AI Assisted Coding

Assignment – 9.5

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Batch : 23

Problem 1: String Utilities Function

Consider the following Python function:

def reverse_string(text):

return text[::-1]

Task:

1. Write documentation in:

o (a) Docstring

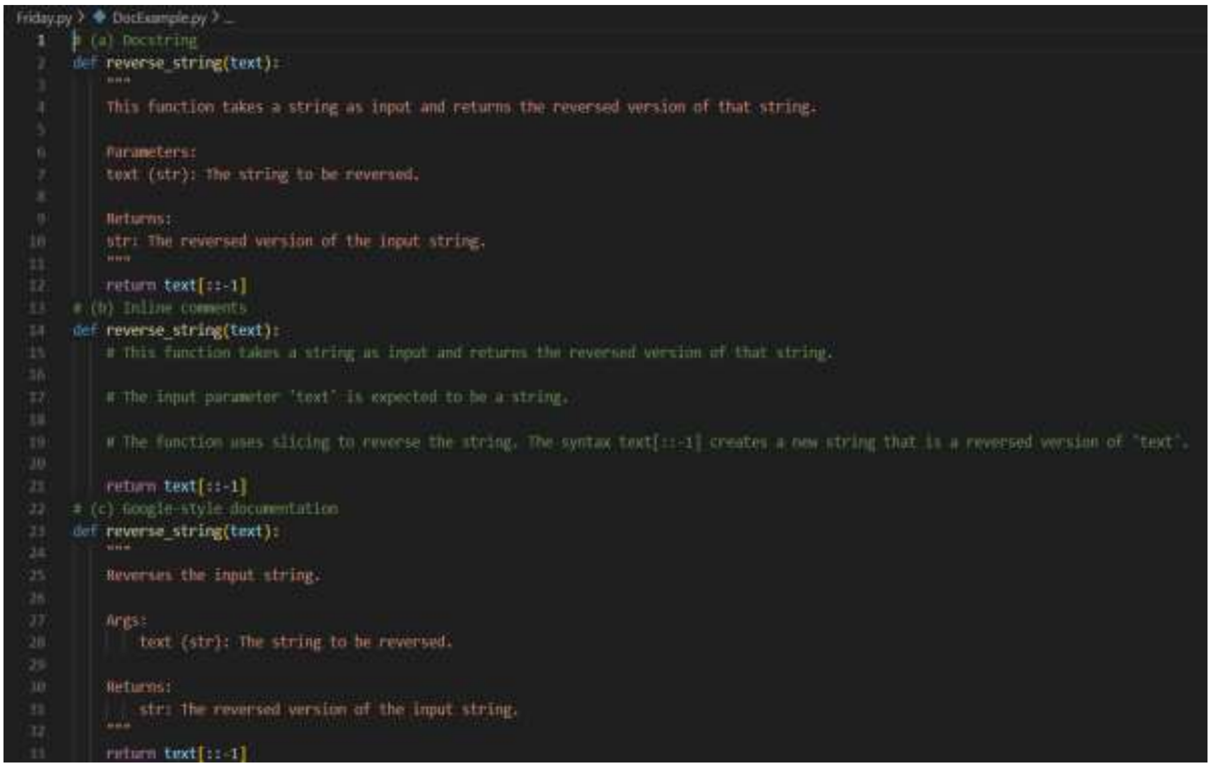
o (b) Inline comments

o (c) Google-style documentation

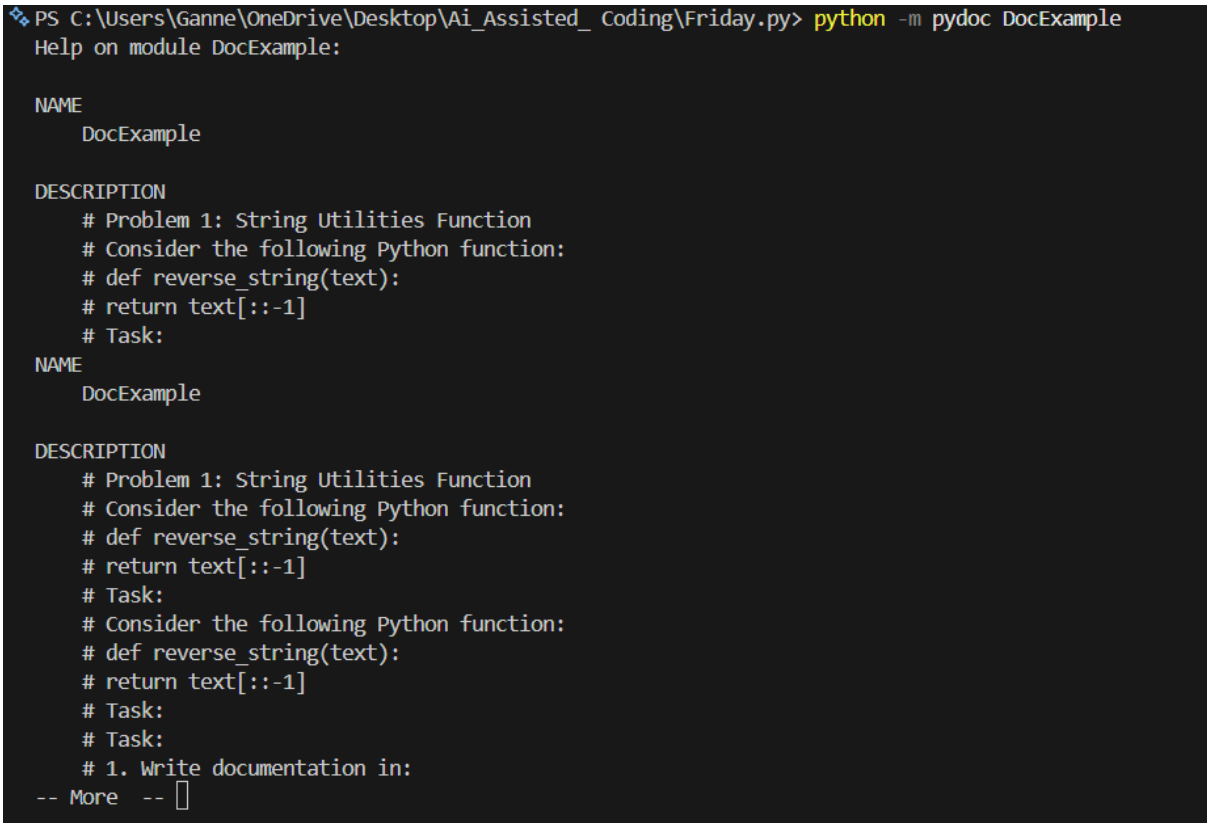
2. Compare the three documentation styles.

