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

Academic Session : 2025-2026

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Enrollment No. : 2303A52100

Batch No. : 33

Date : 03/02/26

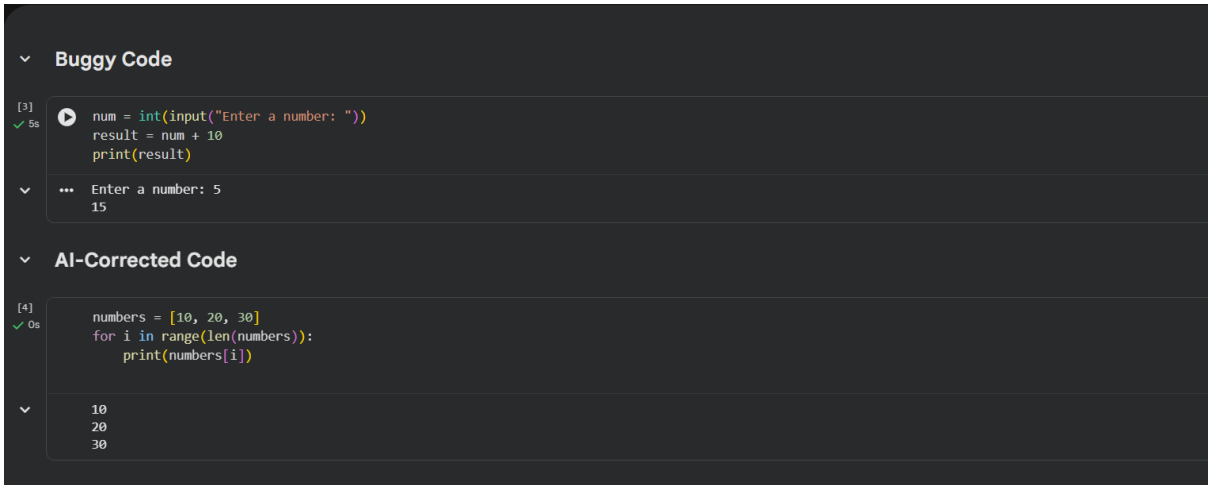
Lab 7: Error Debugging with AI (Week 4 – Tuesday)

