AI ASSISTED CODING

ASSIGNMENT-7.2

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BATCH : 34

Task 1 – Runtime Error Due to Invalid Input Type

- A Python program accepts user input and performs arithmetic operations. However, the program throws a runtime error because the input is treated as a string instead of a numeric type.

Example (Buggy Code):

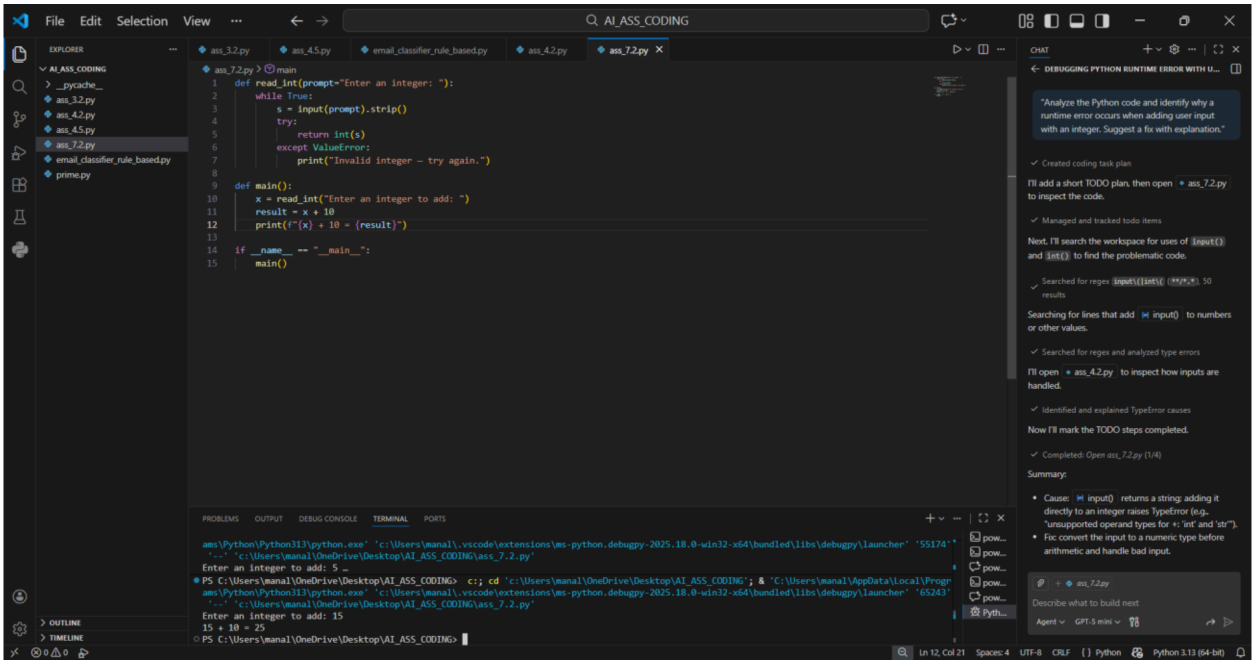
```
num = input("Enter a number: ")
result = num + 10
print(result)
```

- Task:

Use AI tools to identify the cause of the runtime error and modify the program so it executes correctly.

Expected Output -1:

- AI converts the input to the appropriate numeric type and eliminates the runtime error.



```python
def read_int(prompt="Enter an integer: "):
    while True:
        s = input(prompt).strip()
        try:
            return int(s)
        except ValueError:
            print("Invalid integer – try again.")

def main():
    x = read_int("Enter an integer to add: ")
    result = x + 10
    print(f"{x} + 10 = {result}")

if __name__ == "__main__":
    main()
```

```
ams\Python\Python313\python.exe' 'c:\Users\manal\.vscode\extensions\ms-python.debugpy-2025.18.0-win32-x64\bundled\libs\debugpy\launcher' '55174'
 '--' 'c:\Users\manal\OneDrive\Desktop\AI_ASS_CODING\ass_7.2.py'
Enter an integer to add: 5 _
PS C:\Users\manal\OneDrive\Desktop\AI_ASS_CODING>  c:; cd 'c:\Users\manal\OneDrive\Desktop\AI_ASS_CODING'; & 'C:\Users\manal\AppData\Local\Progr
ams\Python\Python313\python.exe' 'c:\Users\manal\.vscode\extensions\ms-python.debugpy-2025.18.0-win32-x64\bundled\libs\debugpy\launcher' '65243'
 '--' 'c:\Users\manal\OneDrive\Desktop\AI_ASS_CODING\ass_7.2.py'
Enter an integer to add: 15
15 + 10 = 25
PS C:\Users\manal\OneDrive\Desktop\AI_ASS_CODING>
```

