Name: M. Bharath

Roll:2303a52060

Lab 7:

Error Debugging with AI: Systematic approaches to

finding and fixing bugs

Lab Objectives:

Week4 -

Monday

• To identify and correct syntax, logic, and runtime errors in

Python programs using AI tools.

• To understand common programming bugs and AI-assisted

debugging suggestions.

• To evaluate how AI explains, detects, and fixes different

types of coding errors.

• To build confidence in using AI to perform structured

debugging practices.

Lab Outcomes (LOs):

After completing this lab, students will be able to:

• Use AI tools to detect and correct syntax, logic, and runtime

errors.

• Interpret AI-suggested bug fixes and explanations.

• Apply systematic debugging strategies supported by AI-

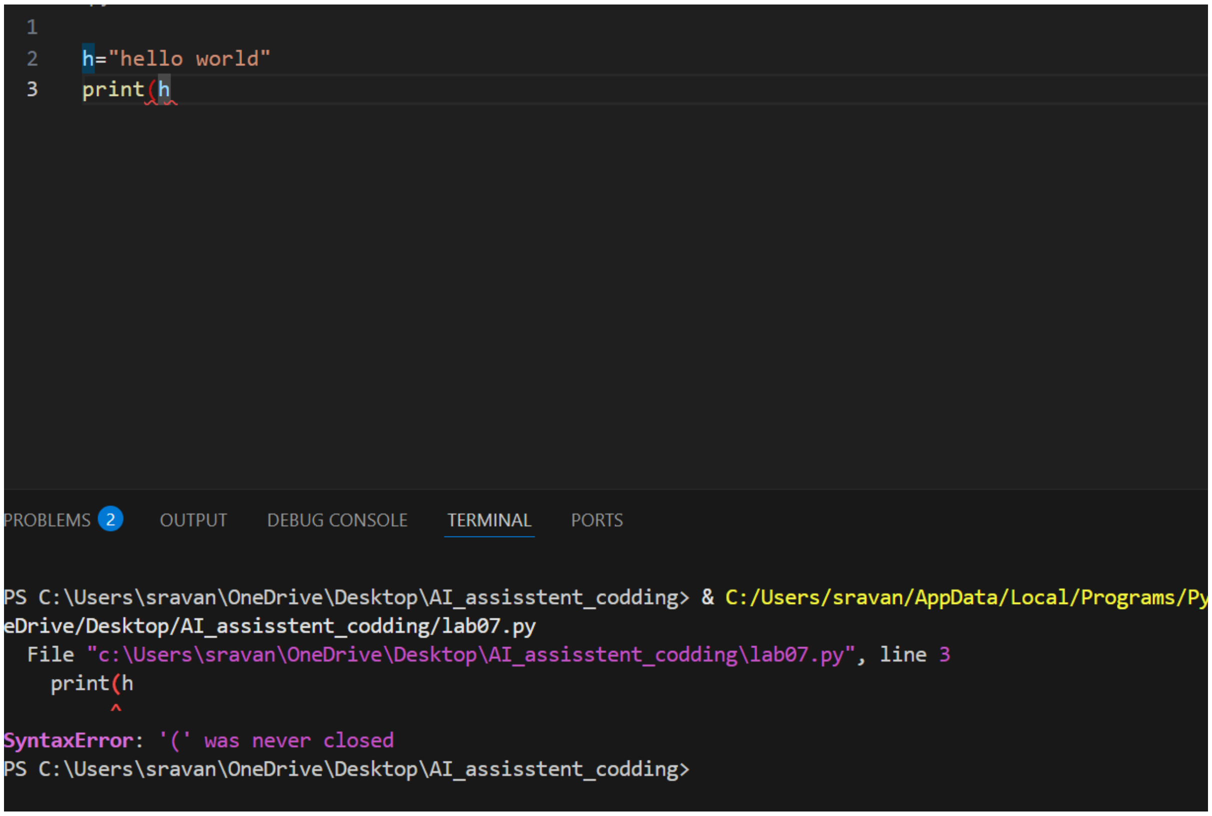
generated insights.

• Refactor buggy code using responsible and reliable

programming patterns.

Task Description #1 (Syntax Errors – Missing Parentheses in Print

Statement)



```
h="hello world"
print(h
```

```
PS C:\Users\sravan\OneDrive\Desktop\AI_assisstent_codding> & C:/Users/sravan/AppData/Local/Programs/Py
eDrive/Desktop/AI_assisstent_codding/lab07.py
  File "c:\Users\sravan\OneDrive\Desktop\AI_assisstent_codding\lab07.py", line 3
    print(h
         ^
SyntaxError: '(' was never closed
PS C:\Users\sravan\OneDrive\Desktop\AI_assisstent_codding>
```

Task: Provide a Python snippet with a missing parenthesis in a print

statement (e.g., print "Hello"). Use AI to detect and fix the syntax

error.

