AI ASSISTED CODING

ASSIGNMENT 9.1

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BATCH :12

QUESTION:

**Task 1: Add Google-Style Docstrings to Functions**

: Use AI to add Google-style docstrings to all functions in a  
given Python script.  
• Instructions:  
o Prompt AI to generate docstrings without providing any  
input-output examples.  
o Ensure each docstring includes:  
▪ Function description  
▪ Parameters with type hints  
▪ Return values with type hints  
▪ Example usage  
o Review the generated docstrings for accuracy and  
formatting.

**Objective:** Use AI to generate standardized, detailed function docstrings.

**Instructions:**

* Use AI with **zero-shot** prompt (do not provide examples).
* Make sure each function's docstring includes:
  + **Function description**
  + **Parameters with type hints**
  + **Return values with type hints**
  + **Example usage**
* Manually review for clarity and format.
* Expected output:
* def sample\_function(x: int, y: int) -> int:
* """Adds two integers and returns the result.
* Args:
* x (int): First integer.
* y (int): Second integer.
* Returns:
* int: The sum of x and y.
* Example:
* >>> sample\_function(2, 3)
* 5
* """
* return x + y

prompt:

Add a Google-style docstring to this Python function. Include a description, parameter types, return type, and an example.

### ****Task 2: Add Inline Comments for Complex Logic****

### Use AI to add meaningful inline comments to a Python program explaining only complex logic parts. • Instructions: o Provide a Python script without comments to the AI. o Instruct AI to skip obvious syntax explanations and focus only on tricky or non-intuitive code sections. o Verify that comments improve code readability and maintainability. • Expected Output #2: o Python code with concise, context-aware inline comments for complex logic blocks.

**Objective:** Focus AI-generated comments only on non-obvious logic.

**Instructions:**

* Input: Python code without comments.
* Skip simple lines like variable assignment or loops.
* Target:
  + Tricky conditions
  + Recursive logic
  + Algorithmic sections
* Ensure improved readability.

Expected output:

* if a > b and c < d:
* # Check if a dominates b while c is still below d, indicating an edge case
* handle\_edge\_case()

### ****prompt:****

### ****Add inline comments only to the non-obvious or complex parts of this code. Skip explaining simple syntax.****

### ****Task 3: Add Module-Level Docstring****

Use AI to create a module-level docstring summarizing the  
purpose, dependencies, and main functions/classes of a Python  
file.

### • Instructions: o Supply the entire Python file to AI. o Instruct AI to write a single multi-line docstring at the top of the file. o Ensure the docstring clearly describes functionality and usage without rewriting the entire code. • Expected Output #3: o A complete, clear, and concise module-level docstring at the beginning of the file.

**Objective:** Provide a summary at the top of the Python file.

**Instructions:**

* Supply the **entire Python file**.
* AI should generate a multi-line docstring that includes:
  + **Purpose of the module**
  + **Dependencies (if any)**

**List of main functions and classes**

* + **Brief description of usage**
  + **Expected output:**
* """
* This module processes user data from a CSV file, validates entries,
* and stores them in a SQLite database.
* Dependencies:
* - pandas
* - sqlite3
* Main Functions:
* - load\_csv\_data
* - validate\_entries
* - store\_to\_db
* Usage:
* Run this script directly to process the default data.csv file.
* """

Prompt:

Write a module-level docstring for this file describing the purpose, dependencies, and available functions.

### ****Task 4: Convert Inline Comments to Google-Style Docstrings****

### Use AI to transform existing inline comments into structured function docstrings following Google style. • Instructions: o Provide AI with Python code containing inline comments. o Ask AI to move relevant details from comments into function docstrings. o Verify that the new docstrings keep the meaning intact while improving structure. • Expected Output #4: o Python code with comments replaced by clear, standardized docstrings

**Objective:** Refactor functions by moving inline comments into docstrings.

**Instructions:**

* Provide code that has inline comments.
* Instruct AI to extract relevant comments and move them into Google-style docstrings.
* Keep code logic untouched, remove in-code comments.
* Expected output:

def calculate\_area(radius: float) -> float:

    """Calculates the area of a circle.

    Args:

        radius (float): Radius of the circle.

    Returns:

        float: The calculated area.

    """

    return 3.1415 \* radius \* radius

### ****prompt:****

### ****Convert inline comments into a structured Google-style docstring.****

### ****Task 5: Review and Correct Existing Docstrings****

### Use AI to identify and correct inaccuracies in existing docstrings. • Instructions: o Provide Python code with outdated or incorrect docstrings. o Instruct AI to rewrite each docstring to match the current code behavior. o Ensure corrections follow Google-style formatting. • Expected Output #5: o Python file with updated, accurate, and standardized docstrings.

**Objective:** Fix incorrect, outdated, or incomplete docstrings.

**Instructions:**

* Provide code with poor or outdated docstrings.
* Ask AI to:
  + Rewrite each docstring to reflect actual behavior.
  + Use proper Google-style formatting.
* Expected output:
* Before:
* def login(user):
* """Checks login."""
* ...

Expected output:

After:

def login(user: str) -> bool:

    """Validates user credentials for login.

    Args:

        user (str): Username string.

    Returns:

        bool: True if login is successful, False otherwise.

    """

    ...

Prompt:

Correct the docstring to accurately describe the function using Google style.

**Task 6:**

**Prompt Comparison Experiment** Compare documentation output from a vague prompt and a detailed prompt for the same Python function.  
• Instructions:  
o Create two prompts: one simple (“Add comments to this  
function”) and one detailed (“Add Google-style docstrings  
with parameters, return types, and examples”).  
o Use AI to process the same Python function with both  
prompts.  
o Analyze and record differences in quality, accuracy, and  
completeness.  
• Expected Output #6:  
o A comparison table showing the results from both prompts with observations.

**Objective:** Compare AI output from vague vs detailed prompts.

**Instructions:**

* Use one simple prompt:
  + "Add comments to this function"
* Use one detailed prompt:
  + "Add Google-style docstrings with parameters, return types, and examples"
* Apply both to the same function.
* Create a comparison table with observations:
  + **Clarity**
  + **Completeness**
  + **Correctness**
  + **Structure**
* **Expected Output Table:**

| **Aspect** | **Vague Prompt Output** | **Detailed Prompt Output** | **Observation** |
| --- | --- | --- | --- |
| Clarity | Basic one-line comment | Structured docstring with clear explanation | Detailed prompt much clearer |
| Completeness | Only what function does | Full param/return types, example usage | Detailed prompt is more complete |
| Correctness | Partially aligns with behavior | Matches function's logic closely | Detailed prompt produces accurate results |
| Structure | Informal style | Google-style standard | Detailed prompt adheres to best practices |

Prompt: Add a Google-style docstring to this function. Include a description, parameter types, return type, and an example.