ASSIGNMENT – 10.5

AI- ASSISTED-CODING

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BATCH: 35

Task Description -1 : Variable Naming Issues

Task: Use AI to improve unclear variable names.

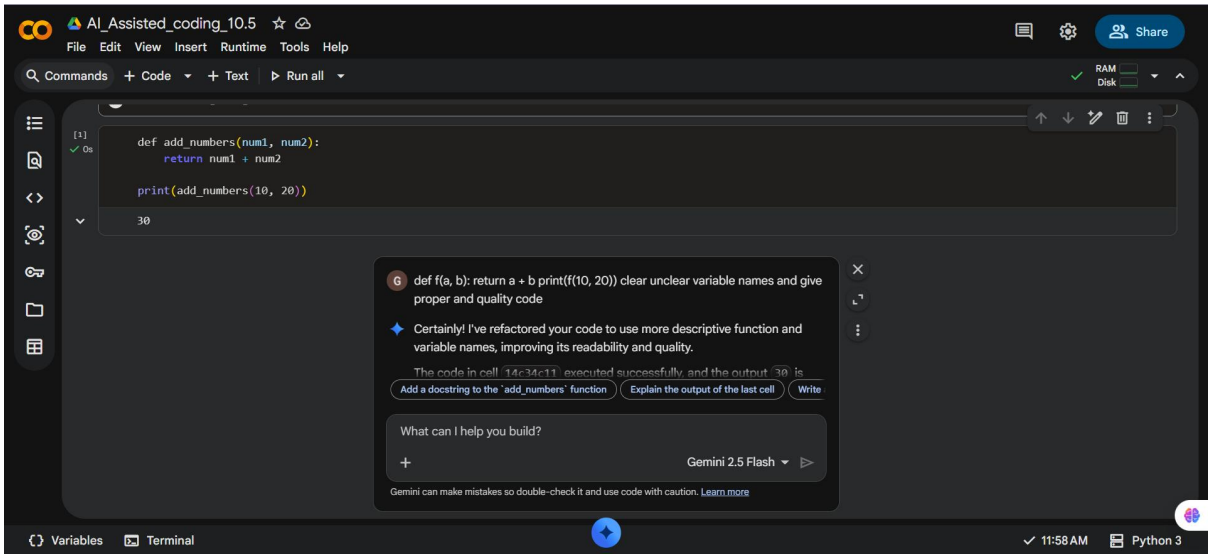
Sample Input Code:

```
def f(a, b):
    return a + b
print(f(10, 20))
```

Expected Output:

• Code rewritten with meaningful function and variable names.

OUTPUT:



Task Description -2 : Missing Error Handling

Task: Use AI to add proper error handling.

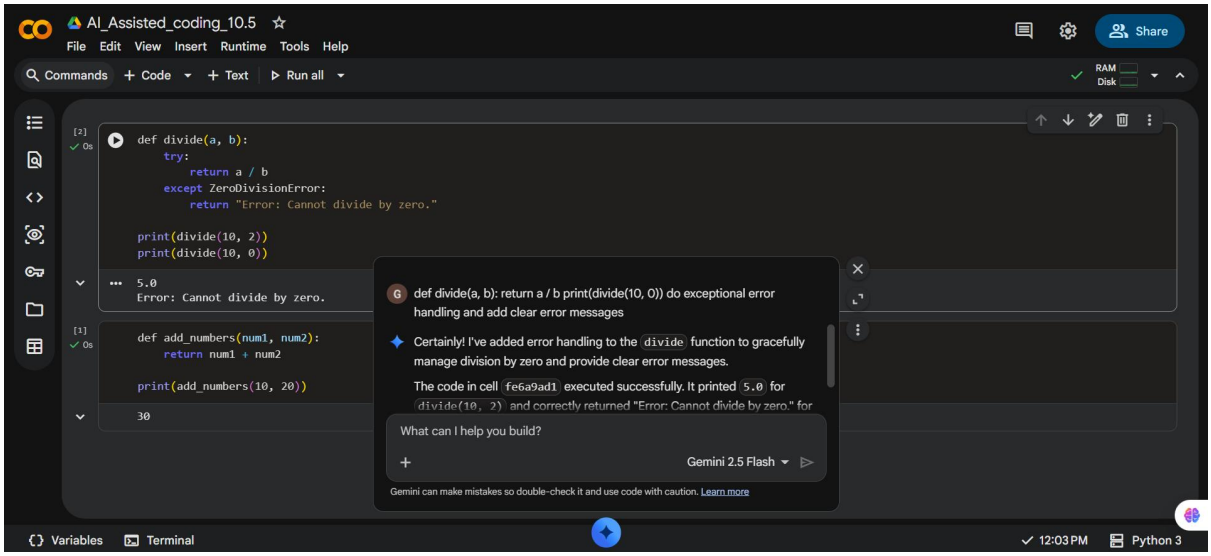
Sample Input Code:

```
def divide(a, b):
    return a / b
print(divide(10, 0))
```

