

# **ADVANCED PROGRAMMING LAB**

## **LAB RECORD**

*Submitted by*

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**Submitted to: Dr. Mahesh Kumar**



**2022-2023**

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## Lab Exercise 2: IF-ELSE and While Loop

**Q1. Write a python program to input two numbers and if their sum is equal to 10 and their multiplication is less than 20, print the text string "incorrect."**

**Solution:**

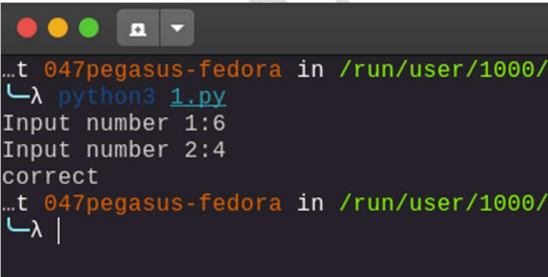
'''

This program is created by Tanishq Agarwal(211B326)

Lab 2 Question 1

'''

```
a = int(input('Input number 1:'))
b = int(input('Input number 2:'))
sumnum = a + b
mul = a * b
if sumnum == 10 and mul < 20:
    print("Incorrect!!")
else:
    print("correct")
```



```
...t 047pegasus-fedora in /run/user/1000/...
λ python3 1.py
Input number 1:6
Input number 2:4
correct
...t 047pegasus-fedora in /run/user/1000/...
λ |
```

**Q2. Write a python program for finding area and circumference of a circle.**

**Solution:**

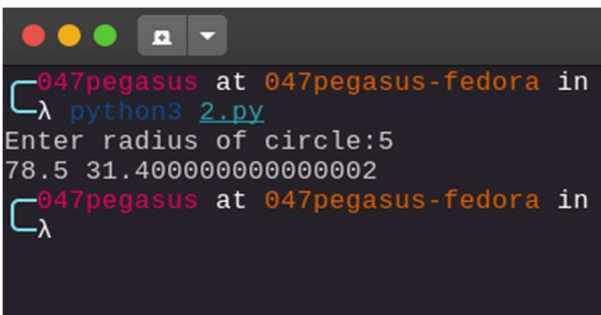
'''

This program is created by Tanishq Agarwal(211B326)

Lab 2 Question 2

'''

```
r = int(input("Enter radius of circle:"))
ar = 3.14 * r * r
crc = 2 * 3.14 * r
print(ar, crc)
```



```
047pegasus at 047pegasus-fedora in
λ python3 2.py
Enter radius of circle:5
78.5 31.400000000000002
047pegasus at 047pegasus-fedora in
λ
```

**Q3. Write a python program for calculating simple and compound interest.**

**Solution:**

'''

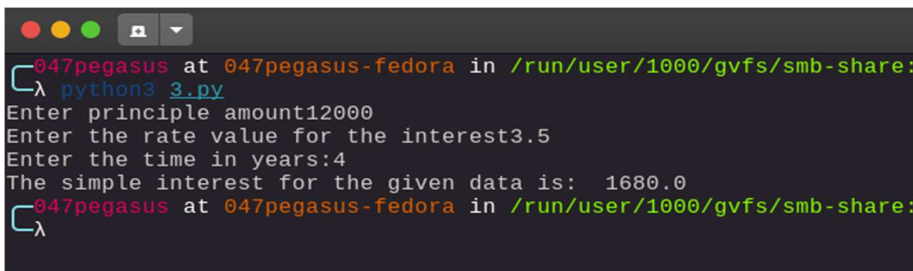
This program is created by Tanishq Agarwal(211B326)

Lab 2 Question 3

```

'''
"simple interest"
p = int(input("Enter principle amount"))
r = float(input("Enter the rate value for the interest"))
t = int(input("Enter the time in years:"))
si = float((p * r * t) / 100)
print("The simple interest for the given data is: ", si)

```



```

047pegasus at 047pegasus-fedora in /run/user/1000/gvfs/smb-share:
λ python3 3.py
Enter principle amount12000
Enter the rate value for the interest3.5
Enter the time in years:4
The simple interest for the given data is: 1680.0
047pegasus at 047pegasus-fedora in /run/user/1000/gvfs/smb-share:
λ

```

**Q4. Write a python program to convert temperature from degree centigrade to Fahrenheit.**

Solution: '''