# Bug: Missing parentheses in print statement

def greet():

print "Hello, AI Debugging Lab!"

greet()

Requirements:

• Run the given code to observe the error.

• Apply AI suggestions to correct the syntax.

• Use at least 3 assert test cases to confirm the corrected code works.

Expected Output #1:

• Corrected code with proper syntax and AI explanation.

Task Description #2 (Incorrect condition in an If Statement)

Task: Supply a function where an if-condition mistakenly uses = instead of ==. Let AI identify and fix the issue.

```
# Bug: Using assignment (=) instead of comparison (==)
def check_number(n):
if n = 10:
return "Ten"
else:
return "Not Ten"
```

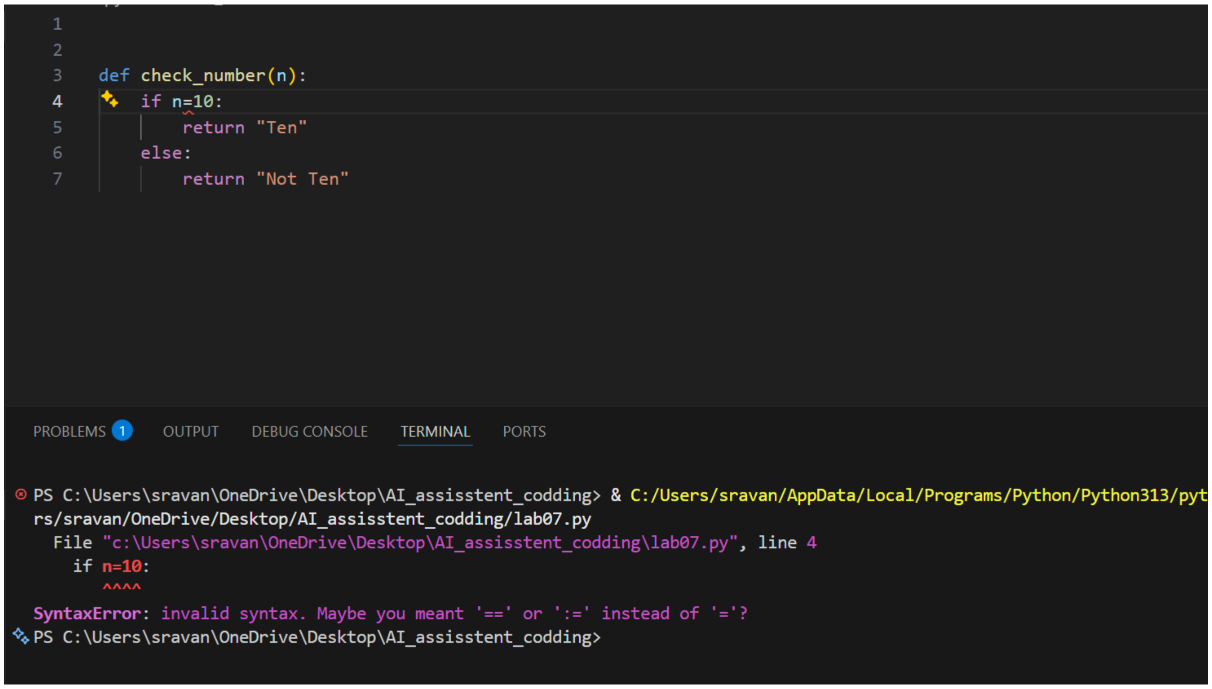
Requirements:

• Ask AI to explain why this causes a bug.

• Correct the code and verify with 3 assert test cases.

Expected Output #2:

• Corrected code using == with explanation and successful test execution.



```
def check_number(n):
    if n=10:
        return "Ten"
    else:
        return "Not Ten"
```

