

School of Computer Science and Artificial Intelligence

Lab Assignment # 7.5

Program : B. Tech (CSE)

Specialization : AIML

Course Title : AI Assisted

Coding Course Code:

23CS002PC304

Semester : VI

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Batch No: 33

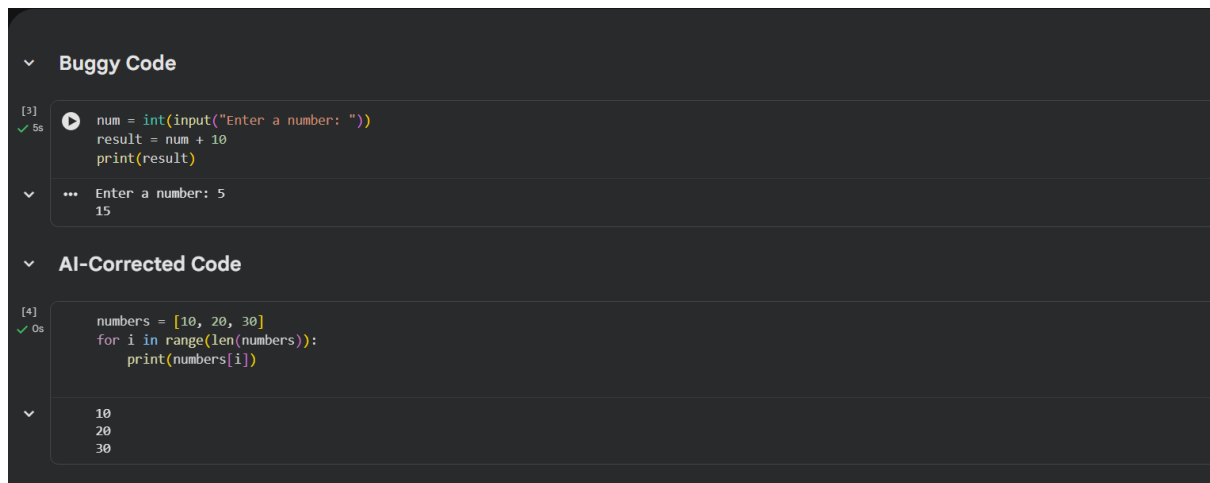
Lab 7: Error Debugging with AI (Week 4 – Tuesday)

Topic: Systematic approaches to finding and fixing bugs using AI

Task 1 – Runtime Error Due to Invalid Input Type

Bug Analysis (AI Explanation)

- `input()` always returns a **string**
- Adding a string and an integer causes a **TypeError**



The screenshot shows a code editor with two sections. The first section, titled 'Buggy Code', contains a Python script that prompts the user for a number and attempts to add it to 10. The second section, titled 'AI-Corrected Code', shows the same script but with the input converted to an integer using `int()`. The output of the corrected code shows the numbers 10, 20, and 30.

```
[3]
✓ 5s
num = int(input("Enter a number: "))
result = num + 10
print(result)

... Enter a number: 5
15
```

```
[4]
✓ 0s
numbers = [10, 20, 30]
for i in range(len(numbers)):
    print(numbers[i])

10
20
30
```

Expected Output – 1

- AI converts user input to an integer
 - Runtime error is eliminated
-

Task 2 – Incorrect Function Return Value

Bug Analysis (AI Explanation)

- Function calculates the square but **does not return it**
- Without return, Python returns `None`

▼

Buggy Code

[9]
✓ Os
def square(n):
 result = n * n

+ Code + Text

▼

AI-Corrected Code

[10]
✓ Os
def square(n):
 result = n * n
 return result

Expected Output – 2

- Function correctly returns the square of the number

Task 3 – IndexError in List Traversal

Bug Analysis (AI Explanation)

- range(0, len(numbers)+1) goes **one step too far**
- Causes IndexError: list index out of range

✓

Buggy Code

2]
Os
numbers = [10, 20, 30]
for i in range(0, len(numbers)+1):
 print(numbers[i])

...

10
20
30

Traceback (most recent call last)
/tmp/ipython-input-2172525831.py in <cell line: 0>()
1 numbers = [10, 20, 30]
2 for i in range(0, len(numbers)+1):
----> 3 print(numbers[i])

IndexError: list index out of range

Next steps: Explain error

▼

AI-Corrected Code

[4]
✓ Os
numbers = [10, 20, 30]
for i in range(len(numbers)):
 print(numbers[i])

▼

...

10
20
30

+ Code + Text

Expected Output – 3

- Loop boundary corrected
- Prevents out-of-range access

Task 4 – Uninitialized Variable Usage

Bug Analysis (AI Explanation)

- Variable total is **used before assignment**
- Causes NameError

▼ Buggy Code

[5]
0s

▶

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

▼

...

Traceback (most recent call last)

/tmp/ipython-input-3608487366.py in <cell line: 0>()
1 if True:
2 pass
----> 3 print(total)

NameError: name 'total' is not defined

Next steps:

Explain error

▼ AI-Corrected Code

[6]
✓ 0s

▶

```
total = 0
if True:
    pass
print(total)
```

▼

...

0

+ Code

+ Text

Expected Output – 4

- Variable initialized before use
- Program runs safely

Task 5 – Logical Error in Student Grading System

Bug Analysis (AI Explanation)

- Logical order of grading conditions is incorrect
- marks ≥ 80 wrongly assigns grade **C**
- else block assigns **B** incorrectly

Buggy Code

[7]
✓ 0s

▶

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

▼

...

C

▼ AI-Corrected Code

```
✓ AI-Corrected Code

[8] ✓ Os ▶ marks = 85
    if marks >= 90:
        grade = "A"
    elif marks >= 80:
        grade = "B"
    else:
        grade = "C"
    print(grade)

... B
```

Expected Output – 5

- Correct grade is assigned based on marks
- Logical flow fixed

Summary: AI-Assisted Debugging Strategies Used

- ✓ Type conversion for runtime errors
- ✓ Return statement validation
- ✓ Loop boundary correction
- ✓ Variable initialization checks
- ✓ Logical condition reordering