Expected Output:

• Code with exception handling and clear error messages

OUTPUT:



Task Description -3: Student Marks Processing System

The following program calculates total, average, and grade of a student, but it has poor readability, style issues, and no error handling.

```
marks=[78,85,90,66,88]
t=0
for i in marks:
    t=t+i
a=t/len(marks)
if a>=90:
    print("A")
elif a>=75:
    print("B")
```

```
elif a>=60:
        print("C")
else:
        print("F")
```

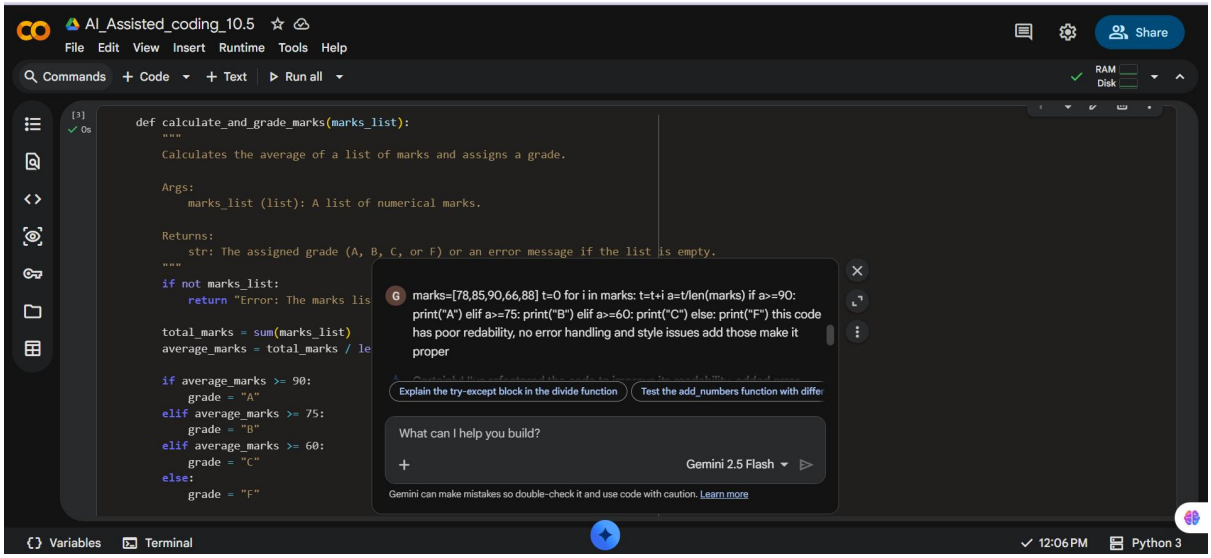
Task:

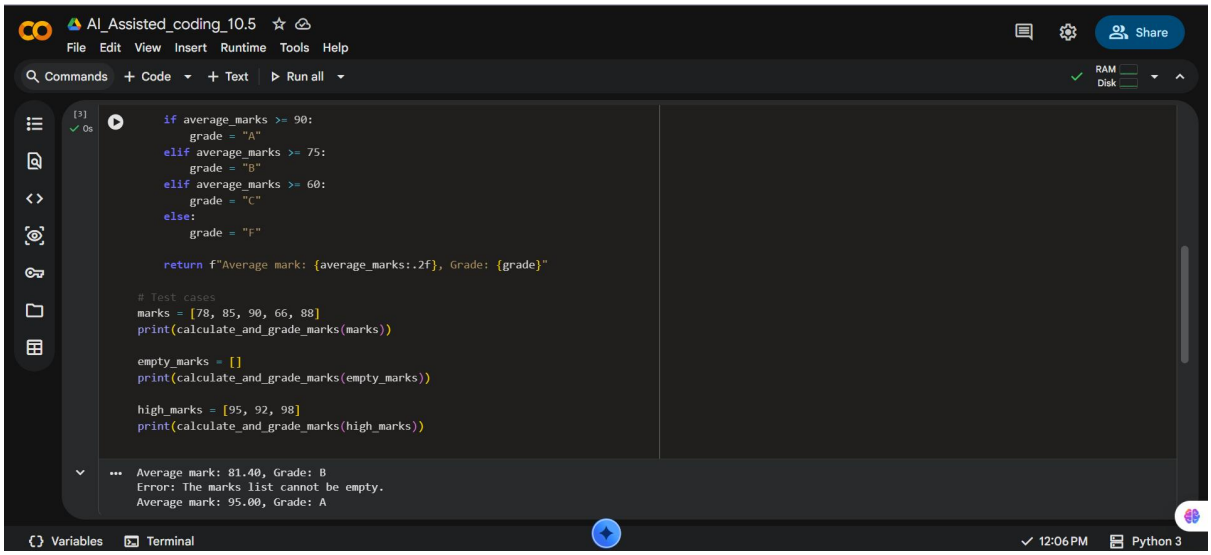
• Use AI to refactor the code to follow PEP 8 standards.

• Add meaningful variable names, functions, and comments.

• Add basic input validation and documentation.

OUTPUT:



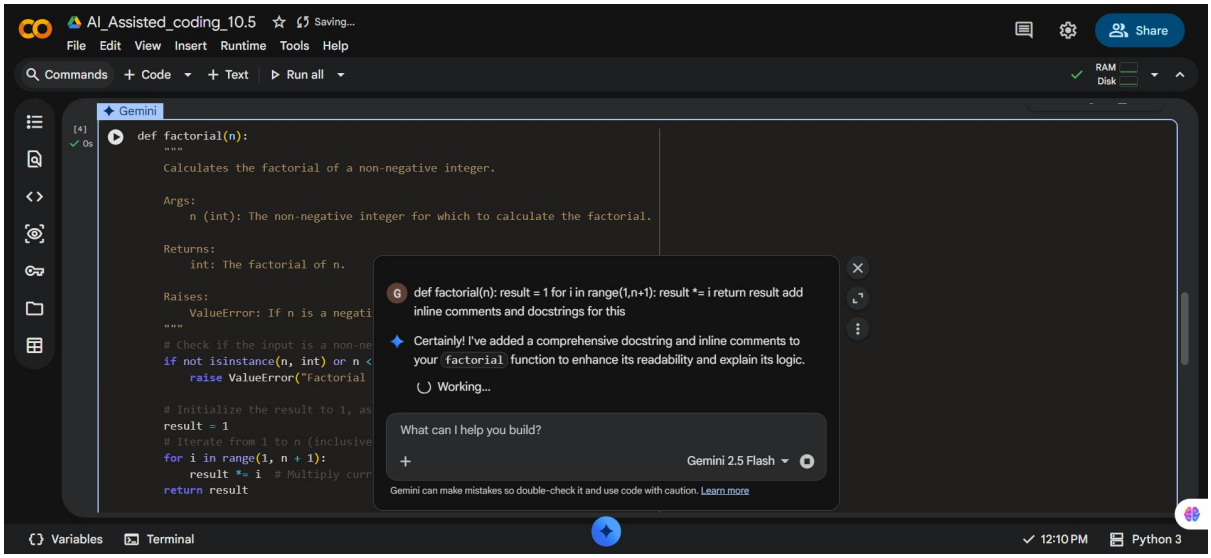


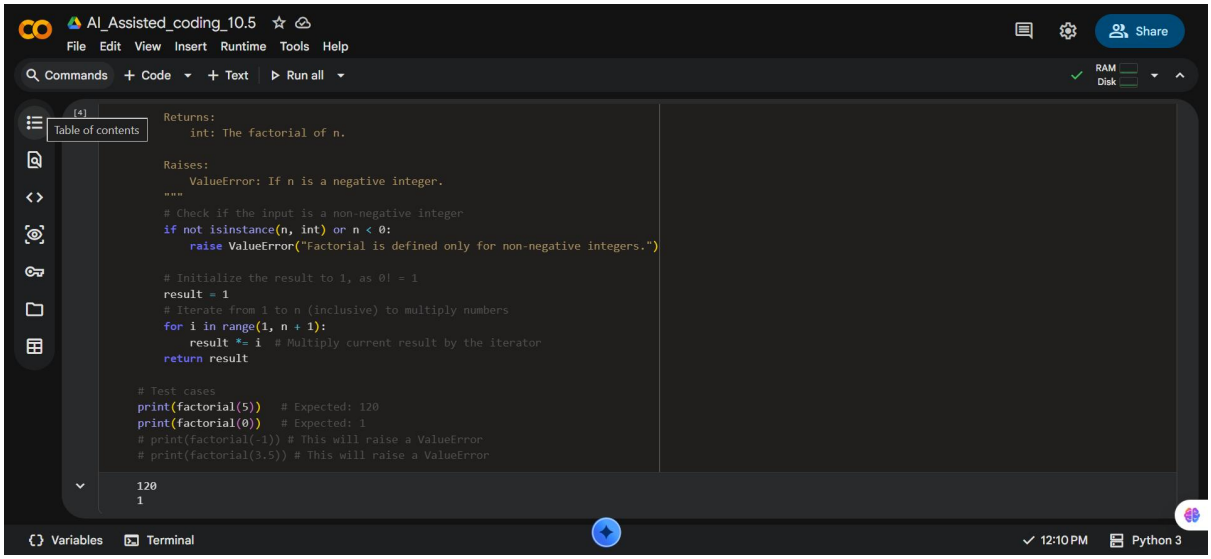
Task Description - 4: Use AI to add docstrings and inline comments

to the following function.

```
def factorial(n):
    result = 1
    for i in range(1,n+1):
        result *= i
    return result
```

OUTPUT:





Task Description - 5: Password Validation System (Enhanced)

The following Python program validates a password using only a minimum length check, which is insufficient for real-world security requirements.

```
pwd = input("Enter password: ")
if len(pwd) >= 8:
    print("Strong")
```

```
else:
    print("Weak")
```

Task:

1. Enhance password validation using AI assistance to include multiple security rules such as:

o Minimum length requirement

o Presence of at least one uppercase letter

o Presence of at least one lowercase letter

o Presence of at least one digit

o Presence of at least one special character

2. Refactor the program to:

o Use meaningful variable and function names

o Follow PEP 8 coding standards

o Include inline comments and a docstring

3. Analyze the improvements by comparing the original and AI-enhanced versions in terms of:

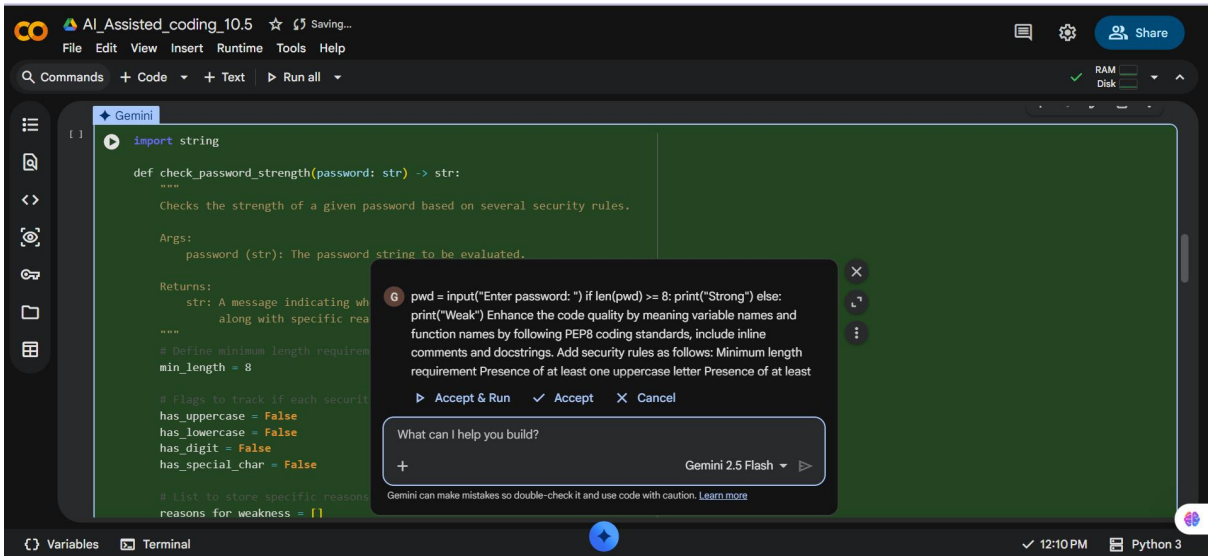
o Code readability and structure

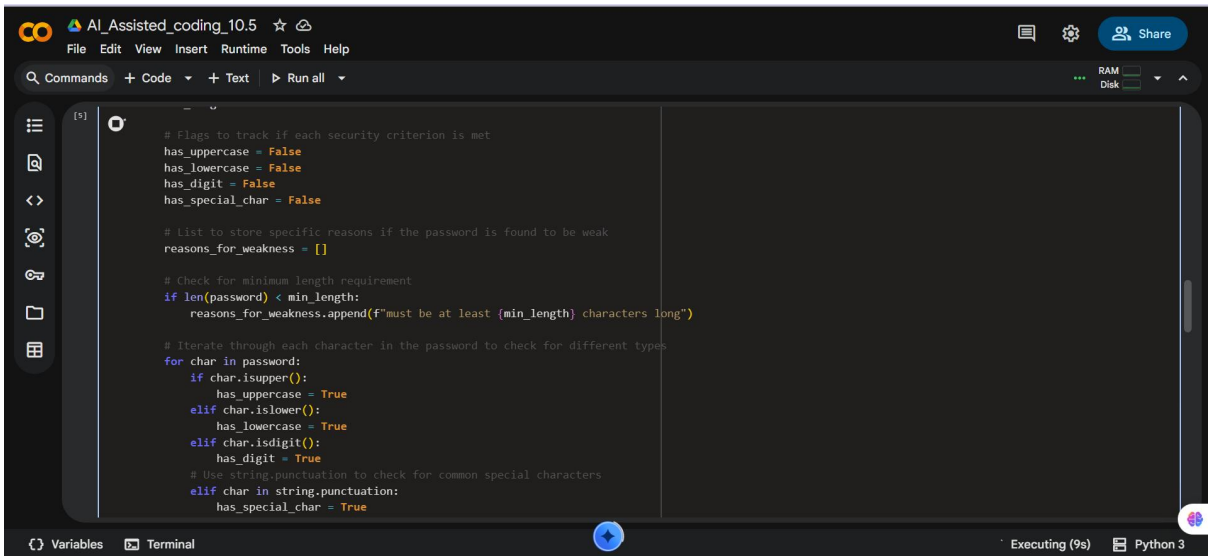
o Maintainability and reusability

o Security strength and robustness

4. Justify the AI-generated changes, explaining why each added rule and refactoring decision improves the overall quality of the program.

