Write a program to find all numbers between 2000 and 3000 (both inclusive) which are divisible by 7 but not a multiple of 5. All such numbers are to be printed in a comma separated sequence on a single line.

Solution:

```
for a in range(2000,3001):
    if((a%7==0)and(a%5!=0)):
        print(a,end=",")
```

Output:

```
In [2]: runfile('C:/Users/Vibin/Python Scripts/Python Codes/Pro 2_1.py',
wdir='C:/Users/Vibin/Python Scripts/Python Codes')
2002,2009,2016,2023,2037,2044,2051,2058,2072,2079,2086,2093,2107,2114,2121,
2128,2142,2149,2156,2163,2177,2184,2191,2198,2212,2219,2226,2233,2247,2254,
2261,2268,2282,2289,2296,2303,2317,2324,2331,2338,2352,2359,2366,2373,2387,
2394,2401,2408,2422,2429,2436,2443,2457,2464,2471,2478,2492,2499,2506,2513,
2527,2534,2541,2548,2562,2569,2576,2583,2597,2604,2611,2618,2632,2639,2646,
2653,2667,2674,2681,2688,2702,2709,2716,2723,2737,2744,2751,2758,2772,2779,
2786,2793,2807,2814,2821,2828,2842,2849,2856,2863,2877,2884,2891,2898,2912,
2919,2926,2933,2947,2954,2961,2968,2982,2989,2996,
```

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19. A number is said to be an Armstrong number if the sum of its digits when raised to the power n is equal to itself, where n is the total number of digits in the number.For example, 371 is a three digit Armstrong number since $3^3+7^3+1^3=371$. Write a program that checks whether a given number is Armstrong number or not.

Solution:

```
n=int(input("Enter a Number:"))
d=0
s=0
m=n
while n!=0:
   n=n//10
   d+=1
n=m
while m!=0:
   r=m%10
   s=s+r**d
   m=m//10
if s==n:
   print(n,"is an Armstrong Number")
else:
   print("Not Armstrong")
```

Output:

```
In [6]: runfile('C:/Users/Vibin/Python Scripts/Python Codes/Pro 2_1.py',
wdir='C:/Users/Vibin/Python Scripts/Python Codes')

Enter a Number:407
407 is an Armstrong Number

In [7]: runfile('C:/Users/Vibin/Python Scripts/Python Codes/Pro 2_1.py',
wdir='C:/Users/Vibin/Python Scripts/Python Codes')

Enter a Number:372
Not Armstrong

In [8]: runfile('C:/Users/Vibin/Python Scripts/Python Codes/Pro 2_1.py',
wdir='C:/Users/Vibin/Python Scripts/Python Codes')

Enter a Number:9474
9474 is an Armstrong Number
```

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20. The Hailstone sequence:

- **Start with a positive integer n**
- **If n is even, divide it by 2.**
- **If n is odd, multiply it by 3 and add 1.**
- **Continue the process until n is 1.**
-

Write a python program which takes a random number between 50 and 100 as input and generate the hailstone sequence.

Eg. Hailstone sequence for 68 is 34,17,52,26,13,40,20,10,5,16,8,4,2,1

Sample input-Output:
Enter the number:52

26.0
13.0
40.0
20.0
10.0
5.0
16.0
8.0
4.0
2.0
1.0

Solution:

```
n=int(input("Enter a number between 50 and 100 : "))
print("The Hailstone Sequence of",n,"is:")
while n!=1:
   if n%2==0:
      n=n/2
      print (n)
   else:
      n=n*3+1
      print (n)
```

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Output:

```
In [1]: runfile('C:/Users/Vibin/Python Scripts/Python Codes/Pro 2_1.py',
wdir='C:/Users/Vibin/Python Scripts/Python Codes')

Enter a number between 50 and 100:68
The Hailstone Sequence for 68 is:
34.0
17.0
52.0
26.0
13.0
40.0
20.0
10.0
5.0
16.0
8.0
4.0
2.0
1.0

In [2]: runfile('C:/Users/Vibin/Python Scripts/Python Codes/Pro 2_1.py',
wdir='C:/Users/Vibin/Python Scripts/Python Codes')

Enter a number between 50 and 100:52
The Hailstone Sequence for 52 is:
26.0
13.0
40.0
20.0
10.0
5.0
16.0
8.0
4.0
2.0
1.0
```