***AI ASSISTED CODING***

***Lab Test -1***

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**Task 1:**

**Write a Python code to calculate the sum of odd and even numbers in a given list using GitHub Copilot along with VS Code. Use zero shot prompting.**

**Prompt:**

**Write a Python function that takes a list of numbers and returns the sum of odd numbers and the sum of even numbers separately.**

**Code:**

def sum\_odd\_even(numbers):

    odd\_sum = 0

    even\_sum = 0

    for num in numbers:

        if num % 2 == 0:

            even\_sum += num

        else:

            odd\_sum += num

    return odd\_sum, even\_sum

# Example usage:

nums = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10]

odd, even = sum\_odd\_even(nums)

print(f"Sum of odd numbers: {odd}")

print(f"Sum of even numbers: {even}")

**Output:**

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**Explanation:**

**This code defines a function to separately sum odd and even numbers in a list:**

**sum\_odd\_even(numbers):**

**Takes a list of numbers as input.**

**Initializes odd\_sum and even\_sum to zero.**

**Iterates through each number in the list:**

**If the number is even (num % 2 == 0), adds it to even\_sum.**

**Otherwise, adds it to odd\_sum.**

**Returns both sums as a tuple: (odd\_sum, even\_sum).**

**Example usage:**

**The list nums contains numbers from 1 to 10.**

**The function is called, and the results are printed:**

**Sum of odd numbers: 25**

**Sum of even numbers: 30**

**This allows you to easily get the total of odd and even numbers from any list.**

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**Task 2:**

**Write a Python code for given a list of integers, remove duplicates and print the sorted result. GitHub Copilot along with VS Code. Use one shot prompting.**

**Prompt:**

**Write a Python function that removes duplicates from a list of integers and returns the sorted result.**

**Example: Input = [5, 3, 1, 2, 3, 5, 4], Output = [1, 2, 3, 4, 5].**

**Code:**

# Function to remove duplicates and return sorted result

def remove\_duplicates\_and\_sort(numbers):

    return sorted(set(numbers))

# Example usage:

nums\_with\_duplicates = [5, 3, 1, 2, 3, 5, 4]

result = remove\_duplicates\_and\_sort(nums\_with\_duplicates)

print(f"Sorted list without duplicates: {result}")

**Output:**

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**Explanation:**

**This code defines a function to remove duplicates from a list of integers and return the sorted result:**

**remove\_duplicates\_and\_sort(numbers):**

**Converts the input list to a set using set(numbers), which automatically removes any duplicate values.**

**Uses sorted() to sort the unique values in ascending order.**

**Returns the sorted list.**

**Example usage:**

**The list [5, 3, 1, 2, 3, 5, 4] contains duplicates.**

**The function returns [1, 2, 3, 4, 5], which is the sorted list with duplicates removed.**

**This is a concise and efficient way to deduplicate and sort a list in Python.**

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**Task 3:**

**Write a Python function that converts the temperature between Celsius, Fahrenheit, and Kelvin based on user choice. Use the Cursor AI tool. Use few shot prompting.**

**Prompt:**

**Write a Python function that converts temperature values between Celsius, Fahrenheit, and Kelvin.**

**Example 1: Input = (100, "Celsius", "Fahrenheit") → Output = 212.0**

**Example 2: Input = (0, "Celsius", "Kelvin") → Output = 273.15**

**Example 3: Input = (32, "Fahrenheit", "Celsius") → Output = 0.0**

**Code:** def convert\_temperature(value, from\_unit, to\_unit):

    from\_unit = from\_unit.lower()

    to\_unit = to\_unit.lower()

    # Step 1: Convert input to Celsius

    if from\_unit == "celsius":

        celsius = value

    elif from\_unit == "fahrenheit":

        celsius = (value - 32) \* 5/9

    elif from\_unit == "kelvin":

        celsius = value - 273.15

    else:

        raise ValueError("Invalid from\_unit. Use 'Celsius', 'Fahrenheit', or 'Kelvin'.")

    # Step 2: Convert Celsius to target unit

    if to\_unit == "celsius":

        return celsius

    elif to\_unit == "fahrenheit":

        return (celsius \* 9/5) + 32

    elif to\_unit == "kelvin":

        return celsius + 273.15

    else:

        raise ValueError("Invalid to\_unit. Use 'Celsius', 'Fahrenheit', or 'Kelvin'.")