This program is created by Tanishq Agarwal(211B326)

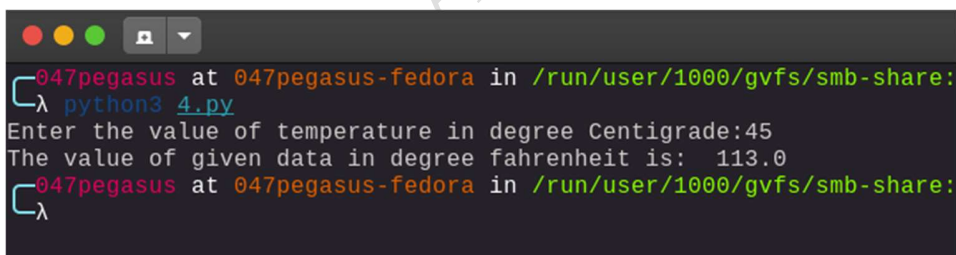
Lab 2 Question 4

'''

```

cent = float(input("Enter the value of temperature in degree Centigrade:"))
far = float(((9 / 5) * cent) + 32)
print("The value of given data in degree fahrenheit is: ", far)

```



```

047pegasus at 047pegasus-fedora in /run/user/1000/gvfs/smb-share:
λ python3 4.py
Enter the value of temperature in degree Centigrade:45
The value of given data in degree fahrenheit is: 113.0
047pegasus at 047pegasus-fedora in /run/user/1000/gvfs/smb-share:
λ

```

**Q5. Write a python program to calculate average of three numbers.**

Solution: '''

'''

This program is created by Tanishq Agarwal(211B326)

Lab 2 Question 5

'''

```

a = int(input("Enter a number 1:"))

```

```

b = int(input("Enter a number 2:"))
c = int(input("Enter a number 3:"))
print("The average of a,b,c is: ", a + b + c / 3)

```

```

047pegasus at 047pegasus-fedora in /run/user/
λ python3 5.py
Enter a number 1:24
Enter a number 2:25
Enter a number 3:34
The average of a,b,c is: 60.333333333333336
047pegasus at 047pegasus-fedora in /run/user/
λ |

```

**Q6. Write a python program to calculate sum of 6 subjects and find percentage obtained.**

Solution:

'''

This program is created by Tanishq Agarwal(211B326)

Lab 2 Question 6

'''

```

sub_1 = int(input("Enter the value of marks for subject 1:"))
sub_2 = int(input("Enter the value of marks for subject 2:"))
sub_3 = int(input("Enter the value of marks for subject 3:"))
sub_4 = int(input("Enter the value of marks for subject 4:"))
sub_5 = int(input("Enter the value of marks for subject 5:"))
sub_6 = int(input("Enter the value of marks for subject 6:"))
sub_sum = sub_1 + sub_2 + sub_3 + sub_4 + sub_5 + sub_6
perc = (sub_sum / 600) * 100
print("The sum of the marks allotted for the subjects is:", sub_sum, "and the percentage is: ", perc)

```

```

047pegasus
047pegasus at 047pegasus-fedora in /run/user/1000/gvfs/smb-share:server=192.168.4.11,share=211b326/AP LAB/LAB 2
λ python3 6.py
Enter the value of marks for subject 1:100
Enter the value of marks for subject 2:99
Enter the value of marks for subject 3:98
Enter the value of marks for subject 4:97
Enter the value of marks for subject 5:96
Enter the value of marks for subject 6:99
The sum of the marks allotted for the subjects is: 589 and the percentage is: 98.16666666666667
047pegasus at 047pegasus-fedora in /run/user/1000/gvfs/smb-share:server=192.168.4.11,share=211b326/AP LAB/LAB 2
λ

```

**Q7. Write a python program to print swapping of two numbers without using third variable.**

Solution:

'''

This program is created by Tanishq Agarwal(211B326)

Lab 2 Question 7

'''

```

X = int(input("Enter X: "))
Y = int(input("Enter Y: "))
X, Y = Y, X
print("The value of X is:", X)
print("The value of Y is:", Y)

```

```

047pegasus at 047pegasus-fedora in /run/
λ python3 7.py
Enter X: 11
Enter Y: 12
The value of X is: 12
The value of Y is: 11
047pegasus at 047pegasus-fedora in /run/
λ |

