IoT Assignment 2

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Github Link: https://github.com/mdazharuddin1011999/IoT_Assignment_2

Part 1

Q1) Write a python program to find following using looping and decision making without function

I) Sum of all digits of any numbers

Program:

```
print(sum(list(map(int,[digit for digit in input("Enter a number: ")]))))
```

Output:

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL

D:\Books & Pdf\B.Tech\7th sem\IOT\Assignment2>cd till_looping

D:\Books & Pdf\B.Tech\7th sem\IOT\Assignment2\till_looping>python 1_1.py
Enter a number: 14352
15
```

II) Sum of all even digits of any number

Program:

```
print(sum(map(int, [digit for digit in input("Enter a number: ") if
int(digit)%2==0])))
```

Output:

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL

D:\Books & Pdf\B.Tech\7th sem\IOT\Assignment2\till_looping>python 1_2.py
Enter a number: 52426
14
```

III)Sum of all odd digits of any number

Program:

```
print(sum(map(int, [digit for digit in input("Enter a number: ") if int(digit)%2!=0])))
```

Output:

```
D:\Books & Pdf\B.Tech\7th sem\IOT\Assignment2\till_looping>python 1_3.py
Enter a number: 41252
6
```

IV) Sum of all prime digits

Program:

```
print(sum(map(int, [i for i in input("Enter a number: ") if i in ('2', '3', '5', '7')])))
```

Output:

```
D:\Books & Pdf\B.Tech\7th sem\IOT\Assignment2\till_looping>python 1_4.py
Enter a number: 273564
17
```

V) Difference between average of all even digits except divisible by 4 and average of all odd digits except divisible by 3

Program:

```
n = input("Enter a number: ")
evens = [int(i) for i in n if int(i)%2==0 and int(i)%4 != 0]
odds = [int(i) for i in n if int(i)%2!=0 and int(i)%3!=0]
print(sum(evens)/len(evens) - sum(odds)/len(odds))
```

Output:

```
D:\Books & Pdf\B.Tech\7th sem\IOT\Assignment2\till_looping>python 1_5.py
Enter a number: 243857
-4.0
```

VI) Find kth digit from frontside or back side of any digits number and find its positional value

Program:

```
num = input("Enter a number: ")
k = int(input("Enter K: "))
print("\nFront:",num[k-1], "\nBack:",num[-k]) if k<len(num) else
print("\nInvalid K")
```

Output:

```
D:\Books & Pdf\B.Tech\7th sem\IOT\Assignment2\till_looping>python 1_6.py
Enter a number: 454725
Enter K: 2

Front: 5
Back: 2
```

VII) Sum of product of consecutive digits of any digit number

Program:

```
n = input("Enter a number: ")
print(sum(int(n[i])*int(n[i+1]) for i in range(0, len(n)-1)))
```

Output:

```
D:\Books & Pdf\B.Tech\7th sem\IOT\Assignment2\till_looping>python 1_7.py
Enter a number: 4315
20
```

VIII) Sum of product of consecutive even digits of any digit number

Program:

```
n = list(filter(lambda x: int(x)%2==0, input("Enter a number: ")))
print(sum(int(n[i])*int(n[i+1]) for i in range(0, len(n)-1)))
```

Output:

```
D:\Books & Pdf\B.Tech\7th sem\IOT\Assignment2\till_looping>python 1_8.py
Enter a number: 25346
32
```

IX) Sum of product of consecutive odd digits of any digit number

Program:

```
n = list(filter(lambda x: int(x)%2!=0, input("Enter a number: ")))
print(sum(int(n[i])*int(n[i+1]) for i in range(0, len(n)-1)))
```

Output:

```
D:\Books & Pdf\B.Tech\7th sem\IOT\Assignment2\till_looping>python 1_9.py
Enter a number: 65341
18
```

X) Sum of product of consecutive prime digits of any digit number

Program:

```
n = list(filter(lambda x: x in ['2','3','5','7'],input("Enter number: ")))
print(sum(int(n[i])*int(n[i+1]) for i in range(0, len(n)-1)))
```

