AI Assistant Coding

Assignment 9.5

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Batch: 32

Problem 1: String Utilities Function Consider the following Python function:

def reverse_string(text):

return text[::-1]

Task:

1. Write documentation in: Docstring, Inline comments, Google-style documentation

2. Compare the three documentation styles.

3. Recommend the most suitable style for a utility-based string library.

Code:

```python
def reverse_string(s: str) -> str:
    """Reverse a given string.

    Args:
        s (str): The string to reverse.

    Returns:
        str: The reversed string.
    """
    return s[::-1]  # This slicing technique reverses the string by stepping through it backwards.
```

Aspect	Docstring	Inline Comments	Google-Style Doc
Readability	High	Medium	Very High
Explains logic	Low	High	Medium
Explains parameters	Low	No	High
Tool support (IDE/docs)	Yes	No	Yes
Suitable for libraries	Medium	Low	High

Recommendation: Use Google-style docstrings + minimal inline comments only when logic is non-obvious.

Problem 2: Password Strength Checker Consider the function:

def check_strength(password):

return len(password) >= 8

Task:

1. Document the function using docstring, inline comments, and

Google style.

2. Compare documentation styles for security-related code.

3. Recommend the most appropriate style.

Code:

```python
def check_password_strength(password: str) -> str:
    """Check the strength of a given password.

    Args:
        password (str): The password to check.

    Returns:
        str: A message indicating the strength of the password.
    """
    if len(password) < 6: # Passwords shorter than 6 characters are considered weak.
        return "Weak password: Too short."
    elif len(password) < 12:# Passwords between 6 and 12 characters are considered moderate.
        return "Moderate password: Could be stronger."
    else:
        return "Strong password: Good job!" # Passwords 12 characters or longer are considered strong.
```

Aspect	Docstring	Inline Comments	Google-Style Doc
Clarity	Medium	High (logic only)	Very High
Explains security rules	Low	High	High
Describes inputs/outputs	Low	No	Yes
Maintainability	Medium	Low	High
Suitable for security code	Medium	Medium	Best

Recommendation: Google-Style Documentation

Problem 3: Math Utilities Module

Task:

1. Create a module math_utils.py with functions:

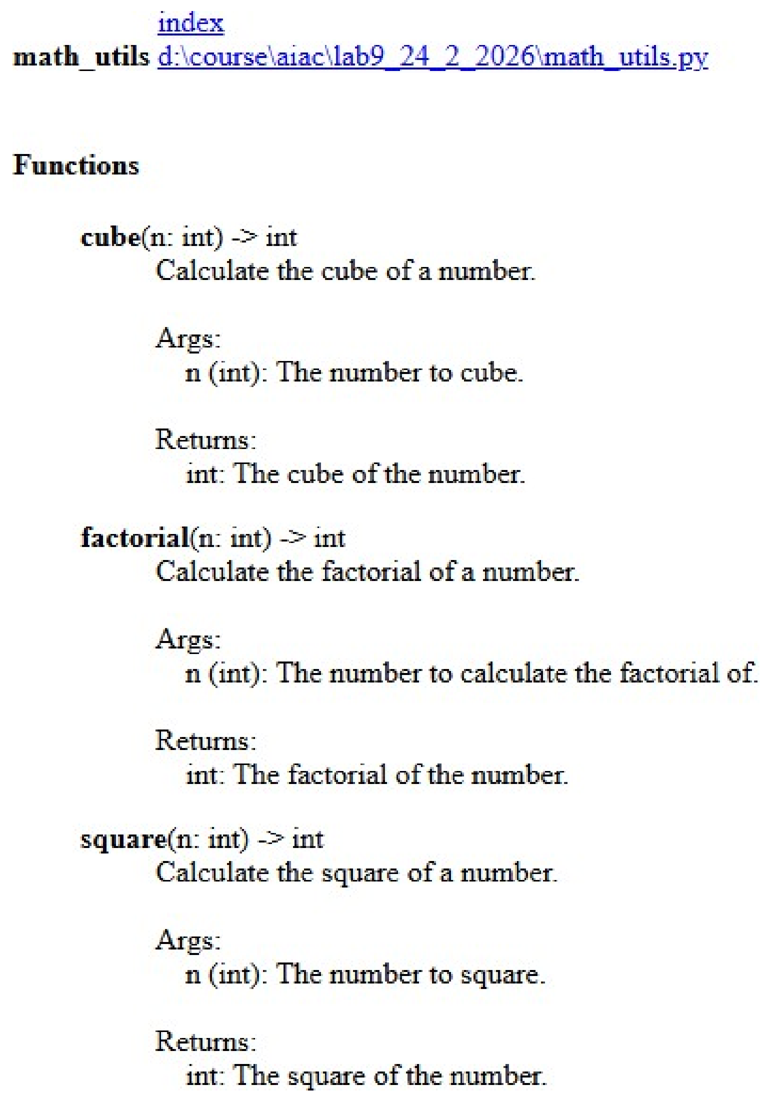
square(n), cube(n), factorial(n)

