

AI LAB: 2

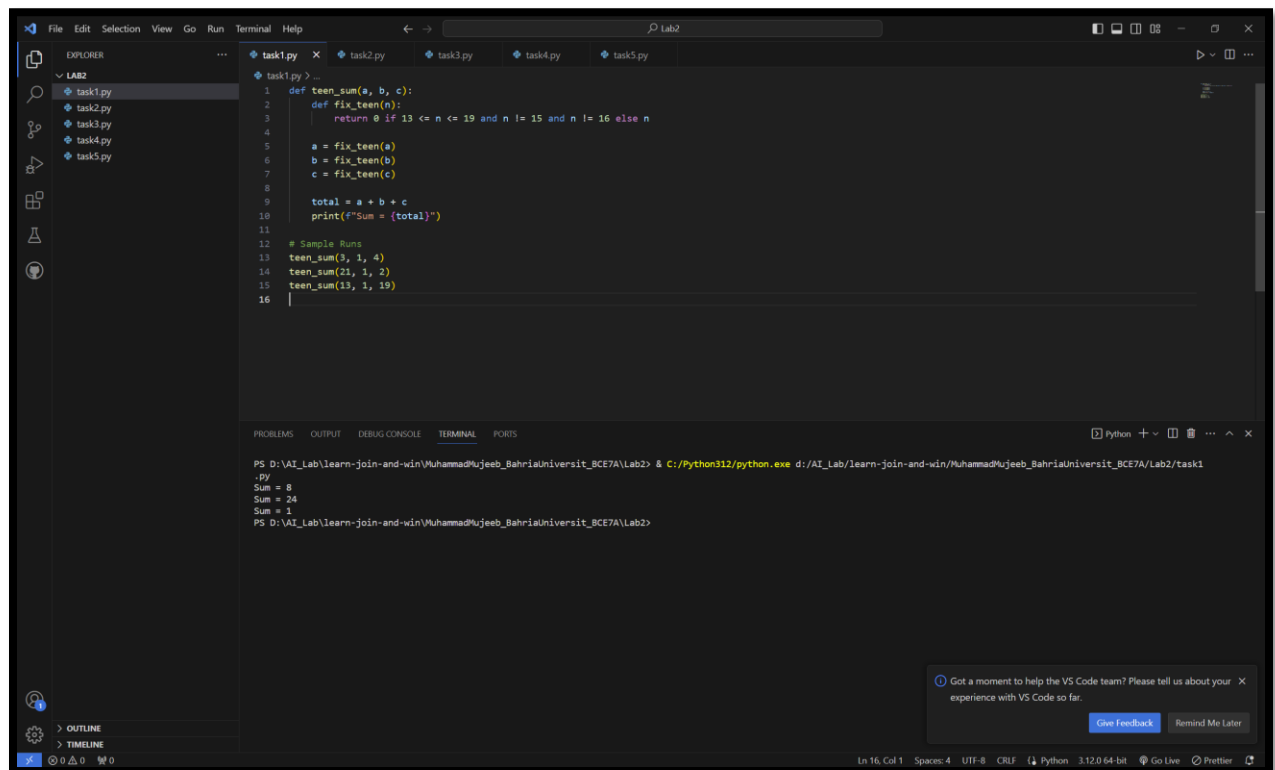
Exercise 1

Given 3 int values, a b c, return their sum. However, if any of the values is a teen -- in the range 13..19 inclusive -- then that value counts as 0.