```

**Q8. Write a python program to find gross salary (GS). [ Given:  $DA = (10 \times BS) / 100$ ,  $TA = (12 \times BS) / 100$ ,  $GS = BS + TA + DA$  ]**

Solution:

'''

This program is created by Tanishq  
Agarwal(211B326)

Lab 2 Question 8

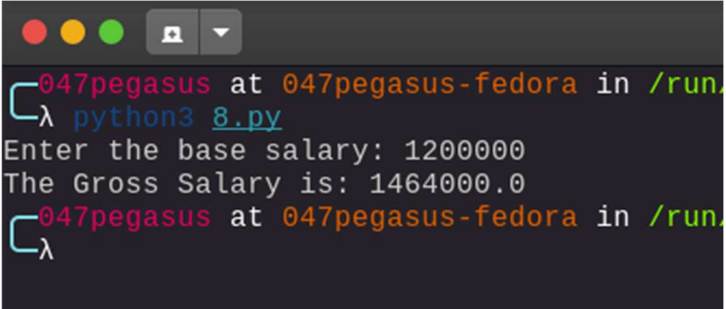
'''

```
salary = int(input("Enter the base salary:"))
```

```
DA = (10 * salary) / 100
```

```
TA = (12 * salary) / 100
```

```
print("The Gross Salary is:", salary + DA + TA)
```

A terminal window showing the execution of a Python script. The prompt is 047pegasus at 047pegasus-fedora in /run/. The user enters python3 8.py. The program prompts for the base salary, which is entered as 1200000. The program then outputs 'The Gross Salary is: 1464000.0'.

**Q9. Write a python program to find greatest in 3 numbers.**

Solution:

'''

This program is created by Tanishq Agarwal(211B326)

Lab 2 Question 9

'''

```
x = int(input("Enter first number: "))
```

```
y = int(input("Enter second number: "))
```

```
z = int(input("Enter third number: "))
```

```
great = 0
```

```
if x >= y:
```

```
    if x >= z:
```

```
        great = x
```

```
    else:
```

```
        great = z
```

```
else:
```

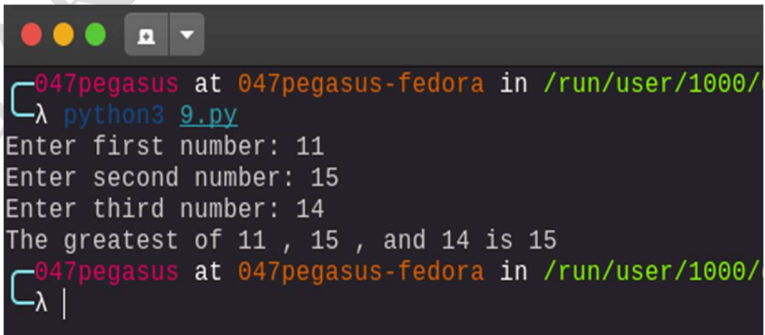
```
    if y >= z:
```

```
        great = y
```

```
    else:
```

```
        great = z
```

```
print("The greatest of", x, ",", y, ",", z, "is", great)
```

A terminal window showing the execution of a Python script. The prompt is 047pegasus at 047pegasus-fedora in /run/user/1000/. The user enters python3 9.py. The program prompts for three numbers: 11, 15, and 14. The program then outputs 'The greatest of 11 , 15 , and 14 is 15'.

**Q10. Write a python program to find whether a given no. is even or odd.**

Solution:

```
'''
```

```
This program is created by Tanishq  
Agarwal(211B326)
```

```
Lab 2 Question 10
```

```
'''
```

```
x = int(input("Enter the number: "))
```

```
if x % 2 == 0:
```

```
    print("The number is even")
```

```
else:
```

```
    print("The number is odd")
```

**Q11. If the marks obtained by a student in five different subjects are input through the keyboard, find out the aggregate marks and percentage marks obtained by the student. Assume that the maximum marks that can be obtained by a student in each subject is 100.**

Solution:

```
'''
```

```
This program is created by Tanishq Agarwal(211B326)
```

```
Lab 2 Question 11
```

```
'''
```

```
sub1 = int(input("Enter marks of first subject: "))
```

```
sub2 = int(input("Enter marks of second subject: "))
```

