

## Assingment-7.1

Name: Y. Poojitha

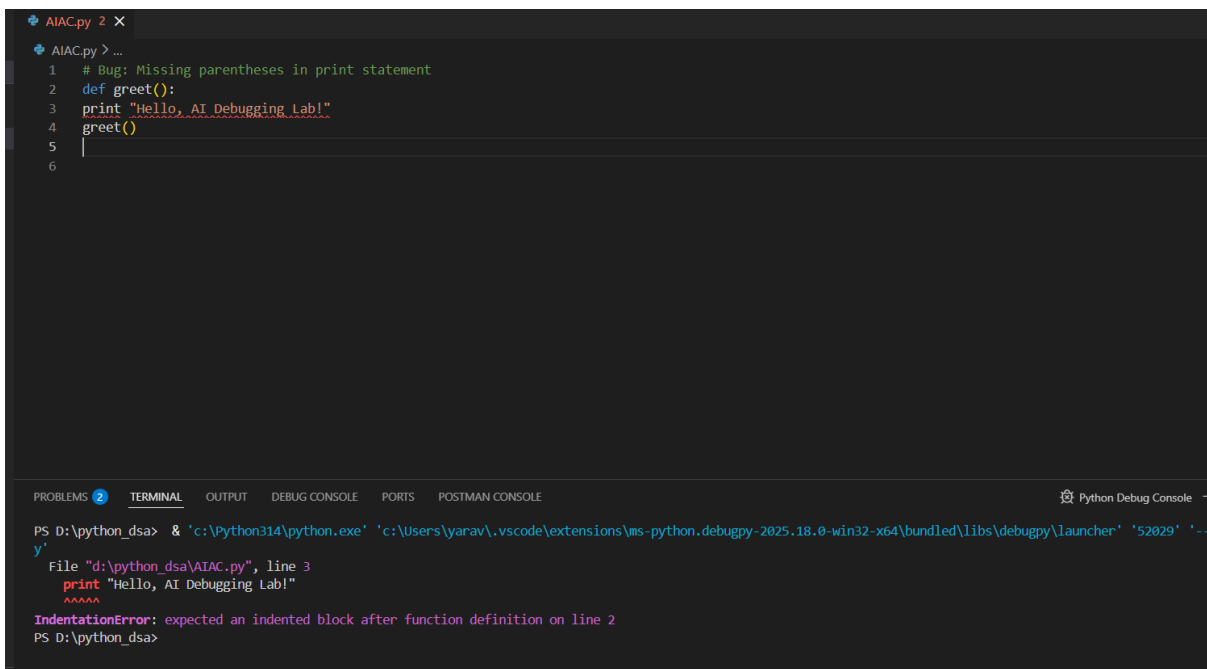
Hall Ticket No:2303A51499

Batch-08

Lab 7: Error Debugging with AI: Systematic approaches to finding and fixing bugs

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

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.



```
AIAC.py 2 X
AIAC.py > ...
1 # Bug: Missing parentheses in print statement
2 def greet():
3 print "Hello, AI Debugging Lab!"
4 greet()
5
6

PROBLEMS 2 TERMINAL OUTPUT DEBUG CONSOLE PORTS POSTMAN CONSOLE Python Debug Console
PS D:\python_dsa> & 'c:\Python314\python.exe' 'c:\Users\yarav\.vscode\extensions\ms-python.debugpy-2025.18.0-win32-x64\bundle\libs\debugpy\launcher' '52029' '--y'
File "d:\python_dsa\AIAC.py", line 3
    print "Hello, AI Debugging Lab!"
    ^^^^^
IndentationError: expected an indented block after function definition on line 2
PS D:\python_dsa>
```

