Part 1

Evaluate the following Boolean expressions in **IDLE**:

Note down the response to each. Do they differ from what you would expect?

```
7 and 5 #5
True and True#True
True and False or True #True
False or False and True #False
False or 0 #0
not (False) and True #True
not (True or not (False and False)) #False
 (10 > 14) and (4 == 5) #False
True and 5 #5
 (3 * 4)! = (14 - 2) or ('C' >= 'D')#Syntax
 Error (12 * 2) == (3 * 8) #True
 (14 * 2)! = (3 * 8)#Syntax error
```

Part 2

1. Evaluate the following expressions for `num1 = 10` and `num2 = 20`.

(a) `not (num1 < 1) and num2 < 10` **#False**

(b) `not (num1 < 1) and num2 < 10 or num1 + num3 < 100` **#True**

(c) `not (num2 > 1) or num1 > num2 - 10` **#Syntax error**

2. Write a python program to find the sum and product of two numbers.

```
#Nabodip Thapa
num1 = int(input("Enter a number : "))
num2 = int(input("Enter another number: "))
sum = num1+num2
product = num1*num2
print("sum is",sum)
print("product is ", prodcut)
```

```
Enter a number : 6
Enter another number: 7
sum is 13
product is  42
```

3. Write a python program to input first name, last name, and address. Print them.

```
#Nabodip Thapa
first_name = input("your first name")
last_name = input("your last name ")
address = input ("your address")
print(first_name, last_name, address)
```

```
your first name Nabodip
your last name Thapa
your address Dhumbarahi
 Nabodip Thapa  Dhumbarahi
```

4. Write a python program to input three numbers and find their sum.

```
#Nabodip Thapa
first_num = int(input("your first number"))
second_num = int(input("your second number "))
third_num = int(input ("your third number"))
print("sum is",first_num+second_num+third_num)
```

```
your first number3
your second number 4
your third number5
sum is 12
```

5. Write a python program to print the area of circle. Take radius of circle as an input form the user.

```
#Nabodip Thapa
radius = int(input("Input the radius:"))
area= 3.14*(radius**2)
print("Area of the circle ",area)
```

```
Input the radius: 2
Area of the circle  12.56
```

Part 3

1. Write a program that:

(a) Asks to input the user's weight in kilograms

(b) Asks to input the user's height in centimeters.

(c) Calculates the BMI (Body Mass Index).

[BMI=weight in kilograms / square of height in centimeters]

(d) Prints the user's BMI.

```
#Nabodip Thapa
weight = int(input("Enter your weight in kg:"))
height = int(input("Enter your height in cm:"))
BMI = weight/(height**2)
print(format(BMI,'.2F'))
```

```
Enter your weight in kg:70
Enter your height in cm:35
0.06
```

2. An observer sees the shadow of a bird at mid-day.

(a) The distance between the observer and the shadow is 15 meters.

(b) The perpendicular distance between the bird and its shadow is 25 meters.

(c) Find the total distance between the bird and the observer.

[Use height and distance formula: $h^2=p^2+b^2$]

```
import math
base = 15
perpendicular = 25
hypotenus = math.sqrt((base**2) + (perpendicular**2))
print(format(hypotenus,'.2f'))
```

```
29.15
```

3. A costumer walks in a flower shop and finds the following menu:

Particulars	White Roses	Lilies	Poppies	Marigold	Red Roses
Per piece	50	50	40	20	100
Per bouquet	300	300	250	200	1000

If the user bought a bouquet of lilies and four red roses, find the total money the user spent in the flower shop.

```
#Nabodip Thapa
lilies= 300
red_roses= 100
toal_moneyl= lilies+4*red_roses
print(total_money)
```

```
700
```

4. Take user's name, age and address as input and generate a formatted output using python scripting. [Use %d and %s to generate the output]

```
#Nabodip Thapa
name = input ("Enter yout name: ")
age = int(input("Enter your age: "))
address = input("Where do you live?:")
print ("%s who lives in %s is %d years old."%(name, address, age))
```

```
Enter yout name: Nabodip
Enter your age: 18
Where do you live?:Kathmandu
Nabodip who lives in Kathmandu is 18 years old.
```

5. Calculate the VAT amount of a gadget the user bought using the built in python format function within two decimal digits. Input the cost price from the user. [VAT =13%]

```
vat = 13/100
gadget = int(input("How much did you pay for this gadget
print(format(gadget*vat,'.2f'))
```

```
How much did you pay for this gadget?550
71.50
```

Part 4 (Home Task)

1. Give an appropriate if statement for each of the following
(The value of `num` is not important):

(a) Displays `'within range'` if `num` is between 0 and 100, inclusive.