Output:

```
D:\Books & Pdf\B.Tech\7th sem\IOT\Assignment2\till_looping>python 1_10.py
Enter number: 26537
46
```

XI) Difference between Sum of product of consecutive even digits except 2 and 6 and Sum of product of consecutive odd digits except 3 and 7 of any digit number

Program:

```
n = input("Enter a number: ")
evens = list(filter(lambda x: x in [0,4,8], map(int,n)))
odds = list(filter(lambda x: x in [1,5,9], map(int,n)))
print(sum([evens[i]*evens[i+1] for i in range(len(evens)-1)])
 - sum([odds[i]*odds[i+1] for i in range(len(odds)-1)]))
```

Output:

```
D:\Books & Pdf\B.Tech\7th sem\IOT\Assignment2\till_looping>python 1_11.py
Enter a number: 2134658
27
```

Q2) Write a python program to find sum of product of corresponding digits of two any digit number Such as n=1234 m=7896 output=6*4+9*3+8*2+7*1

Program:

```
print(sum(int(i)*int(j) for (i,j) in zip(input("Enter a number: "),
input("Enter another number: "))))
```

Output:

```
D:\Books & Pdf\B.Tech\7th sem\IOT\Assignment2\till_looping>python 2.py
Enter a number: 1234
Enter another number: 7896
74
```

Q3) Write a python program to find sum of product of corresponding even digits of first number and corresponding odd digit of second number such as n=1234 m=4567 output=4*7+2*5

Program:

```
print(sum(i*j for (i,j) in zip(filter(lambda x: x%2==0, map(int,input("Enter
first number: "))), filter(lambda x: x%2!=0, map(int,input("Enter second
number: "))))))
```

Output:

```
D:\Books & Pdf\B.Tech\7th sem\IOT\Assignment2\till_looping>python 3.py
Enter first number: 1234
Enter second number: 4567
38
```

Q4) Write a python program to compute following series and take input x and n

I) $1-x^2/2! + x^3/3!-x^4/4!+------+x^n/n!$

Program:

```
from math import factorial
x = int(input("Enter x: "))
n = int(input("Enter n: "))
print(1+sum([(-1)**(i+1)*x**i/factorial(i) for i in range(2,n+1)]))
```

Output:

```
D:\Books & Pdf\B.Tech\7th sem\IOT\Assignment2\till_looping>python 4_1.py
Enter x: 2
Enter n: 6
-0.15555555555555567
```

II) $x-x^3/3! + x^5/5!-x^7/7!+------+x^n/n!$

Program:

```
from math import factorial
x = int(input("Enter x: "))
n = int(input("Enter n: "))
print(sum([(-1)**i*x**j/factorial(j) for i,j in enumerate(range(1,n+1,
2))]))
```

Output:

```
D:\Books & Pdf\B.Tech\7th sem\IOT\Assignment2\till_looping>python 4_2.py
Enter x: 2
Enter n: 6
0.9333333333333333
```

III) $1+x^2/2! + x^4/4!+x^6/6!+------+x^n/n!$

Program:

```
from math import factorial
x = int(input("Enter x: "))
n = int(input("Enter n: "))
print(1+sum([x**i/factorial(i) for i in range(2,n+1, 2)]))
```

Output:

```
D:\Books & Pdf\B.Tech\7th sem\IOT\Assignment2\till_looping>python 4_3.py
Enter x: 2
Enter n: 6
3.7555555555555555
```

Q5) Write a python program compute following series and take a numbers num as input

$x-x^3/3! + x^5/5!-x^7/7!+------+x^n/n!$

where x=sum of all even digits except 2 and 8 and n= sum of all odd digits except 1 and 3

Program:

```
from math import factorial
num = input("Enter a number: ")
x = sum([int(i) for i in num if i in ('0','4','6')])
n = sum([int(i) for i in num if i in ('5','7','9')])
print(sum([(-1)**i*x**j/factorial(j) for i,j in enumerate(range(1,n+1,
2))]))
```

Output:

```
D:\Books & Pdf\B.Tech\7th sem\IOT\Assignment2\till_looping>python 5.py
Enter a number: 316245
676.6666666666667
```