Corrected Code

```
AIAC.py > ...
1 # Bug: Missing parentheses in print statement
2 def greet():
3 | print('Hello, AI Debugging Lab!')
4 greet()
5
6

PROBLEMS 0 TERMINAL OUTPUT DEBUG CONSOLE PORTS POSTMAN CONSOLE Python Debug Console + - [ ] [ ]

PS D:\python_dsa> & 'c:\Python314\python.exe' 'c:\Users\yarav\.vscode\extensions\ms-python.debugpy-2025.18.0-win32-x64\bundle\libs\debugpy\launcher' '53869' '--' 'd:\python_dsa\AIAC.py'
Hello, AI Debugging Lab!
PS D:\python_dsa>
```

## 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.

```
AIAC.py 1 X
AIAC.py > ...
1 # Bug: Using assignment (=) instead of comparison (==)
2 def check_number(n):
3 | if n = 10:
4 | | return 'Ten'
5 | else:
6 | | return 'Not Ten'
7
8
9

PROBLEMS 1 TERMINAL OUTPUT DEBUG CONSOLE PORTS POSTMAN CONSOLE Python Debug Console + - [ ] [ ]

PS D:\python_dsa> & 'c:\Python314\python.exe' 'c:\Users\yarav\.vscode\extensions\ms-python.debugpy-2025.18.0-win32-x64\bundle\libs\debugpy\launcher' '53869' '--' 'd:\python_dsa\AIAC.py'
Hello, AI Debugging Lab!
PS D:\python_dsa> ^C
PS D:\python_dsa>
PS D:\python_dsa> cd 'd:\python_dsa'; & 'c:\Python314\python.exe' 'c:\Users\yarav\.vscode\extensions\ms-python.debugpy-2025.18.0-win32-x64\bundle\libs\debugpy\launcher' '53869' '--' 'd:\python_dsa\AIAC.py'
File "d:\python_dsa\AIAC.py", line 3
    if n = 10:
        ^^^^^
SyntaxError: invalid syntax. Maybe you meant '==' or ':=' instead of '='?
PS D:\python_dsa>
```

## Corrected Code

```
AIAC.py X
AIAC.py > ...
1 # Fixed Version: Using comparison operator (==)
2 def check_number(n):
3     if n == 10:
4         return "Ten"
5     else:
6         return "Not Ten"
7
8
9 # Test Cases
10 assert check_number(10) == "Ten"
11 assert check_number(5) == "Not Ten"
12 assert check_number(-10) == "Not Ten"
13
14 print("All tests passed successfully!")
15
16
17

PROBLEMS TERMINAL OUTPUT DEBUG CONSOLE PORTS POSTMAN CONSOLE Python Debug Console
PS D:\python_dsa> & 'c:\Python314\python.exe' 'c:\Users\yarav\.vscode\extensions\ms-python.debugpy-2025.18.0-win32-x64\bundle\libs\debugpy\launcher' '57860' 'y'
All tests passed successfully!
PS D:\python_dsa>
```


### 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.

```
AIAC.py X
AIAC.py > ...
1 # Bug: Program crashes if file is missing
2 def read_file(filename):
3     with open(filename, 'r') as f:
4         return f.read()
5
6 print(read_file("nonexistent.txt"))
7
8
9

PROBLEMS TERMINAL OUTPUT DEBUG CONSOLE PORTS POSTMAN CONSOLE Python Debug Console
All tests passed successfully!
PS D:\python_dsa> ^C
PS D:\python_dsa>
PS D:\python_dsa> d:: cd 'd:\python_dsa'; & 'c:\Python314\python.exe' 'c:\Users\yarav\.vscode\extensions\ms-python.debugpy-2025.18.0-win32-x64\bundle\libs\debugpy\launcher' '57860' 'y'
Traceback (most recent call last):
  File "d:\python_dsa\AIAC.py", line 6, in <module>
    print(read_file("nonexistent.txt"))
          ~~~~~~^~~~~~
  File "d:\python_dsa\AIAC.py", line 3, in read_file
    with open(filename, 'r') as f:
          ~~~~~~^~~~~~
FileNotFoundError: [Errno 2] No such file or directory: 'nonexistent.txt'
```

