AI ASSISTED CODING

SCHOOL OF COMPUTER SCIENCE AND ARTIFICIAL INTELLIGENCE

DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

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BATCH – 03 **13 – 01 – 2026**

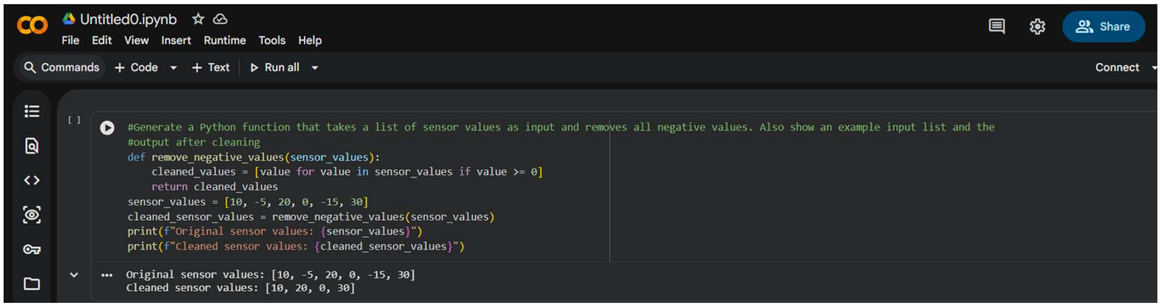
ASSIGNMENT – 2.2

Lab 2: Exploring Additional AI Coding Tools beyond Copilot – Gemini (Colab) and Cursor AI.

Task 1: Cleaning Sensor Data

Prompt: I am working with IoT sensor data where negative values are invalid. Generate a Python function that removes all negative numbers from a given list. Also print the list before cleaning and after cleaning. Provide a sample input and output.

Code:



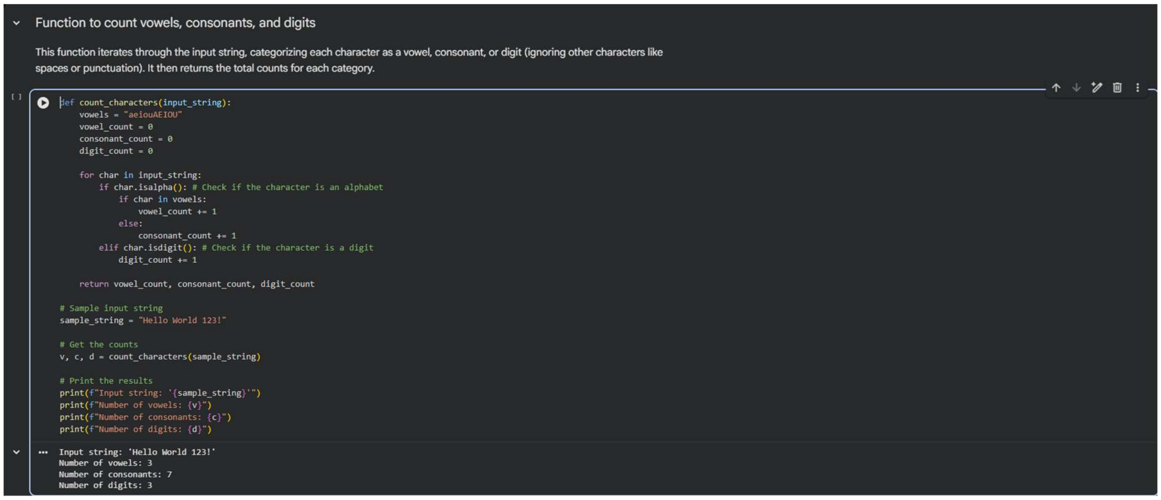
```
#Generate a Python function that takes a list of sensor values as input and removes all negative values. Also show an example input list and the
#output after cleaning
def remove_negative_values(sensor_values):
    cleaned_values = [value for value in sensor_values if value >= 0]
    return cleaned_values
sensor_values = [10, -5, 20, 0, -15, 30]
cleaned_sensor_values = remove_negative_values(sensor_values)
print(f"Original sensor values: {sensor_values}")
print(f"Cleaned sensor values: {cleaned_sensor_values}")
```

```
Original sensor values: [10, -5, 20, 0, -15, 30]
Cleaned sensor values: [10, 20, 0, 30]
```

Task 2: String Character Analysis.

