

# **COURSE: AI ASSISTED CODING**

## **Lab 7: Error Debugging with AI: Systematic approaches to finding**

**NAME: PRAVALIKA MUTHOJU**

**BATCH : 34**

**BRANCH :CSE(AIML)**

### **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):**

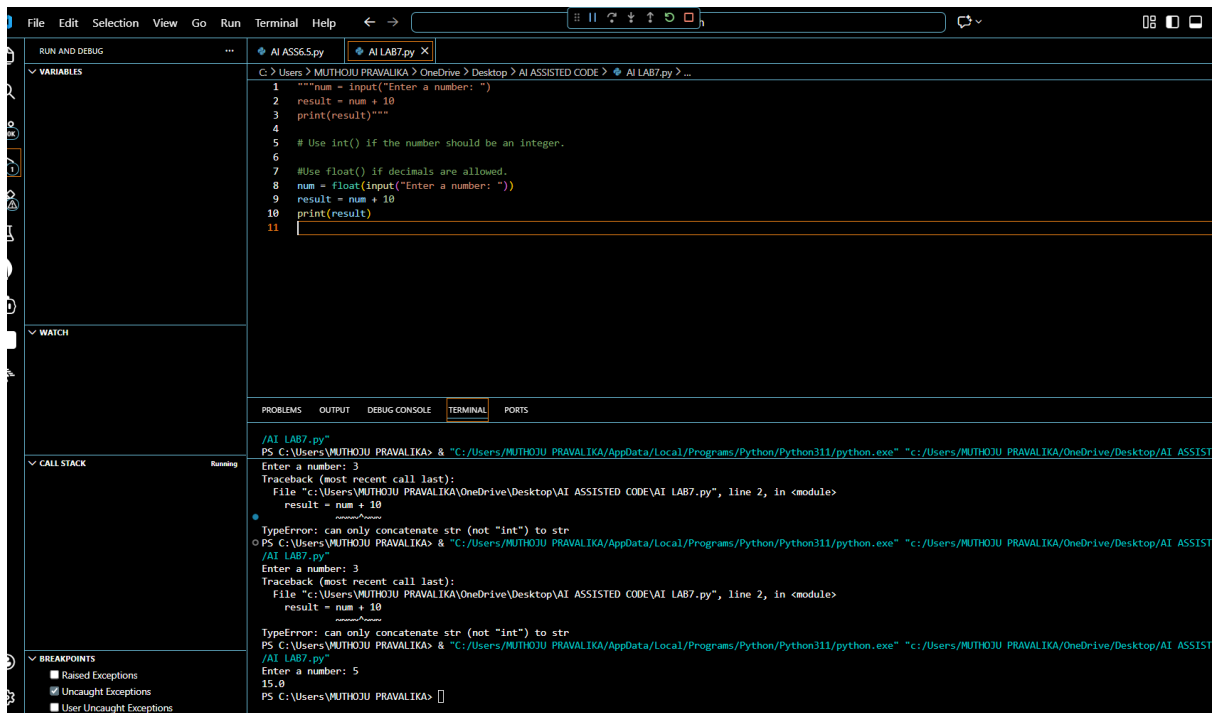
```
num = input("Enter a number: ")  
result = num + 10  
print(result)
```

#### **• 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.



## Task Description

### 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

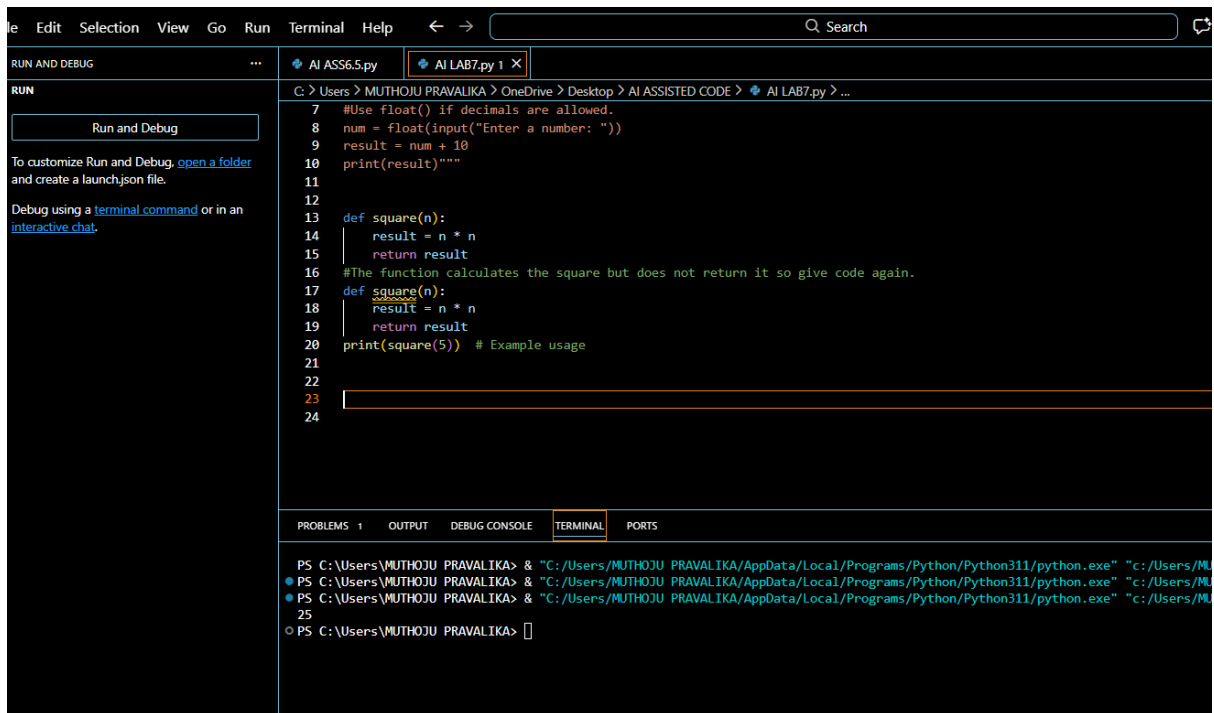
```

**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.



## Task Description

### 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.

