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School of Computer Science and Artificial Intelligence

# Lab Assignment # 2.2

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| **Program** | **: B. Tech (CSE)** |
| **Specialization** | **:** |
| **Course Title** | **: AI Assisted coding** |
| **Course Code** | **:** |
| **Semester** | **: II** |
| **Academic Session** | **: 2025-2026** |
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| **Enrollment No.** | **: 2403A51L02** |
| **Batch No.** | **: 51** |
| **Date** | **:013-01-2026** |

### Task -1: Cleaning Sensor Data

**Prompt :** Generate a Python function that filters out all negative numbers from a list.

```
[1]
✓ 0s
def remove_negative_values(sensor_data):
    cleaned_data = []
    for value in sensor_data:
        if value >= 0:
            cleaned_data.append(value)
    return cleaned_data
```

### Output

```
[2]
✓ 0s
sensor_data = [12, -5, 7, -3, 0, 15, -8]
print("Before Cleaning:", sensor_data)
print("After Cleaning:", remove_negative_values(sensor_data))

Before Cleaning: [12, -5, 7, -3, 0, 15, -8]
After Cleaning: [12, 7, 0, 15]
```

### Code Explanation

The function checks each value in the list.

Negative values are ignored.

Only valid non-negative values are stored and returned.

### Comments

Gemini generated correct and simple logic.

The code is easy to understand and reusable.

### Task 2: String Character Analysis

**Prompt :** Generate a Python function that counts vowels, consonants, and digits in a string.

```
[3]
✓ 0s
def analyze_string(text):
    vowels = "aeiouAEIOU"
    vowel_count = 0
    consonant_count = 0
    digit_count = 0

    for char in text:
        if char.isdigit():
            digit_count += 1
        elif char.isalpha():
            if char in vowels:
                vowel_count += 1
            else:
                consonant_count += 1

    return vowel_count, consonant_count, digit_count
```

### Output:

```
[4]
✓ 0s
text = "Hello123World"
v, c, d = analyze_string(text)
print("Vowels:", v)
print("Consonants:", c)
print("Digits:", d)

Vowels: 3
Consonants: 7
Digits: 3
```

### Code Explanation:

The function checks each character.

Digits, vowels, and consonants are counted separately.

Uses built-in string methods like `isdigit()` and `isalpha()`.

**Comments:**

Gemini helped understand string handling.

Code is well structured and efficient.

### Task 3: Palindrome Check – Tool Comparison

**Gemini Generated code**

```
[5]
✓ 0s
    def is_palindrome_gemini(s):
        s = s.lower()
        return s == s[::-1]
```

**Copilot Generated Code:**

```
[6]
✓ 0s
    def is_palindrome_copilot(text):
        cleaned = text.lower()
        reversed_text = cleaned[::-1]
        if cleaned == reversed_text:
            return True
        return False
```

**Code Explanation:**

Both codes check whether a string reads the same forward and backward.

Gemini uses a shorter, optimized approach.

Copilot uses step-by-step logic for better readability.

**Comments:**

Gemini is concise and fast.

Copilot is easier to understand for beginners.

### Task 4: Code Explanation Using AI

```
[7]
✓ 0s
    def is_palindrome(s):
        s = s.lower()
        return s == s[::-1]
```

### AI Explanation

- The function defines a palindrome check.
- Converts input to lowercase.
- Compares the string with its reversed version.
- Returns True or False.

### Student Understanded:

Gemini clearly explained slicing (`[::-1]`).

Helpful for quick code review.

# Cursor AI – Explanation

### What is Cursor AI?

- Cursor AI is an AI-powered code editor.
- It helps generate, refactor, and explain code.
- Useful for debugging and improving code quality.

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### Student Comments on Cursor AI

Good for editing large code files.

Helpful in understanding existing code.

Improves productivity.

## Final Conclusion:

This lab helped me understand how AI tools like **Gemini, Copilot, and Cursor AI** assist in coding, explanation, and optimization. Each tool has its own strengths and improves learning efficiency.