Sample Run:

Input: a=3, b=1, c=4 ; a=21, b=1, c=2 ; a=13, b=1, c=19

Output: Sum= 8, ; Sum=24 ; Sum = 1



```
1 def teen_sum(a, b, c):
2     def fix_teen(n):
3         return 0 if 13 <= n <= 19 and n != 15 and n != 16 else n
4
5     a = fix_teen(a)
6     b = fix_teen(b)
7     c = fix_teen(c)
8
9     total = a + b + c
10    print(f"Sum = {total}")
11
12 # Sample Runs
13 teen_sum(3, 1, 4)
14 teen_sum(21, 1, 2)
15 teen_sum(13, 1, 19)
16
```

```
PS D:\AI_Lab\learn-join-and-win\MuhammadUjeeb_BahriaUniversit_BCE7A\Lab2> & C:/Python312/python.exe d:/AI_Lab/learn-join-and-win/MuhammadUjeeb_BahriaUniversit_BCE7A/Lab2/task1
.py
Sum = 8
Sum = 24
Sum = 1
PS D:\AI_Lab\learn-join-and-win\MuhammadUjeeb_BahriaUniversit_BCE7A\Lab2>
```

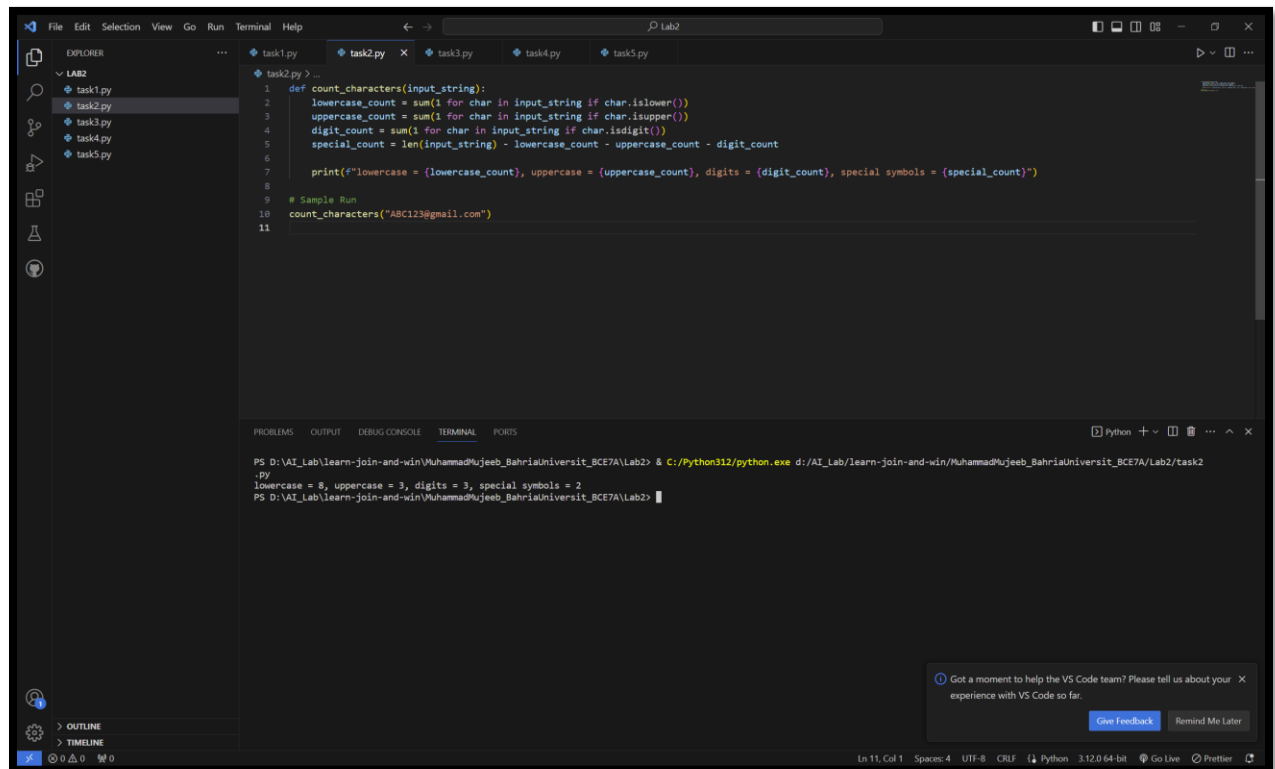
Exercise 2

Given a string input Count all lower case, upper case, digits, and special symbols.