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**



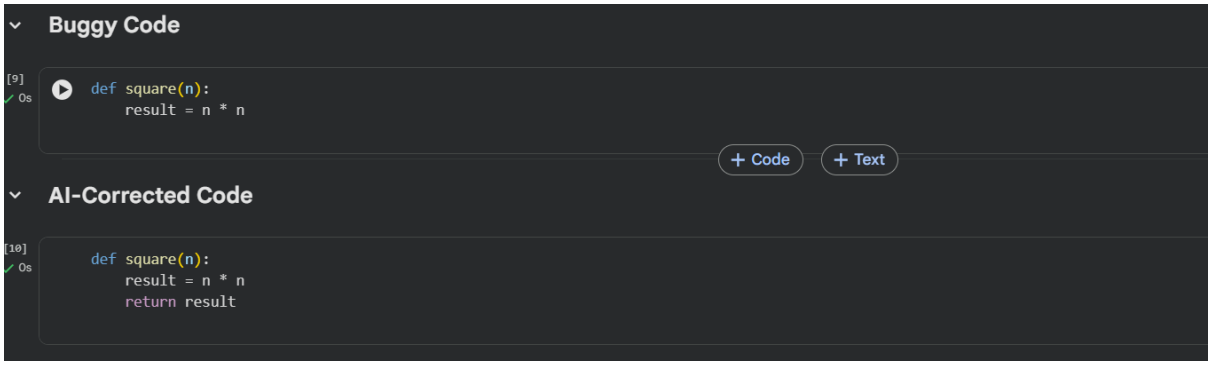
Expected Output – 1

- 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

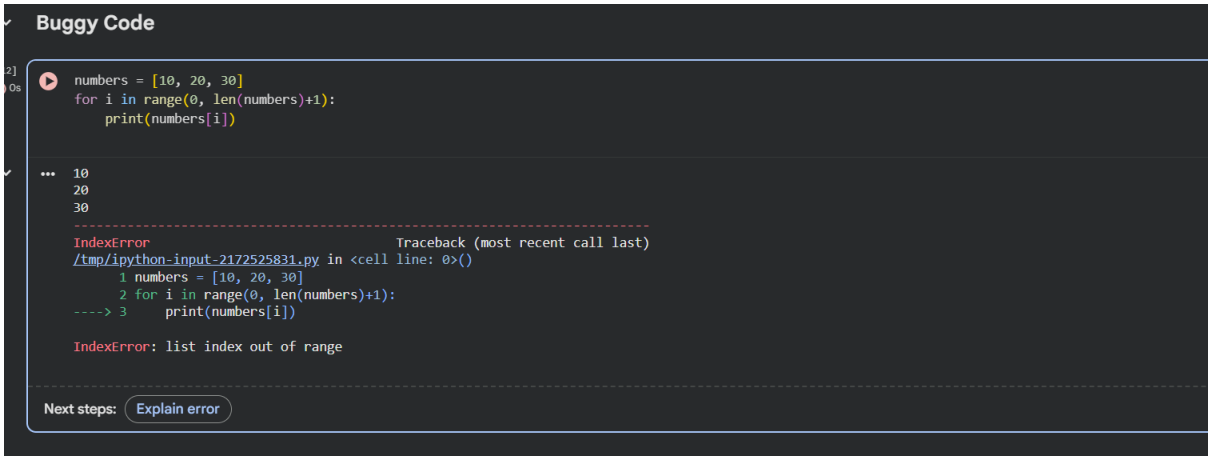


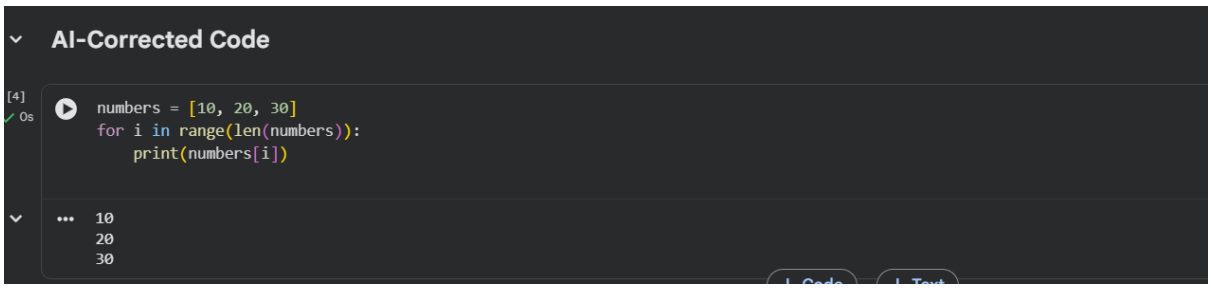
Expected Output – 2

- 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





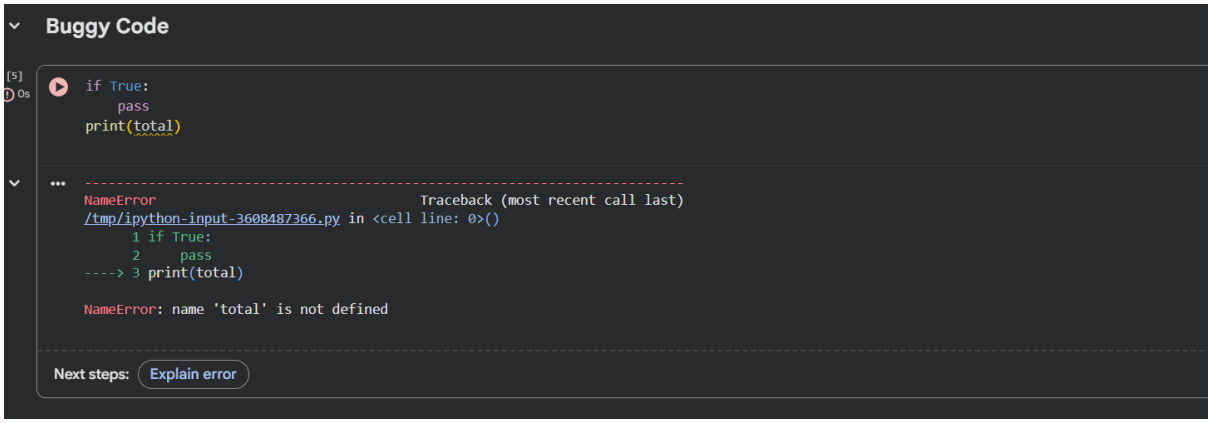
Expected Output – 3