Prompt: Create a Python function that analyzes a given string and counts the number of vowels, consonants, and digits present in it.
Show the function, explain briefly how it works, and provide sample inputs with corresponding outputs.

Code:



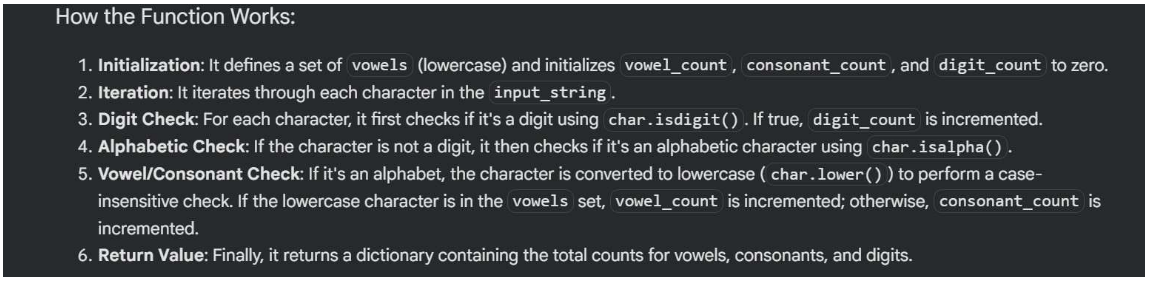
Function to count vowels, consonants, and digits

This function iterates through the input string, categorizing each character as a vowel, consonant, or digit (ignoring other characters like spaces or punctuation). It then returns the total counts for each category.

```python
def count_characters(input_string):
    vowels = "aeiouAEIOU"
    vowel_count = 0
    consonant_count = 0
    digit_count = 0

    for char in input_string:
        if char.isalpha(): # Check if the character is an alphabet
            if char in vowels:
                vowel_count += 1
            else:
                consonant_count += 1
        elif char.isdigit(): # Check if the character is a digit
            digit_count += 1

    return vowel_count, consonant_count, digit_count

# Sample input string
sample_string = "Hello World 123!"

# Get the counts
v, c, d = count_characters(sample_string)

# Print the results
print(f"Input string: '{sample_string}'")
print(f"Number of vowels: {v}")
print(f"Number of consonants: {c}")
print(f"Number of digits: {d}")
```

```
Input string: 'Hello World 123!'
Number of vowels: 3
Number of consonants: 7
Number of digits: 3
```

Working Function:



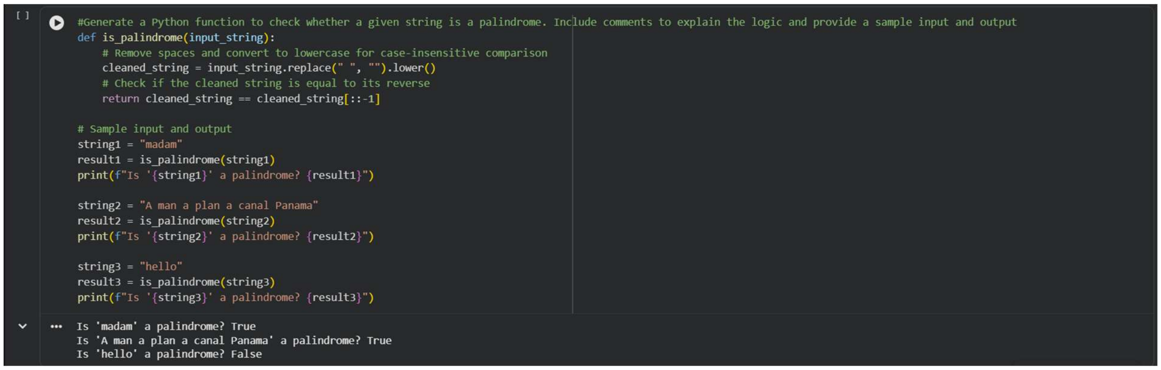
How the Function Works:

1. **Initialization**: It defines a set of `vowels` (lowercase) and initializes `vowel_count`, `consonant_count`, and `digit_count` to zero.
2. **Iteration**: It iterates through each character in the `input_string`.
3. **Digit Check**: For each character, it first checks if it's a digit using `char.isdigit()`. If true, `digit_count` is incremented.
4. **Alphabetic Check**: If the character is not a digit, it then checks if it's an alphabetic character using `char.isalpha()`.
5. **Vowel/Consonant Check**: If it's an alphabet, the character is converted to lowercase (`char.lower()`) to perform a case-insensitive check. If the lowercase character is in the `vowels` set, `vowel_count` is incremented; otherwise, `consonant_count` is incremented.
6. **Return Value**: Finally, it returns a dictionary containing the total counts for vowels, consonants, and digits.

Task 3: Palindrome Check.

Prompt (Gemini Colab): Write a Python function to check whether a given string is a palindrome. Keep the code simple and easy to understand.

Code:

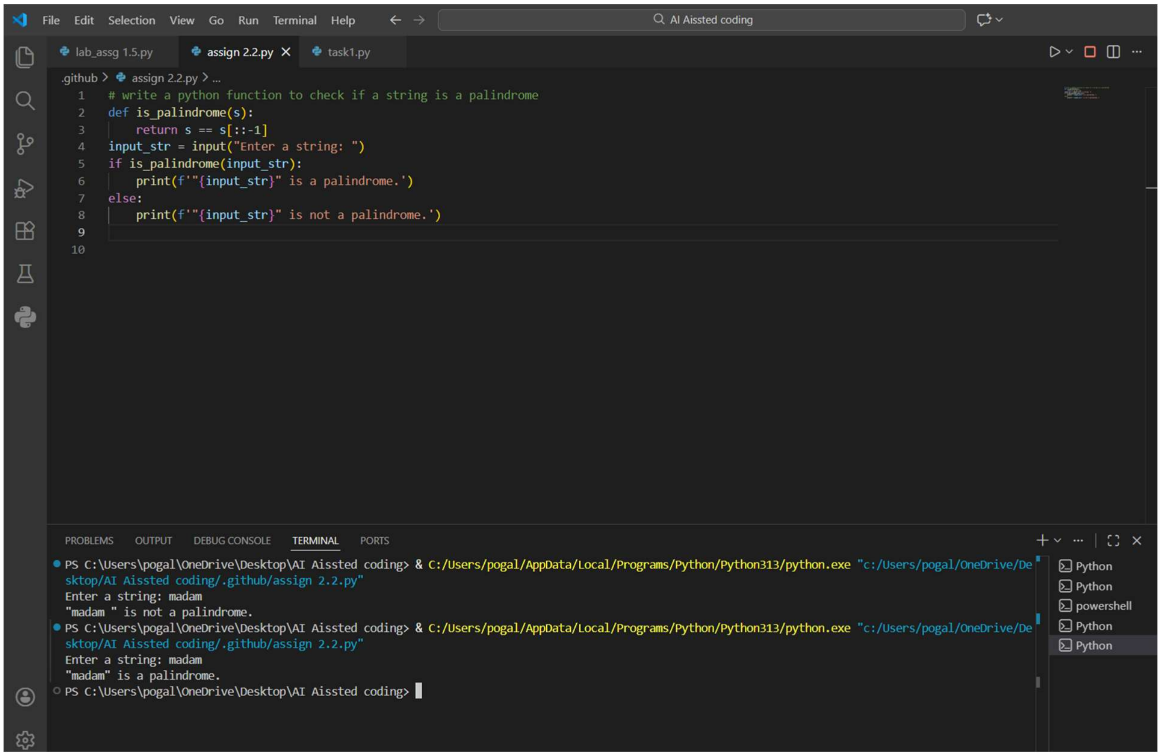


```python
#Generate a Python function to check whether a given string is a palindrome. Include comments to explain the logic and provide a sample input and output
def is_palindrome(input_string):
    # Remove spaces and convert to lowercase for case-insensitive comparison
    cleaned_string = input_string.replace(" ", "").lower()
    # Check if the cleaned string is equal to its reverse
    return cleaned_string == cleaned_string[::-1]

# Sample input and output
string1 = "madam"
result1 = is_palindrome(string1)
print(f"Is '{string1}' a palindrome? {result1}")

string2 = "A man a plan a canal Panama"
result2 = is_palindrome(string2)
print(f"Is '{string2}' a palindrome? {result2}")

string3 = "hello"
result3 = is_palindrome(string3)
print(f"Is '{string3}' a palindrome? {result3}")
```

```
Is 'madam' a palindrome? True
Is 'A man a plan a canal Panama' a palindrome? True
Is 'hello' a palindrome? False
```