### Safe Version with Exception Handling



The screenshot shows a Python IDE with a file named `AIAC.py`. The code defines a `read_file(filename)` function that attempts to open and read a file. It includes error handling for `FileNotFoundError` and `OSError`. Below the function, there are test scenarios commented out, each preceded by a checkbox. The first test, `# [x] Test Scenarios`, is active. It includes a comment `# [x] File Exists` and a test case where a file `testfile.txt` is created and its content is verified. Subsequent tests for `File Missing` and `Invalid Path` are commented out. The code concludes with a print statement indicating all tests passed successfully.

```

1  def read_file(filename):
2      try:
3          with open(filename, 'r') as f:
4              return f.read()
5      except FileNotFoundError:
6          return "Error: File not found."
7      except OSError:
8          return "Error: Invalid file path or unable to access file."
9
10
11 # -----
12 # [x] Test Scenarios
13 # -----
14
15 # [x] File Exists
16 with open("testfile.txt", "w") as f:
17     f.write("Sample content")
18
19 assert read_file("testfile.txt") == "Sample content"
20
21 # [ ] File Missing
22 assert read_file("nonexistent.txt") == "Error: File not found."
23
24 # [ ] Invalid Path
25 assert read_file("invalid:/path/test.txt") == "Error: Invalid file path or unable to access file."
26
27 print("All test cases passed successfully!")
28

```

The IDE interface includes a **TERMINAL** panel at the bottom, which shows the command prompt output: `PS D:\python_dsa> & 'c:\python314\python.exe' 'c:\Users\yarav\.vscode\extensions\ms-python.debugpy-2025.18.0-win32-x64\bundled\libs\debugpy\launcher' '49781' '-' 'd:\python_dsa\AIAC.py'` and the output `All test cases passed successfully!`.

### 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.

The screenshot shows a code editor window titled "AIAC.py". The code defines a class "Car" with a method "start(self)" that returns "car started". It then creates an instance "my\_car = Car()" and attempts to call "print(my\_car.drive())". A red squiggly line under "drive()" indicates an error. Below the code, a terminal window displays the traceback: "AttributeError: 'Car' object has no attribute 'drive'", indicating that the "Car" class does not have a "drive" method defined.

```
AIAC.py > ...  
1 # Bug: Calling an undefined method  
2 class Car:  
3     def start(self):  
4         return "car started"  
5  
6 my_car = Car()  
7 print(my_car.drive()) # drive() is not defined  
8  
9  
10  
11  
12
```

