

## **AI ASSISTED CODING**

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B-34

### **LAB-7:**

#### **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.

The screenshot shows a Python development environment with the following details:

- File Bar:** File, Edit, Selection, View, Go, Run, Terminal, Help.
- Project Explorer:** AI ASSISTED CODE > AI LAB7.py
- Code Editor:**

```
C:\>Users\>MUTHOUJU PRAVALIKA> OneDrive > Desktop > AI ASSISTED CODE > AI LAB7.py > ...
1     ""num = input("Enter a number: ")
2     result = num + 10
3     print(result)"""
4
5     # Use int() if the number should be an integer.
6
7     # Use float() if decimals are allowed.
8     num = float(input("Enter a number: "))
9     result = num + 10
10    print(result)
11
```
- Variables:** None listed.
- Watch:** None listed.
- Terminal:**

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
/AI LAB7.py"
PS C:\Users\>MUTHOUJU PRAVALIKA> & "C:/Users/MUTHOUJU PRAVALIKA/AppData/Local/Programs/Python/Python311/python.exe" "c:/Users/MUTHOUJU PRAVALIKA/OneDrive/Desktop/AI ASSISTED CODE/AI LAB7.py"
Enter a number: 3
Traceback (most recent call last):
  File "<C:/Users/MUTHOUJU PRAVALIKA/OneDrive/Desktop/AI ASSISTED CODE/AI LAB7.py>", line 2, in <module>
    result = num + 10
  File "<C:/Users/MUTHOUJU PRAVALIKA/OneDrive/Desktop/AI ASSISTED CODE/AI LAB7.py>", line 2, in <module>
    result = num + 10
      ~~~~~
TypeError: can only concatenate str (not "int") to str
PS C:\Users\>MUTHOUJU PRAVALIKA> & "C:/Users/MUTHOUJU PRAVALIKA/AppData/Local/Programs/Python/Python311/python.exe" "c:/Users/MUTHOUJU PRAVALIKA/OneDrive/Desktop/AI ASSISTED CODE/AI LAB7.py"
Enter a number: 5
Traceback (most recent call last):
  File "<C:/Users/MUTHOUJU PRAVALIKA/OneDrive/Desktop/AI ASSISTED CODE/AI LAB7.py>", line 2, in <module>
    result = num + 10
  File "<C:/Users/MUTHOUJU PRAVALIKA/OneDrive/Desktop/AI ASSISTED CODE/AI LAB7.py>", line 2, in <module>
    result = num + 10
      ~~~~~
TypeError: can only concatenate str (not "int") to str
PS C:\Users\>MUTHOUJU PRAVALIKA> & "C:/Users/MUTHOUJU PRAVALIKA/AppData/Local/Programs/Python/Python311/python.exe" "c:/Users/MUTHOUJU PRAVALIKA/OneDrive/Desktop/AI ASSISTED CODE/AI LAB7.py"
Enter a number: 5.0
15.0
PS C:\Users\>MUTHOUJU PRAVALIKA>
```
- Call Stack:** None listed.
- Breakpoints:**
  - Raised Exceptions
  - Uncaught Exceptions
  - User Uncaught Exceptions

## 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.

The screenshot shows a code editor interface with a dark theme. At the top, there is a navigation bar with tabs for 'File', 'Edit', 'Selection', 'View', 'Go', 'Run', 'Terminal', and 'Help'. To the right of the tabs is a search bar with a magnifying glass icon. Below the navigation bar, there is a 'RUN AND DEBUG' section with a 'Run and Debug' button. A note says: 'To customize Run and Debug, open a folder and create a launch.json file.' Another note says: 'Debug using a terminal command or in an interactive chat.' The main area displays a Python script with code completion suggestions. The code is as follows:

```
C > Users > MUTHOJU PRAVALIKA > OneDrive > Desktop > AI ASSISTED CODE > AI LAB7.py > ...
7 #Use float() if decimals are allowed.
8 num = float(input("Enter a number: "))
9 result = num + 10
10 print(result)"""
11
12
13 def square(n):
14     result = n * n
15     return result
16 #The function calculates the square but does not return it so give code again.
17 def square(n):
18     result = n * n
19     return result
20 print(square(5)) # Example usage
21
22
23
24
```

At the bottom of the code editor, there is a tab bar with 'PROBLEMS 1', 'OUTPUT', 'DEBUG CONSOLE', 'TERMINAL' (which is selected), and 'PORTS'. The terminal tab shows the following command-line history:

```
PS C:\Users\MUTHOJU PRAVALIKA> & "C:/Users/MUTHOJU PRAVALIKA/AppData/Local/Programs/Python/Python311/python.exe" "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" "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" "c:/Users/MUTHOJU PRAVALIKA/AppData/Local/Programs/Python/Python311/python.exe"
25
○ PS C:\Users\MUTHOJU PRAVALIKA> []
```

## 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

```

TERMINAL

```

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])
           ^~~~~~^A
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> []

```

REAKPOINTS

- Raised Exceptions
- Uncaught Exceptions
- User Uncaught Exceptions

Indexing completed.

## 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

The screenshot shows a code editor interface with a dark theme. On the left, there's a sidebar with a 'Run and Debug' section containing instructions to maximize the run and debug view, open a folder, and use a launch.json file. The main area contains a Python script named 'AI LAB7.py'. The code includes a for loop, an if statement, and a print statement. Line 38 contains a syntax error: 'print(total)''' instead of 'print(total)'. The terminal tab at the bottom shows the command 'PS C:\Users\... & "C:/Users/MUTHOJU PRAVALIKA/AppData/Local/Programs/Python/Python...' followed by a traceback indicating a NameError for the variable 'total'. The terminal also shows the corrected output: 'Total: 5'.

```

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	<b>TERMINAL</b>	PORTS
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```

① PS C:\Users\... & "C:/Users/MUTHOJU PRAVALIKA/AppData/Local/Programs/Python/Python...
Traceback (most recent call last):
  File "c:/Users\...\\AI ASSISTED CODE\\AI LAB7.py", line 38, in <module>
    print(total)
           ^
NameError: name 'total' is not defined
● PS C:\Users\... & "C:/Users/MUTHOJU PRAVALIKA/AppData/Local/Programs/Python/Python...
Total: 5
○ PS C:\Users\...

```

## 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)

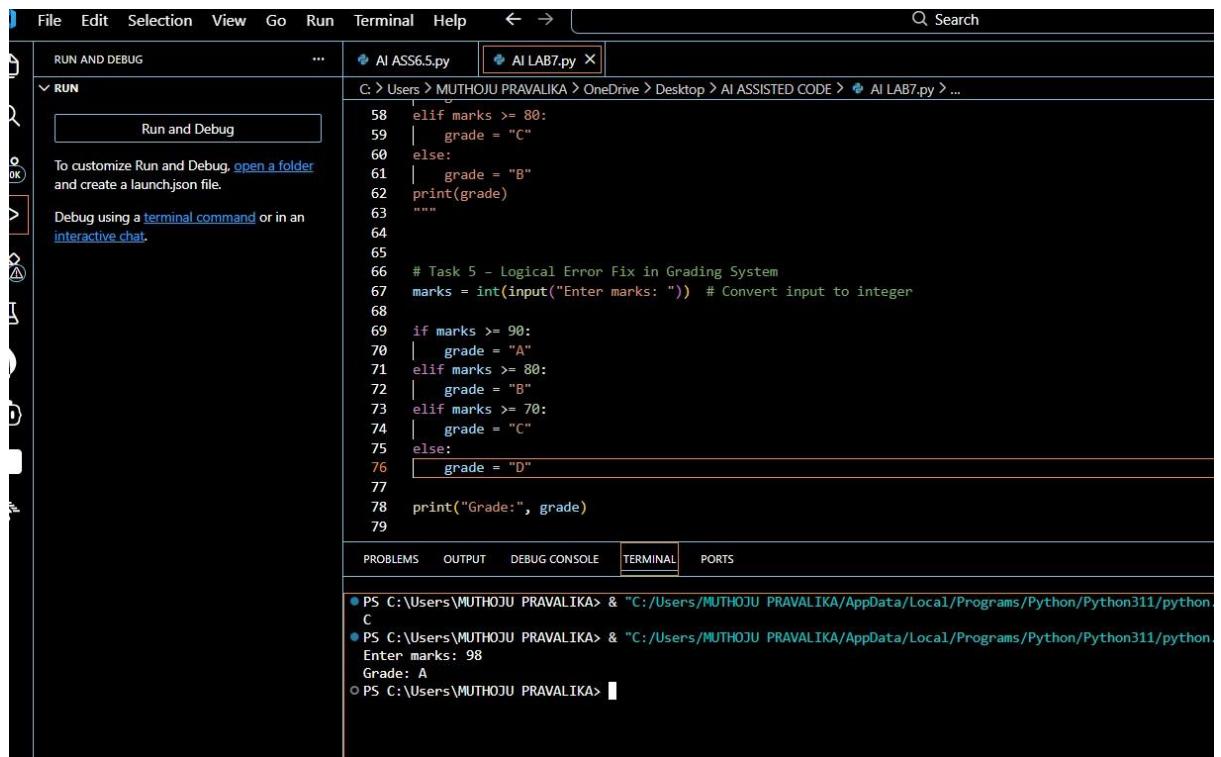
```

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 code editor interface with a dark theme. At the top, there is a menu bar with File, Edit, Selection, View, Go, Run, Terminal, Help, and a search bar. Below the menu is a toolbar with icons for RUN AND DEBUG, RUN, and other development tools. A sidebar on the left contains icons for file operations like Open, Save, and Find. The main area displays a Python script named AI LAB7.py. The code uses nested if-elif statements to determine a grade based on marks. The terminal tab at the bottom shows the command line output where the script is run and a mark of 98 is entered, resulting in the grade 'A' being printed. The status bar at the bottom indicates the current file is AI LAB7.py.

```
File Edit Selection View Go Run Terminal Help ← → Q Search
RUN AND DEBUG ... AI ASS6.5.py AI LAB7.py X
C: > Users > MUTHOJU PRAVALIKA > OneDrive > Desktop > AI ASSISTED CODE > AI LAB7.py > ...
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
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
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>
```