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

library.



```python
# (a) Docstring
def reverse_string(text):
    """
    This function takes a string as input and returns the reversed version of that string.

    Parameters:
    text (str): The string to be reversed.

    Returns:
    str: The reversed version of the input string.
    """
    return text[::-1]
# (b) Inline comments
def reverse_string(text):
    # This function takes a string as input and returns the reversed version of that string.

    # The input parameter 'text' is expected to be a string.

    # The function uses slicing to reverse the string. The syntax text[::-1] creates a new string that is a reversed version of 'text'.

    return text[::-1]
# (c) Google-style documentation
def reverse_string(text):
    """
    Reverses the input string.

    Args:
        text (str): The string to be reversed.

    Returns:
        str: The reversed version of the input string.
    """
    return text[::-1]
```



```
PS C:\Users\Ganne\OneDrive\Desktop\Ai_Assisted_ Coding\Friday.py> python -m pydoc DocExample
Help on module DocExample:

NAME
    DocExample

DESCRIPTION
    # Problem 1: String Utilities Function
    # Consider the following Python function:
    # def reverse_string(text):
    # return text[::-1]
    # Task:
NAME
    DocExample

DESCRIPTION
    # Problem 1: String Utilities Function
    # Consider the following Python function:
    # def reverse_string(text):
    # return text[::-1]
    # Task:
    # Consider the following Python function:
    # def reverse_string(text):
    # return text[::-1]
    # Task:
    # Task:
    # 1. Write documentation in:
-- More  --
```

Problem 2: Password Strength Checker

Consider the function:

def check_strength(password):

return len(password) >= 8

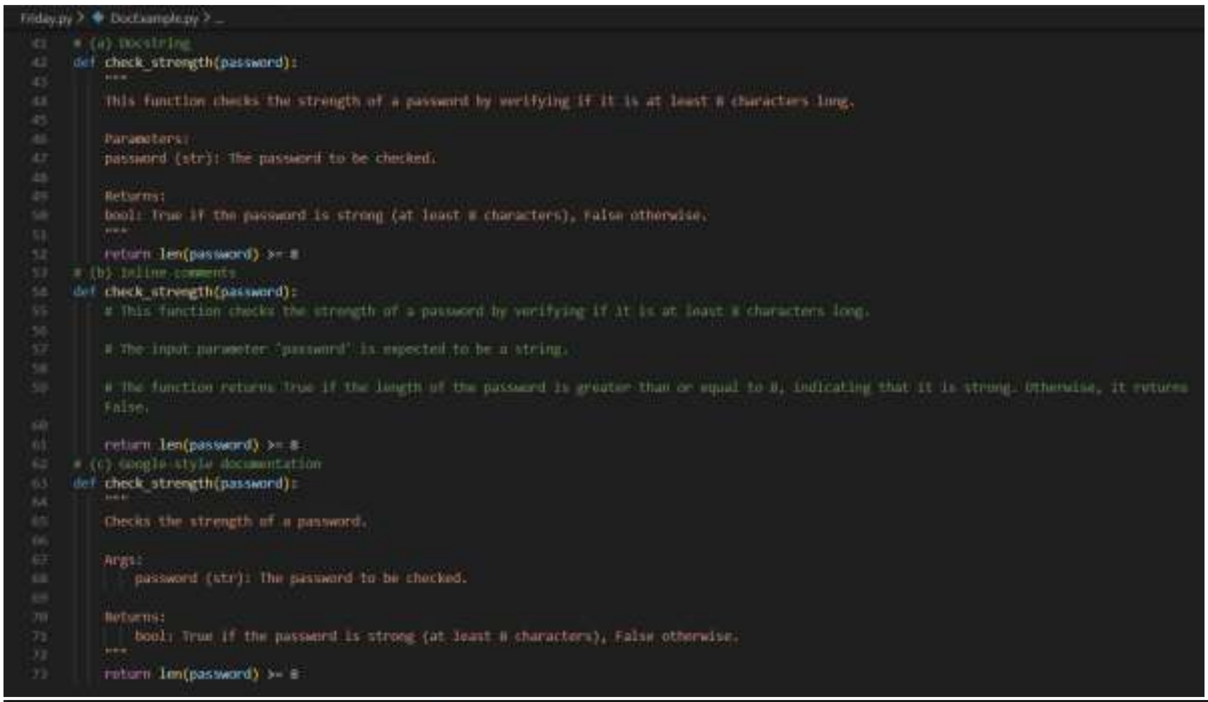
Task:

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

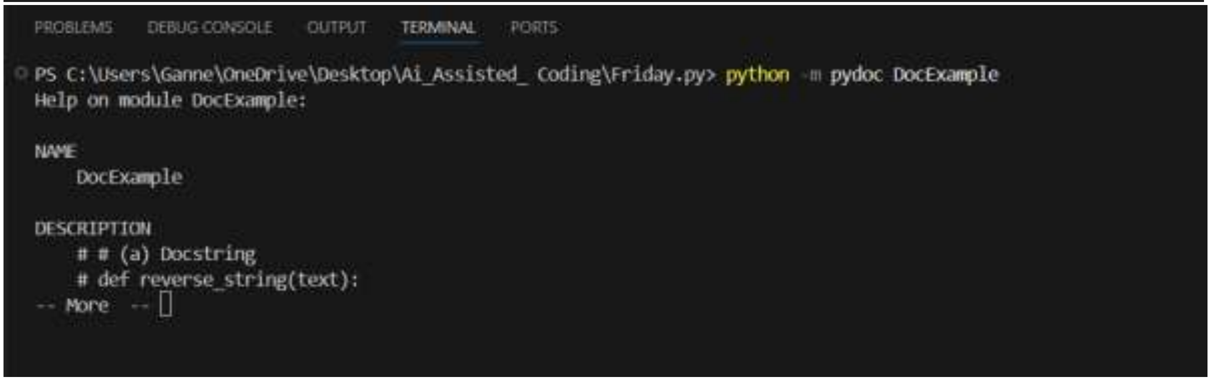
Google style.

2. Compare documentation styles for security-related code.

3. Recommend the most appropriate style.



```
Friday.py > DocExample.py > ...
# (a) Docstring
def check_strength(password):
    """
    This function checks the strength of a password by verifying if it is at least 8 characters long.

    Parameters:
    password (str): The password to be checked.

    Returns:
    bool: True if the password is strong (at least 8 characters), False otherwise.
    """
    return len(password) >= 8
# (b) Inline comments
def check_strength(password):
    # This function checks the strength of a password by verifying if it is at least 8 characters long.

    # The input parameter 'password' is expected to be a string.

    # The function returns True if the length of the password is greater than or equal to 8, indicating that it is strong. Otherwise, it returns
    False.

    return len(password) >= 8
# (c) Google-style documentation
def check_strength(password):
    """
    Checks the strength of a password.

    Args:
        password (str): The password to be checked.

    Returns:
        bool: True if the password is strong (at least 8 characters), False otherwise.
    """
    return len(password) >= 8
```



```
PS C:\Users\Ganne\OneDrive\Desktop\Ai_Assisted_ Coding\Friday.py> python -m pydoc DocExample
Help on module DocExample:

NAME
    DocExample

DESCRIPTION
    # # (a) Docstring
    # def reverse_string(text):
-- More  --
```

Problem 3: Math Utilities Module

Task:

1. Create a module math_utils.py with functions:

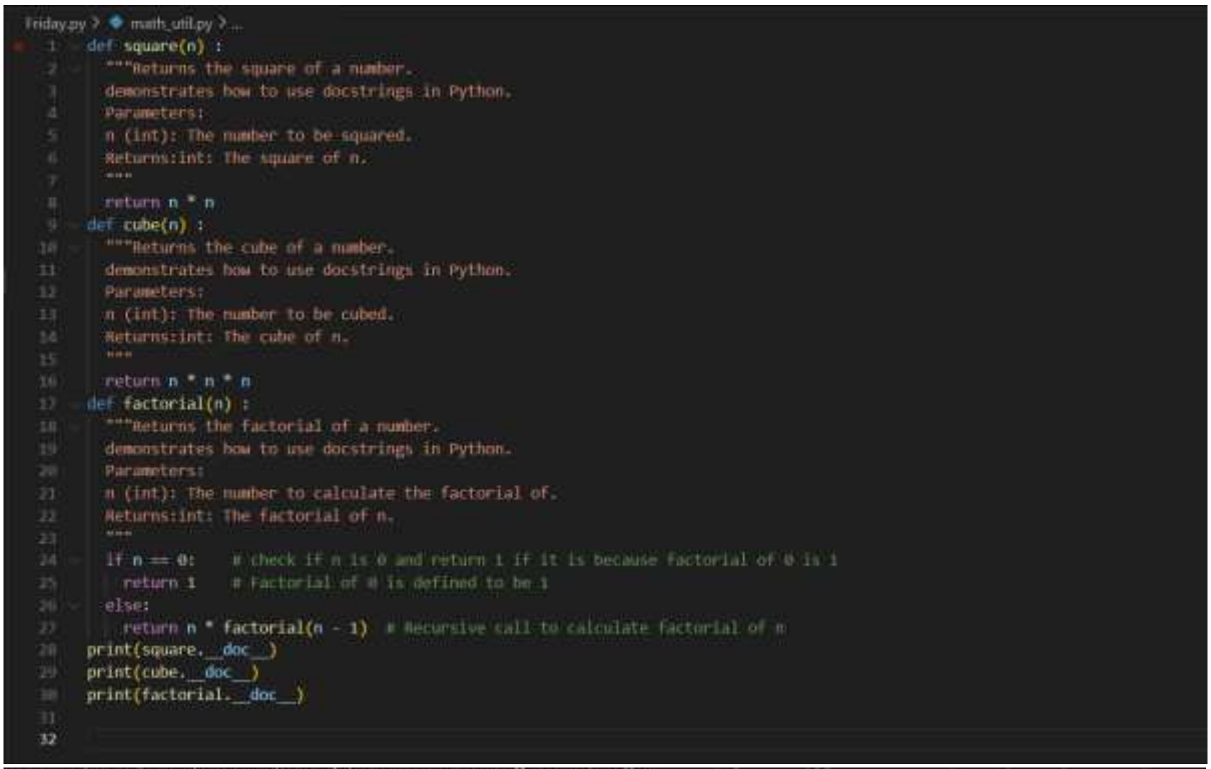
o square(n)

o cube(n)

