

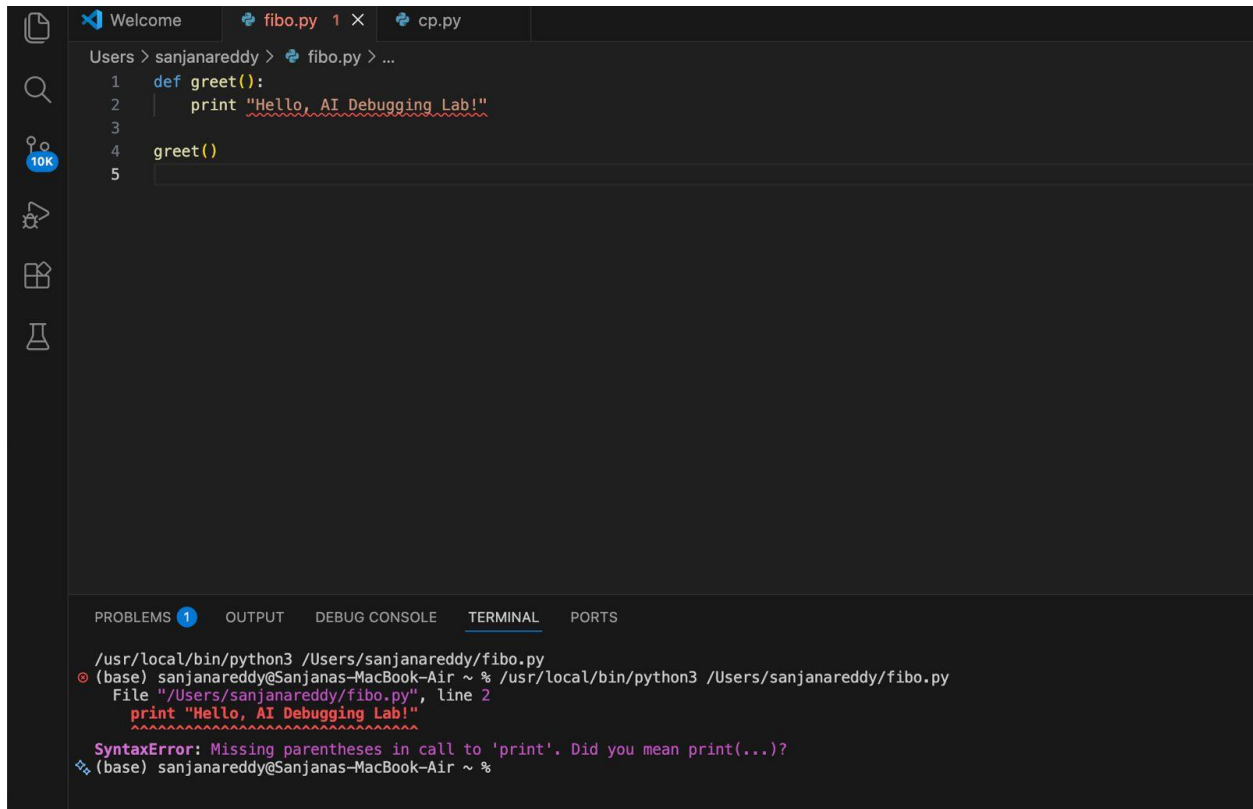
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**BATCH:**07

## Lab 7: Error Debugging with AI – Systematic Bug Fixing

### Task 1 – Syntax Error



The screenshot shows a code editor with a file named `fibonacci.py` open. The code in the editor is as follows:

```
1 def greet():
2     print "Hello, AI Debugging Lab!"
3
4 greet()
5
```

The code has a syntax error on line 2, where the `print` function is called without parentheses. The error message in the terminal is:

```
SyntaxError: Missing parentheses in call to 'print'. Did you mean print(...)?
```