Sample Run:

String: ABC123@gmail.com

Output: lowercase = 8, uppercase = 3 , special symbols = 2 , digits = 3



The screenshot shows a Visual Studio Code editor window with a Python file named `task2.py` open. The code defines a function `count_characters` that takes an input string and returns a tuple of counts for lowercase letters, uppercase letters, digits, and special symbols. The function is then called with the sample string "ABC123@gmail.com". The terminal output shows the execution of the script, which produces the expected output: lowercase = 8, uppercase = 3, digits = 3, special symbols = 2.

```
1 def count_characters(input_string):
2     lowercase_count = sum(1 for char in input_string if char.islower())
3     uppercase_count = sum(1 for char in input_string if char.isupper())
4     digit_count = sum(1 for char in input_string if char.isdigit())
5     special_count = len(input_string) - lowercase_count - uppercase_count - digit_count
6
7     print(f"lowercase = {lowercase_count}, uppercase = {uppercase_count}, digits = {digit_count}, special symbols = {special_count}")
8
9 # Sample Run
10 count_characters("ABC123@gmail.com")
11
```

```
PS D:\AI_Lab\learn-join-and-win\MuhammadMujeeb_BahriaUnversit_BCE7A\Lab2> & C:/Python312/python.exe d:/AI_Lab/learn-join-and-win/MuhammadMujeeb_BahriaUnversit_BCE7A/Lab2/task2
.PY
lowercase = 8, uppercase = 3, digits = 3, special symbols = 2
PS D:\AI_Lab\learn-join-and-win\MuhammadMujeeb_BahriaUnversit_BCE7A\Lab2>
```