OUTPUT:


AI_Assisted_coding_10.5
Saving...
File Edit View Insert Runtime Tools Help
Share
Commands + Code + Text Run all
RAM Disk
Gemini
import string
def check_password_strength(password: str) -> str:
"""
Checks the strength of a given password based on several security rules.
Args:
password (str): The password string to be evaluated.
Returns:
str: A message indicating wh
along with specific rea
"""
# Define minimum length requirem
min_length = 8
# Flags to track if each securit
has_uppercase = False
has_lowercase = False
has_digit = False
has_special_char = False
# List to store specific reasons
reasons for weakness = []
pwd = input("Enter password: ") if len(pwd) >= 8: print("Strong") else: print("Weak") Enhance the code quality by meaning variable names and function names by following PEP8 coding standards, include inline comments and docstrings. Add security rules as follows: Minimum length requirement Presence of at least one uppercase letter Presence of at least
Accept & Run
Accept
Cancel
What can I help you build?
Gemini 2.5 Flash
Gemini can make mistakes so double-check it and use code with caution. Learn more
Variables
Terminal
12:10 PM
Python 3


AI_Assisted_coding_10.5
File Edit View Insert Runtime Tools Help
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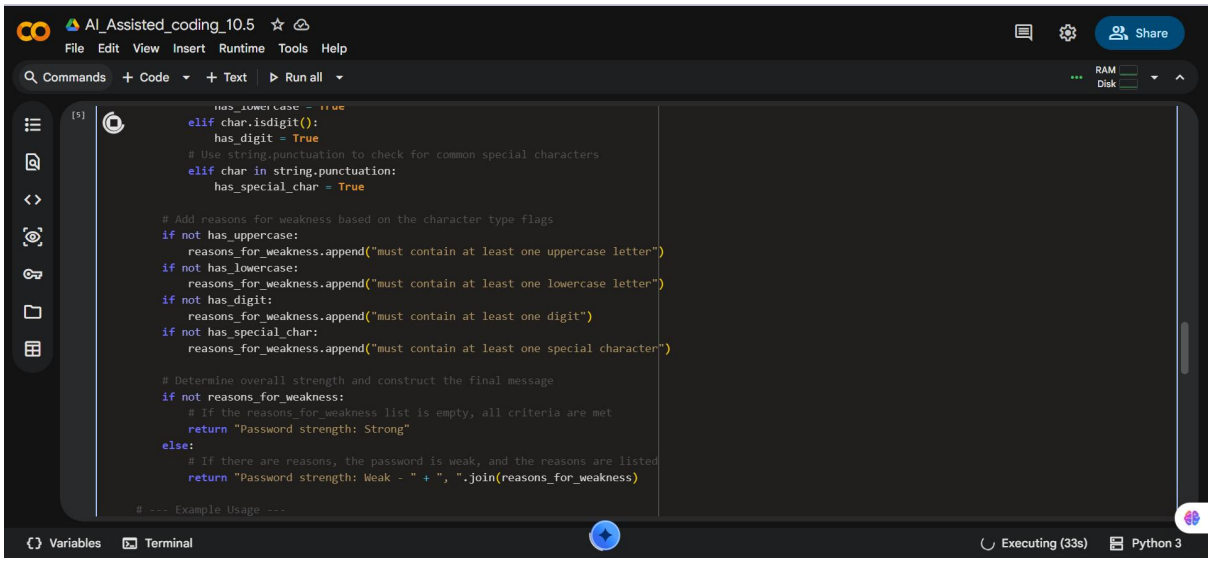
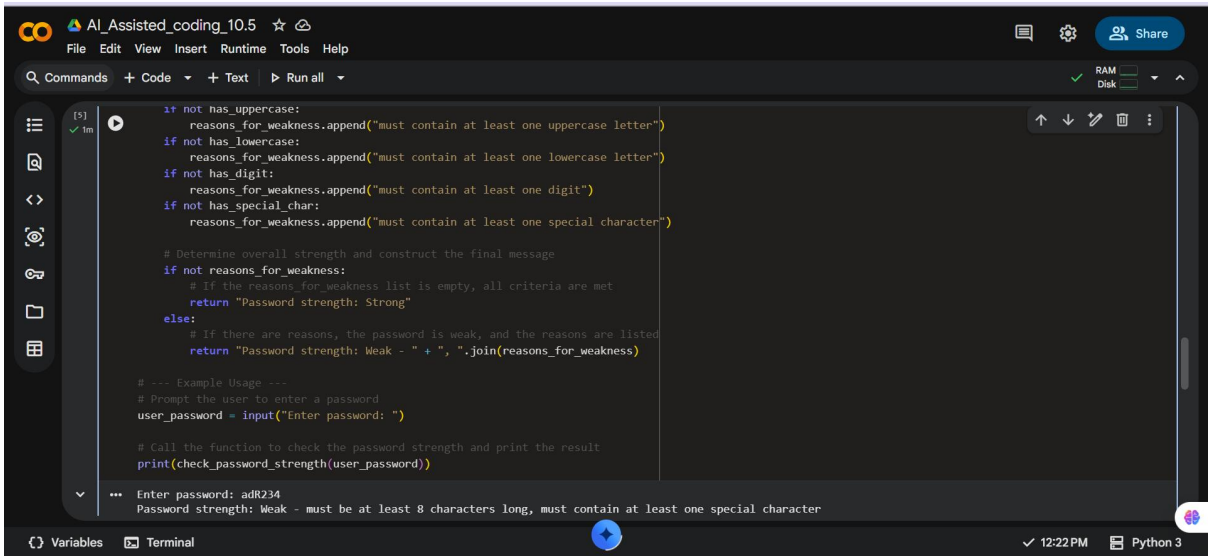
RAM Disk
# Flags to track if each security criterion is met
has_uppercase = False
has_lowercase = False
has_digit = False
has_special_char = False
# List to store specific reasons if the password is found to be weak
reasons_for_weakness = []
# Check for minimum length requirement
if len(password) < min_length:
reasons_for_weakness.append(f"must be at least {min_length} characters long")
# Iterate through each character in the password to check for different types
for char in password:
if char.isupper():
has_uppercase = True
elif char.islower():
has_lowercase = True
elif char.isdigit():
has_digit = True
# Use string.punctuation to check for common special characters
elif char in string.punctuation:
has_special_char = True
Variables
Terminal
Executing (9s)
Python 3