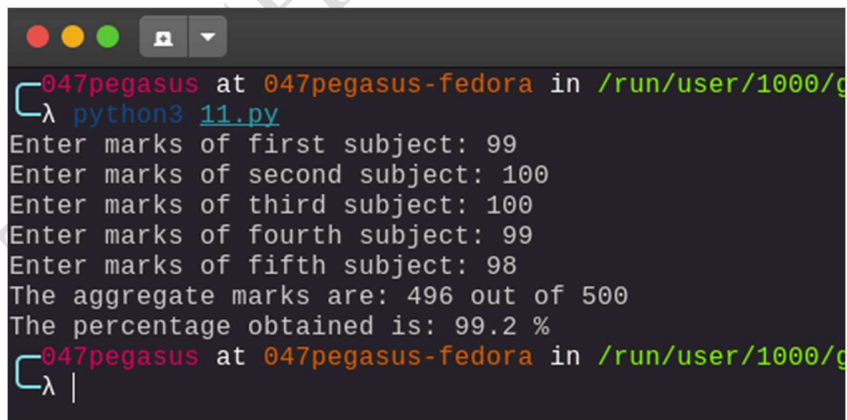
```
sub3 = int(input("Enter marks of third subject: "))
```

```
sub4 = int(input("Enter marks of fourth subject: "))
```

```
sub5 = int(input("Enter marks of fifth subject: "))
```

```
print("The aggregate marks are:", sub1 + sub2 + sub3 + sub4 + sub5, "out of 500")
```

```
print("The percentage obtained is:", (sub1 + sub2 + sub3 + sub4 + sub5) / 5, "%")
```



```
047pegasus at 047pegasus-fedora in /run/user/1000/g
λ python3 11.py
Enter marks of first subject: 99
Enter marks of second subject: 100
Enter marks of third subject: 100
Enter marks of fourth subject: 99
Enter marks of fifth subject: 98
The aggregate marks are: 496 out of 500
The percentage obtained is: 99.2 %
047pegasus at 047pegasus-fedora in /run/user/1000/g
λ |
```

**Q12. The length & breadth of a rectangle and radius of a circle are input through the**

**keyboard. Write an algorithm to calculate the area & perimeter of the rectangle, and the area & circumference of the circle.**

Solution:

'''

This program is created by Tanishq  
Agarwal(211B326)

Lab 2 Question 12

'''

PI = 3.1415

length = int(input("Enter length of the  
rectangle: "))

height = int(input("Enter height of the  
rectangle: "))

radius = int(input("Enter radius of the circle: "))

print("Rectangle:")

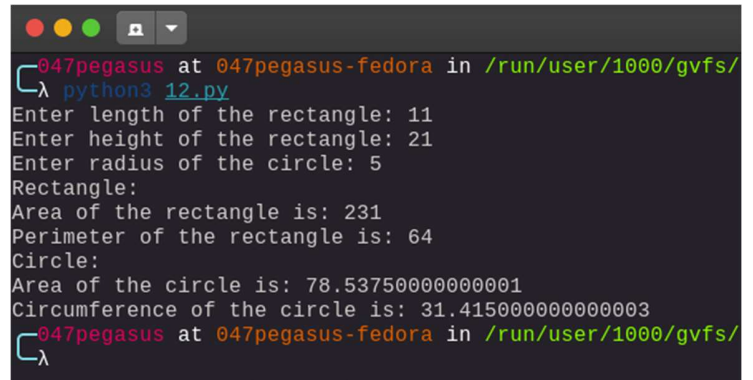
print("Area of the rectangle is:", length \* height)

print("Perimeter of the rectangle is:", 2 \* (length + height))

print("Circle:")

print("Area of the circle is:", PI \* radius \* radius)

print("Circumference of the circle is:", 2 \* PI \* radius)



```
047pegasus at 047pegasus-fedora in /run/user/1000/gvfs/
λ python3 12.py
Enter length of the rectangle: 11
Enter height of the rectangle: 21
Enter radius of the circle: 5
Rectangle:
Area of the rectangle is: 231
Perimeter of the rectangle is: 64
Circle:
Area of the circle is: 78.53750000000001
Circumference of the circle is: 31.415000000000003
047pegasus at 047pegasus-fedora in /run/user/1000/gvfs/
λ
```