Part 2

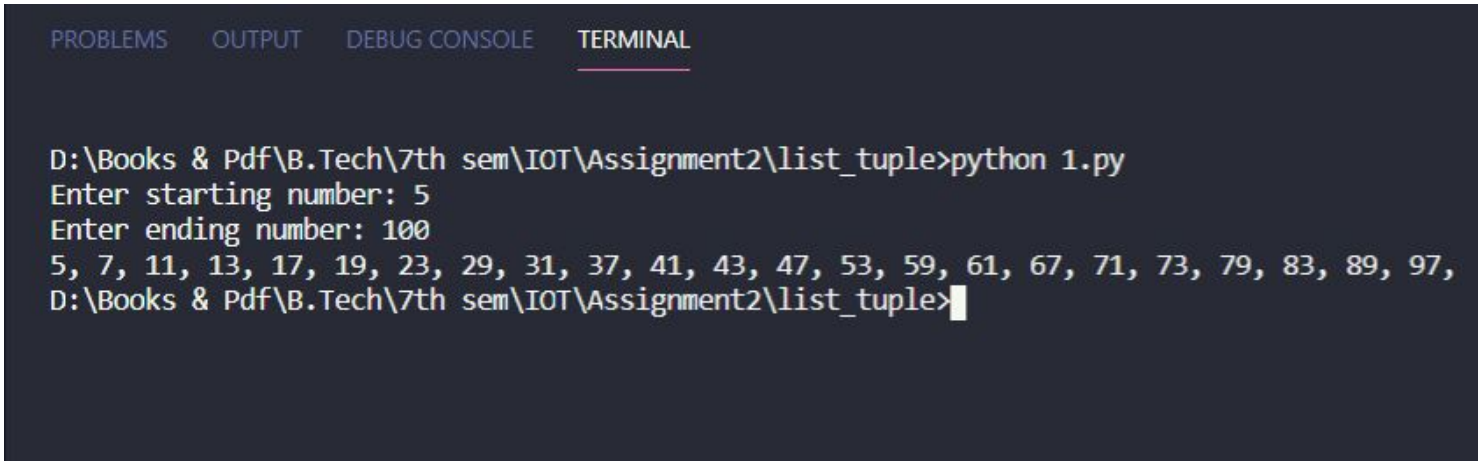
Q1) Write a python program to create a list of prime numbers as per given range

Program:

```
def sieve_of_eratosthenes(start, end):
    prime = [True for i in range(end+1)]
    p=2
    while p*p <= end:
        if prime[p]:
            for i in range(p*p, end+1, p): prime[i] = False
        p+=1
    for i in range(max(2, start), end+1):
        if prime[i]: print(i, end=", ")

sieve_of_eratosthenes(int(input("Enter starting number: ")),
int(input("Enter ending number: ")))
```

Output:



Q2) Write a python program to find total mark of a student and take 5 different subject along with marks of 10 students using dictionary

Program:

```
result = {"Student_{}".format(i+1): [int(input("Enter marks of student_{} for subject_{}: ".format(i+1, j+1))) for j in range(5)] for i in range(10)}

[print("Total marks of Student_{} is {}".format(i+1, total)) for i,total in enumerate([sum(result[student]) for student in result])]
```