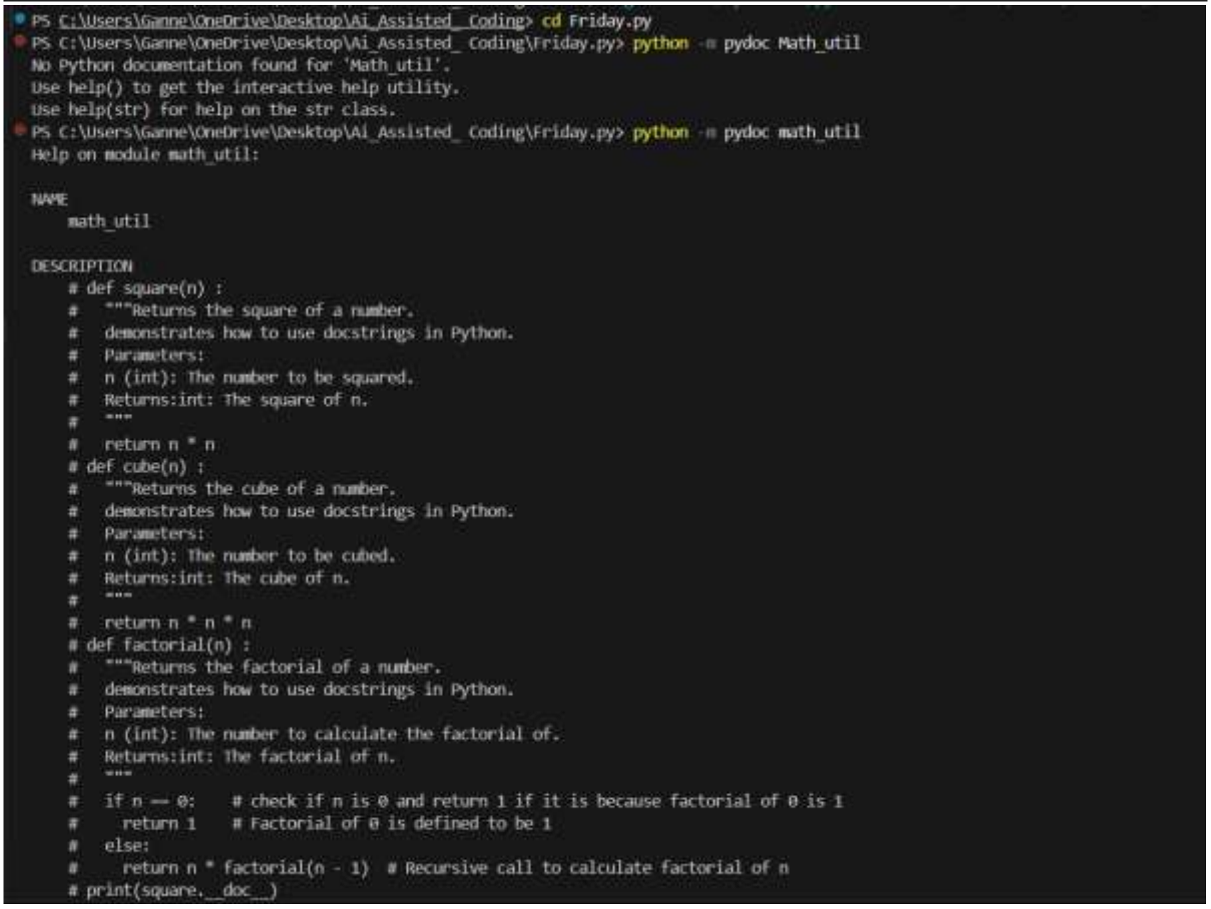
o factorial(n)

2. Generate docstrings automatically using AI tools.

3. Export documentation as an HTML file.



```python
def square(n) :
    """Returns the square of a number.
    demonstrates how to use docstrings in Python.
    Parameters:
    n (int): The number to be squared.
    Returns:int: The square of n.
    """
    return n * n
def cube(n) :
    """Returns the cube of a number.
    demonstrates how to use docstrings in Python.
    Parameters:
    n (int): The number to be cubed.
    Returns:int: The cube of n.
    """
    return n * n * n
def factorial(n) :
    """Returns the factorial of a number.
    demonstrates how to use docstrings in Python.
    Parameters:
    n (int): The number to calculate the factorial of.
    Returns:int: The factorial of n.
    """
    if n == 0:    # check if n is 0 and return 1 if it is because factorial of 0 is 1
      return 1    # Factorial of 0 is defined to be 1
    else:
      return n * factorial(n - 1)  # Recursive call to calculate factorial of n
print(square.__doc__)
print(cube.__doc__)
print(factorial.__doc__)
```



```
PS C:\Users\Ganne\OneDrive\Desktop\Ai_Assisted_ Coding> cd Friday.py
PS C:\Users\Ganne\OneDrive\Desktop\Ai_Assisted_ Coding\Friday.py> python -m pydoc Math_util
No Python documentation found for 'Math_util'.
Use help() to get the interactive help utility.
Use help(str) for help on the str class.
PS C:\Users\Ganne\OneDrive\Desktop\Ai_Assisted_ Coding\Friday.py> python -m pydoc math_util
Help on module math_util:

NAME
    math_util

DESCRIPTION
    # def square(n) :
    #   """Returns the square of a number.
    #   demonstrates how to use docstrings in Python.
    #   Parameters:
    #   n (int): The number to be squared.
    #   Returns:int: The square of n.
    #   """
    #   return n * n
    # def cube(n) :
    #   """Returns the cube of a number.
    #   demonstrates how to use docstrings in Python.
    #   Parameters:
    #   n (int): The number to be cubed.
    #   Returns:int: The cube of n.
    #   """
    #   return n * n * n
    # def factorial(n) :
    #   """Returns the factorial of a number.
    #   demonstrates how to use docstrings in Python.
    #   Parameters:
    #   n (int): The number to calculate the factorial of.
    #   Returns:int: The factorial of n.
    #   """
    #   if n == 0:    # check if n is 0 and return 1 if it is because factorial of 0 is 1
    #     return 1    # Factorial of 0 is defined to be 1
    #   else:
    #     return n * factorial(n - 1)  # Recursive call to calculate factorial of n
    # print(square.__doc__)
```