**Q13. A cashier has currency notes of denominations 10, 50 and 100. If the amount to be withdrawn is input through the keyboard in tens, hundreds or thousands, find the total number of currency notes of each denomination the cashier will have to give to the withdrawer**

Solution:

'''

This program is created by Tanishq  
Agarwal(211B326)

Lab 2 Question 13

'''

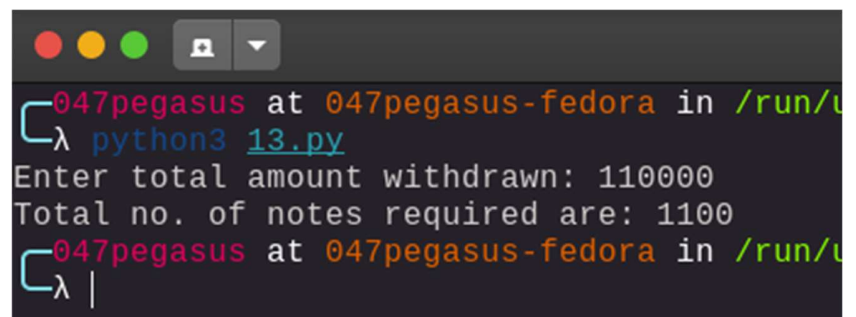
amount = int(input("Enter total amount  
withdrawn: "))

hundred = amount // 100

fifty = (amount % 100) // 50

tens = ((amount % 100) % 50) // 10

print("Total no. of notes required are:", hundred + fifty + tens)



```
047pegasus at 047pegasus-fedora in /run/u
λ python3 13.py
Enter total amount withdrawn: 110000
Total no. of notes required are: 1100
047pegasus at 047pegasus-fedora in /run/u
λ |
```



**Q14. If the total selling price of 15 items and the total profit earned on them is input through the keyboard, write a python program to find the cost price of one item.**

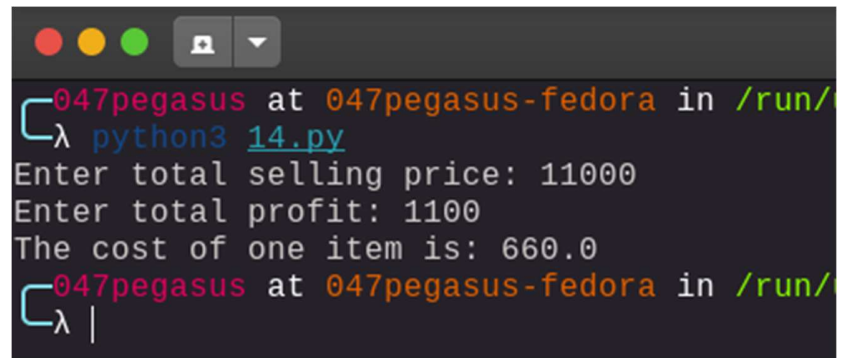
Solution: '''

This program is created by Tanishq Agarwal(211B326)

Lab 2 Question 14

'''

```
sellprice = int(input("Enter total  
selling price: "))  
profit = int(input("Enter total  
profit: "))  
costprice = (sellprice - profit) / 15  
print("The cost of one item is:",  
costprice)
```

A terminal window showing the execution of a Python script. The prompt is '047pegasus at 047pegasus-fedora in /run/'. The user enters 'python3 14.py'. The program prompts for 'Enter total selling price: 11000' and 'Enter total profit: 1100'. The output is 'The cost of one item is: 660.0'.

```
047pegasus at 047pegasus-fedora in /run/  
λ python3 14.py  
Enter total selling price: 11000  
Enter total profit: 1100  
The cost of one item is: 660.0  
047pegasus at 047pegasus-fedora in /run/  
λ |
```

**Q15. If a five-digit number is input through the keyboard, write a python program to print a new number by adding one to each of its digits. For example if the number that is input is 12391 then the output should be displayed as 23402. [If digit is 9 it should be converted into 0].**

Solution: '''