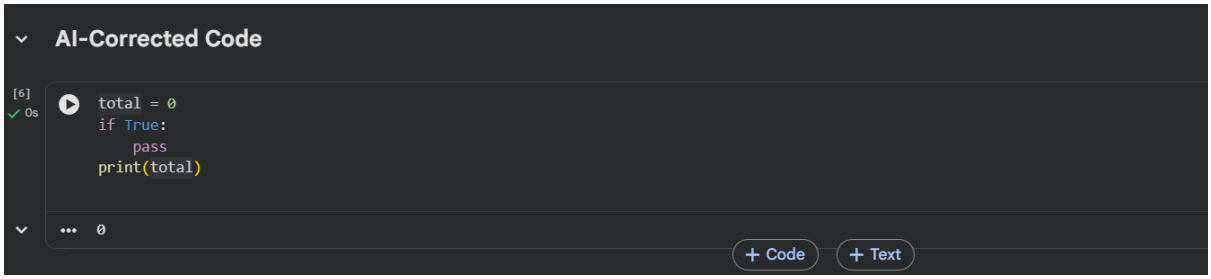
- Loop boundary corrected
- Prevents out-of-range access

Task 4 – Uninitialized Variable Usage

Bug Analysis (AI Explanation)

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



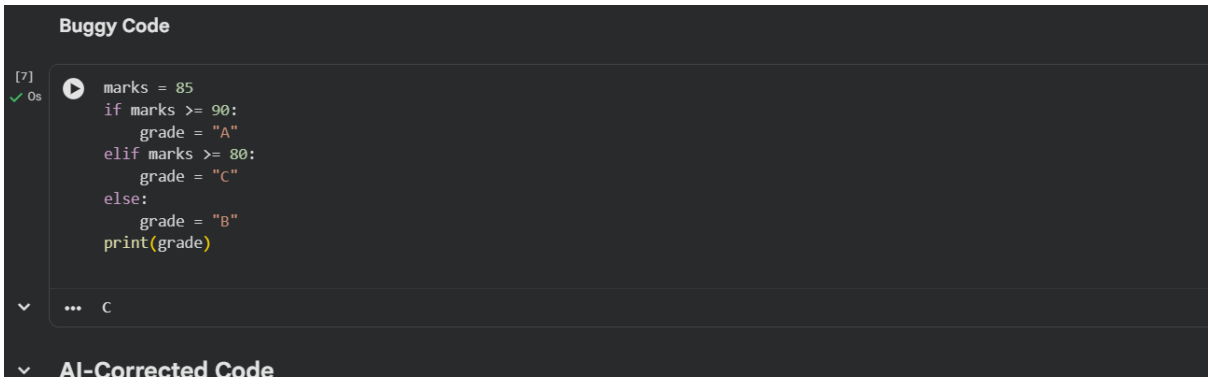


Expected Output – 4

- 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



AI-Corrected Code

[8]
✓ 0s

```
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