Problem 4: Attendance Management Module

Task:

1. Create a module attendance.py with functions:

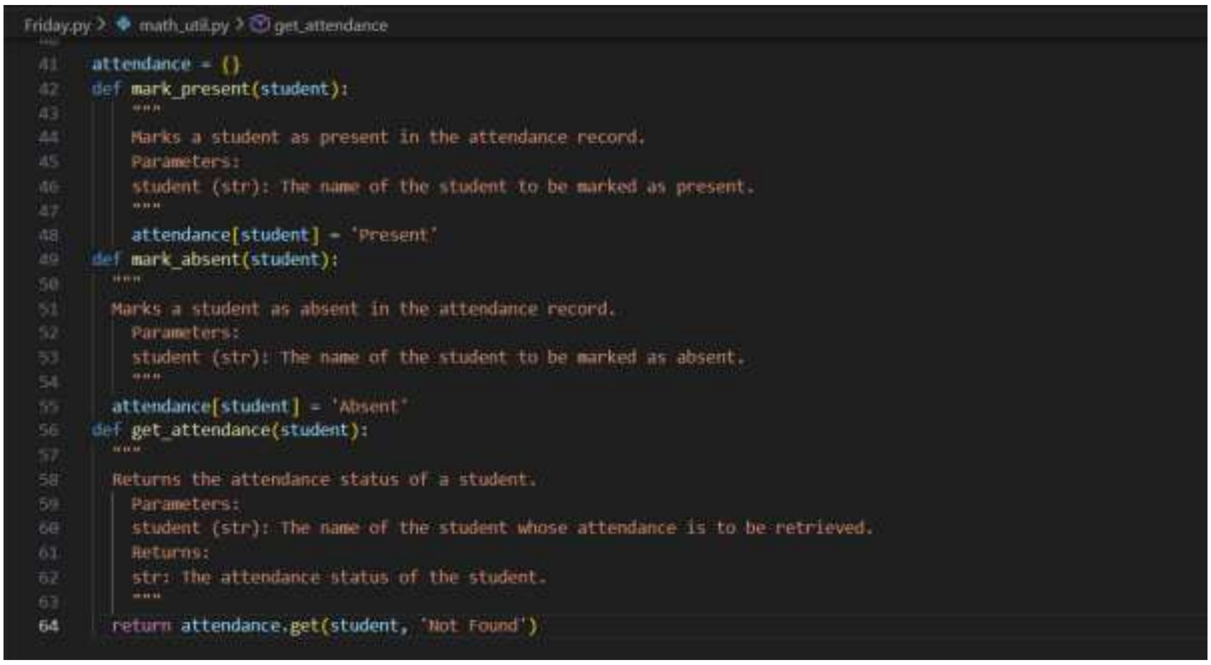
o mark_present(student)

o mark_absent(student)

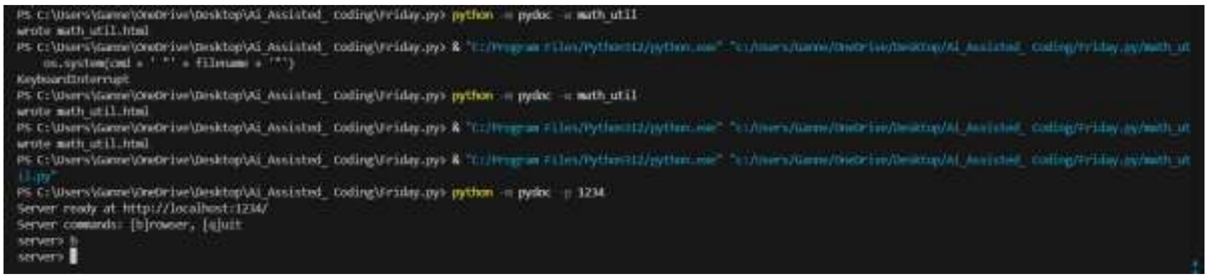
o get_attendance(student)