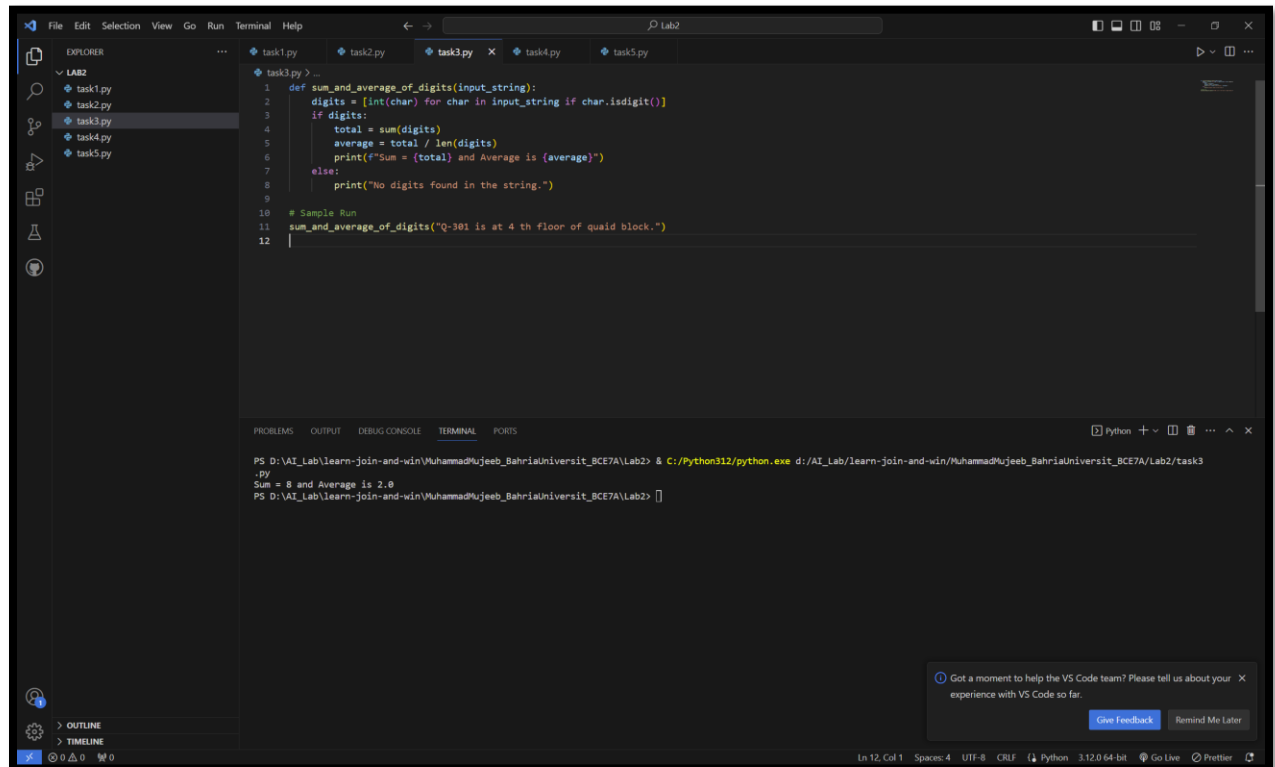
Exercise 3

Given a string, return the sum and average of the digits that appear in the string, ignoring all other characters.

Sample Run:

String: Q-301 is at 4 th floor of quaid block.

Output: Sum = 8 and Average is 2



The screenshot shows a Visual Studio Code editor window with a Python file named `task3.py` open. The code defines a function `sum_and_average_of_digits` that takes an input string, extracts digits, calculates their sum and average, and prints the results. A sample run is shown in the code, calling the function with the string "Q-301 is at 4 th floor of quaid block.". The terminal at the bottom shows the command to run the script and the output: "Sum = 8 and Average is 2.0".

```
1 def sum_and_average_of_digits(input_string):
2     digits = [int(char) for char in input_string if char.isdigit()]
3     if digits:
4         total = sum(digits)
5         average = total / len(digits)
6         print(f"Sum = {total} and Average is {average}")
7     else:
8         print("No digits found in the string.")
9
10 # Sample Run
11 sum_and_average_of_digits("Q-301 is at 4 th floor of quaid block.")
12
```

Terminal Output:

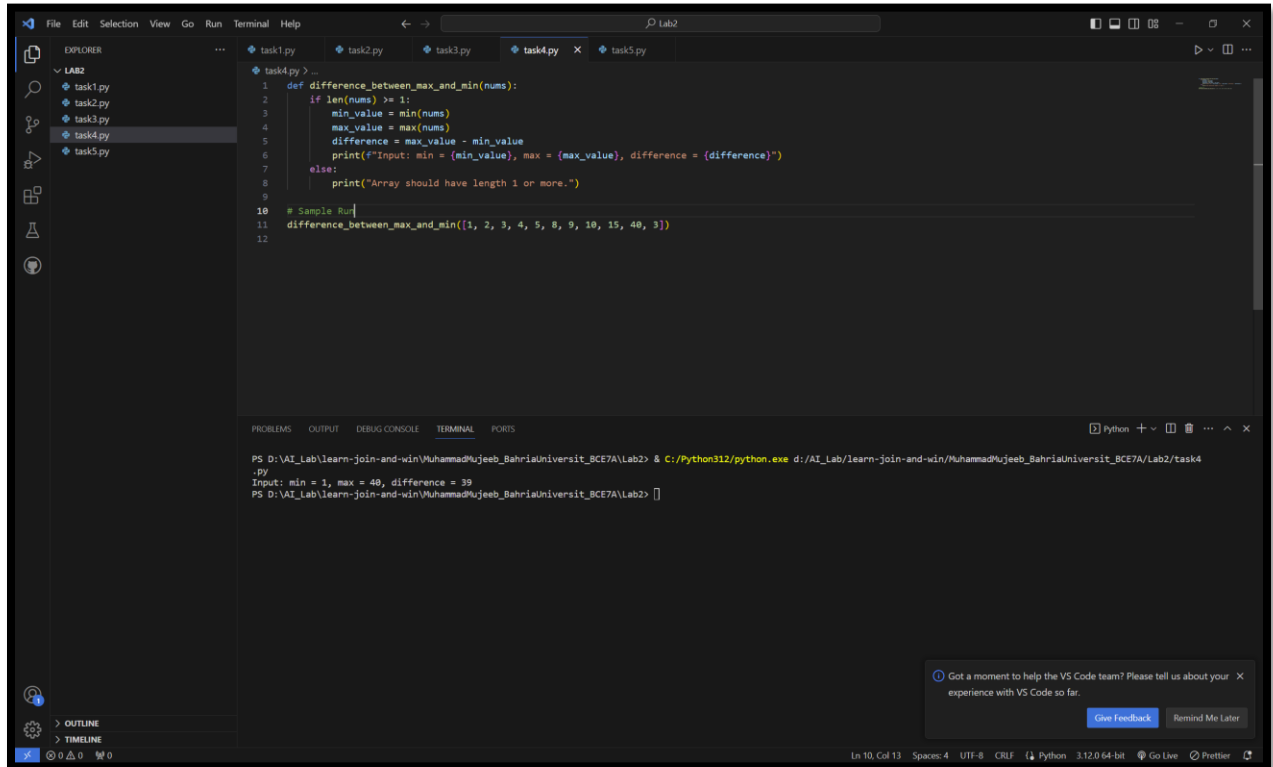
```
PS D:\AI_Lab\learn-join-and-win\MuhammadMujeeb_BahriaUniversity_BCE7A\Lab2> & C:/Python312/python.exe d:/AI_Lab/learn-join-and-win/MuhammadMujeeb_BahriaUniversity_BCE7A/Lab2/task3
.py
Sum = 8 and Average is 2.0
PS D:\AI_Lab\learn-join-and-win\MuhammadMujeeb_BahriaUniversity_BCE7A\Lab2>
```