```

C: > Users > MUTHOJU PRAVALIKA > OneDrive > Desktop > AI ASSISTED CODE > AI LAB7.py > ...
20 print(square(5)) # Example usage
21
22
23 numbers = [10, 20, 30]
24 for i in range(0, len(numbers)+1):
25     print(numbers[i])
26
27
28
29
30 numbers = [10, 20, 30]
31
32 for i in range(len(numbers)): # stops at len-1
33     print(numbers[i])
34

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```

● PS C:\Users\MUTHOJU PRAVALIKA> & "C:/Users/MUTHOJU PRAVALIKA/AppData/Local/Programs/Python/Python311/python.exe"
● PS C:\Users\MUTHOJU PRAVALIKA> & "C:/Users/MUTHOJU PRAVALIKA/AppData/Local/Programs/Python/Python311/python.exe"
25
● PS C:\Users\MUTHOJU PRAVALIKA> & "C:/Users/MUTHOJU PRAVALIKA/AppData/Local/Programs/Python/Python311/python.exe"
10
20
30
Traceback (most recent call last):
  File "c:\Users\MUTHOJU PRAVALIKA\OneDrive\Desktop\AI ASSISTED CODE\AI LAB7.py", line 25, in <module>
    print(numbers[i])
    ~~~~~^
IndexError: list index out of range
● PS C:\Users\MUTHOJU PRAVALIKA> & "C:/Users/MUTHOJU PRAVALIKA/AppData/Local/Programs/Python/Python311/python.exe"
File "c:\Users\MUTHOJU PRAVALIKA\OneDrive\Desktop\AI ASSISTED CODE\AI LAB7.py", line 25
    print(numbers[i])
    ~~~~~^
SyntaxError: unterminated triple-quoted string literal (detected at line 33)
PS C:\Users\MUTHOJU PRAVALIKA> & "C:/Users/MUTHOJU PRAVALIKA/AppData/Local/Programs/Python/Python311/python.exe"
● 10
● 20
● 30
○ PS C:\Users\MUTHOJU PRAVALIKA>

```

BREAKPOINTS

- ☐ Raised Exceptions
- ☒ Uncaught Exceptions
- ☐ User Uncaught Exceptions

## 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

```
31
32 for i in range(len(numbers)): # stops at len-1
33 |   print(numbers[i]) ""
34
35
36 ""if True:
37 |   pass
38 print(total)""
39
40
41
42 # Task 4 - Uninitialized Variable Fix
43 total = 0 # Initialize the variable before use
44
45 # Example operation
46 if True:
47 |   total += 5
48
49 print("Total:", total)
50
```

PROBLEMS OUTPUT DEBUG CONSOLE **TERMINAL** PORTS

```
PS C:\Users\MUTHOJU PRAVALIKA> & "C:/Users/MUTHOJU PRAVALIKA/AppData/Local/Programs/Python/Python39-64/Python.exe" -i
Traceback (most recent call last):
  File "c:\Users\MUTHOJU PRAVALIKA\OneDrive\Desktop\AI ASSISTED CODE\AI LAB7.py", line 38, in <module>
    print(total)
NameError: name 'total' is not defined
PS C:\Users\MUTHOJU PRAVALIKA> & "C:/Users/MUTHOJU PRAVALIKA/AppData/Local/Programs/Python/Python39-64/Python.exe" -i
Total: 5
PS C:\Users\MUTHOJU PRAVALIKA>
```

## Task Description

### 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.

The screenshot shows a Visual Studio Code editor window with a Python file named `AI LAB7.py` open. The file path is `C:\Users\MUTHOJU PRAVALIKA\OneDrive\Desktop\AI ASSISTED CODE\AI LAB7.py`. The code is a Python script for calculating grades based on marks. It includes a comment: `# Task 5 - Logical Error Fix in Grading System`. The script prompts the user to enter marks, converts the input to an integer, and then uses a series of conditional statements to assign a grade. The output window shows the execution of the script, where the user entered 98, and the program correctly output 'Grade: A'.

```
58 elif marks >= 80:
59     grade = "C"
60 else:
61     grade = "B"
62 print(grade)
63 """
64
65
66 # Task 5 - Logical Error Fix in Grading System
67 marks = int(input("Enter marks: ")) # Convert input to integer
68
69 if marks >= 90:
70     grade = "A"
71 elif marks >= 80:
72     grade = "B"
73 elif marks >= 70:
74     grade = "C"
75 else:
76     grade = "D"
77
78 print("Grade:", grade)
79
```

Terminal Output:

```
PS C:\Users\MUTHOJU PRAVALIKA> & "C:/Users/MUTHOJU PRAVALIKA/AppData/Local/Programs/Python/Python311/python.
C
PS C:\Users\MUTHOJU PRAVALIKA> & "C:/Users/MUTHOJU PRAVALIKA/AppData/Local/Programs/Python/Python311/python.
Enter marks: 98
Grade: A
PS C:\Users\MUTHOJU PRAVALIKA>
```