2. Add proper docstrings.

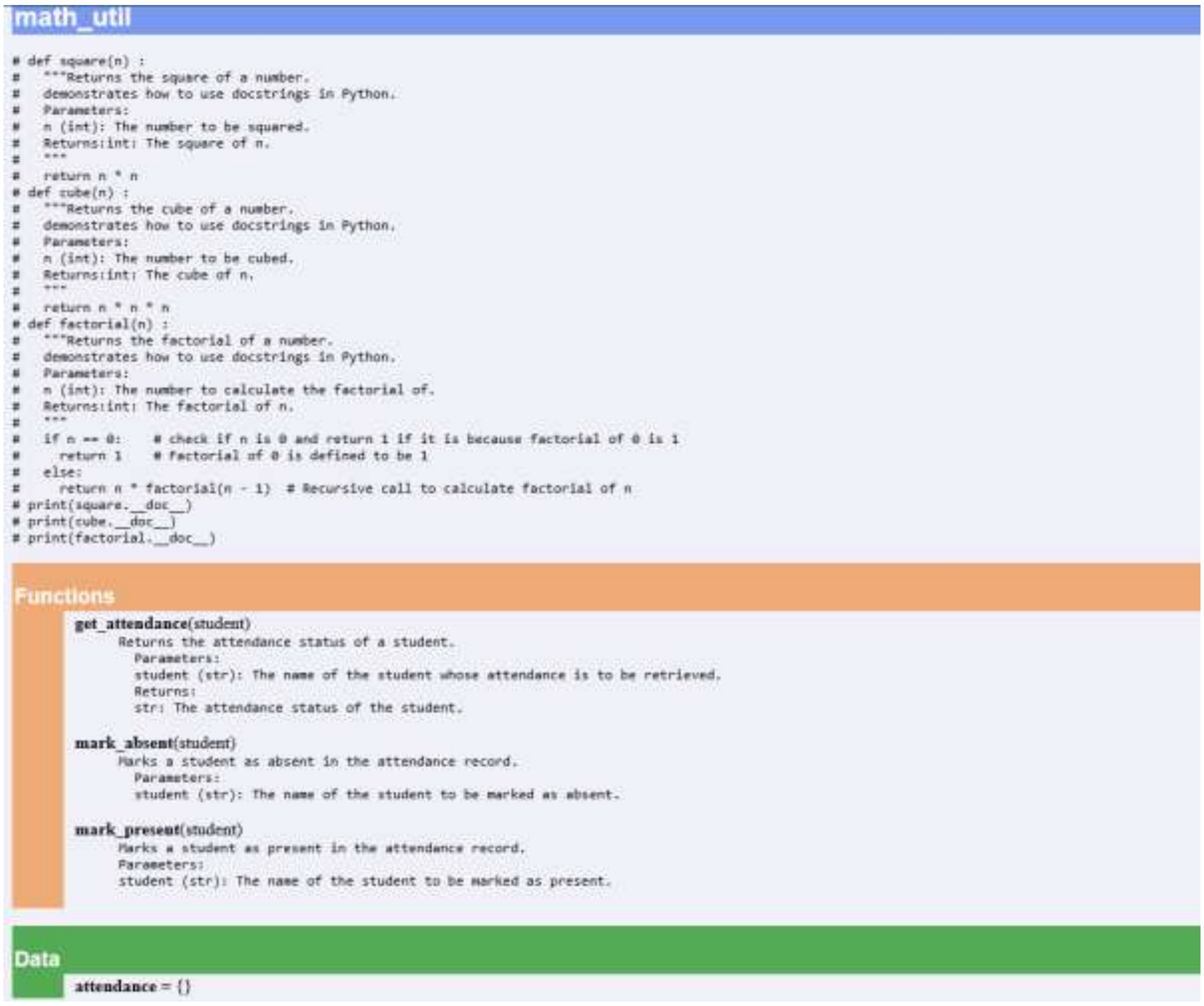
3. Generate and view documentation in terminal and browse



```python
attendance = {}
def mark_present(student):
    """
    Marks a student as present in the attendance record.
    Parameters:
    student (str): The name of the student to be marked as present.
    """
    attendance[student] = 'Present'
def mark_absent(student):
  """
  Marks a student as absent in the attendance record.
    Parameters:
    student (str): The name of the student to be marked as absent.
    """
  attendance[student] = 'Absent'
def get_attendance(student):
  """
  Returns the attendance status of a student.
    Parameters:
    student (str): The name of the student whose attendance is to be retrieved.
    Returns:
    str: The attendance status of the student.
    """
  return attendance.get(student, 'Not Found')
```



```
PS C:\Users\Ganne\OneDrive\Desktop\AI_Assisted_ Coding\Friday.py> python -m pydoc -w math_util
wrote math_util.html
PS C:\Users\Ganne\OneDrive\Desktop\AI_Assisted_ Coding\Friday.py> & "C:/Program Files/Python312/python.exe" "c:/Users/Ganne/OneDrive/Desktop/AI_Assisted_ Coding/Friday.py/math_ut
    os.system(cmd + ' "' + filename + '"')
KeyboardInterrupt
PS C:\Users\Ganne\OneDrive\Desktop\AI_Assisted_ Coding\Friday.py> python -m pydoc -w math_util
wrote math_util.html
PS C:\Users\Ganne\OneDrive\Desktop\AI_Assisted_ Coding\Friday.py> & "C:/Program Files/Python312/python.exe" "c:/Users/Ganne/OneDrive/Desktop/AI_Assisted_ Coding/Friday.py/math_ut
wrote math_util.html
PS C:\Users\Ganne\OneDrive\Desktop\AI_Assisted_ Coding\Friday.py> & "C:/Program Files/Python312/python.exe" "c:/Users/Ganne/OneDrive/Desktop/AI_Assisted_ Coding/Friday.py/math_ut
il.py"
PS C:\Users\Ganne\OneDrive\Desktop\AI_Assisted_ Coding\Friday.py> python -m pydoc -p 1234
Server ready at http://localhost:1234/
Server commands: [b]rowser, [q]uit
server> b
server> 
```