Output:

```
D:\Books & Pdf\B.Tech\7th sem\IOT\Assignment2\list_tuple>python 2.py
Enter marks of student_1 for subject_1: 35
Enter marks of student_1 for subject_2: 76
Enter marks of student_1 for subject_3: 21
Enter marks of student_1 for subject_4: 39
Enter marks of student_1 for subject_5: 57
Enter marks of student_2 for subject_1: 27
Enter marks of student_2 for subject_2: 73
Enter marks of student_2 for subject_3: 96
Enter marks of student_2 for subject_4: 98
Enter marks of student_2 for subject_5: 79
Enter marks of student_3 for subject_1: 58
Enter marks of student_3 for subject_2: 68
Enter marks of student_3 for subject_3: 64
Enter marks of student_3 for subject_4: 98
Enter marks of student_3 for subject_5: 56
Enter marks of student_4 for subject_1: 34
Enter marks of student_4 for subject_2: 71
Enter marks of student_4 for subject_3: 16
Enter marks of student_4 for subject_4: 47
Enter marks of student_4 for subject_5: 38
Enter marks of student_5 for subject_1: 54
Enter marks of student_5 for subject_2: 84
Enter marks of student_5 for subject_3: 78
Enter marks of student_5 for subject_4: 37
Enter marks of student_5 for subject_5: 32
Enter marks of student_6 for subject_1: 69
Enter marks of student_6 for subject_2: 34
Enter marks of student_6 for subject_3: 67
Enter marks of student_6 for subject_4: 25
Enter marks of student_6 for subject_5: 79
Enter marks of student_7 for subject_1: 26
Enter marks of student_7 for subject_2: 69
Enter marks of student_7 for subject_3: 46
Enter marks of student_7 for subject_4: 69
Enter marks of student_7 for subject_5: 26
Enter marks of student_8 for subject_1: 57
Enter marks of student_8 for subject_2: 45
Enter marks of student_8 for subject_3: 87
Enter marks of student_8 for subject_4: 45
Enter marks of student_8 for subject_5: 67
Enter marks of student_9 for subject_1: 43
Enter marks of student_9 for subject_2: 67
Enter marks of student_9 for subject_3: 78
Enter marks of student_9 for subject_4: 43
Enter marks of student_9 for subject_5: 78
Enter marks of student_10 for subject_1: 43
Enter marks of student_10 for subject_2: 78
Enter marks of student_10 for subject_3: 43
Enter marks of student_10 for subject_4: 78
Enter marks of student_10 for subject_5: 43
Total marks of Student_1 is 228
Total marks of Student_2 is 373
Total marks of Student_3 is 344
Total marks of Student_4 is 206
Total marks of Student_5 is 285
Total marks of Student_6 is 274
Total marks of Student_7 is 236
Total marks of Student_8 is 301
Total marks of Student_9 is 309
Total marks of Student_10 is 285
```

Q3) Write a python program to store details of a student like rollno, regd no, name, branch, stream, sem, phone no, address in dictionary and print the details in cv format

