

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

## **Part 2**

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

- (a)** not (num1 < 1) and num2 < 10
- (b)** not (num1 < 1) and num2 < 10 or num1 + num3 < 100
- (c)** not (num2 > 1) or num1 > num2 - 10

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

```
a = input("enter the first number: ")
b = input("enter the second number :")
sum = float(a)+float(b)
product = float(a)*float(b)
print("the sum is "+str(sum))
print("the product is "+str(product))
```

```
main x
C:\Users\Asus\PycharmProjects\pythonProject\venv\Scripts\python.exe
enter the first number: 2
enter the second number :3
the sum is 5.0
the product is 6.0
Process finished with exit code 0
```

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

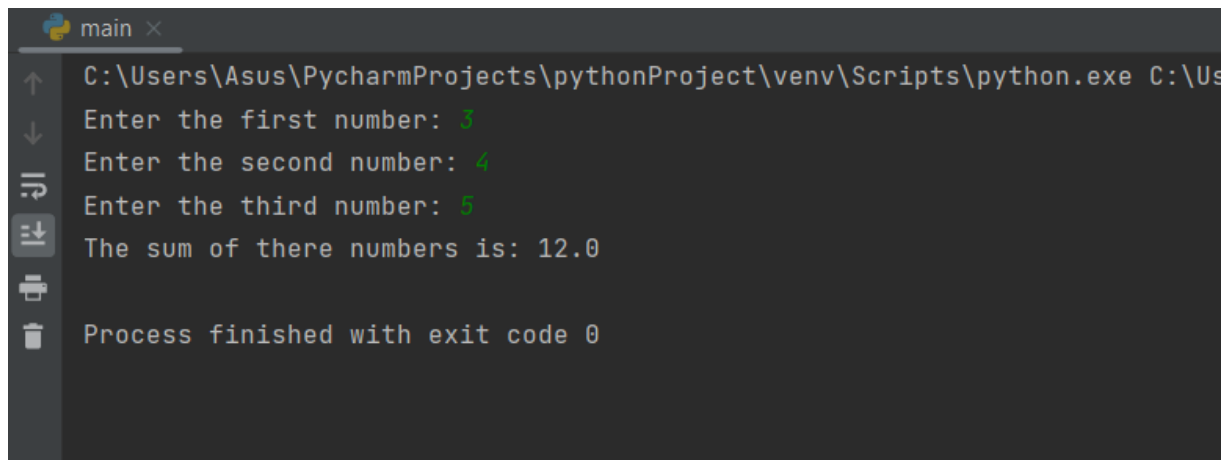
```
first_name = input("enter first name? ")
last_name = input("enter last name? ")
address = input("enter address? ")

print("First name:", first_name)
print("Last name:", last_name)
print("Address:", address)
```

```
C:\Users\Asus\PycharmProjects\pythonProject\venv\Scripts\python.exe
enter first name? manogya
enter last name? bajracharya
enter address? kupondole
First name: manogya
Last name: bajracharya
Address: kupondole
Process finished with exit code 0
```

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

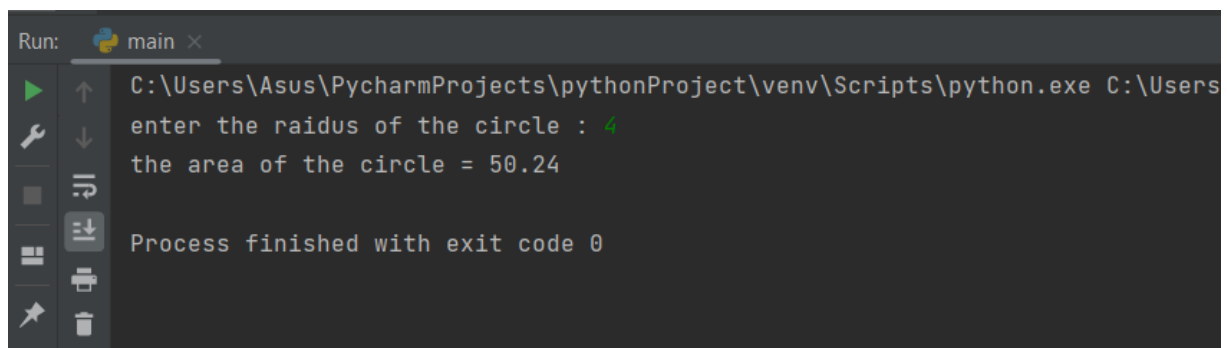
```
num1 = float(input("Enter the first number: "))
num2 = float(input("Enter the second number: "))
num3 = float(input("Enter the third number: "))
sum = num1 + num2 + num3
print("The sum of there numbers is:", sum)
```



```
main x
C:\Users\Asus\PycharmProjects\pythonProject\venv\Scripts\python.exe C:\Us
Enter the first number: 3
Enter the second number: 4
Enter the third number: 5
The sum of there numbers is: 12.0
Process finished with exit code 0
```