Exercise 4

Given an array length 1 or more of ints, return the difference between the largest and smallest values in the array. Note: the built-in min(v1, v2) and max(v1, v2) functions return the smaller or larger of two values.

Sample Run: 1,2,3,4,5,8,9,10,15,40,3

Input: min = 1, max= 40 difference = 39



The screenshot shows a Visual Studio Code editor window with a Python file named `task4.py` open. The code defines a function `difference_between_max_and_min(nums)` that calculates the difference between the maximum and minimum values in a list. It includes a comment `# Sample Run` and a test call. The terminal at the bottom shows the command to run the script and the resulting output.

```
1 def difference_between_max_and_min(nums):
2     if len(nums) >= 1:
3         min_value = min(nums)
4         max_value = max(nums)
5         difference = max_value - min_value
6         print(f"Input: min = {min_value}, max = {max_value}, difference = {difference}")
7     else:
8         print("Array should have length 1 or more.")
9
10 # Sample Run
11 difference_between_max_and_min([1, 2, 3, 4, 5, 8, 9, 10, 15, 40, 3])
12
```

Terminal Output:

```
PS D:\AI_Lab\learn-join-and-win\MuhammadMujeeb_BahriaUnivrsit_BCE7A\Lab2> & C:/Python312/python.exe d:/AI_Lab/learn-join-and-win/MuhammadMujeeb_BahriaUnivrsit_BCE7A/Lab2/task4
.py
Input: min = 1, max = 40, difference = 39
PS D:\AI_Lab\learn-join-and-win\MuhammadMujeeb_BahriaUnivrsit_BCE7A\Lab2>
```