PROBLEMS 1   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
PS C:\Users\sravan\OneDrive\Desktop\AI_assisstent_codding> & C:/Users/sravan/AppData/Local/Programs/Python/Python313/pyt
rs/sravan/OneDrive/Desktop/AI_assisstent_codding/lab07.py
  File "c:\Users\sravan\OneDrive\Desktop\AI_assisstent_codding\lab07.py", line 4
    if n=10:
       ^^^^
SyntaxError: invalid syntax. Maybe you meant '==' or ':=' instead of '='?
PS C:\Users\sravan\OneDrive\Desktop\AI_assisstent_codding>
```

Task Description #3 (Runtime Error – File Not Found)

Task: Provide code that attempts to open a non-existent file and

crashes. Use AI to apply safe error handling.

# Bug: Program crashes if file is missing

def read_file(filename):

with open(filename, 'r') as f:

return f.read()

print(read_file("nonexistent.txt"))

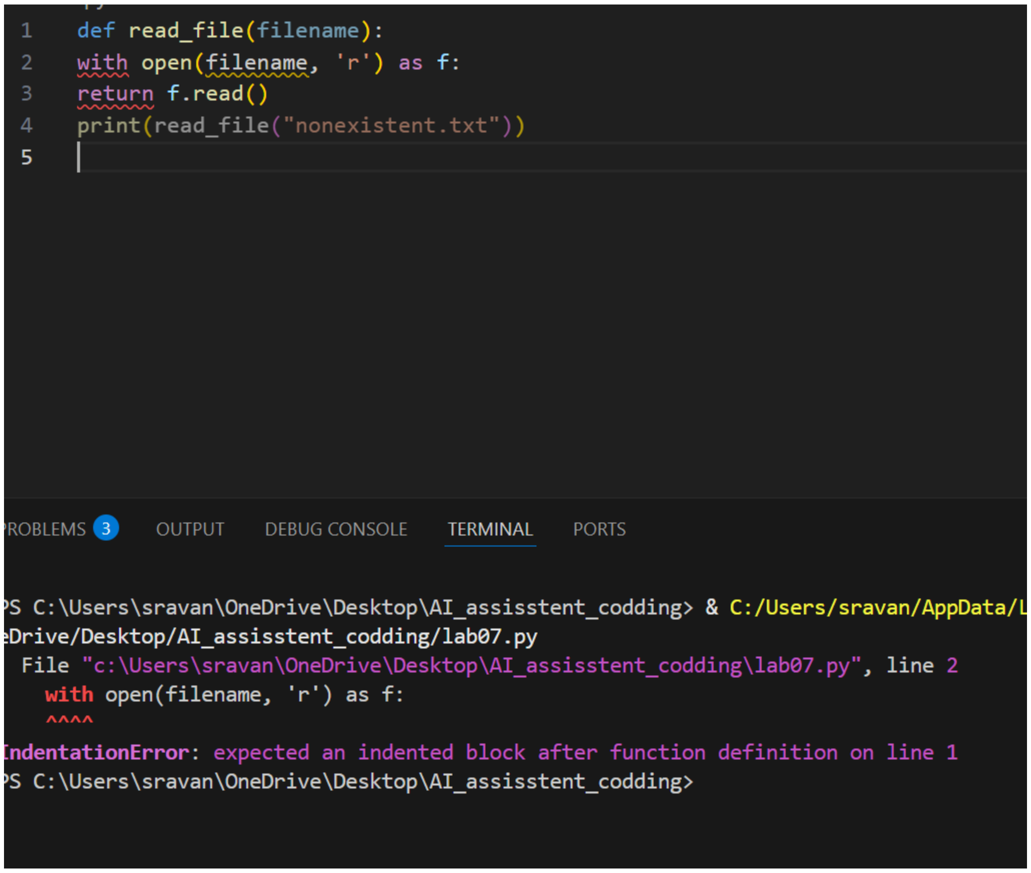
Requirements:

• Implement a try-except block suggested by AI.

• Add a user-friendly error message.

• Test with at least 3 scenarios: file exists, file missing, invalid

path.



```
def read_file(filename):
with open(filename, 'r') as f:
return f.read()
print(read_file("nonexistent.txt"))
```

PROBLEMS 3 OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS C:\Users\sravan\OneDrive\Desktop\AI_assisstent_codding> & C:/Users/sravan/AppData/L
eDrive/Desktop/AI_assisstent_codding/lab07.py
  File "c:\Users\sravan\OneDrive\Desktop\AI_assisstent_codding\lab07.py", line 2
    with open(filename, 'r') as f:
    ^^^^
IndentationError: expected an indented block after function definition on line 1
PS C:\Users\sravan\OneDrive\Desktop\AI_assisstent_codding>
```

Expected Output #3:

• Safe file handling with exception management.

Task Description #4 (Calling a Non-Existent Method)

Task: Give a class where a non-existent method is called (e.g.,

obj.undefined_method()). Use AI to debug and fix.