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

```
pi = 3.14
r = float(input("enter the radius of the circle : "))
a = pi *r*r
print("the area of the circle = %.2f" %a)
```



```
Run: main x
C:\Users\Asus\PycharmProjects\pythonProject\venv\Scripts\python.exe C:\Users
enter the raidus of the circle : 4
the area of the circle = 50.24
Process finished with exit code 0
```

## **Part 3**

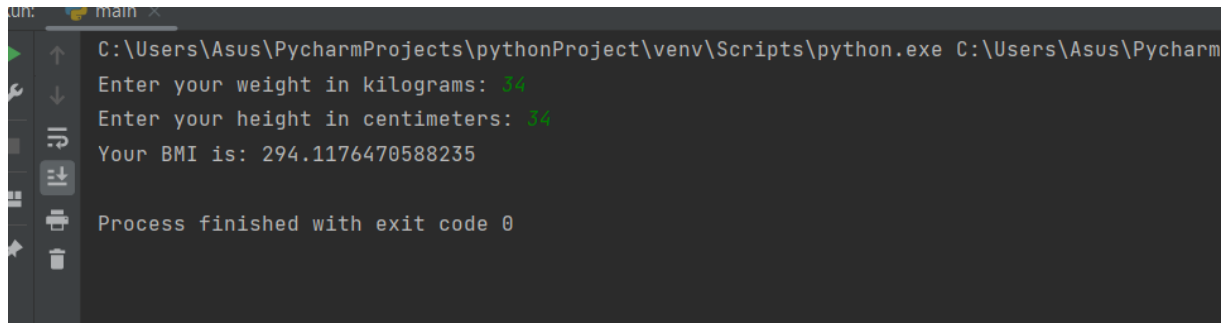
1. Write a program that:

- (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.

```
weight = float(input("Enter your weight in kilograms: "))
height = float(input("Enter your height in centimeters: "))
height_in_meters = height / 100
bmi = weight / (height_in_meters ** 2)
print("Your BMI is:", bmi)
```



```
Run: main x
C:\Users\Asus\PycharmProjects\pythonProject\venv\Scripts\python.exe C:\Users\Asus\Pycharm
Enter your weight in kilograms: 34
Enter your height in centimeters: 34
Your BMI is: 294.1176470588235
Process finished with exit code 0
```

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

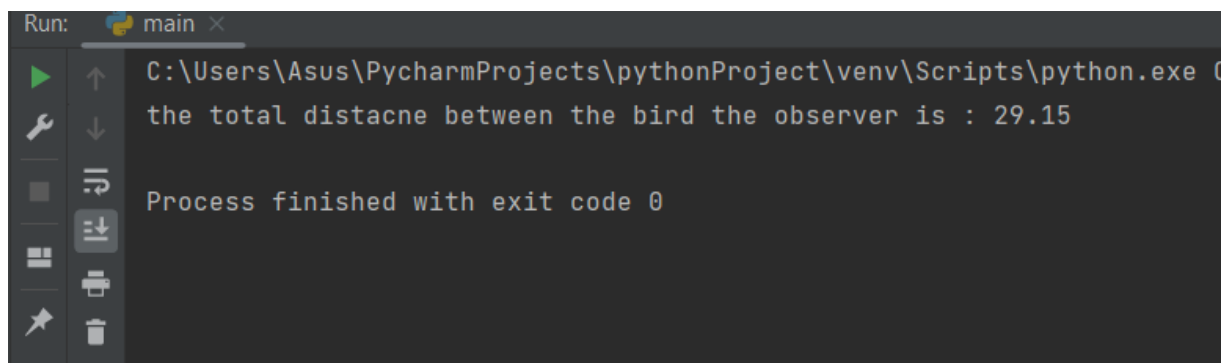
(a) The distance between the observer and the shadow is 15 meters.