"Analyze the Python code and identify why a runtime error occurs when adding user input with an integer. Suggest a fix with explanation."

✓ Created coding task plan

I'll add a short TODO plan, then open ass_7.2.py to inspect the code.

✓ Managed and tracked todo items

Next, I'll search the workspace for uses of `input()` and `int()` to find the problematic code.

✓ Searched for regex `input\(|int\(` (`**/*.*`), 50 results

Searching for lines that add input() to numbers or other values.

✓ Searched for regex and analyzed type errors

I'll open ass_4.2.py to inspect how inputs are handled.

✓ Identified and explained TypeError causes

Now I'll mark the TODO steps completed.

✓ Completed: *Open ass_7.2.py* (1/4)

Summary:

- Cause: input() returns a string; adding it directly to an integer raises TypeError (e.g., "unsupported operand types for +: 'int' and 'str'").
- Fix: convert the input to a numeric type before arithmetic and handle bad input.

Task 2 – Incorrect Function Return Value

A function is designed to calculate the square of a number, but it does not

return the computed result properly.

Example (Buggy Code):

```
def square(n):

result = n * n
```

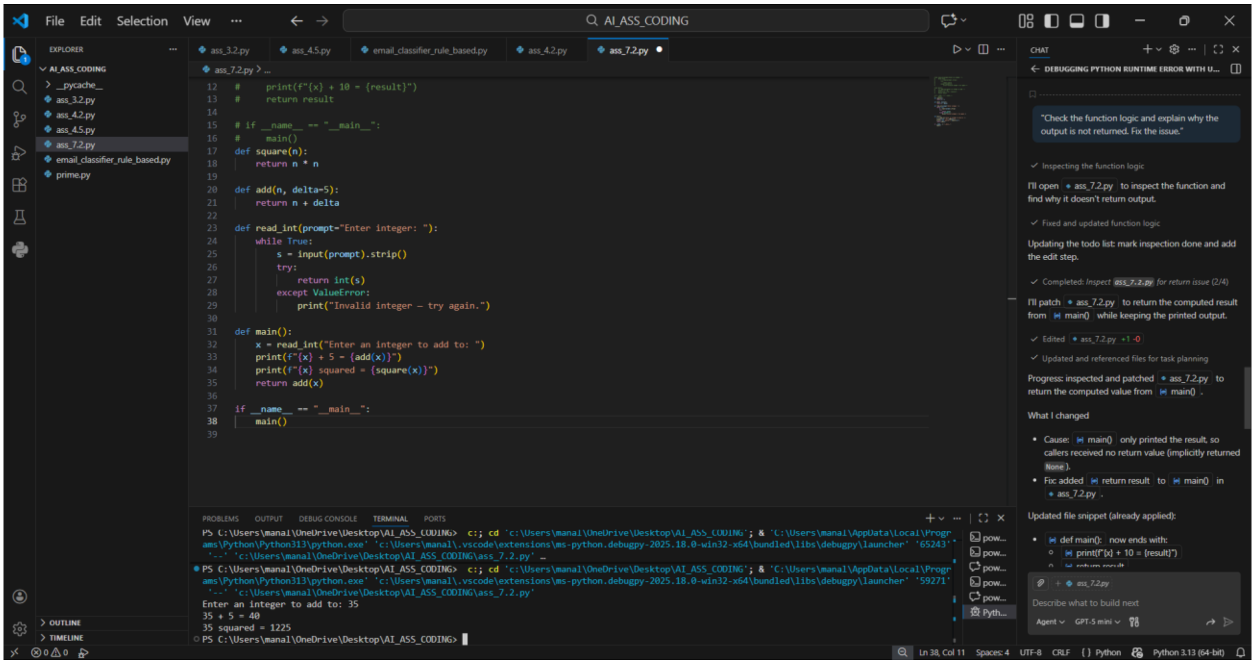
Task:

Use AI assistance to analyze the function and ensure the correct value is

returned.

Expected Output -2:

AI fixes the missing return statement and the function returns the correct output.



```python
#     print(f"{x} + 10 = {result}")
#     return result

# if __name__ == "__main__":
#     main()
def square(n):
    return n * n

def add(n, delta=5):
    return n + delta

def read_int(prompt="Enter integer: "):
    while True:
        s = input(prompt).strip()
        try:
            return int(s)
        except ValueError:
            print("Invalid integer — try again.")

def main():
    x = read_int("Enter an integer to add to: ")
    print(f"{x} + 5 = {add(x)}")
    print(f"{x} squared = {square(x)}")
    return add(x)

if __name__ == "__main__":
    main()
```

```
PS C:\Users\manal\OneDrive\Desktop\AI_ASS_CODING>  c:; cd 'c:\Users\manal\OneDrive\Desktop\AI_ASS_CODING'; & 'C:\Users\manal\AppData\Local\Progr
ams\Python\Python313\python.exe' 'c:\Users\manal\.vscode\extensions\ms-python.debugpy-2025.18.0-win32-x64\bundled\libs\debugpy\launcher' '65243'
 '--' 'c:\Users\manal\OneDrive\Desktop\AI_ASS_CODING\ass_7.2.py' …
PS C:\Users\manal\OneDrive\Desktop\AI_ASS_CODING>  c:; cd 'c:\Users\manal\OneDrive\Desktop\AI_ASS_CODING'; & 'C:\Users\manal\AppData\Local\Progr
ams\Python\Python313\python.exe' 'c:\Users\manal\.vscode\extensions\ms-python.debugpy-2025.18.0-win32-x64\bundled\libs\debugpy\launcher' '59271'
 '--' 'c:\Users\manal\OneDrive\Desktop\AI_ASS_CODING\ass_7.2.py'
Enter an integer to add to: 35
35 + 5 = 40
35 squared = 1225
PS C:\Users\manal\OneDrive\Desktop\AI_ASS_CODING> 
```

"Check the function logic and explain why the output is not returned. Fix the issue."

✓ Inspecting the function logic

I'll open ass_7.2.py to inspect the function and find why it doesn't return output.

✓ Fixed and updated function logic

Updating the todo list: mark inspection done and add the edit step.

✓ Completed: *Inspect* `ass_7.2.py` *for return issue* (2/4)

I'll patch ass_7.2.py to return the computed result from main() while keeping the printed output.

✓ Edited ass_7.2.py +1 -0

✓ Updated and referenced files for task planning

Progress: inspected and patched ass_7.2.py to return the computed value from main() .

What I changed

- Cause: main() only printed the result, so callers received no return value (implicitly returned `None`).
- Fix: added return result to main() in ass_7.2.py .

Updated file snippet (already applied):

- def main(): now ends with:
    - print(f"{x} + 10 = {result}")

ass_7.2.py

Describe what to build next

Agent
GPT-5 mini

Task 3 – IndexError in List Traversal

A Python program iterates over a list using incorrect index limits, causing an IndexError.