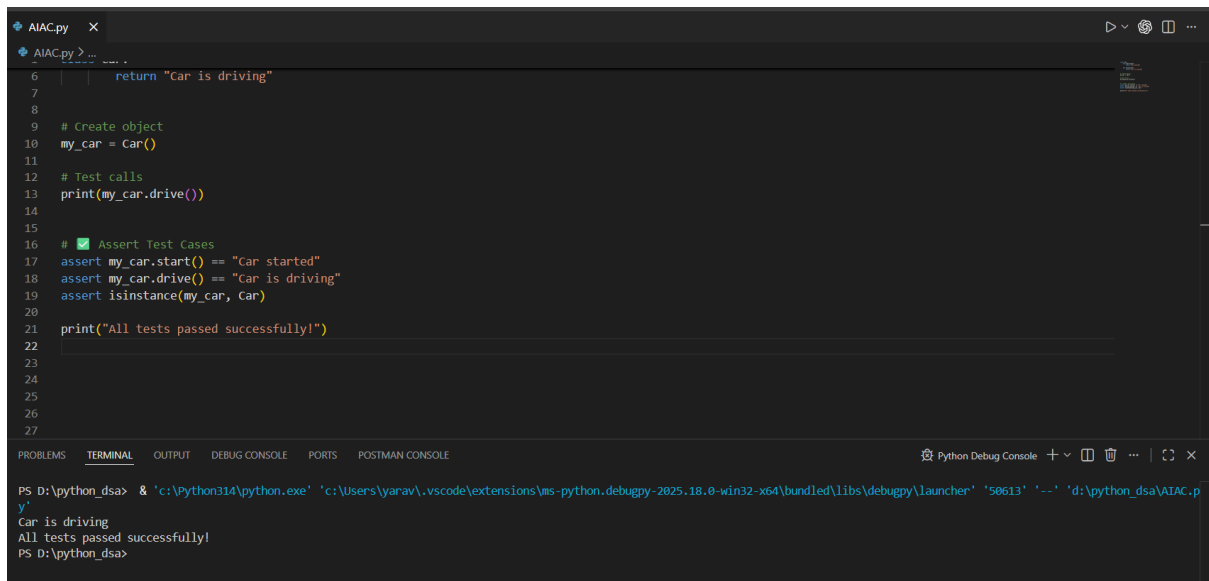
PROBLEMS TERMINAL OUTPUT DEBUG CONSOLE PORTS POSTMAN CONSOLE

y'  
Traceback (most recent call last):  
File "d:\python\_dsa\AIAC.py", line 7, in <module>  
 print(my\_car.drive()) # drive() is not defined  
~~~~~  
AttributeError: 'Car' object has no attribute 'drive'

Python Debug Console + [ ] [X] | [C] [R]

PS D:\python\_dsa>

### Corrected Code



```
6 |         return "Car is driving"
7 |
8 |
9 | # Create object
10 | my_car = Car()
11 |
12 | # Test calls
13 | print(my_car.drive())
14 |
15 |
16 | # Assert Test Cases
17 | assert my_car.start() == "Car started"
18 | assert my_car.drive() == "Car is driving"
19 | assert isinstance(my_car, Car)
20 |
21 | print("All tests passed successfully!")
22 |
23 |
24 |
25 |
26 |
27 |
```

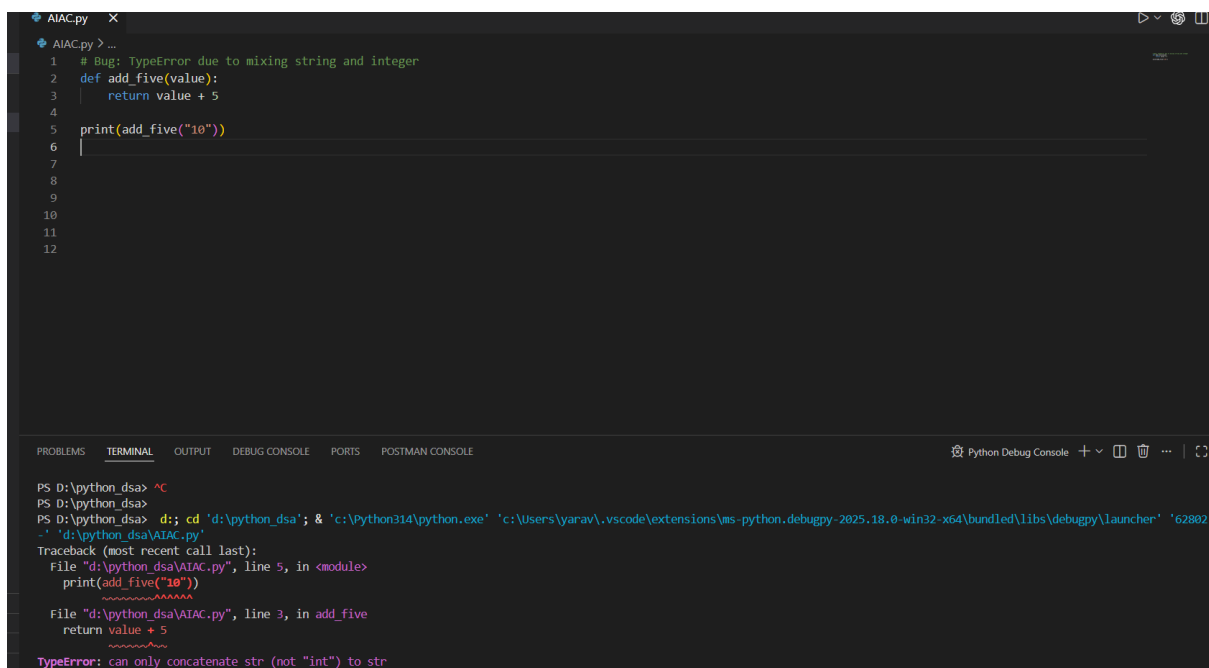
PROBLEMS TERMINAL OUTPUT DEBUG CONSOLE PORTS POSTMAN CONSOLE

Python Debug Console