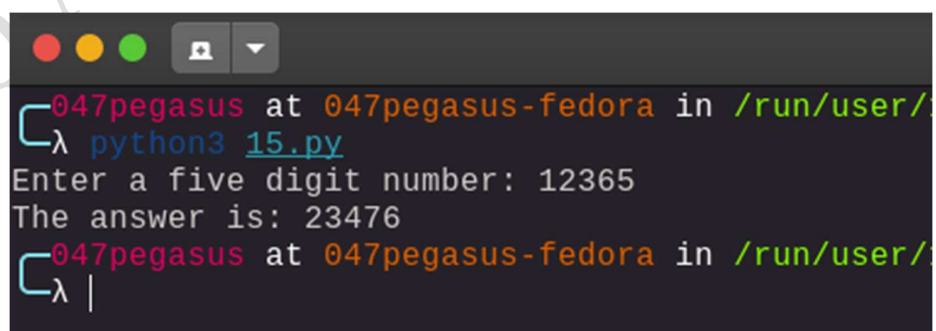
'''

This program is created by Tanishq Agarwal(211B326)

Lab 2 Question 15

'''

```
num = int(input("Enter a five digit number: "))  
ans = 0  
counter = 0  
while (num > 0):  
    x = num % 10  
    num = num // 10  
    if x == 9:  
        x = 0  
    else:  
        x += 1  
    ans = ans + (x * (10 ** counter))  
    counter += 1
```

A terminal window showing the execution of a Python script. The prompt is '047pegasus at 047pegasus-fedora in /run/user/'. The user enters 'python3 15.py'. The program prompts for 'Enter a five digit number: 12365'. The output is 'The answer is: 23476'.

```
047pegasus at 047pegasus-fedora in /run/user/  
λ python3 15.py  
Enter a five digit number: 12365  
The answer is: 23476  
047pegasus at 047pegasus-fedora in /run/user/  
λ |
```

```
print("The answer is:", ans)
```

**Q16. Write a program that asks the user to input 10 integers, and then prints the largest odd**

**number that was entered. If no odd number was entered, it should print a message to that effect.**

Solution:

'''

This program is created by Tanishq Agarwal(211B326)

Lab 2 Question 16

'''

counter = 0

ans = 0

while (counter < 10):

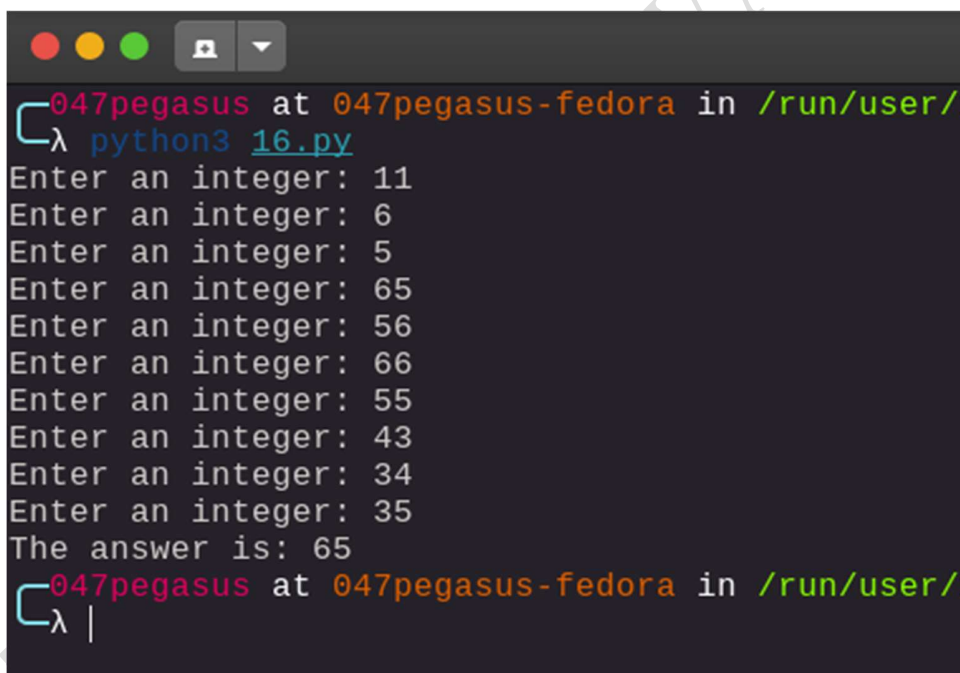
    x = int(input("Enter an integer: "))

    if ((x % 2 != 0) and (x > ans)) or (counter == 0):

        ans = x

    counter += 1

print("The answer is:", ans)



```
047pegasus at 047pegasus-fedora in /run/user/...  
λ python3 16.py  
Enter an integer: 11  
Enter an integer: 6  
Enter an integer: 5  
Enter an integer: 65  
Enter an integer: 56  
Enter an integer: 66  
Enter an integer: 55  
Enter an integer: 43  
Enter an integer: 34  
Enter an integer: 35  
The answer is: 65  
047pegasus at 047pegasus-fedora in /run/user/...  
λ |
```