Example (Buggy Code):

```
numbers = [10, 20, 30]

for i in range(0, len(numbers)+1):

print(numbers[i])
```

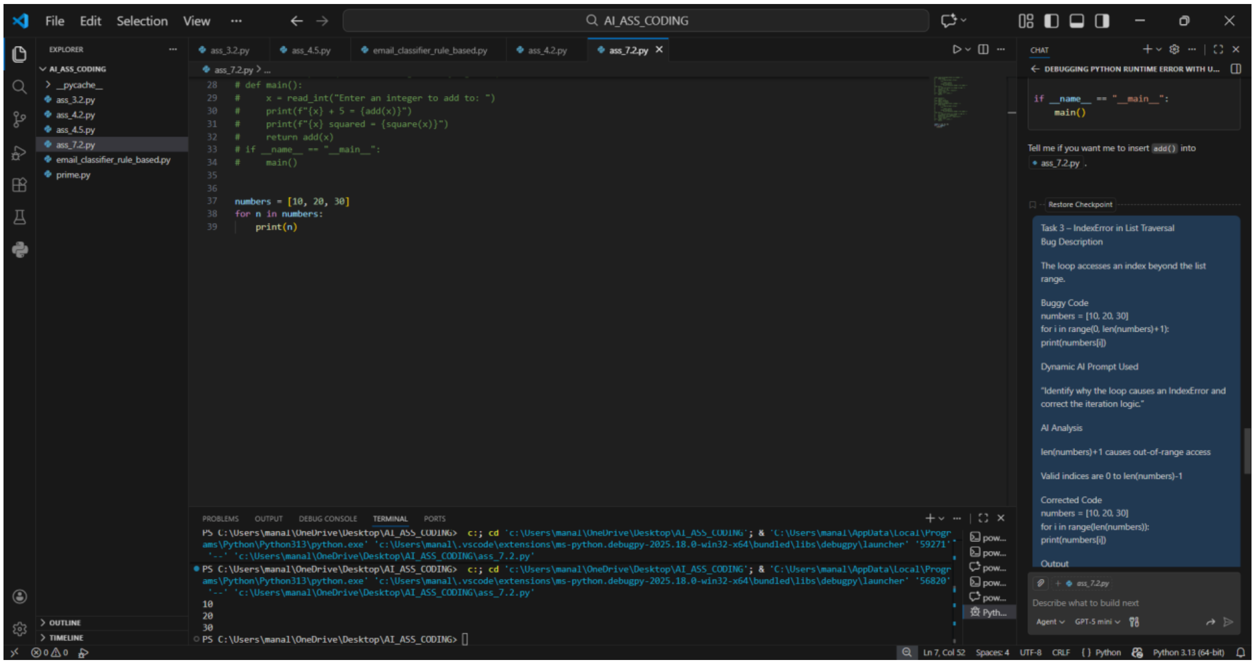
Task:

Use AI to identify the incorrect loop boundary and correct the iteration

logic.

Expected Output -3:

AI fixes the loop condition and prevents out-of-range list access.



```python
# def main():
#     x = read_int("Enter an integer to add to: ")
#     print(f"{x} + 5 = {add(x)}")
#     print(f"{x} squared = {square(x)}")
#     return add(x)
# if __name__ == "__main__":
#     main()


numbers = [10, 20, 30]
for n in numbers:
    print(n)
```

```
PS C:\Users\manal\OneDrive\Desktop\AI_ASS_CODING>  c:; cd 'c:\Users\manal\OneDrive\Desktop\AI_ASS_CODING'; & 'C:\Users\manal\AppData\Local\Progr
ams\Python\Python313\python.exe' 'c:\Users\manal\.vscode\extensions\ms-python.debugpy-2025.18.0-win32-x64\bundled\libs\debugpy\launcher' '59271'
 '--' 'c:\Users\manal\OneDrive\Desktop\AI_ASS_CODING\ass_7.2.py'
PS C:\Users\manal\OneDrive\Desktop\AI_ASS_CODING>  c:; cd 'c:\Users\manal\OneDrive\Desktop\AI_ASS_CODING'; & 'C:\Users\manal\AppData\Local\Progr
ams\Python\Python313\python.exe' 'c:\Users\manal\.vscode\extensions\ms-python.debugpy-2025.18.0-win32-x64\bundled\libs\debugpy\launcher' '56820'
 '--' 'c:\Users\manal\OneDrive\Desktop\AI_ASS_CODING\ass_7.2.py'
10
20
30
PS C:\Users\manal\OneDrive\Desktop\AI_ASS_CODING> 
```

```python
if __name__ == "__main__":
    main()
```

Tell me if you want me to insert `add()` into ass_7.2.py .