```
PS D:\python_dsa> & 'c:\Python314\python.exe' 'c:\Users\yarav\.vscode\extensions\ms-python.debugpy-2025.18.0-win32-x64\bundle\libs\debugpy\launcher' '50613' '--' 'd:\python_dsa\AIAC.py'
Car is driving
All tests passed successfully!
PS D:\python_dsa>
```

## 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



```
1 | # Bug: TypeError due to mixing string and integer
2 | def add_five(value):
3 |     return value + 5
4 |
5 | print(add_five("10"))
6 |
7 |
8 |
9 |
10 |
11 |
12 |
```

PROBLEMS TERMINAL OUTPUT DEBUG CONSOLE PORTS POSTMAN CONSOLE

Python Debug Console

```
PS D:\python_dsa> ^C
PS D:\python_dsa> d:; cd 'd:\python_dsa'; & 'c:\Python314\python.exe' 'c:\Users\yarav\.vscode\extensions\ms-python.debugpy-2025.18.0-win32-x64\bundle\libs\debugpy\launcher' '62882' -- 'd:\python_dsa\AIAC.py'
Traceback (most recent call last):
  File "d:\python_dsa\AIAC.py", line 5, in <module>
    print(add_five("10"))
           ~~~~~~
  File "d:\python_dsa\AIAC.py", line 3, in add_five
    return value + 5
           ~~~~~~
TypeError: can only concatenate str (not "int") to str
```

## Solution 1: Type Casting (Convert to Integer)

```
AIAC.py X
AIAC.py > ...
1 # Solution 1: Type Casting
2 def add_five(value):
3     return int(value) + 5
4
5
6 # Test Cases
7 assert add_five("10") == 15
8 assert add_five(20) == 25
9 assert add_five("0") == 5
10
11 print("Solution 1 tests passed!")
12
13
14
15
16
17
18
19

PROBLEMS TERMINAL OUTPUT DEBUG CONSOLE PORTS POSTMAN CONSOLE Python Debug Console + -

PS D:\python_dsa> & 'c:\Python314\python.exe' 'c:\Users\yarav\.vscode\extensions\ms-python.debugpy-2025.18.0-win32-x64\bundle\libs\debugpy\launcher' '59738' '--' 'd:\python_dsa\AIAC.py'
Solution 1 tests passed!
PS D:\python_dsa>
```

## Solution 2: String Concatenation

```
AIAC.py X
AIAC.py > ...
1 # Solution 2: String Concatenation
2 def add_five(value):
3     return str(value) + "5"
4
5
6 # Test Cases
7 assert add_five("10") == "105"
8 assert add_five(20) == "205"
9 assert add_five("") == "5"
10
11 print("Solution 2 tests passed!")
12
13
14
15
16
17
18
19
20

PROBLEMS TERMINAL OUTPUT DEBUG CONSOLE PORTS POSTMAN CONSOLE Python Debug Console + -

PS D:\python_dsa> & 'c:\Python314\python.exe' 'c:\Users\yarav\.vscode\extensions\ms-python.debugpy-2025.18.0-win32-x64\bundle\libs\debugpy\launcher' '63944' '--' 'd:\python_dsa\AIAC.py'
Solution 2 tests passed!
PS D:\python_dsa>
```