math_util

```
# def square(n) :
#   """Returns the square of a number.
#   demonstrates how to use docstrings in Python.
#   Parameters:
#   n (int): The number to be squared.
#   Returns:int: The square of n.
#   """
#   return n * n
# def cube(n) :
#   """Returns the cube of a number.
#   demonstrates how to use docstrings in Python.
#   Parameters:
#   n (int): The number to be cubed.
#   Returns:int: The cube of n.
#   """
#   return n * n * n
# def factorial(n) :
#   """Returns the factorial of a number.
#   demonstrates how to use docstrings in Python.
#   Parameters:
#   n (int): The number to calculate the factorial of.
#   Returns:int: The factorial of n.
#   """
#   if n == 0:    # check if n is 0 and return 1 if it is because factorial of 0 is 1
#     return 1    # factorial of 0 is defined to be 1
#   else:
#     return n * factorial(n - 1)  # Recursive call to calculate factorial of n
# print(square.__doc__)
# print(cube.__doc__)
# print(factorial.__doc__)
```

Functions

get_attendance(student)

```
Returns the attendance status of a student.
  Parameters:
  student (str): The name of the student whose attendance is to be retrieved.
  Returns:
  str: The attendance status of the student.
```

mark_absent(student)

```
Marks a student as absent in the attendance record.
  Parameters:
  student (str): The name of the student to be marked as absent.
```

mark_present(student)

```
Marks a student as present in the attendance record.
Parameters:
student (str): The name of the student to be marked as present.
```

Data

attendance = {}

Problem 5: File Handling Function

Consider the function:

def read_file(filename):

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

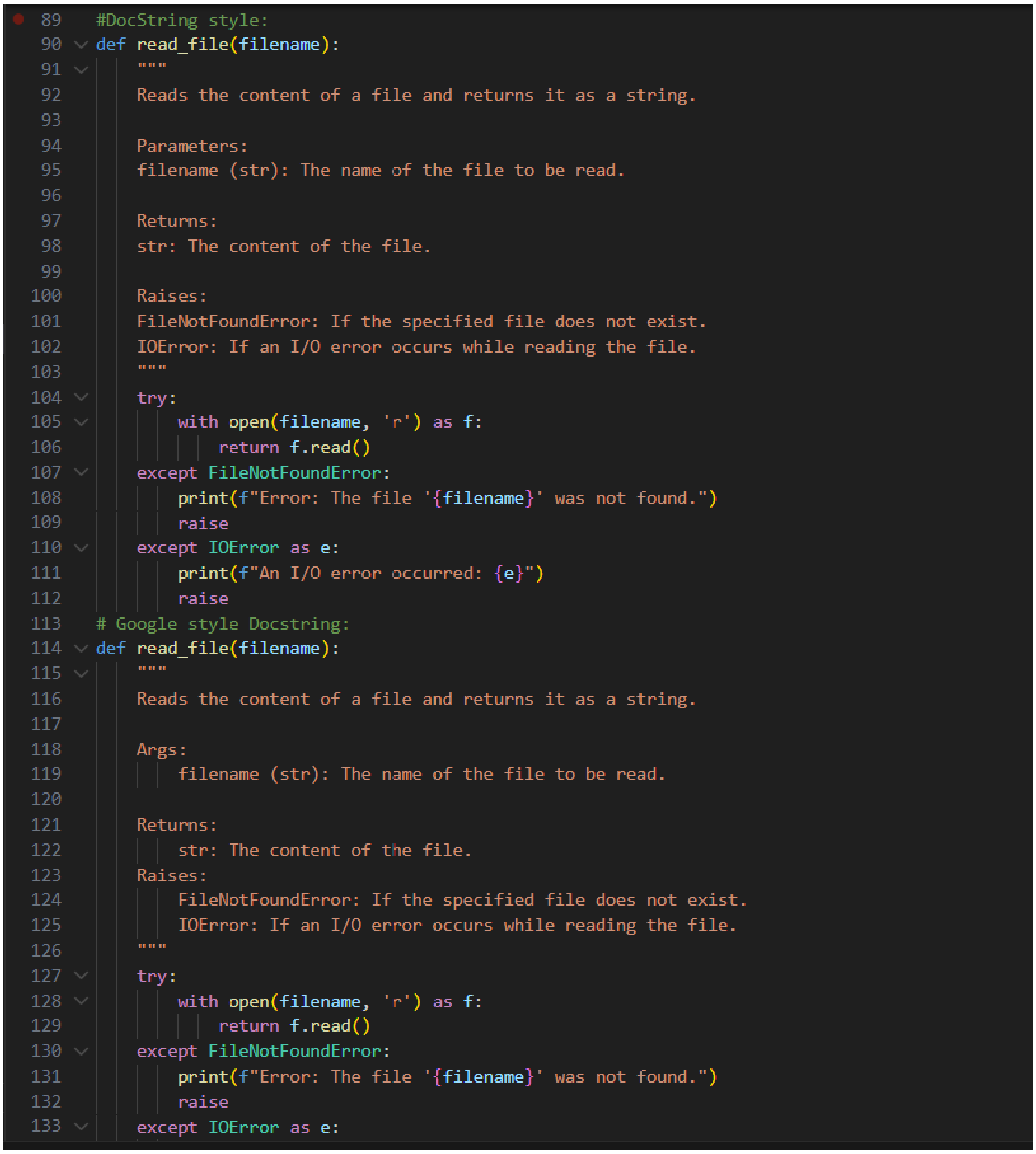
return f.read()