Task 3 – IndexError in List Traversal
Bug Description

The loop accesses an index beyond the list range.

Buggy Code
numbers = [10, 20, 30]
for i in range(0, len(numbers)+1):
print(numbers[i])

Dynamic AI Prompt Used

"Identify why the loop causes an IndexError and correct the iteration logic."

AI Analysis

len(numbers)+1 causes out-of-range access

Valid indices are 0 to len(numbers)-1

Corrected Code
numbers = [10, 20, 30]
for i in range(len(numbers)):
print(numbers[i])

Output

Task 4 – Uninitialized Variable Usage

A program uses a variable in a calculation before assigning it any value.

Example (Buggy Code):

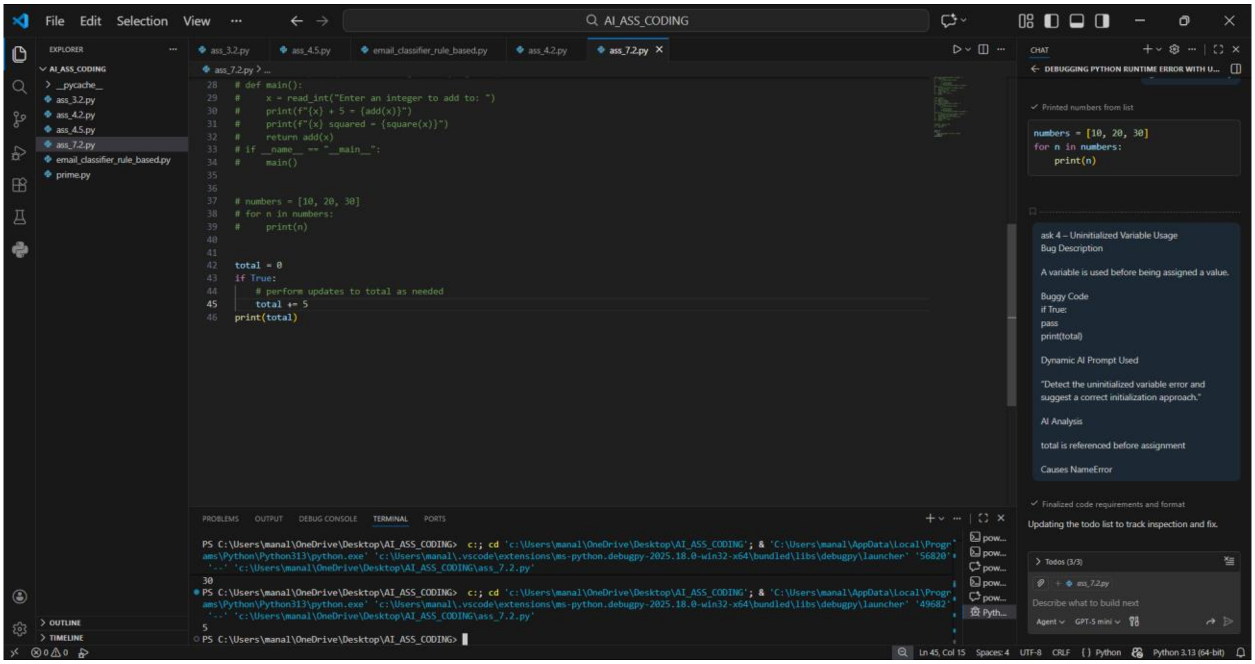
```
if True:
pass
print(total)
```

Task:

Use AI tools to detect the uninitialized variable and correct the program.