(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
p = 25
b = 15
h = math.sqrt(p**2 + b**2)
print("the total distacne between the bird the observer is : %.2f" %h)
```



```
Run: main x
C:\Users\Asus\PycharmProjects\pythonProject\venv\Scripts\python.exe C
the total distacne between the bird the observer is : 29.15
Process finished with exit code 0
```

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.

```
lilies = 300
roses = 400
money_spent = lilies + roses
print("sum is ", money_spent)
```

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]

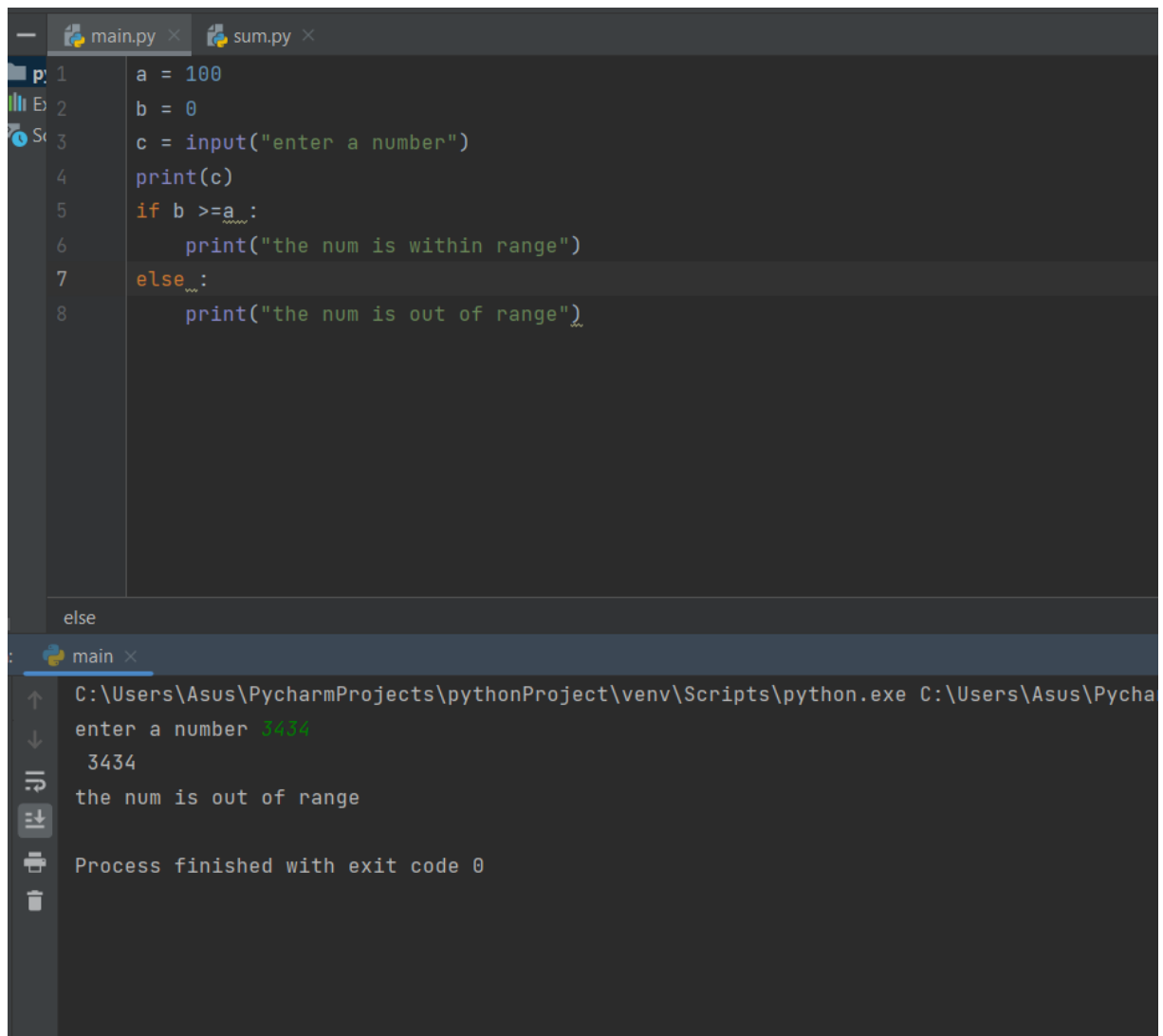
5. Calculate the VAT amount of a gadget the user bought using the built in python format function within two decimal digits. Input the cost price from the user. [VAT=13%]

### **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.



The screenshot shows the PyCharm IDE with two tabs: `main.py` and `sum.py`. The `main.py` tab is active, displaying the following Python code:

```
1 a = 100
2 b = 0
3 c = input("enter a number")
4 print(c)
5 if b >= a:
6     print("the num is within range")
7 else:
8     print("the num is out of range")
```

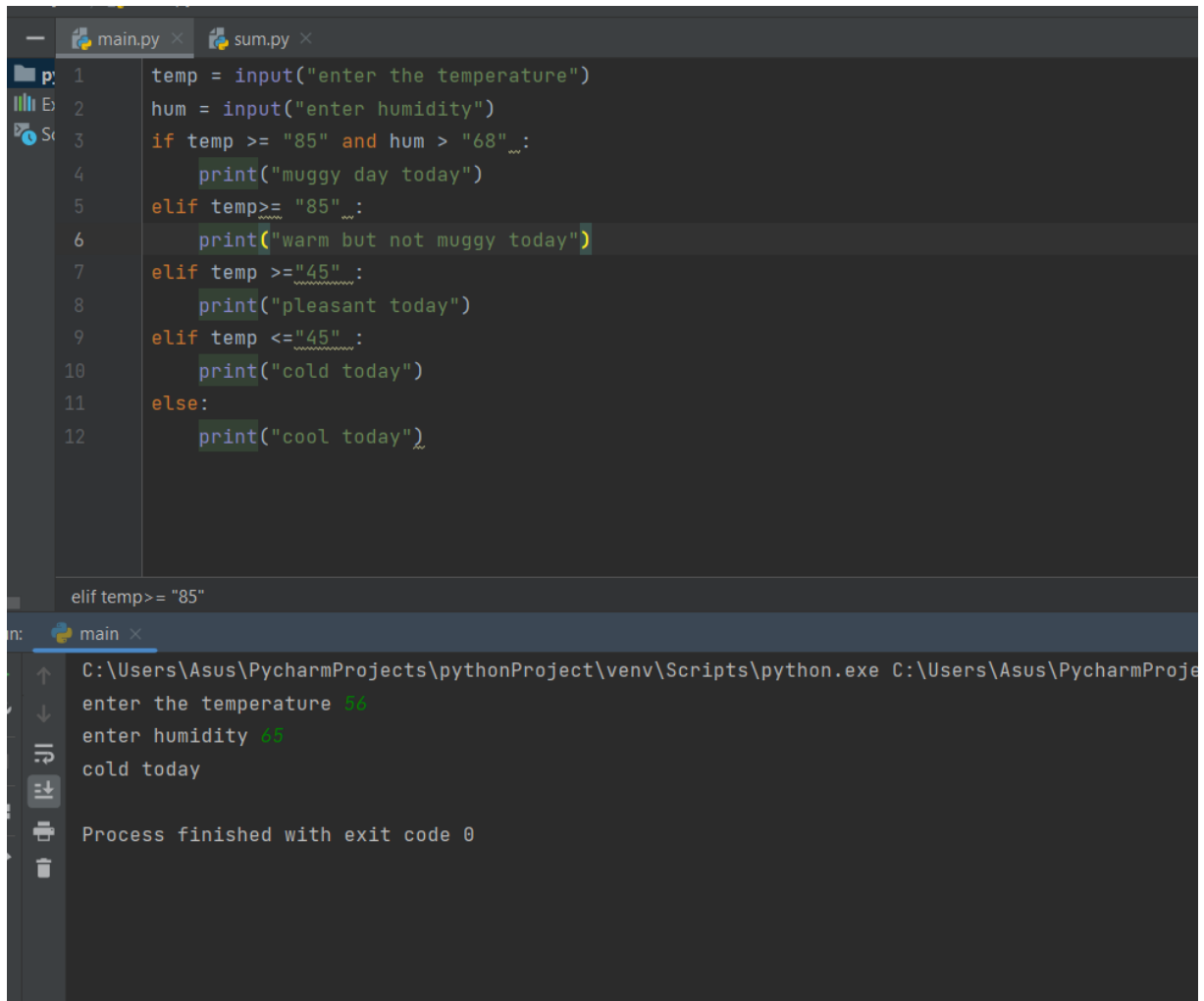
Below the code editor, the Run tool window shows the execution output for the `main` configuration:

```
C:\Users\Asus\PycharmProjects\pythonProject\venv\Scripts\python.exe C:\Users\Asus\Pycha
enter a number 3434
3434
the num is out of range
Process finished with exit code 0
```

**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')
```



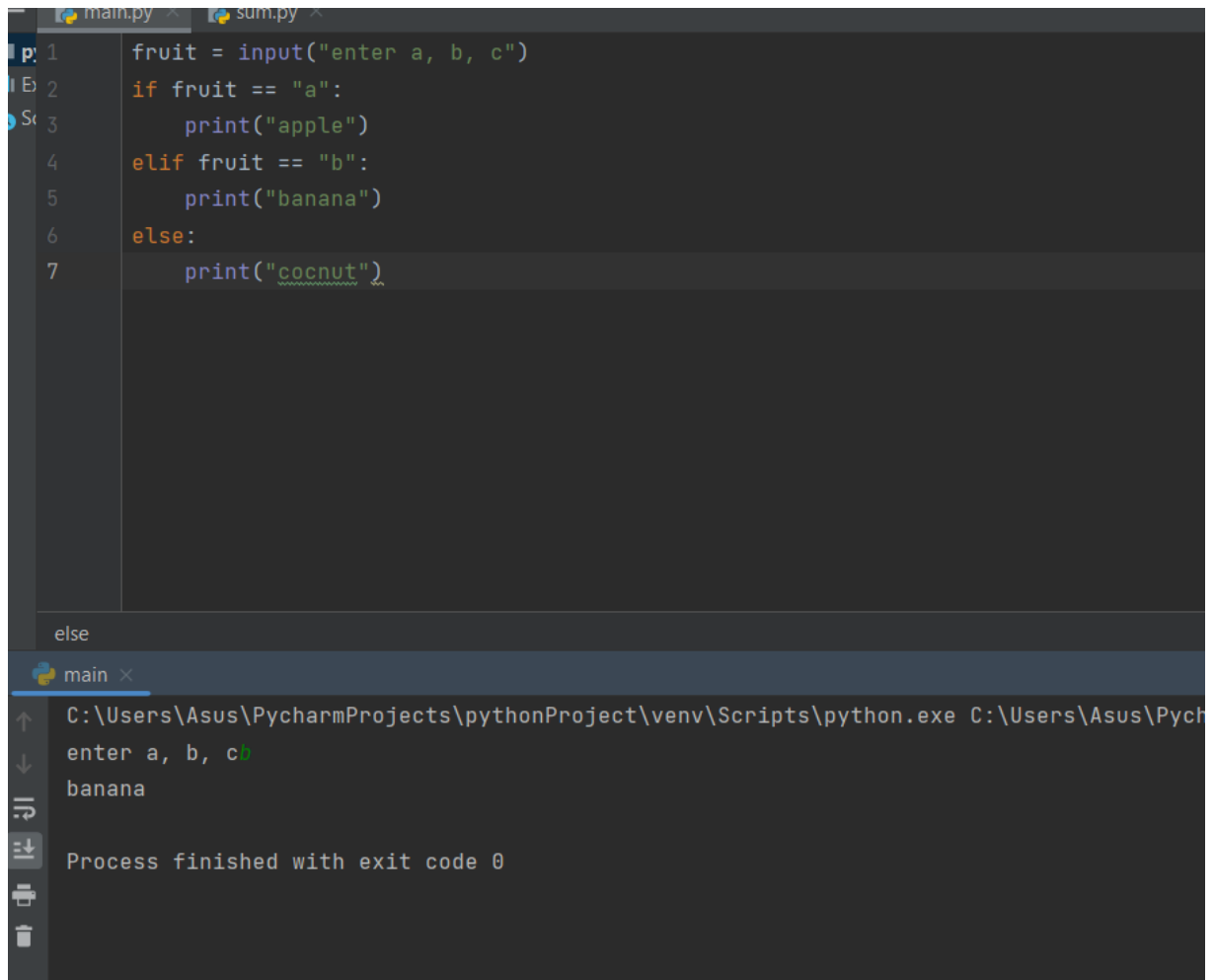
The screenshot shows the PyCharm IDE with two tabs: `main.py` and `sum.py`. The `main.py` tab is active, displaying a Python script that takes temperature and humidity as input and prints a weather-related message based on conditional logic. The script is as follows:

```
1 temp = input("enter the temperature")
2 hum = input("enter humidity")
3 if temp >= "85" and hum > "68":
4     print("muggy day today")
5 elif temp >= "85":
6     print("warm but not muggy today")
7 elif temp >= "45":
8     print("pleasant today")
9 elif temp <= "45":
10    print("cold today")
11 else:
12    print("cool today")
```