(b) Displays `'within range'` if `num` is between 0 and 100, inclusive, and displays `'out of range'` otherwise.

```
user = int(input("Enter a number: "))
if user<=100 and user>=0:
print("Within range")
else:
print("out of range")
```

```
Enter a number: 88
Within range
```

2. Rewrite the following if-else statements using a single if statement and elif:

```
if temperature >= 85 and humidity > 60:
    print ('muggy day today')
else:
     if temperature >= 85:
         print ('warm, but not muggy today')
      else:
         if temperature >= 65:
             print ('pleasant today')
         else:
             if temperature <= 45:
                 print ('cold today')
             else:
                 print ('cool today')
```

```
temperature =int(input("Enter the current temperature:
"))
humidity =int(input("Enter the current humidity: "))
if temperature >= 85 and humidity > 60:
print ('muggy day today')
elif temperature >= 85:
print ('warm, but not muggy today')
elif temperature >= 65:
print ('pleasant today')
elif temperature <= 45:
print ('cold today')
else:
print ('cool today')
```

```
Enter the current temperature:16
Enter the current humidity: 50
cold today
```

3. Write a Python program in which:

(a) The user enters either `'A', 'B', or 'C'`. If `'A'` is entered, the program should display the word `'Apple'`; if `'B'` is entered, it displays `'Banana'`; and if 'C' is entered, it displays `'Coconut'`. Use nested if statements for this.

```
user = input("Enter a letter ")
list1 = ["A","B","C"]
if user not in list1:
 print(":)")
else:
 if user == "A":
  print("Apple")
 else:
  if user == "B":
   print("Banana")
  else:
   if user == "C":
    print("Coconut")
   else:
     print("Not happy with the input")
```

```
Enter a letter A
Apple
```

(b) Repeat question **(a)** using an if statement with `elif` headers instead.

```
user = input("Enter a letter ")
list1 = ["A","B","C"]
if user not in list1:
 print(":)")
elif user == "A":
 print("Apple")
elif user == "B":
 print("Banana")
elif user == "C":
 print("Coconut")
else:
 print("Not happy with the input")
```

```
Enter a letter C
Coconut
```

(c) A student enters the number of college credits earned. If the number of credits is greater than or equal to 90, 'Senior Status' is displayed; if greater than or equal to 60, 'Junior Status' is displayed; if greater than or equal to 30, 'Sophomore Status' is displayed; else, 'Freshman Status' is displayed.

```
user = int(input("Tell me your credit score: "))
if user >= 90:
 print("Senior status:)")
elif user >= 30 and user < 60:
 print("Junior")
elif user >= 60 and user < 90:
 print("Sophomore")
else:
 print("Join the college!!")
```

```
Tell me your credit score: 90
Senior status:)
```