Expected Output -4:

AI initializes the variable correctly before it is used


File Edit Selection View
AI_ASS_CODING
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ass_3.2.py
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ass_4.5.py
ass_7.2.py
email_classifier_rule_based.py
prime.py
OUTLINE
TIMELINE
ass_3.2.py
ass_4.5.py
email_classifier_rule_based.py
ass_4.2.py
ass_7.2.py
ass_7.2.py > ...
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
Ln 45, Col 15 Spaces: 4 UTF-8 CRLF {} Python Python 3.13 (64-bit)
CHAT
DEBUGGING PYTHON RUNTIME ERROR WITH U...
Todos (3/3)
ass_7.2.py
Describe what to build next
Agent GPT-5 mini

```python
# def main():
#     x = read_int("Enter an integer to add to: ")
#     print(f"{x} + 5 = {add(x)}")
#     print(f"{x} squared = {square(x)}")
#     return add(x)
# if __name__ == "__main__":
#     main()


# numbers = [10, 20, 30]
# for n in numbers:
#     print(n)


total = 0
if True:
    # perform updates to total as needed
    total += 5
print(total)
```

```
PS C:\Users\manal\OneDrive\Desktop\AI_ASS_CODING>  c:; cd 'c:\Users\manal\OneDrive\Desktop\AI_ASS_CODING'; & 'C:\Users\manal\AppData\Local\Progr
ams\Python\Python313\python.exe' 'c:\Users\manal\.vscode\extensions\ms-python.debugpy-2025.18.0-win32-x64\bundled\libs\debugpy\launcher' '56820'
 '--' 'c:\Users\manal\OneDrive\Desktop\AI_ASS_CODING\ass_7.2.py'
30
PS C:\Users\manal\OneDrive\Desktop\AI_ASS_CODING>  c:; cd 'c:\Users\manal\OneDrive\Desktop\AI_ASS_CODING'; & 'C:\Users\manal\AppData\Local\Progr
ams\Python\Python313\python.exe' 'c:\Users\manal\.vscode\extensions\ms-python.debugpy-2025.18.0-win32-x64\bundled\libs\debugpy\launcher' '49682'
 '--' 'c:\Users\manal\OneDrive\Desktop\AI_ASS_CODING\ass_7.2.py'
5
PS C:\Users\manal\OneDrive\Desktop\AI_ASS_CODING>
```

✓ Printed numbers from list

```python
numbers = [10, 20, 30]
for n in numbers:
    print(n)
```

ask 4 – Uninitialized Variable Usage
Bug Description

A variable is used before being assigned a value.

Buggy Code
if True:
pass
print(total)

Dynamic AI Prompt Used

"Detect the uninitialized variable error and suggest a correct initialization approach."

AI Analysis

total is referenced before assignment

Causes NameError

✓ Finalized code requirements and format

Updating the todo list to track inspection and fix.

Task 5 – Logical Error in Student Grading System

A grading program assigns incorrect grades due to improper conditional logic.

Example (Buggy Code):