Prompt (Copilot): Generate a clean and optimized Python function that checks if a string is a palindrome and returns True or False.

Code:



```python
# write a python function to check if a string is a palindrome
def is_palindrome(s):
    return s == s[::-1]
input_str = input("Enter a string: ")
if is_palindrome(input_str):
    print(f'"{input_str}" is a palindrome.')
else:
    print(f'"{input_str}" is not a palindrome.')
```

```
PS C:\Users\pogal\OneDrive\Desktop\AI Aissted coding> & C:/Users/pogal/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/pogal/OneDrive/Desktop/AI Aissted coding/.github/assign 2.2.py"
Enter a string: madam
"madam " is not a palindrome.
PS C:\Users\pogal\OneDrive\Desktop\AI Aissted coding> & C:/Users/pogal/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/pogal/OneDrive/Desktop/AI Aissted coding/.github/assign 2.2.py"
Enter a string: madam
"madam" is a palindrome.
PS C:\Users\pogal\OneDrive\Desktop\AI Aissted coding> 
```

<u>Comparison: (Gemini vs GitHub Copilot)</u>

Feature	**Gemini**	**GitHub Copilot**
Clarity	Very clear and beginner-friendly. Uses simple logic and explains steps well.	Clear logic but provides little explanation; assumes basic coding knowledge.
Structure	Step-by-step approach focusing on understanding before optimization.	Compact and efficient structure following professional coding standards.
Readability	Highly readable for students and beginners.	Readable for experienced programmers but slightly complex for beginners.
Explanation Quality	Provides detailed and easy-to-understand explanations.	Minimal explanation; focuses mainly on code generation.
Overall Strength	Best for learning and concept understanding.	Best for real-world coding and optimized solutions.

Task 4: Code Explanation Using AI.

Prompt: Explain the following Python function line by line in simple language so that a beginner can understand it clearly.(**prime check OR palindrome function)**

Line	**Explanation**
def is_palindrome(word):	This line creates a function named is_palindrome that takes one input called word.
word = word.lower()	Converts the word to lowercase so that capital and small letters are treated the same.
reversed_word = word[::-1]	Reverses the string using slicing. Example: "madam" becomes "madam", "hello" becomes "olleh".
if word == reversed_word:	Checks whether the original word and the reversed word are the same.
return True	If they are the same, the function returns True meaning it **is a palindrome**.
else:	Runs when the condition is false.
return False	Returns False meaning it **is not a palindrome**

This explanation helped me understand how strings can be reversed and compared in Python. The step-by-step logic made it easy to learn how palindrome checking works.

THANK YOU !!