Problem Solving Using Python and R Lab

Lab2. Python Loops

Question1. Write a program that accepts numbers continuously as long as the number is positive and prints the sum of the numbers read (Use while loop).

```
1  n=int(input("enter the number: "))
2  sum=0
3  while(n>0):
4      sum=sum+n
5      n=int(input("enter the number: "))
6  print("sum of numbers",sum)
7
```

Shell

```
Python 3.7.9 (bundled)
>>> %Run l2.1.py

  enter the number: 5
  enter the number: 2
  enter the number: 1
  enter the number: 6
  enter the number: -6
  sum of numbers 14

>>> %Run l2.1.py

  enter the number: 8
  enter the number: 0
  sum of numbers 8

>>> %Run l2.1.py

  enter the number: -7
  sum of numbers 0

>>> %Run l2.1.py

  enter the number: 1
  enter the number: 2
  enter the number: 3
  enter the number: 4
  enter the number: 5
  enter the number: -8
  sum of numbers 15
```

Question 2. Write a program to take the values of two integers m and n from the user. Calculate the sum of even number between m and n (including both m and n).Please note that value of m must be less than value of n. If m > n. then you must print a message “Value of m should be less than n” and ask for next input values. Print the values of m, n and sum. (Use while loop).The program should continue until user types ‘q’ to quit the program.

```
while True:
    m=int(input("enter the value of m:"))
    n=int(input("enter the value of n:"))
    s=0
    if m>n:
        print("value of 'M' should be less then 'N'")
    for i in range(m,n-1):
        if(i%2==0):
            s=s+i
    print("sum of even numbers:",s)
    q=input("do you want to quit(type q)?:")
    if q=="q":
        break
```

Shell

```
Python 3.7.9 (bundled)
>>> %Run 12.2.py
enter the value of m:1
enter the value of n:10
sum of even numbers: 20
do you want to quit(type q)?:
enter the value of m:2
enter the value of n:10
sum of even numbers: 20
do you want to quit(type q)?:
enter the value of m:20
enter the value of n:10
value of 'M' should be less then 'N'
sum of even numbers: 0
do you want to quit(type q)?:q
```

Question3. Write a program to accept n and display its multiplication table. Value of n must be provided by the user. (Example: n * 1, n * 2,....,n*10) (Use for loop)

```
1  n=int(input("enter the number: "))
2  for i in range(1, 11):
3     print(n, 'x', i, '=', n*i)
```

Shell

```
>>> %Run 12.3.py
  enter the number: 5
  5 x 1 = 5
  5 x 2 = 10
  5 x 3 = 15
  5 x 4 = 20
  5 x 5 = 25
  5 x 6 = 30
  5 x 7 = 35
  5 x 8 = 40
  5 x 9 = 45
  5 x 10 = 50
>>> %Run 12.3.py
  enter the number: 6
  6 x 1 = 6
  6 x 2 = 12
  6 x 3 = 18
  6 x 4 = 24
  6 x 5 = 30
  6 x 6 = 36
  6 x 7 = 42
  6 x 8 = 48
  6 x 9 = 54
  6 x 10 = 60
```

Question4. Write a program that receives an integer and prints the sum of its digits.

```
1  n=int(input("Enter a number:"))
2  tot=0
3  while(n>0):
4      dig=n%10
5      tot=tot+dig
6      n=n//10
7  print("The total sum of digits is:",tot)
```

Shell

```
>>> %Run 12.4.py

  Enter a number:132
  The total sum of digits is: 6

>>> %Run 12.4.py

  Enter a number:563
  The total sum of digits is: 14

>>> %Run 12.4.py

  Enter a number:135
  The total sum of digits is: 9

>>> %Run 12.4.py

  Enter a number:765
  The total sum of digits is: 18
```

Question5. Develop an application in Python that repeatedly reads numbers until the user enters done. Once done is entered, print out the total, count, and average of the numbers. If the user enters anything other than a number, detect their mistake using try and except and print an error message and skip to the next number.

```
num = 0
tot = 0.0
while True:
    number = input("Enter a number: ")
    if number == 'done':
        break
    try :
        num1 = float(number)
    except:
        print('Invailed Input')
        continue
    num = num+1
    tot = tot + num1
print ('all done')
print ("total of given numbers {0},count of given numbers {1},average of given numbers {2}".format(tot,num,tot/num))
```

Shell

```
>>> %Run 12.5.py

 Enter a number: 1
 Enter a number: 2
 Enter a number: 3
 Enter a number: @
 Invailed Input
 Enter a number: 6
 Enter a number: done
 all done
 total of given numbers 12.0,count of given numbers 4,average of given numbers 3.0
```