# Bug: Calling an undefined method

class Car:

def start(self):

return "Car started"

my_car = Car()

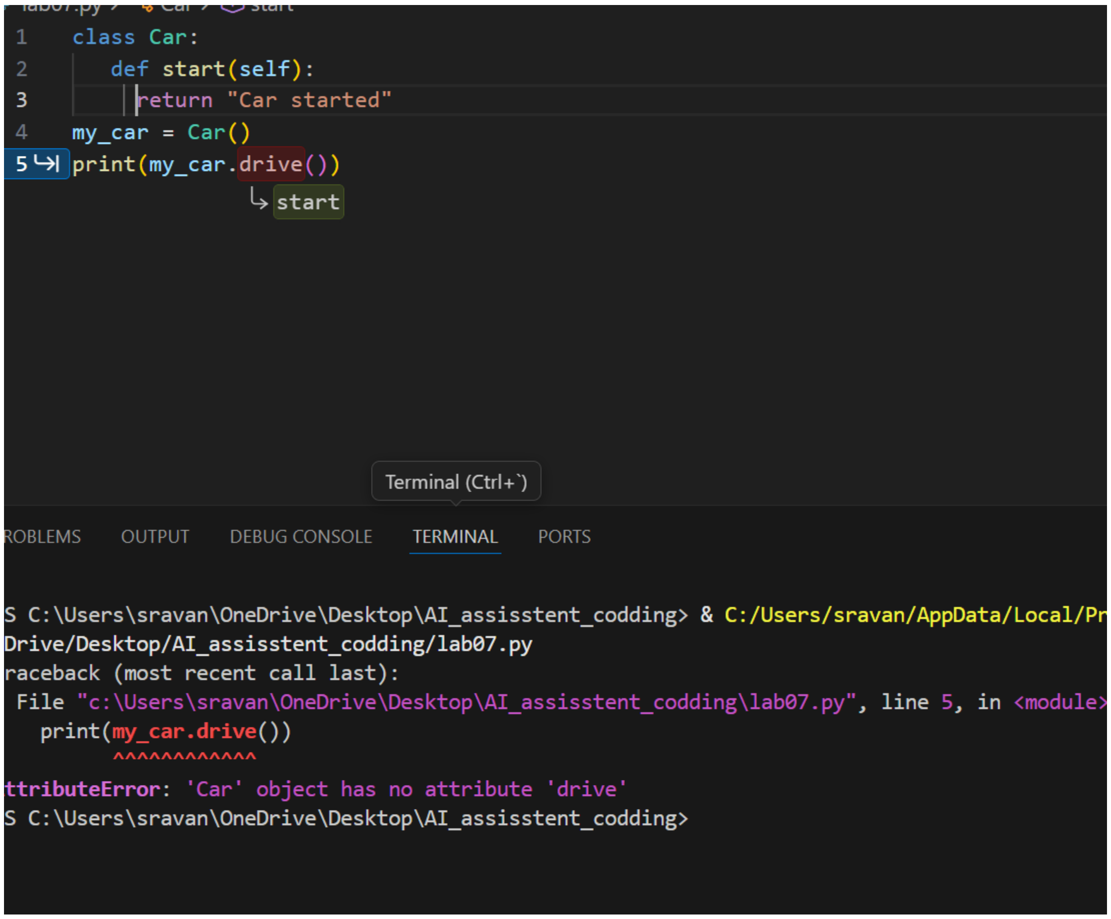
print(my_car.drive()) # drive() is not defined

Requirements:

• Students must analyze whether to define the missing method

or correct the method call.

• Use 3 assert tests to confirm the corrected class works.



```
class Car:
    def start(self):
        return "Car started"
my_car = Car()
print(my_car.drive())
                    ↳ start
```

Terminal (Ctrl+`)