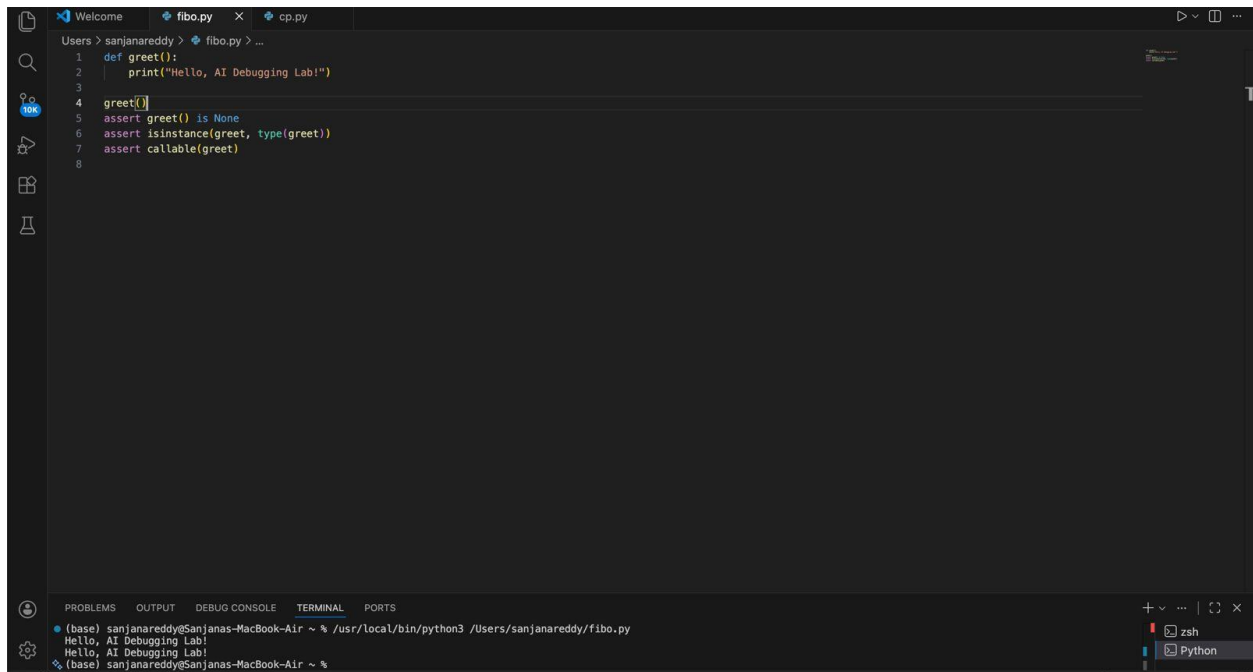
### Observed Error

**SyntaxError:** Missing parentheses in call to 'print'

### AI Explanation

Python 3 requires parentheses in the print function. Without parentheses, Python throws a syntax error.

### Corrected Code:

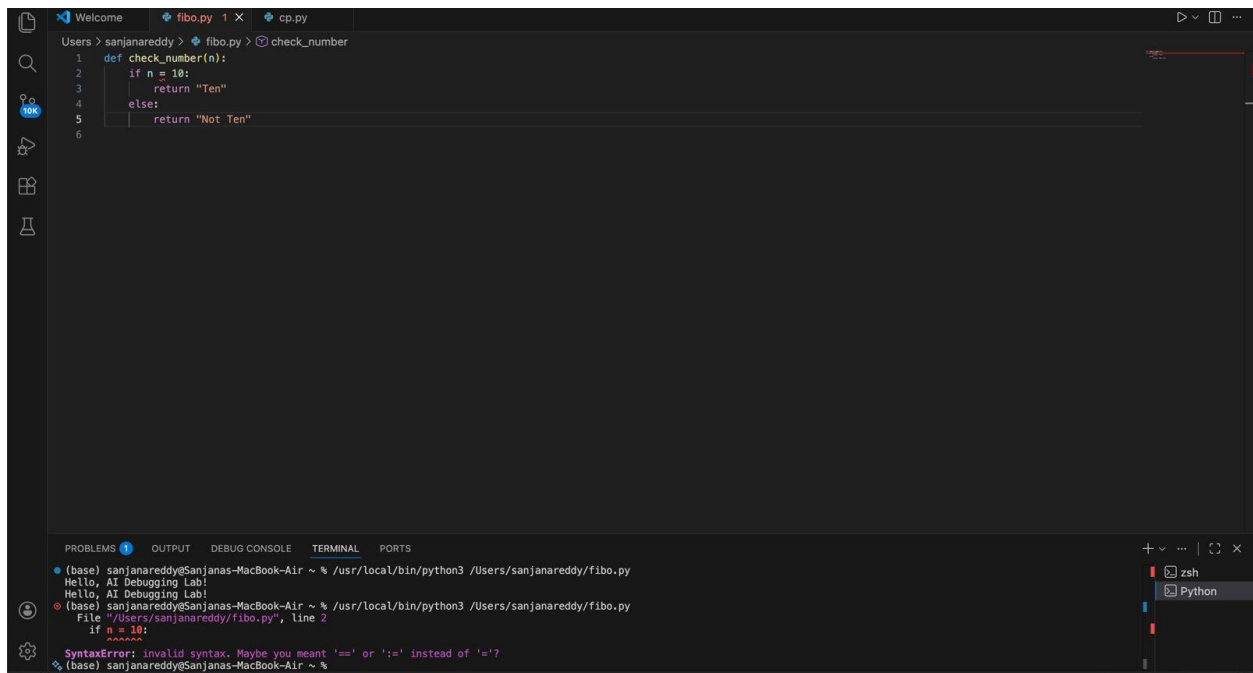


```
def greet():  
    print("Hello, AI Debugging Lab!")  
  
greet()  
assert greet() is None  
assert isinstance(greet, type(greet))  
assert callable(greet)
```