AI_Assisted_coding_10.5
File Edit View Insert Runtime Tools Help
Share
Commands + Code + Text Run all
RAM Disk
elif char.isdigit():
has_digit = True
# Use string.punctuation to check for common special characters
elif char in string.punctuation:
has_special_char = True
# Add reasons for weakness based on the character type flags
if not has_uppercase:
reasons_for_weakness.append("must contain at least one uppercase letter")
if not has_lowercase:
reasons_for_weakness.append("must contain at least one lowercase letter")
if not has_digit:
reasons_for_weakness.append("must contain at least one digit")
if not has_special_char:
reasons_for_weakness.append("must contain at least one special character")
# Determine overall strength and construct the final message
if not reasons_for_weakness:
# If the reasons_for_weakness list is empty, all criteria are met
return "Password strength: Strong"
else:
# If there are reasons, the password is weak, and the reasons are listed
return "Password strength: Weak - " + ", ".join(reasons_for_weakness)
--- Example Usage ---
Variables
Terminal
Executing (33s)
Python 3


AI_Assisted_coding_10.5
File Edit View Insert Runtime Tools Help
Share
Commands + Code + Text Run all
RAM
Disk
[5]
1m
if not has_uppercase:
reasons_for_weakness.append("must contain at least one uppercase letter")
if not has_lowercase:
reasons_for_weakness.append("must contain at least one lowercase letter")
if not has_digit:
reasons_for_weakness.append("must contain at least one digit")
if not has_special_char:
reasons_for_weakness.append("must contain at least one special character")
# Determine overall strength and construct the final message
if not reasons_for_weakness:
# If the reasons_for_weakness list is empty, all criteria are met
return "Password strength: Strong"
else:
# If there are reasons, the password is weak, and the reasons are listed
return "Password strength: Weak - " + ", ".join(reasons_for_weakness)
# --- Example Usage ---
# Prompt the user to enter a password
user_password = input("Enter password: ")
# Call the function to check the password strength and print the result
print(check_password_strength(user_password))
Enter password: adR234
Password strength: Weak - must be at least 8 characters long, must contain at least one special character
Variables
Terminal
12:22 PM
Python 3