**Q17. Write a program to prints the integer cube root, if it exists, of an integer. If the input is not a perfect cube, it prints a message “the number is not perfect cube” otherwise it prints “the number is perfect cube”.**

Solution:

'''

This program is created by Tanishq Agarwal(211B326)

Lab 2 Question 17

'''

```
a = int(input('Enter the number whose integral cube root is to be calculated:'))
```

```
cube = a ** (1 / 3)
```

```
print(cube)
```

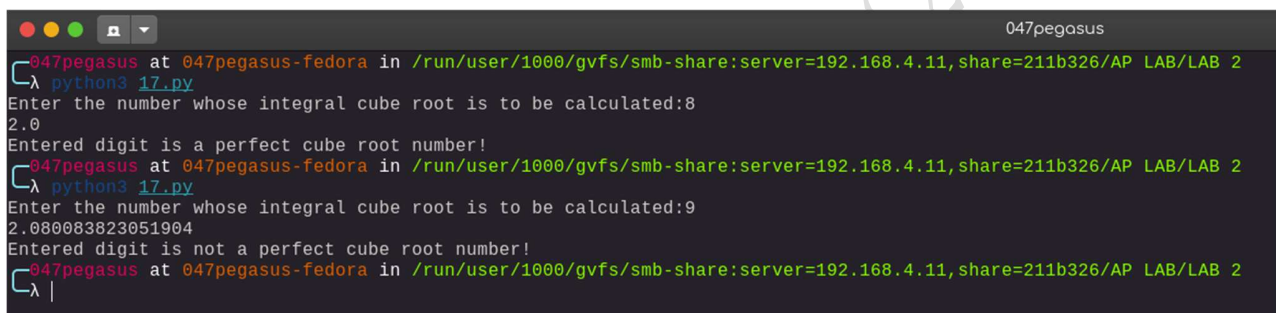
```
b = int(cube)
```

```
if cube == b:
```

```
    print('Entered digit is a perfect cube root number!')
```

```
else:
```

```
    print('Entered digit is not a perfect cube root number!')
```



```
047pegasus at 047pegasus-fedora in /run/user/1000/gvfs/smb-share:server=192.168.4.11,share=211b326/AP LAB/LAB 2
λ python3 17.py
Enter the number whose integral cube root is to be calculated:8
2.0
Entered digit is a perfect cube root number!
047pegasus at 047pegasus-fedora in /run/user/1000/gvfs/smb-share:server=192.168.4.11,share=211b326/AP LAB/LAB 2
λ python3 17.py
Enter the number whose integral cube root is to be calculated:9
2.080083823051904
Entered digit is not a perfect cube root number!
047pegasus at 047pegasus-fedora in /run/user/1000/gvfs/smb-share:server=192.168.4.11,share=211b326/AP LAB/LAB 2
λ |
```

**Q18. Write a program to print all even numbers between 1 to 100.**

Solution:

'''

This program is created by Tanishq Agarwal(211B326)

Lab 2 Question 18

'''

```
n = 1
```

```
while n <= 100:
```

```
    if n % 2 == 0:
```

```
        print(n)
```

```
        n = n + 1
```

```
    else:
```

```
        n = n + 1
```

```
047pegasus at 047pegasus-fedora in /run/user/1000/gvfs/smb-share:server=192.168.4.11,share=211b326/AP LAB/LAB 2
λ python3 18.py
2
4
6
8
10
12
14
16
18
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
78
80
82
84
86
88
90
92
94
96
98
100
047pegasus at 047pegasus-fedora in /run/user/1000/gvfs/smb-share:server=192.168.4.11,share=211b326/AP LAB/LAB 2
```

**Q19. Write a program to print all odd number between 1 to 100**

Solution:

'''