# ✅ Test cases

print(convert\_temperature(100, "Celsius", "Fahrenheit"))  # 212.0

print(convert\_temperature(0, "Celsius", "Kelvin"))        # 273.15

print(convert\_temperature(32, "Fahrenheit", "Celsius"))   # 0.0

**Output:**

**212.0**

**273.15**

**0.0**

**Explantion:**

This Python function **converts temperature values** between **Celsius, Fahrenheit, and Kelvin**.

1. **Input Parameters**
   * value → the temperature value you want to convert
   * from\_unit → the unit of the input value (Celsius, Fahrenheit, or Kelvin)
   * to\_unit → the unit you want to convert into

Example: (100, "Celsius", "Fahrenheit") means convert **100°C to Fahrenheit**.

1. **Normalization**  
   The function first changes both from\_unit and to\_unit to lowercase.  
   This way, inputs like "Celsius", "celsius", or "CELSIUS" are treated the same.
2. **Convert everything to Celsius first**  
   Since Celsius is the base unit, the function first changes the input into Celsius:
   * If the input is already in Celsius → no change
   * If it’s in Fahrenheit → apply formula: (F−32)×5/9(F - 32) × 5/9(F−32)×5/9
   * If it’s in Kelvin → apply formula: K−273.15K - 273.15K−273.15
3. **Convert Celsius to the target unit**  
   Once we have the Celsius value, it is easy to convert to the target unit:
   * To Celsius → just return the same value
   * To Fahrenheit → formula: (C×9/5)+32(C × 9/5) + 32(C×9/5)+32
   * To Kelvin → formula: C+273.15C + 273.15C+273.15
4. **Error Handling**  
   If the user enters an invalid unit (something other than Celsius, Fahrenheit, or Kelvin), the function raises an error message.
5. **Examples**
   * convert\_temperature(100, "Celsius", "Fahrenheit") → 212.0  
     (100°C = 212°F)
   * convert\_temperature(0, "Celsius", "Kelvin") → 273.15  
     (0°C = 273.15 K)
   * convert\_temperature(32, "Fahrenheit", "Celsius") → 0.0  
     (32°F = 0°C)

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**Task 4:**

**Write a Python function to remove punctuation, convert to lowercase, and remove stop words from a given text. Use the Cursor AI tool. Use zero shot prompting.**

**Prompt:**

**Write a Python function that removes punctuation, converts all text to lowercase, and removes common stop words (like "a", "an", "the", "is", "are") from a given string.**

**Code:**

import string

def clean\_text(text):

    # Define a basic stop words list

    stop\_words = {"a", "an", "the", "and", "or", "but", "is", "are", "was", "were", "to", "of", "in", "on"}

    # Convert to lowercase

    text = text.lower()

    # Remove punctuation

    text = text.translate(str.maketrans('', '', string.punctuation))

    # Remove stop words

    words = [word for word in text.split() if word not in stop\_words]

    return " ".join(words)

# ✅ Example usage

sample\_text = "The Quick brown fox, jumps over a lazy Dog!"

print(clean\_text(sample\_text))  # "quick brown fox jumps over lazy dog"

**Output:**

**quick brown fox jumps over lazy dog**

**explanation:**

**This Python function cleans up a piece of text by doing three things:**

1. **It converts the text to lowercase so that all words are uniform (for example, "Dog" becomes "dog").**
2. **It removes punctuation marks such as commas, periods, and exclamation marks.**
3. **It removes common stop words like *a, an, the, is, are, was, were, to, of, in, on*, which usually don’t add much meaning.**

**How it works step by step**

* **A list of stop words is defined inside the function.**
* **The text is changed to lowercase.**
* **All punctuation symbols are removed.**
* **The text is split into words, and any word that appears in the stop words list is removed.**
* **The remaining words are joined back into a clean sentence.**

**Example**

**Input text:  
"The Quick brown fox, jumps over a lazy Dog!"**

**Processing:**

* **Lowercase → "the quick brown fox, jumps over a lazy dog!"**
* **Remove punctuation → "the quick brown fox jumps over a lazy dog"**
* **Remove stop words → "quick brown fox jumps over lazy dog"**

**Final output:  
"quick brown fox jumps over lazy dog"**