Terminal output:

```
(base) sanjanareddy@Sanjanas-MacBook-Air ~ % /usr/local/bin/python3 /Users/sanjanareddy/fibo.py  
Hello, AI Debugging Lab!  
Hello, AI Debugging Lab!  
(base) sanjanareddy@Sanjanas-MacBook-Air ~ %
```

## Task 2 – Incorrect If Condition



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

Terminal output:

```
(base) sanjanareddy@Sanjanas-MacBook-Air ~ % /usr/local/bin/python3 /Users/sanjanareddy/fibo.py  
Hello, AI Debugging Lab!  
Hello, AI Debugging Lab!  
(base) sanjanareddy@Sanjanas-MacBook-Air ~ % /usr/local/bin/python3 /Users/sanjanareddy/fibo.py  
File "/Users/sanjanareddy/fibo.py", line 2  
    if n = 10:  
        ^^^^^  
SyntaxError: invalid syntax. Maybe you meant '=' or '!=' instead of '='?  
(base) sanjanareddy@Sanjanas-MacBook-Air ~ %
```

## Observed Error

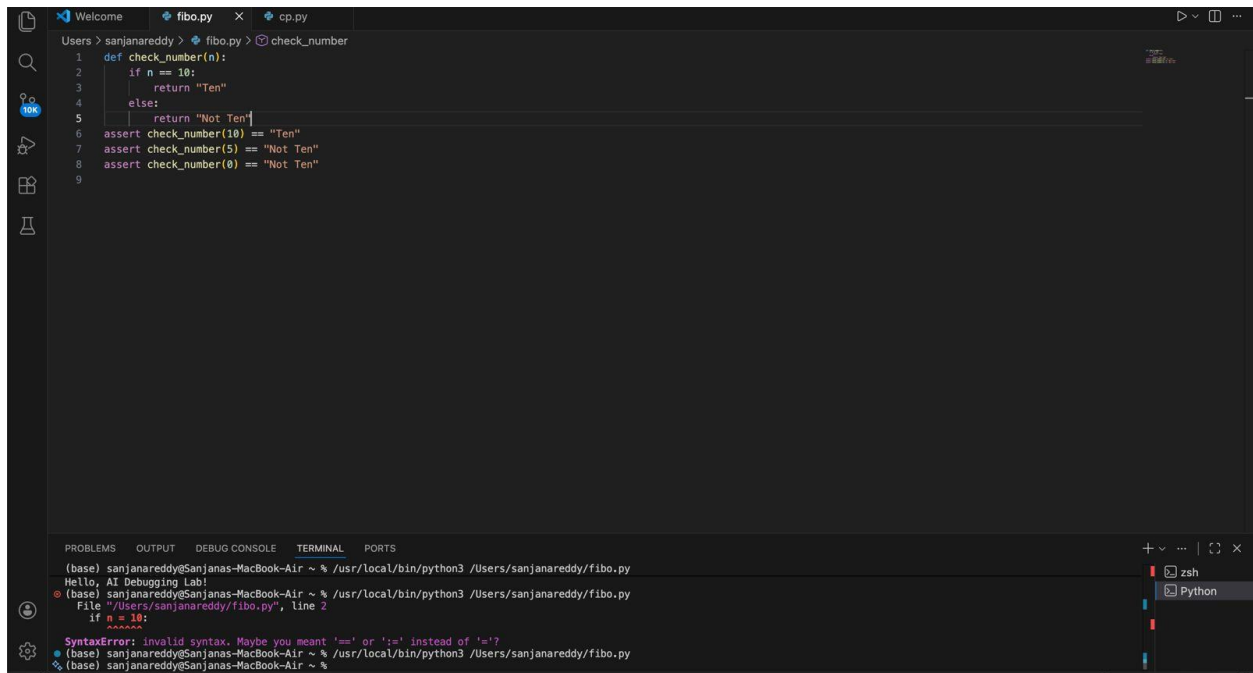
SyntaxError due to use of assignment (=) instead of comparison (==).

## AI Explanation

= is assignment operator.

== is comparison operator.

Python does not allow assignment inside if condition like this.