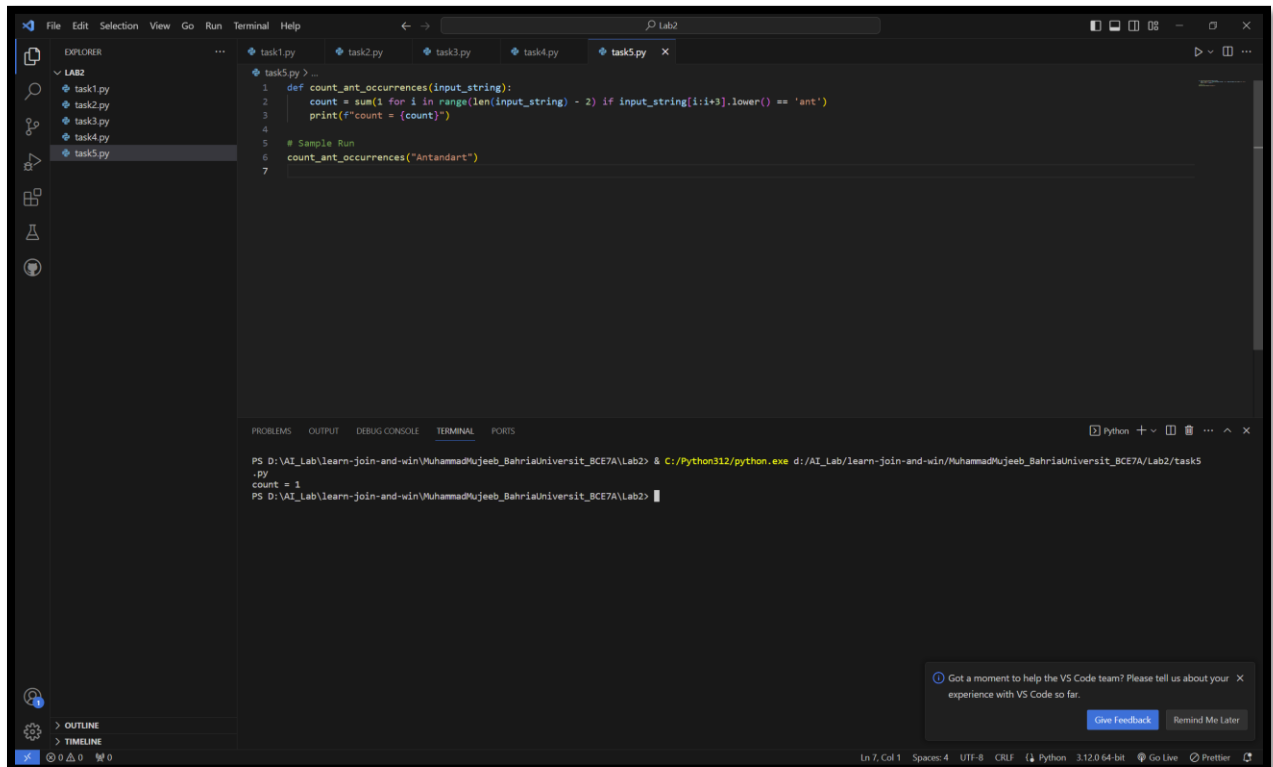
Exercise 5

Return the number of times that the string "ant" appears anywhere in the given string, except we'll accept any letter for the 'n', so "art" and "abt" and other counts.

Sample Run:

String: Antandart

Output: count = 2



The screenshot shows a Visual Studio Code editor window with a file explorer on the left and a terminal at the bottom. The file explorer shows a folder named 'LAB2' containing five files: 'task1.py', 'task2.py', 'task3.py', 'task4.py', and 'task5.py'. The 'task5.py' file is open in the editor, showing the following Python code:

```
1 def count_ant_occurrences(input_string):
2     count = sum(1 for i in range(len(input_string) - 2) if input_string[i:i+3].lower() == 'ant')
3     print(f"count = {count}")
4
5 # Sample Run
6 count_ant_occurrences("Antandart")
7
```

The terminal at the bottom shows the command prompt output for running the script:

```
PS D:\AI_Lab\learn-join-and-win\MuhammadMujeeb_BahriaUniversity_BCE7A\Lab2> & c:/Python312/python.exe d:/AI_Lab/learn-join-and-win/MuhammadMujeeb_BahriaUniversity_BCE7A/Lab2/task5
.py
count = 1
PS D:\AI_Lab\learn-join-and-win\MuhammadMujeeb_BahriaUniversity_BCE7A\Lab2>
```

A notification bubble in the bottom right corner of the editor says: "Got a moment to help the VS Code team? Please tell us about your experience with VS Code so far." with buttons for "Give Feedback" and "Remind Me Later".