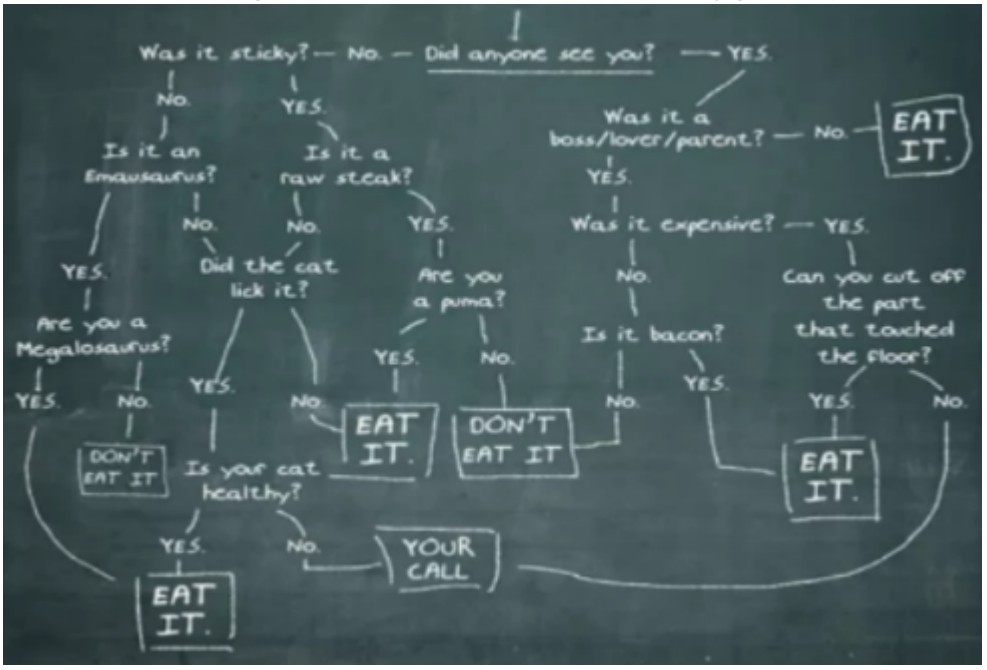
(d) The user enters a number. If the number is divisible by 3, the word ‘Fizz’ should be displayed; if the number is divisible by 5 the word ‘Buzz’ should be displayed and if the number is divisible by both ‘FizzBuzz’should be displayed.

```
user = int(input("Enter a number: "))
if user%3==0 and user%5==0:
 print("Fizzbizz")
elif user%3==0:
 print("Fizz")
elif user%5==0:
 print("Buzz")
else:
 print("Not divisible by 5 nor 3")
```

```
Enter a number: 15
Fizzbizz
```

5. Create a program using the schematic below to help you decide whether it is okay to eat something that you dropped on the floor…

Note: this is not genuine advice on health and hygiene ;)



```
print("Press y for yes and n for no for every question's answer")
a = input("Was it sticky?")
b = input("Did anyone see you?")
n = 'n'
y = 'y'
if b == n:
    if a == y:
        c = input("Is it a raw steak.")
        if c == y:
            d = input("Are you a puma?")
            if d == 'y':
                print("EAT It")
            elif d == n:
                print("DON'T EAT IT")
        else:
            if c == n:
                e = input("Did the cat lick it?")
                if e == n:
                    print("EAT IT")
                else:
                    if e == y:
                        f = input("Is you cat healthy?")
                        if f == y:
                            print("EAT IT")


                        print("EAT IT")
                    else:
                        if f == n:
                            print("YOUR CALL")
    else:
        if c == n:
            g = input("Is it a Emausaurus?")
            if g == y:
                h = input("Are you a Megalosaurus?")
                if h == y:
                    print("EAT IT")
                else:
                    if h == n:
                        print("DON'T EAT IT")

            else:
                if g == n:
                    i = input("Did the cat lick it?")
                    if i == y:
                        j = input("Is your cat healthy?")
                        if j == y:
                            print("EAT IT")
                        else:
```

```
                    else:
                        if j == n:
                            print("YOUR CALL")
                else:
                    if i == n:
                        print("EAT IT")
else:
    if b == y:
        k = input("Was it a boss/lover/parent?")
        if k == y:
            l = input("Was it expensive?")
            if l == y:
                m = input("Can you cut off the part that touched the floor?")
                if m == y:
                    print("EAT IT")
                else:
                    if m == n:
                        print("YOUR CALL")
            else:
                if l == n:
                    o = input("Is it bacon?")
                    if o == y:
                        print("EAT IT")
                    else:
                        if o == n:
                            print("DON'T EAT IT")
```

```
======== RESTART: E:/Introductory Programming/Python/hygiene_diagram.py ========
Press y for yes and n for no for every question's answer
Was it sticky?y
Did anyone see you?n
Is it a raw steak.y
Are you a puma?n
DON'T EAT IT

======== RESTART: E:/Introductory Programming/Python/hygiene_diagram.py ========
Press y for yes and n for no for every question's answer
Was it sticky?n
Did anyone see you?y
Was it a boss/lover/parent?y
Was it expensive?y
Can you cut off the part that touched the floor?n
YOUR CALL
```