The screenshot shows a code editor with a file named `fibonacci.py` open. The code defines a function `check_number(n)` that returns "Ten" if `n == 10` and "Not Ten" otherwise. Below the function, there are three `assert` statements: `assert check_number(10) == "Ten"`, `assert check_number(5) == "Not Ten"`, and `assert check_number(0) == "Not Ten"`. The terminal at the bottom shows the command `python3 /Users/sanjanareddy/fibonacci.py` being executed, which outputs "Hello, AI Debugging Lab!". A syntax error is highlighted in the code editor, indicating an invalid syntax in the `if` statement. The error message is: `SyntaxError: invalid syntax. Maybe you meant '=' or '!=' instead of '='?`. The terminal also shows the command `python3 /Users/sanjanareddy/fibonacci.py` being executed again, which outputs "Hello, AI Debugging Lab!".

```
1 def check_number(n):
2     if n == 10:
3         return "Ten"
4     else:
5         return "Not Ten"
6 assert check_number(10) == "Ten"
7 assert check_number(5) == "Not Ten"
8 assert check_number(0) == "Not Ten"
9
```

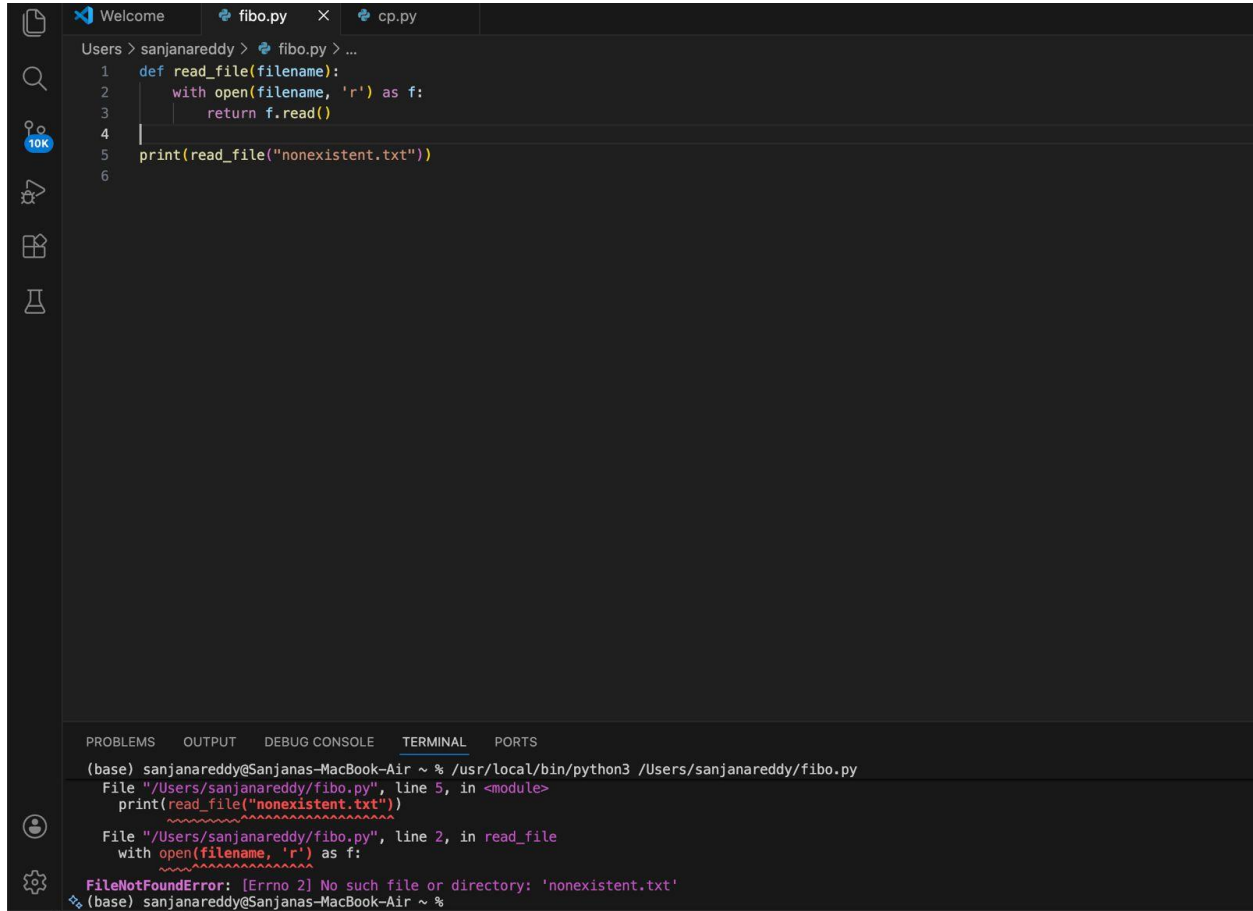
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