2. Generate docstrings automatically using AI tools.

3. Export documentation as an HTML file.

Code:

```python
def square(n: int) -> int:
    """Calculate the square of a number.

    Args:
        n (int): The number to square.

    Returns:
        int: The square of the number.
    """
    return n * n  # This multiplies the number by itself to get the square.
def cube(n: int) -> int:
    """Calculate the cube of a number.

    Args:
        n (int): The number to cube.

    Returns:
        int: The cube of the number.
    """
    return n * n * n  # This multiplies the number by itself three times to
get the cube.
def factorial(n: int) -> int:
    """Calculate the factorial of a number.

    Args:
        n (int): The number to calculate the factorial of.

    Returns:
        int: The factorial of the number.
    """
    if n == 0:
        return 1  # Base case: factorial of 0 is 1
    else:
        return n * factorial(n - 1)  # Recursive case: n! = n * (n - 1)!
```



```
            index
math_utils  d:\course\aiac\lab9_24_2_2026\math_utils.py


Functions

      cube(n: int) -> int
            Calculate the cube of a number.

            Args:
               n (int): The number to cube.

            Returns:
               int: The cube of the number.

      factorial(n: int) -> int
            Calculate the factorial of a number.

            Args:
               n (int): The number to calculate the factorial of.

            Returns:
               int: The factorial of the number.

      square(n: int) -> int
            Calculate the square of a number.

            Args:
               n (int): The number to square.

            Returns:
               int: The square of the number.
```

Problem 4: Attendance Management Module

Task:

1. Create a module attendance.py with functions:

mark_present(student), mark_absent(student), get_attendance(student)

2. Add proper docstrings.

3. Generate and view documentation in terminal and browse

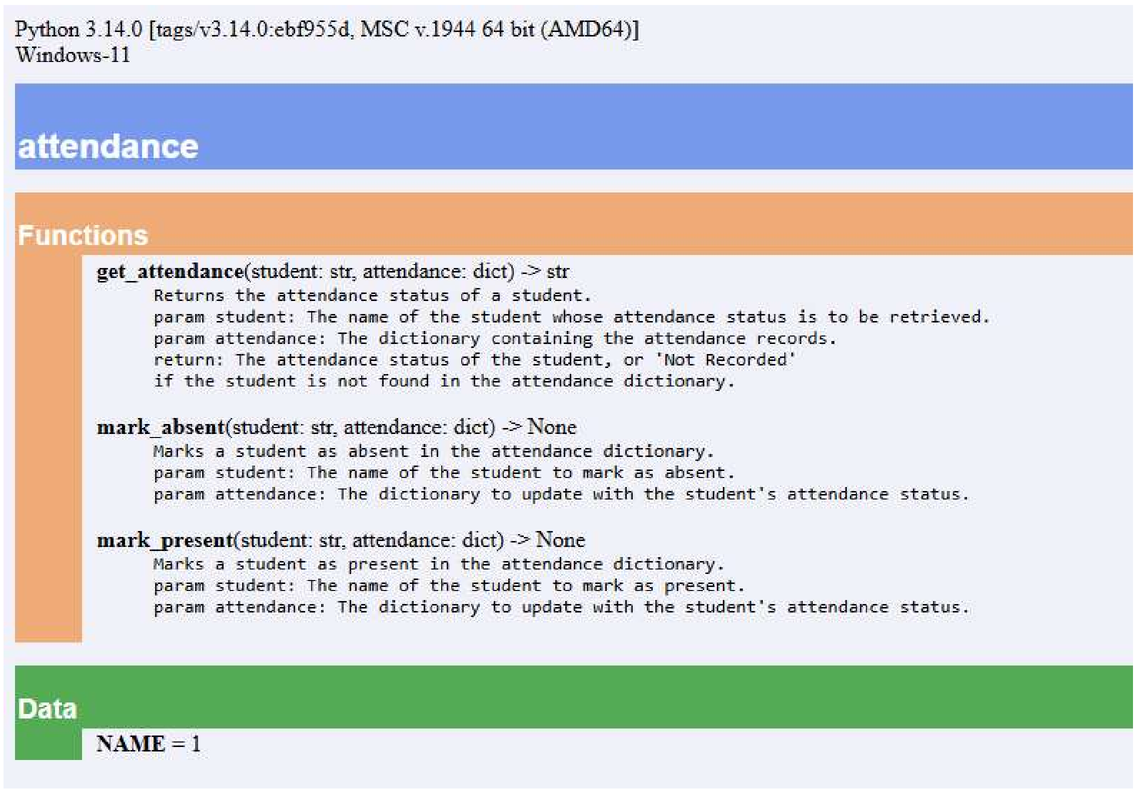
Code:

```
def mark_present(student: str, attendance: dict) -> None:
    """Marks a student as present in the attendance dictionary.
    param student: The name of the student to mark as present.
    param attendance: The dictionary to update with the student's attendance
status.
    """
    attendance[student] = 'Present'
def mark_absent(student: str, attendance: dict) -> None:
    """Marks a student as absent in the attendance dictionary.
    param student: The name of the student to mark as absent.
    param attendance: The dictionary to update with the student's attendance
status."""
    attendance[student] = 'Absent'
def get_attendance(student: str, attendance: dict) -> str:
    """Returns the attendance status of a student.
    param student: The name of the student whose attendance status is to be
retrieved.
    param attendance: The dictionary containing the attendance records.
    return: The attendance status of the student, or 'Not Recorded'
    if the student is not found in the attendance dictionary."""
    return attendance.get(student, 'Not Recorded')
```