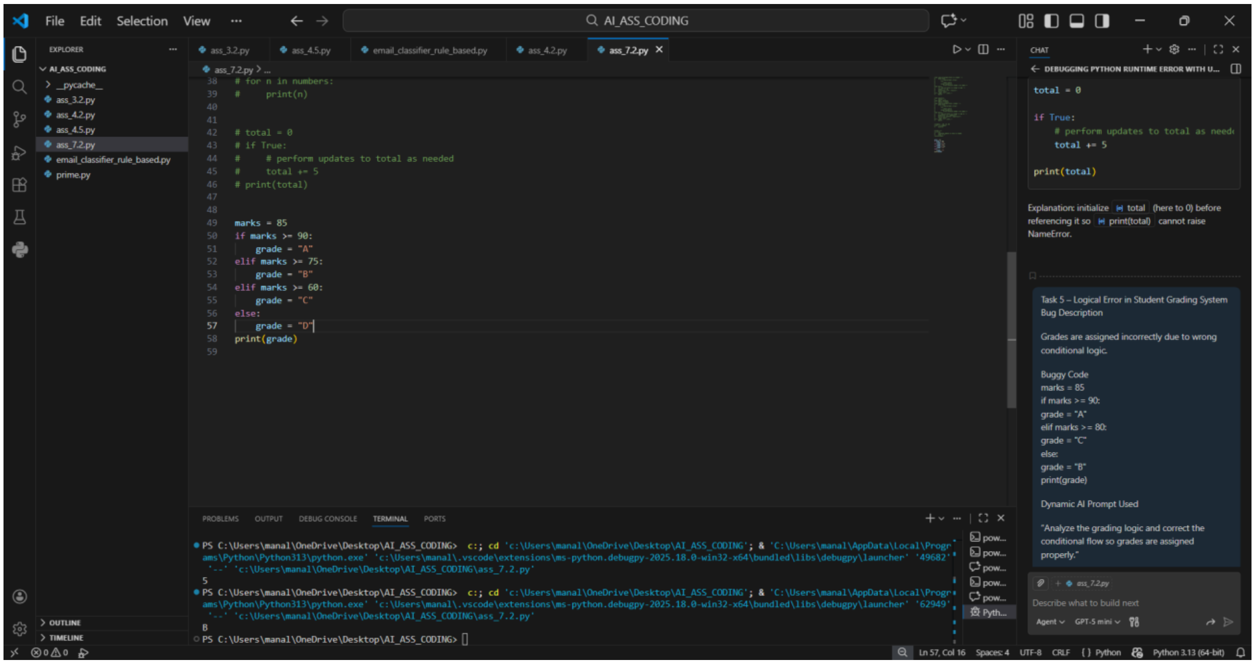
```
marks = 85
if marks >= 90:
grade = "A"
elif marks >= 80:
grade = "C"
else:
grade = "B"
print(grade)
```

Task:

Use AI to analyze the grading conditions and correct the logical flow.

Expected Output -5:

AI corrects the conditional logic so grades are assigned accurately.



```python
# for n in numbers:
#     print(n)


# total = 0
# if True:
#     # perform updates to total as needed
#     total += 5
# print(total)


marks = 85
if marks >= 90:
    grade = "A"
elif marks >= 75:
    grade = "B"
elif marks >= 60:
    grade = "C"
else:
    grade = "D"
print(grade)
```

```
PS C:\Users\manal\OneDrive\Desktop\AI_ASS_CODING>  c:; cd 'c:\Users\manal\OneDrive\Desktop\AI_ASS_CODING'; & 'C:\Users\manal\AppData\Local\Progr
ams\Python\Python313\python.exe' 'c:\Users\manal\.vscode\extensions\ms-python.debugpy-2025.18.0-win32-x64\bundled\libs\debugpy\launcher' '49682'
 '--' 'c:\Users\manal\OneDrive\Desktop\AI_ASS_CODING\ass_7.2.py'
5
PS C:\Users\manal\OneDrive\Desktop\AI_ASS_CODING>  c:; cd 'c:\Users\manal\OneDrive\Desktop\AI_ASS_CODING'; & 'C:\Users\manal\AppData\Local\Progr
ams\Python\Python313\python.exe' 'c:\Users\manal\.vscode\extensions\ms-python.debugpy-2025.18.0-win32-x64\bundled\libs\debugpy\launcher' '62949'
 '--' 'c:\Users\manal\OneDrive\Desktop\AI_ASS_CODING\ass_7.2.py'
B
PS C:\Users\manal\OneDrive\Desktop\AI_ASS_CODING>
```

```python
total = 0

if True:
    # perform updates to total as need
    total += 5

print(total)
```

Explanation: initialize total (here to 0) before referencing it so print(total) cannot raise NameError.

Task 5 – Logical Error in Student Grading System
Bug Description

Grades are assigned incorrectly due to wrong conditional logic.

Buggy Code
marks = 85
if marks >= 90:
grade = "A"
elif marks >= 80:
grade = "C"
else:
grade = "B"
print(grade)

Dynamic AI Prompt Used

"Analyze the grading logic and correct the conditional flow so grades are assigned properly."