This program is created by Tanishq Agarwal(211B326)

Lab 2 Question 19

'''

```
n = 1
while n <= 100:
    if n % 2 != 0:
        print(n)
        n = n + 1
    else:
        n = n + 1
```

```
047pegasus at 047pegasus-fedora in /run/user/1000/gvfs/smb-share:server=192.168.4.11,share=211b326/AP LAB/LAB 2
λ python 19.py
1
3
5
7
9
11
13
15
17
19
21
23
25
27
29
31
33
35
37
39
41
43
45
47
49
51
53
55
57
59
61
63
65
67
69
71
73
75
77
79
81
83
85
87
89
91
93
95
97
99
047pegasus at 047pegasus-fedora in /run/user/1000/gvfs/smb-share:server=192.168.4.11,share=211b326/AP LAB/LAB 2
```

**Q20. Write a program to find HCF (GCD) of two numbers.**

Solution:

'''

This program is created by Tanishq Agarwal(211B326)

Lab 2 Question 20

'''

a = int(input('Input number 1:'))

b = int(input('Input number 2:'))

if a == 0 or b == 0:

    print("GCD of a and b is : 0")

elif a == b:

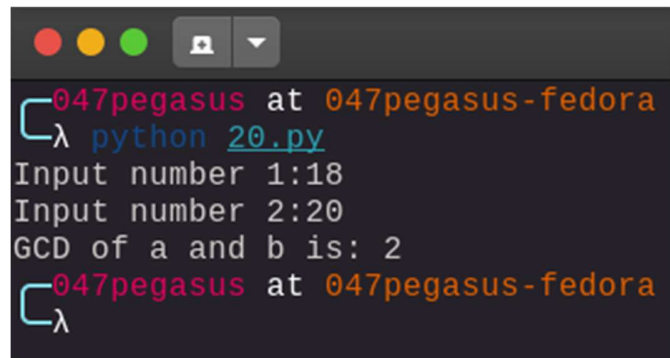
    print("GCD of a and b is :", a)

else:

```

if a < b:
    n = b
else:
    n = a
while n > 0:
    if a % n == 0 and b % n == 0:
        print("GCD of a and b is:", n)
        n = n - 1
    n = n - 1

```



```

047pegasus at 047pegasus-fedora
λ python 20.py
Input number 1:18
Input number 2:20
GCD of a and b is: 2
047pegasus at 047pegasus-fedora
λ

```

**Q21. Write a program to find LCM of two numbers.**

Solution:

'''

This program is created by Tanishq Agarwal(211B326)

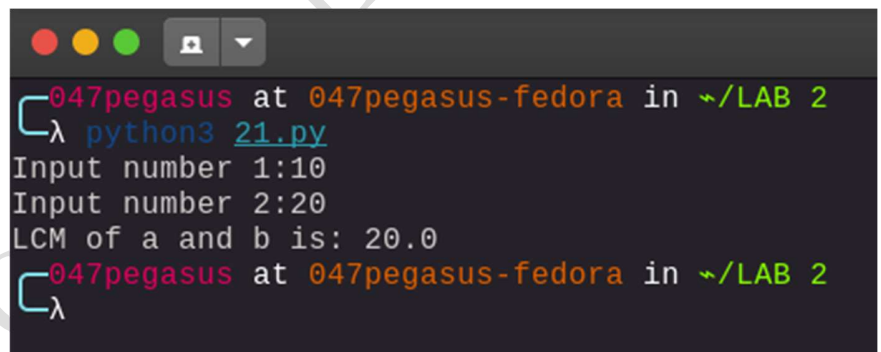
Lab 2 Question 21

'''

```

a = int(input('Input number 1:'))
b = int(input('Input number 2:'))
if a == 0 or b == 0:
    print("LCM of a and b is : 0")
elif a == b:
    print("LCM of a and b is :", a)
else:
    if a < b:
        n = b
    else:
        n = a
    while n > 0:
        if a % n == 0 and b % n == 0:
            print("LCM of a and b is:", (a*b/n))
            break
        n = n - 1

```



```

047pegasus at 047pegasus-fedora in ~/LAB 2
λ python3 21.py
Input number 1:10
Input number 2:20
LCM of a and b is: 20.0
047pegasus at 047pegasus-fedora in ~/LAB 2
λ

```