Below the editor, the Run tool window shows the execution of the script. The command used is `C:\Users\Asus\PycharmProjects\pythonProject\venv\Scripts\python.exe C:\Users\Asus\PycharmProjects\pythonProject\main.py`. The input provided is `56` for temperature and `65` for humidity. The output is `cold today`. The process finished with exit code 0.

**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.



The screenshot shows a PyCharm IDE with two tabs: `main.py` and `sum.py`. The `main.py` tab is active, displaying the following Python code:

```
1 fruit = input("enter a, b, c")
2 if fruit == "a":
3     print("apple")
4 elif fruit == "b":
5     print("banana")
6 else:
7     print("cocnut")
```

Below the code editor, the Run tool window is visible, showing the execution of the script. The command executed is:

```
C:\Users\Asus\PycharmProjects\pythonProject\venv\Scripts\python.exe C:\Users\Asus\PycharmProjects\pythonProject\main.py
```

The input provided was `enter a, b, c`, and the output was `banana`. The process finished with exit code 0.

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



```
1 fruit = input("enter a, b, c")
2 if fruit == "a":
3     print("apple")
4 elif fruit == "b":
5     print("banana")
6 elif fruit == "c":
7     print("coconut")
8 else:
9     print("there is no such data")
```

elif fruit == "c"