(base) sanjanareddy@Sanjanas-MacBook-Air ~ % /usr/local/bin/python3 /Users/sanjanareddy/fibonacci.py  
Hello, AI Debugging Lab!  
File "/Users/sanjanareddy/fibonacci.py", line 2  
if n == 10:  
~~~~~  
SyntaxError: invalid syntax. Maybe you meant '=' or '!=' instead of '='?  
(base) sanjanareddy@Sanjanas-MacBook-Air ~ % /usr/local/bin/python3 /Users/sanjanareddy/fibonacci.py  
(base) sanjanareddy@Sanjanas-MacBook-Air ~ %

## Output

All test cases passed.

## Task 3 – Runtime Error



The screenshot shows a code editor with a dark theme. The top bar has tabs for 'Welcome', 'fibonacci.py', and 'cp.py'. The main editor area shows a Python script named 'fibonacci.py' with the following code:

```
1 def read_file(filename):
2     with open(filename, 'r') as f:
3         return f.read()
4
5 print(read_file("nonexistent.txt"))
6
```

The bottom panel of the editor shows the 'TERMINAL' tab. It displays the command prompt and the execution of the script, which results in a `FileNotFoundError`:

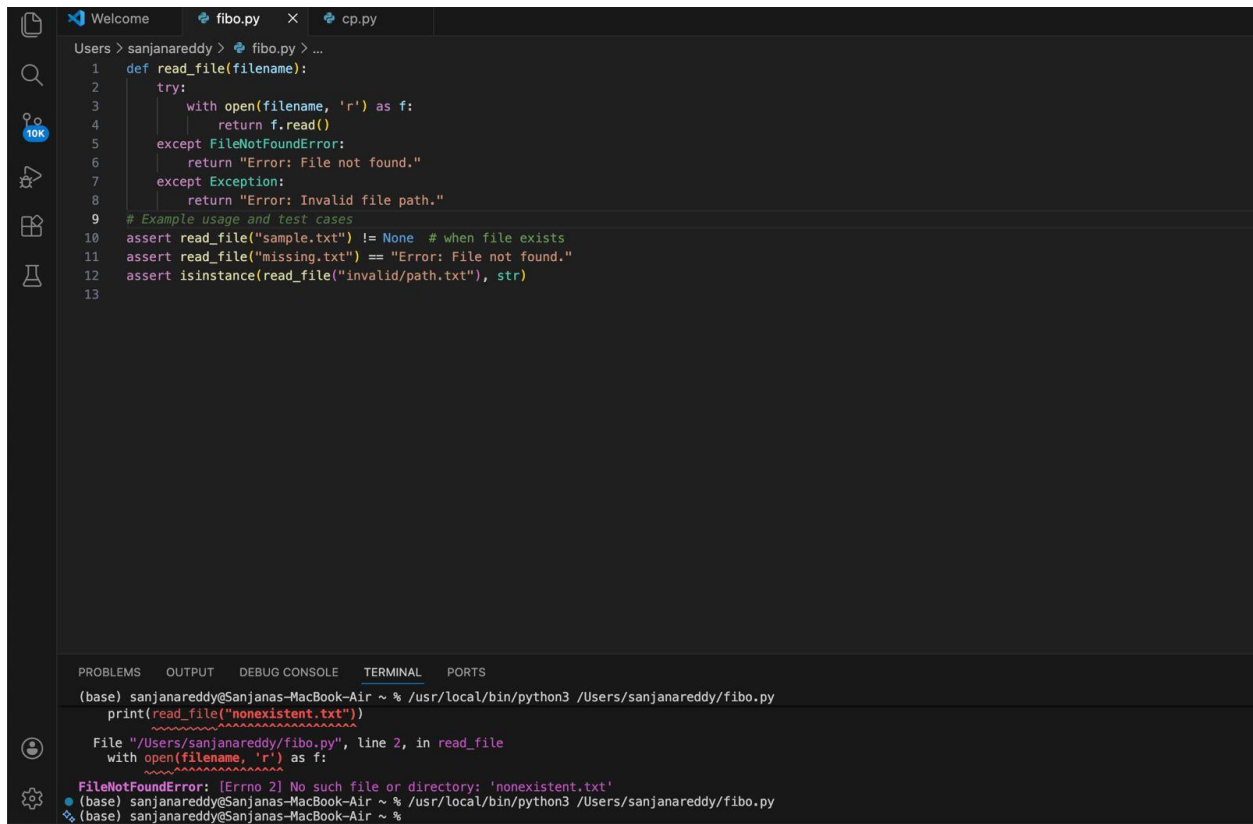
```
(base) sanjanareddy@Sanjanas-MacBook-Air ~ % /usr/local/bin/python3 /Users/sanjanareddy/fibonacci.py
File "/Users/sanjanareddy/fibonacci.py", line 5, in <module>
    print(read_file("nonexistent.txt"))
File "/Users/sanjanareddy/fibonacci.py", line 2, in read_file
    with open(filename, 'r') as f:
FileNotFoundError: [Errno 2] No such file or directory: 'nonexistent.txt'
(base) sanjanareddy@Sanjanas-MacBook-Air ~ %
```

### Observed Error

**FileNotFoundError:** File does not exist.

### AI Explanation

Program crashes when file is missing. Use try-except to handle runtime errors safely.



The screenshot shows a code editor with a dark theme. The top bar has tabs for 'Welcome', 'fibo.py', and 'cp.py'. The left sidebar contains icons for Explorer, Search, Source Control, Run and Debug, Extensions, and Testing. The main editor area displays the following Python code:

```
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 Exception:
8         return "Error: Invalid file path."
9     # Example usage and test cases
10    assert read_file("sample.txt") != None # when file exists
11    assert read_file("missing.txt") == "Error: File not found."
12    assert isinstance(read_file("invalid/path.txt"), str)
13
```

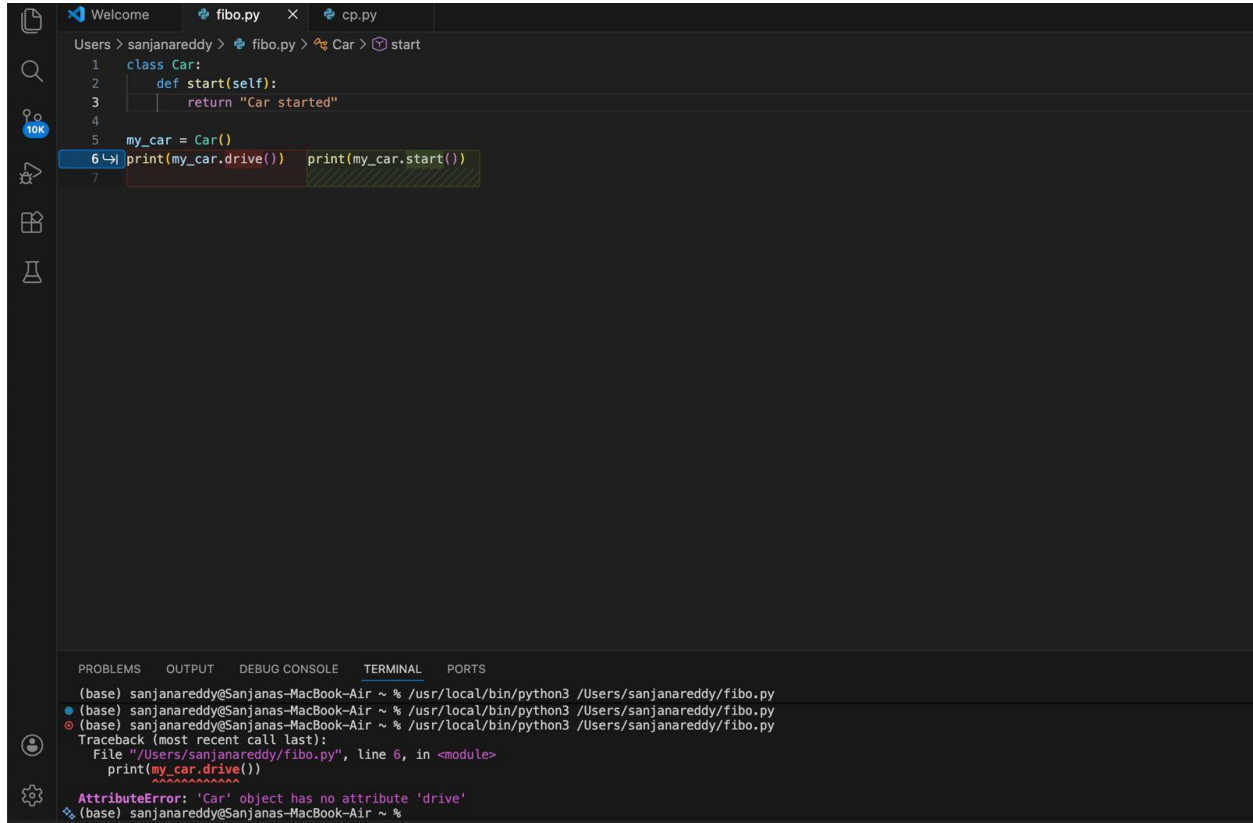
Below the code editor is a panel with tabs for 'PROBLEMS', 'OUTPUT', 'DEBUG CONSOLE', 'TERMINAL', and 'PORTS'. The 'TERMINAL' tab is active, showing the following output:

```
(base) sanjanareddy@Sanjanas-MacBook-Air ~ % /usr/local/bin/python3 /Users/sanjanareddy/fibo.py
print(read_file("nonexistent.txt"))
~~~~~
File "/Users/sanjanareddy/fibo.py", line 2, in read_file
    with open(filename, 'r') as f:
~~~~~
FileNotFoundError: [Errno 2] No such file or directory: 'nonexistent.txt'
(base) sanjanareddy@Sanjanas-MacBook-Air ~ % /usr/local/bin/python3 /Users/sanjanareddy/fibo.py
(base) sanjanareddy@Sanjanas-MacBook-Air ~ %
```

## Output

User-friendly error message displayed when file is missing.

## Task 4 – Calling Non-Existent Method



```
Users > sanjanareddy > fibo.py > Car > start
1 class Car:
2     def start(self):
3         return "Car started"
4
5 my_car = Car()
6 print(my_car.drive()) print(my_car.start())
7
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
(base) sanjanareddy@Sanjanas-MacBook-Air ~ % /usr/local/bin/python3 /Users/sanjanareddy/fibo.py
(base) sanjanareddy@Sanjanas-MacBook-Air ~ % /usr/local/bin/python3 /Users/sanjanareddy/fibo.py
(base) sanjanareddy@Sanjanas-MacBook-Air ~ % /usr/local/bin/python3 /Users/sanjanareddy/fibo.py
Traceback (most recent call last):
  File "/Users/sanjanareddy/fibo.py", line 6, in <module>
    print(my_car.drive())
    ~~~~~~^~~~~~
AttributeError: 'Car' object has no attribute 'drive'
(base) sanjanareddy@Sanjanas-MacBook-Air ~ %
```

### Observed Error

**AttributeError: 'Car' object has no attribute 'drive'**

### AI Explanation

The method `drive()` is not defined in the class. Either define the method or call the correct existing method.

Welcomefibo.pyXcp.py

Users > sanjanareddy > fibo.py > ...

```
1 class Car:
2     def start(self):
3         return "Car started"
4
5     def drive(self):
6         return "Car is moving"
7
8 my_car = Car()
9
10 # Test cases
11 assert my_car.start() == "Car started"
12 assert my_car.drive() == "Car is moving"
13 assert isinstance(my_car, Car)
14 print("All tests passed.")
15 # fibo.py
```

PROBLEMS

OUTPUT

DEBUG CONSOLE

TERMINAL

PORTS

⊙ (base) sanjanareddy@Sanjanas-MacBook-Air ~ % /usr/local/bin/python3 /Users/sanjanareddy/fibo.py

Traceback (most recent call last):

File "/Users/sanjanareddy/fibo.py", line 6, in <module>

print(my\_car.drive())

~~~~~

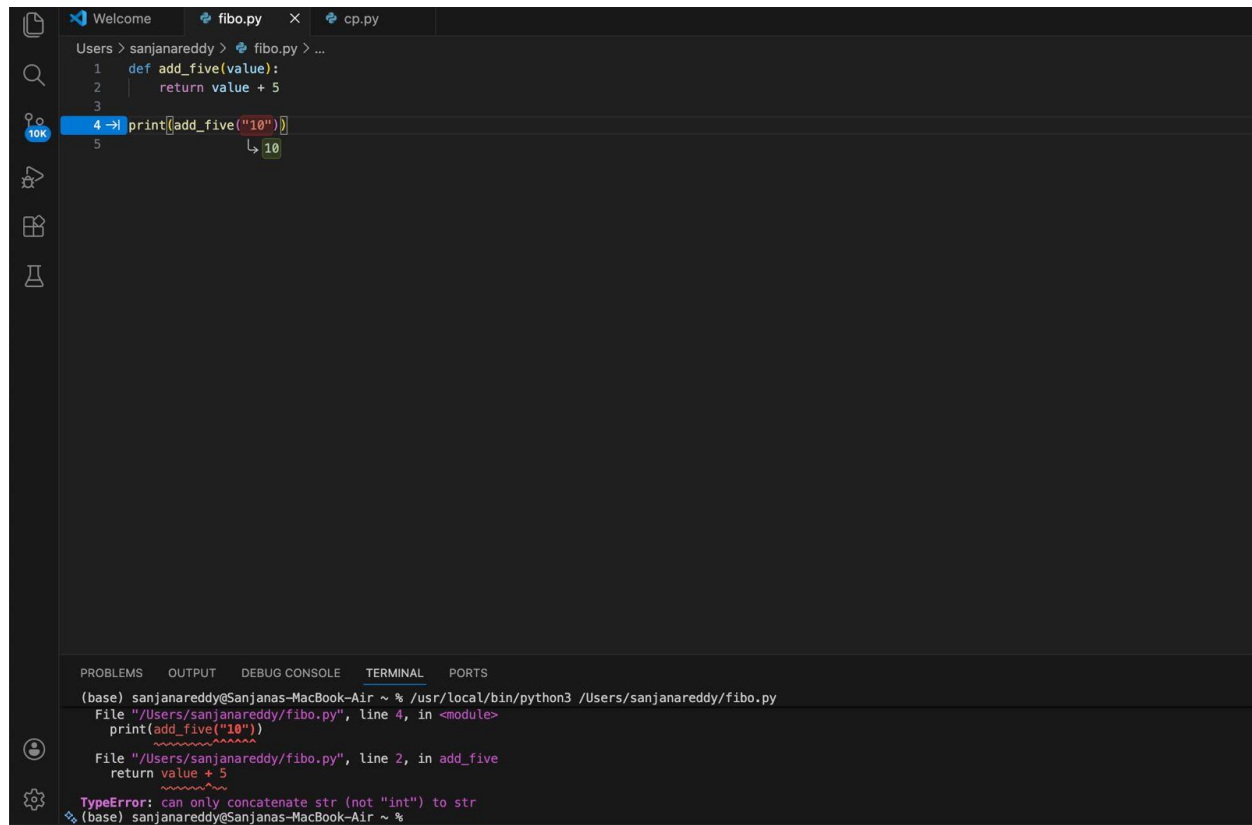
AttributeError: 'Car' object has no attribute 'drive'