Output: Terminal

```
# Help on module attendance:

# NAME
#     attendance

# FUNCTIONS
#     get_attendance(student: str, attendance: dict) -> str
#         Returns the attendance status of a student.
#         param student: The name of the student whose attendance status is to
be retrieved.
#         param attendance: The dictionary containing the attendance records.
#         return: The attendance status of the student, or 'Not Recorded'
#         if the student is not found in the attendance dictionary.

#     mark_absent(student: str, attendance: dict) -> None
#         Marks a student as absent in the attendance dictionary.
#         param student: The name of the student to mark as absent.
#         param attendance: The dictionary to update with the student's
attendance status.

#     mark_present(student: str, attendance: dict) -> None
#         Marks a student as present in the attendance dictionary.
#         param student: The name of the student to mark as present.
#         param attendance: The dictionary to update with the student's
attendance status.

# FILE
#     d:\course\aiac\lab9_24_2_2026\attendance.py
```

Browser:



Python 3.14.0 [tags/v3.14.0:ebf955d, MSC v.1944 64 bit (AMD64)]
Windows-11

attendance

Functions

get_attendance(student: str, attendance: dict) -> str

```
    Returns the attendance status of a student.
    param student: The name of the student whose attendance status is to be retrieved.
    param attendance: The dictionary containing the attendance records.
    return: The attendance status of the student, or 'Not Recorded'
    if the student is not found in the attendance dictionary.
```

mark_absent(student: str, attendance: dict) -> None

```
    Marks a student as absent in the attendance dictionary.
    param student: The name of the student to mark as absent.
    param attendance: The dictionary to update with the student's attendance status.
```

mark_present(student: str, attendance: dict) -> None

```
    Marks a student as present in the attendance dictionary.
    param student: The name of the student to mark as present.
    param attendance: The dictionary to update with the student's attendance status.
```

Data

NAME = 1

Problem 5: File Handling Function Consider the function**:**

def read_file(filename):

with open(filename, 'r') as f:

return f.read()

Task:

1. Write documentation using all three formats.

2. Identify which style best explains exception handling.

3. Justify your recommendation.

Code:

```python
def read_file(file_path: str) -> str:
    """Reads the content of a file and returns it as a string.
    param file_path: The path to the file to be read.
    return: The content of the file as a string.
    Exceptions: Raises FileNotFoundError if the file does not exist.
    """
    try:
        with open(file_path, 'r') as file:
            content = file.read()
        return content
    except FileNotFoundError:
        raise FileNotFoundError(f"The file at {file_path} was not found.")
read_file('example.txt')
```

Recommended Style: Google-Style Documentation

Justification:

File handling is error-prone (missing files, permission issues)

Google-style documentation:

Clearly explains exceptions

Improves code reliability and usability

Helps developers handle errors correctly

Is widely used in production and open-source projects