main x

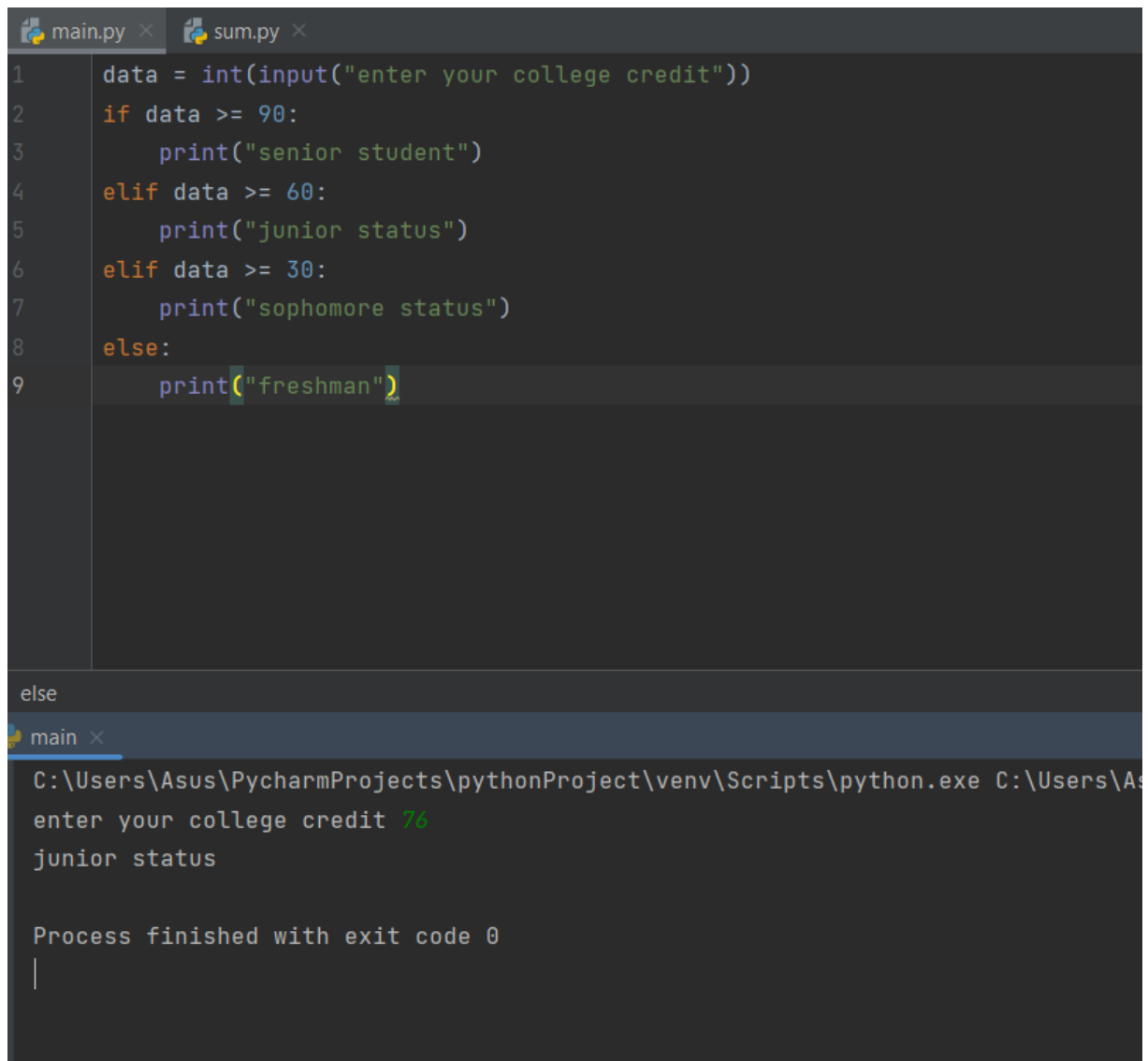
C:\Users\Asus\PycharmProjects\pythonProject\venv\Scripts\python.exe C:\Users\Asu

enter a, b, c

there is no such data

Process finished with exit code 0

(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.