● (base) sanjanareddy@Sanjanas-MacBook-Air ~ % /usr/local/bin/python3 /Users/sanjanareddy/fibo.py

All tests passed.

⚡ (base) sanjanareddy@Sanjanas-MacBook-Air ~ %

## Task 5 – TypeError



The screenshot shows a code editor with a file named `fibonacci.py` open. The code defines a function `add_five` that takes a value and returns it plus 5. It then calls `print(add_five("10"))`. The output of the program is `10`. The bottom panel shows the error message: `TypeError: can only concatenate str (not "int") to str`.

```
1 def add_five(value):
2     return value + 5
3
4 print(add_five("10"))
5
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

(base) sanjanareddy@Sanjanas-MacBook-Air ~ % /usr/local/bin/python3 /Users/sanjanareddy/fibonacci.py

File "/Users/sanjanareddy/fibonacci.py", line 4, in <module>

print(add\_five("10"))

File "/Users/sanjanareddy/fibonacci.py", line 2, in add\_five

return value + 5

TypeError: can only concatenate str (not "int") to str

(base) sanjanareddy@Sanjanas-MacBook-Air ~ %

### Observed Error

**TypeError:** Cannot add string and integer.

### AI Explanation

Python does not allow adding string and integer directly.



```

Welcome  fibo.py  cp.py

Users > sanjanareddy > fibo.py > ...
1  def add_five_str(value):
2      return str(value) + "5"
3
4  # Test cases
5  assert add_five_str("10") == "105"
6  assert add_five_str("0") == "05"
7  assert add_five_str("7") == "75"
8

PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

(base) sanjanareddy@Sanjanas-MacBook-Air ~ % /usr/local/bin/python3 /Users/sanjanareddy/fibo.py

File "/Users/sanjanareddy/fibo.py", line 2, in add_five
    return value + 5
           ~~~~~^~
TypeError: can only concatenate str (not "int") to str
• (base) sanjanareddy@Sanjanas-MacBook-Air ~ % /usr/local/bin/python3 /Users/sanjanareddy/fibo.py
• (base) sanjanareddy@Sanjanas-MacBook-Air ~ % /usr/local/bin/python3 /Users/sanjanareddy/fibo.py
❖ (base) sanjanareddy@Sanjanas-MacBook-Air ~ %
```

```

Welcome  fibo.py  cp.py

Users > sanjanareddy > fibo.py > ...
1  def add_five(value):
2      return int(value) + 5
3
4  # Test cases
5  assert add_five("10") == 15
6  assert add_five("0") == 5
7  assert add_five("5") == 10
8

PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

(base) sanjanareddy@Sanjanas-MacBook-Air ~ % /usr/local/bin/python3 /Users/sanjanareddy/fibo.py
print(add_five("10"))
~~~~~
File "/Users/sanjanareddy/fibo.py", line 2, in add_five
    return value + 5
           ~~~~~^~
TypeError: can only concatenate str (not "int") to str
• (base) sanjanareddy@Sanjanas-MacBook-Air ~ % /usr/local/bin/python3 /Users/sanjanareddy/fibo.py
❖ (base) sanjanareddy@Sanjanas-MacBook-Air ~ %
```

Output

Program runs successfully for multiple inputs.