Task:

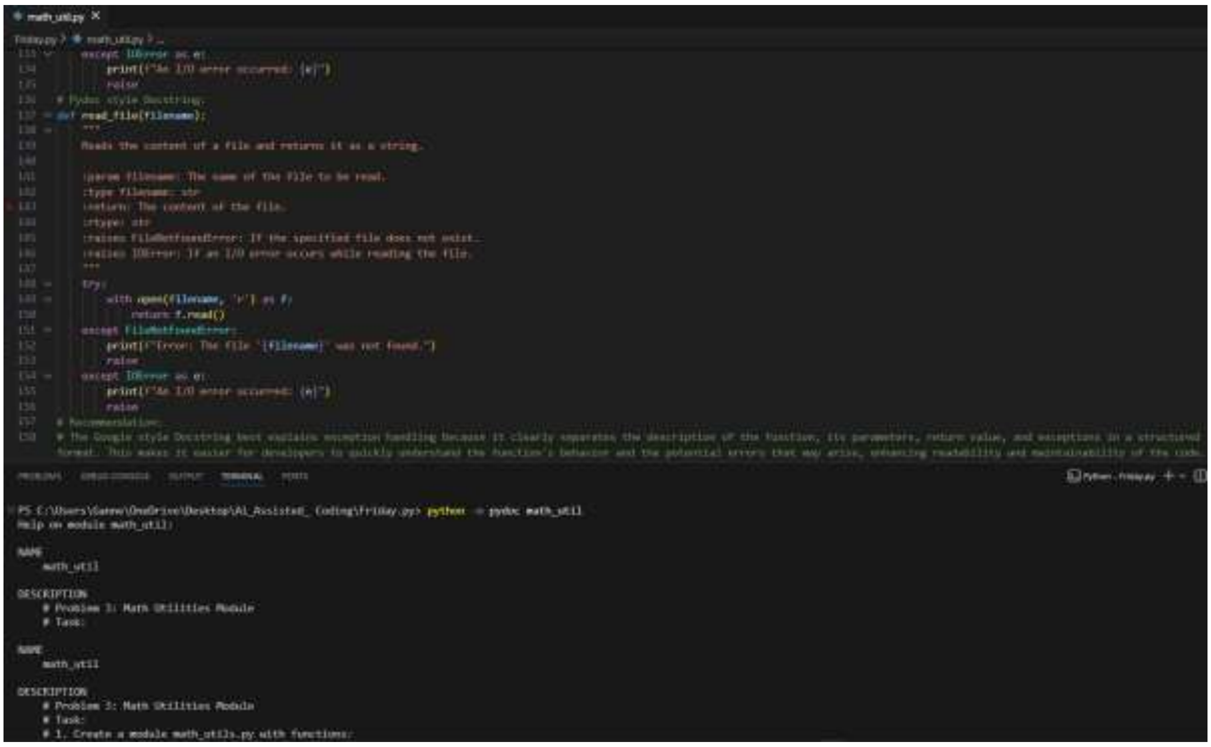
1. Write documentation using all three formats.

2. Identify which style best explains exception handling.

3. Justify your recommendation.



```python
#DocString style:
def read_file(filename):
    """
    Reads the content of a file and returns it as a string.

    Parameters:
    filename (str): The name of the file to be read.

    Returns:
    str: The content of the file.

    Raises:
    FileNotFoundError: If the specified file does not exist.
    IOError: If an I/O error occurs while reading the file.
    """
    try:
        with open(filename, 'r') as f:
            return f.read()
    except FileNotFoundError:
        print(f"Error: The file '{filename}' was not found.")
        raise
    except IOError as e:
        print(f"An I/O error occurred: {e}")
        raise
# Google style Docstring:
def read_file(filename):
    """
    Reads the content of a file and returns it as a string.

    Args:
        filename (str): The name of the file to be read.

    Returns:
        str: The content of the file.
    Raises:
        FileNotFoundError: If the specified file does not exist.
        IOError: If an I/O error occurs while reading the file.
    """
    try:
        with open(filename, 'r') as f:
            return f.read()
    except FileNotFoundError:
        print(f"Error: The file '{filename}' was not found.")
        raise
    except IOError as e:
```



```
    except IOError as e:
        print(f"An I/O error occurred: {e}")
        raise
# Pydoc style Docstring:
def read_file(filename):
    """
    Reads the content of a file and returns it as a string.

    :param filename: The name of the file to be read.
    :type filename: str
    :return: The content of the file.
    :rtype: str
    :raises FileNotFoundError: If the specified file does not exist.
    :raises IOError: If an I/O error occurs while reading the file.
    """
    try:
        with open(filename, 'r') as f:
            return f.read()
    except FileNotFoundError:
        print(f"Error: The file '{filename}' was not found.")
        raise
    except IOError as e:
        print(f"An I/O error occurred: {e}")
        raise
# Recommendation:
# The Google style Docstring best explains exception handling because it clearly separates the description of the function, its parameters, return value, and exceptions in a structured
format. This makes it easier for developers to quickly understand the function's behavior and the potential errors that may arise, enhancing readability and maintainability of the code.
```

```
PS C:\Users\Ganew\OneDrive\Desktop\AI_Assisted_ Coding\Friday.py> python -m pydoc math_util
Help on module math_util:

NAME
    math_util

DESCRIPTION
    # Problem 3: Math Utilities Module
    # Task:

NAME
    math_util

DESCRIPTION
    # Problem 3: Math Utilities Module
    # Task:
    # 1. Create a module math_utils.py with functions:
```