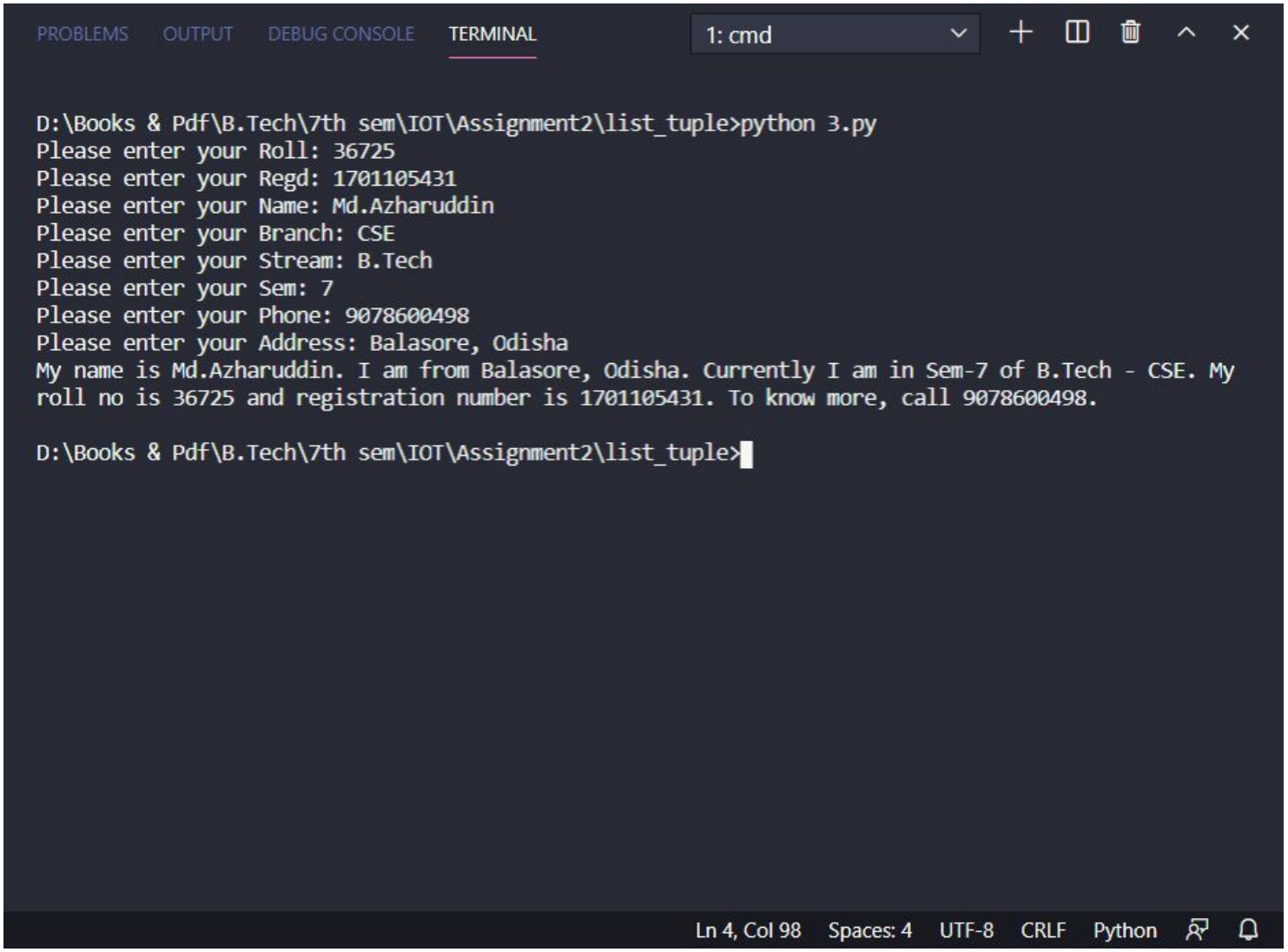
Program:

```
keys=["Roll", "Regd", "Name", "Branch", "Stream", "Sem", "Phone", "Address"]

details = {k: input("Please enter your {}: ".format(k)) for k in keys}

print("My name is {}. I am from {}. Currently I am in Sem-{} of {} - {}. My
roll no is {} and registration number is {}. To know more, call {}."
.format(details["Name"], details["Address"], details["Sem"],
details["Stream"], details["Branch"], details["Roll"], details["Regd"],
details["Phone"]))
```

Output:



Q4) Write a Python program to print and store ‘n terms of Fibonacci series in list

Program:

```
fib = [0, 1]
[fib.append(fib[i-2]+fib[i-1]) for i in range(2, int(input("Enter N: ")))]
print(*fib, sep=", ")
```

Output:

```
D:\Books & Pdf\B.Tech\7th sem\IOT\Assignment2\list_tuple>python 4.py
Enter N: 10
0, 1, 1, 2, 3, 5, 8, 13, 21, 34
```

Q5) Write a Python program

I)To add 'ing' at the end of a given string (length should be at least 3). If the given string already ends with 'ing' then add 'ly'. If the string length is less than 3, leave it unchanged. Sample: 'abc' Expected Result : 'abcing' Sample: 'string' Expected Result : 'stringly'

Program:

```
s = input("Enter a String: ")
if len(s) < 3: print(s)
elif not s.endswith('ing'): print(s+'ing')
else: print(s+'ly')
```

Output:

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL

D:\Books & Pdf\B.Tech\7th sem\IOT\Assignment2\list_tuple>python 5_1.py
Enter a String: Hello
Helloing

D:\Books & Pdf\B.Tech\7th sem\IOT\Assignment2\list_tuple>python 5_1.py
Enter a String: String
Stringly

D:\Books & Pdf\B.Tech\7th sem\IOT\Assignment2\list_tuple>python 5_1.py
Enter a String: An
An

D:\Books & Pdf\B.Tech\7th sem\IOT\Assignment2\list_tuple>
```

II) To get a string from a given string where all occurrences of its first char have been changed to '$', except the first char itself.

Program:

```
s = input("Enter a String: ")
print(''.join([s[0]]+[c if c!=s[0] else '$' for c in s[1:]]))
```

Output:

```
D:\Books & Pdf\B.Tech\7th sem\IOT\Assignment2\list_tuple>python 5_2.py
Enter a String: qyraqusfqqgaq
qyra$usf$$ga$
```

Q6) Write a python program to store names of 10 fruits in strings and sort in alphabetical order

Program:

```
print(sorted([input("Enter name of fruit_%s: "%(i+1)).strip().upper() for i in range(10)]))
```

Output:

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL

D:\Books & Pdf\B.Tech\7th sem\IOT\Assignment2\list_tuple>python 6.py
Enter name of fruit_1: Grapes
Enter name of fruit_2: Pineapple
Enter name of fruit_3: Apple
Enter name of fruit_4: Pear
Enter name of fruit_5: Banana
Enter name of fruit_6: Litchi
Enter name of fruit_7: Apricot
Enter name of fruit_8: Fig
Enter name of fruit_9: Mango
Enter name of fruit_10: Orange
['APPLE', 'APRICOT', 'BANANA', 'FIG', 'GRAPES', 'LITCHI', 'MANGO', 'ORANGE', 'PEAR', 'PINEAPPLE']

D:\Books & Pdf\B.Tech\7th sem\IOT\Assignment2\list_tuple>
```

Q7) Write a python program to find difference between average of all even numbers except divisible by 4 and average of all odd numbers except divisible by 5 in a list of user defined 20 values?

Program:

```
l = [int(input("Enter value_%2d: "%(i+1))) for i in range(20)]
evens = list(filter(lambda x: x%2==0 and x%4!=0, l))
odds = list(filter(lambda x: x%2!=0 and x%5!=0, l))
print(sum(evens)/len(evens) - sum(odds)/len(odds))
```

Output:

```
D:\Books & Pdf\B.Tech\7th sem\IOT\Assignment2\list_tuple>python 7.py
Enter value_ 1: 243
Enter value_ 2: 23
Enter value_ 3: 1
Enter value_ 4: 56
Enter value_ 5: 34
Enter value_ 6: 6783
Enter value_ 7: 45324
Enter value_ 8: 4
Enter value_ 9: 34
Enter value_10: 67
Enter value_11: 234
Enter value_12: 56
Enter value_13: 243
Enter value_14: 768
Enter value_15: 34
Enter value_16: 67
Enter value_17: 234
Enter value_18: 678
Enter value_19: 543
Enter value_20: 345
-788.25
```