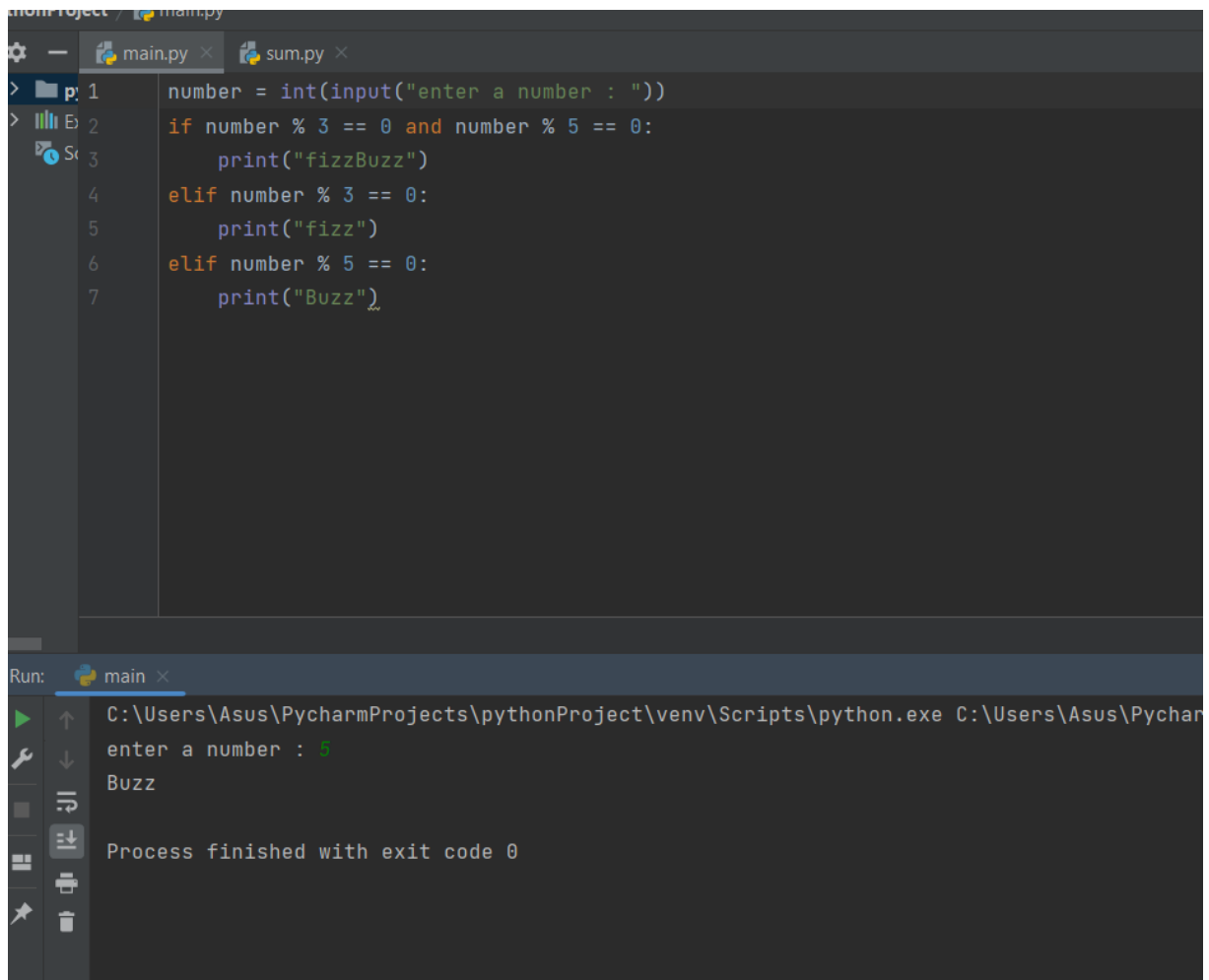


The screenshot displays the PyCharm IDE interface. The top pane shows a Python script named `main.py` with the following code:

```
1 data = int(input("enter your college credit"))
2 if data >= 90:
3     print("senior student")
4 elif data >= 60:
5     print("junior status")
6 elif data >= 30:
7     print("sophomore status")
8 else:
9     print("freshman")
```

The bottom pane shows the terminal output for the execution of `main.py`. The command prompt shows the user entering `76` in response to the prompt `enter your college credit`. The output is `junior status`, and the process finished with exit code 0.

(e) 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.



The screenshot shows the PyCharm IDE interface. The top pane displays a Python script named `main.py` with the following code:

```
1 number = int(input("enter a number : "))
2 if number % 3 == 0 and number % 5 == 0:
3     print("fizzBuzz")
4 elif number % 3 == 0:
5     print("fizz")
6 elif number % 5 == 0:
7     print("Buzz")
```

The bottom pane shows the output of running the program. The command prompt displays the prompt `enter a number :` followed by the user input `5`, and the program outputs `Buzz`. The status bar at the bottom indicates "Process finished with exit code 0".

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 ;)