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
S C:\Users\sravan\OneDrive\Desktop\AI_assisstent_codding> & C:/Users/sravan/AppData/Local/Pr
Drive/Desktop/AI_assisstent_codding/lab07.py
raceback (most recent call last):
 File "c:\Users\sravan\OneDrive\Desktop\AI_assisstent_codding\lab07.py", line 5, in <module>
   print(my_car.drive())
         ^^^^^^^^^^^^
ttributeError: 'Car' object has no attribute 'drive'
S C:\Users\sravan\OneDrive\Desktop\AI_assisstent_codding>
```

Expected Output #4:

• Corrected class with clear AI explanation.

Task Description #5 (TypeError – Mixing Strings and Integers in

Addition)

Task: Provide code that adds an integer and string ("5" + 2) causing

a TypeError. Use AI to resolve the bug.

# Bug: TypeError due to mixing string and integer

def add_five(value):

return value + 5

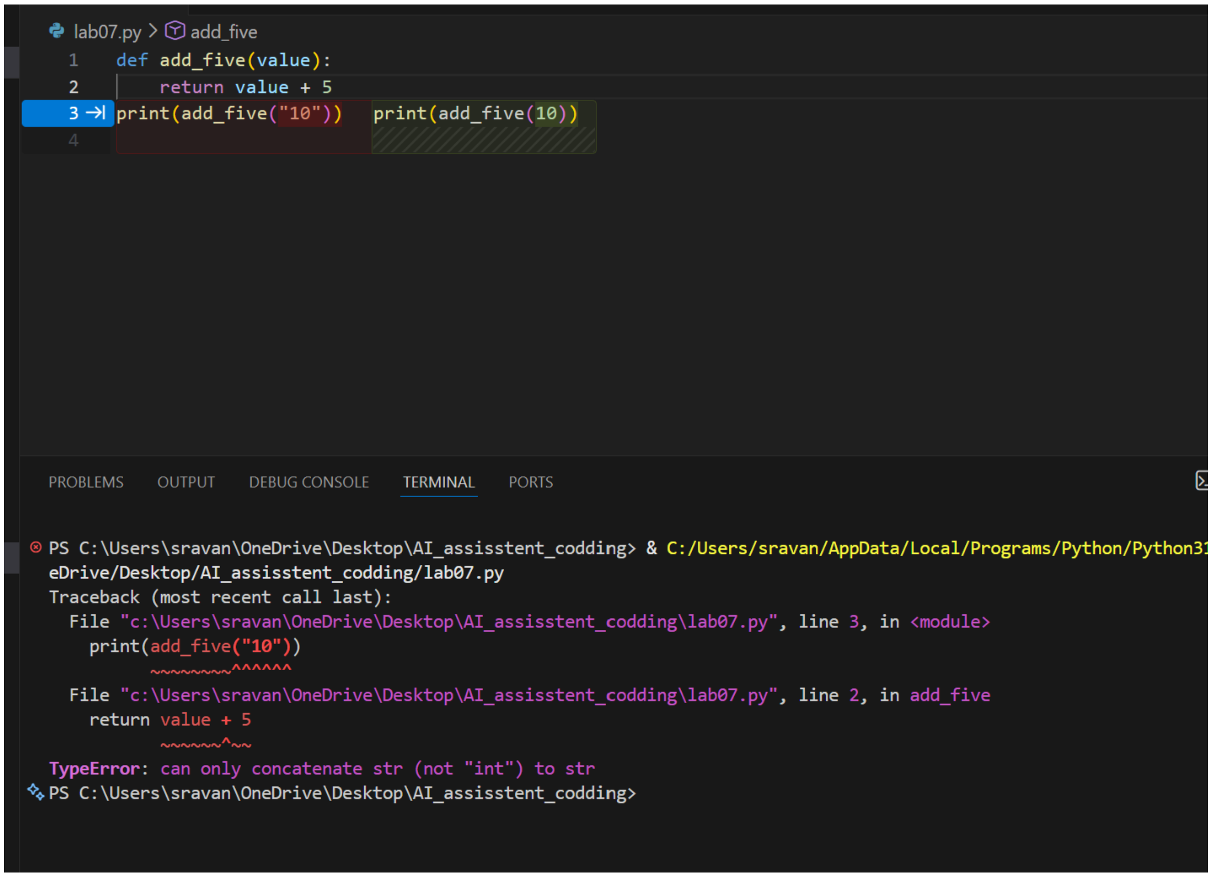
print(add_five("10"))

Requirements:

• Ask AI for two solutions: type casting and string

concatenation.

• Validate with 3 assert test cases.



lab07.py > add_five

```
def add_five(value):
    return value + 5
print(add_five("10"))   print(add_five(10))
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
PS C:\Users\sravan\OneDrive\Desktop\AI_assisstent_codding> & C:/Users/sravan/AppData/Local/Programs/Python/Python3
eDrive/Desktop/AI_assisstent_codding/lab07.py
Traceback (most recent call last):
  File "c:\Users\sravan\OneDrive\Desktop\AI_assisstent_codding\lab07.py", line 3, in <module>
    print(add_five("10"))
          ~~~~~~~~^^^^^^
  File "c:\Users\sravan\OneDrive\Desktop\AI_assisstent_codding\lab07.py", line 2, in add_five
    return value + 5
           ~~~~~~^~~
TypeError: can only concatenate str (not "int") to str
PS C:\Users\sravan\OneDrive\Desktop\AI_assisstent_codding>
```

Expected Output #5:

• Corrected code that runs successfully for multiple inputs.

Note: Report should be submitted a word document for all tasks in a

single document with prompts, comments & code explanation, and

output and if required, screenshots