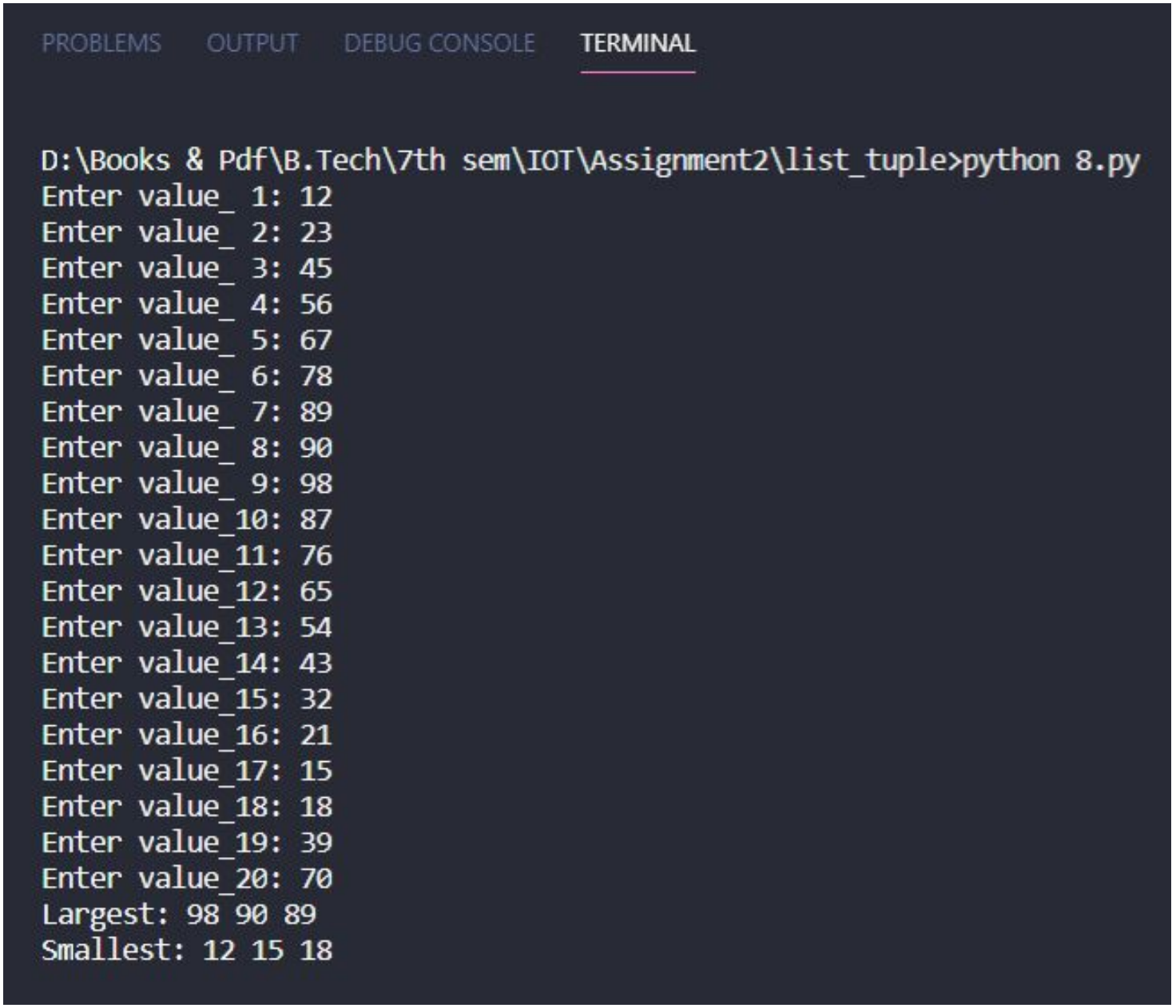
Q8) Write a python program to find 1st,2nd and 3rd largest and smallest numbers in a list 20 user defined values.

Program:

```
l = sorted([int(input("Enter value_%2d: "%(i+1))) for i in range(20)])

print("Largest:", *l[-1:-4:-1], "\nSmallest:", *l[:3])
```

Output:



Q9) Write a python program to find repeated numbers as well as frequency of repetition of numbers in a list of 20 user defined values?

Program:

```
from collections import Counter

c = Counter([int(input("Enter value_%2d: "%(i+1))) for i in range(20)])
[print(k,"is repeated", c[k], "times") for k in c if c[k]>1]
```

Output:

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL

D:\Books & Pdf\B.Tech\7th sem\IOT\Assignment2\list_tuple>python 9.py
Enter value_ 1: 12
Enter value_ 2: 21
Enter value_ 3: 43
Enter value_ 4: 12
Enter value_ 5: 45
Enter value_ 6: 65
Enter value_ 7: 65
Enter value_ 8: 67
Enter value_ 9: 12
Enter value_10: 90
Enter value_11: 76
Enter value_12: 54
Enter value_13: 90
Enter value_14: 65
Enter value_15: 34
Enter value_16: 43
Enter value_17: 67
Enter value_18: 65
Enter value_19: 12
Enter value_20: 33
12 is repeated 4 times
43 is repeated 2 times
65 is repeated 4 times
67 is repeated 2 times
90 is repeated 2 times
```

Q 10) Write a python program to create a tuple of constants values like pi and exponent and use them to find the area of the circle?

Program:

```
from math import pi, exp

consts = (pi, exp)
print("Area of circle is:", consts[0]*int(input("Enter radius of circle:
"))**2)
```

Output: