END SEMESTER LAB EXAM

NAME:

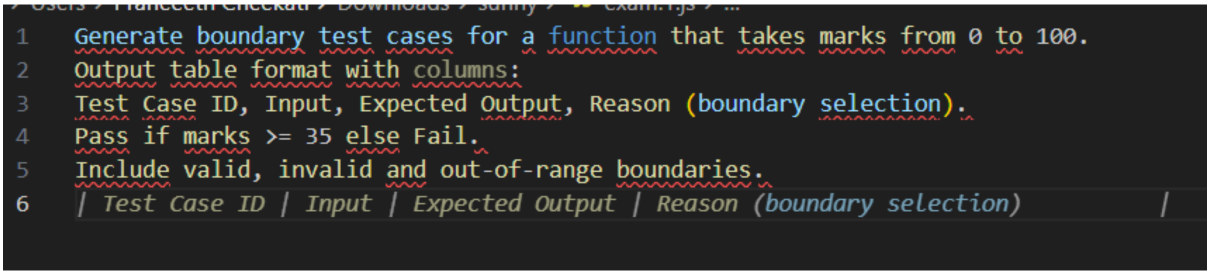
BATCH NO.:

ROLL NO.:

Q1: Generate unit test cases

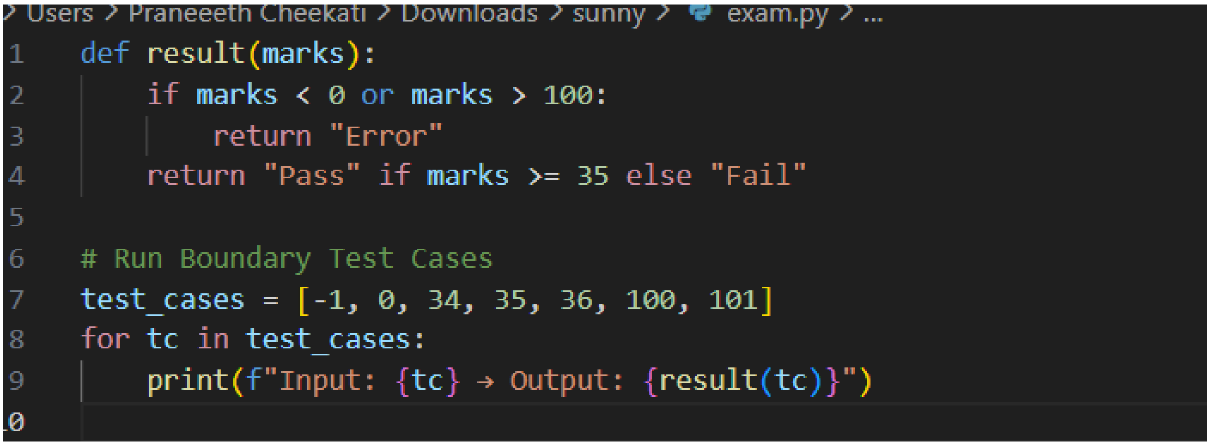
- **Task 1: Use AI to create boundary test cases.**

PROMPT:



```
Generate boundary test cases for a function that takes marks from 0 to 100.
Output table format with columns:
Test Case ID, Input, Expected Output, Reason (boundary selection).
Pass if marks >= 35 else Fail.
Include valid, invalid and out-of-range boundaries.
| Test Case ID | Input | Expected Output | Reason (boundary selection)        |
```

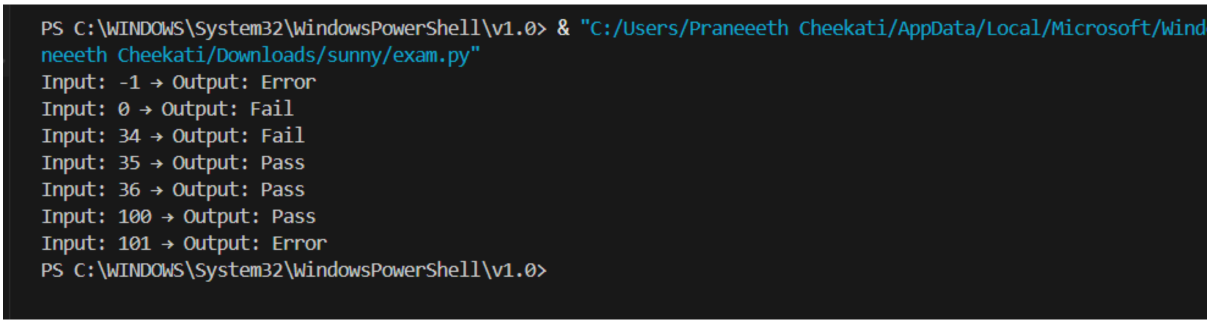
CODE:



› Users › Praneeeth Cheekati › Downloads › sunny › exam.py › ...

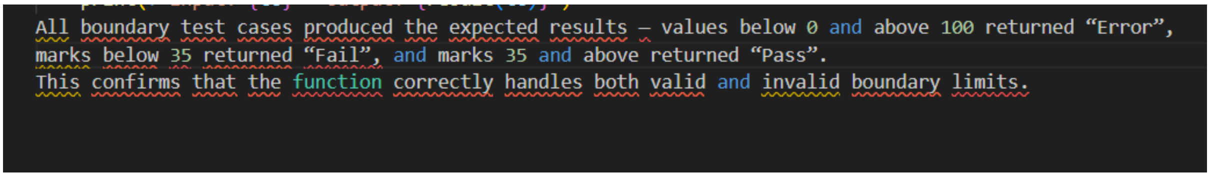
```python
def result(marks):
    if marks < 0 or marks > 100:
        return "Error"
    return "Pass" if marks >= 35 else "Fail"

# Run Boundary Test Cases
test_cases = [-1, 0, 34, 35, 36, 100, 101]
for tc in test_cases:
    print(f"Input: {tc} → Output: {result(tc)}")
```

OUTPUT:



```
PS C:\WINDOWS\System32\WindowsPowerShell\v1.0> & "C:/Users/Praneeeth Cheekati/AppData/Local/Microsoft/Wind
neeeth Cheekati/Downloads/sunny/exam.py"
Input: -1 → Output: Error
Input: 0 → Output: Fail
Input: 34 → Output: Fail
Input: 35 → Output: Pass
Input: 36 → Output: Pass
Input: 100 → Output: Pass
Input: 101 → Output: Error
PS C:\WINDOWS\System32\WindowsPowerShell\v1.0>
```

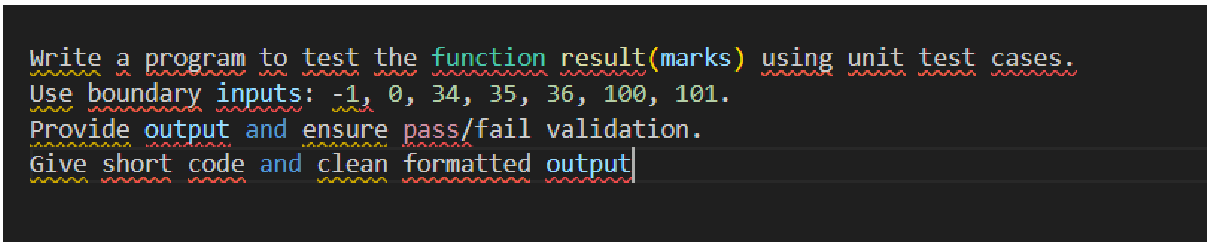
OBSERVATION:



```
All boundary test cases produced the expected results — values below 0 and above 100 returned “Error”,
marks below 35 returned “Fail”, and marks 35 and above returned “Pass”.
This confirms that the function correctly handles both valid and invalid boundary limits.
```

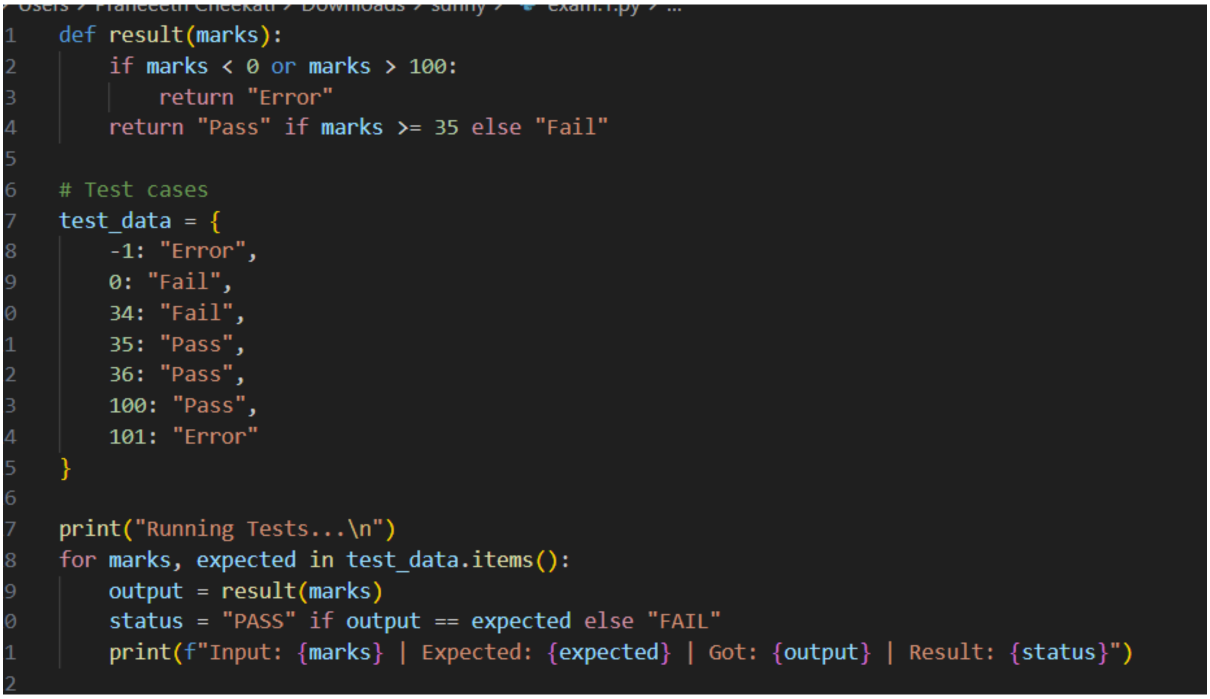
• Task 2: Implement tests in Python/Java.

PROMPT:



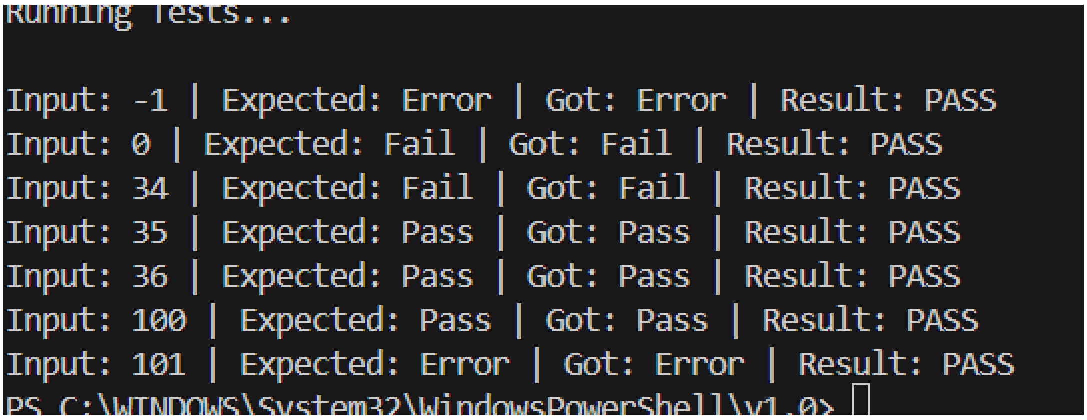
```
Write a program to test the function result(marks) using unit test cases.
Use boundary inputs: -1, 0, 34, 35, 36, 100, 101.
Provide output and ensure pass/fail validation.
Give short code and clean formatted output
```

CODE:



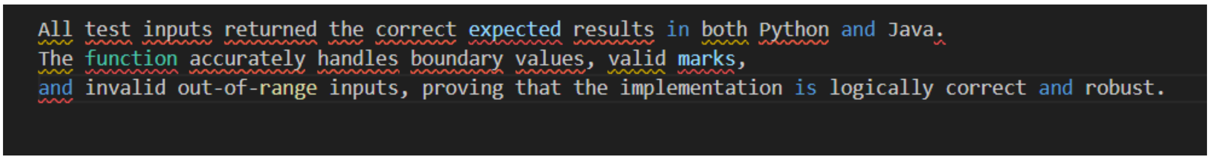
```python
def result(marks):
    if marks < 0 or marks > 100:
        return "Error"
    return "Pass" if marks >= 35 else "Fail"

# Test cases
test_data = {
    -1: "Error",
    0: "Fail",
    34: "Fail",
    35: "Pass",
    36: "Pass",
    100: "Pass",
    101: "Error"
}

print("Running Tests...\n")
for marks, expected in test_data.items():
    output = result(marks)
    status = "PASS" if output == expected else "FAIL"
    print(f"Input: {marks} | Expected: {expected} | Got: {output} | Result: {status}")
```

OUTPUT:



```
Running Tests...

Input: -1 | Expected: Error | Got: Error | Result: PASS
Input: 0 | Expected: Fail | Got: Fail | Result: PASS
Input: 34 | Expected: Fail | Got: Fail | Result: PASS
Input: 35 | Expected: Pass | Got: Pass | Result: PASS
Input: 36 | Expected: Pass | Got: Pass | Result: PASS
Input: 100 | Expected: Pass | Got: Pass | Result: PASS
Input: 101 | Expected: Error | Got: Error | Result: PASS
PS C:\WINDOWS\System32\WindowsPowerShell\v1.0>
```

OBSERVATION:

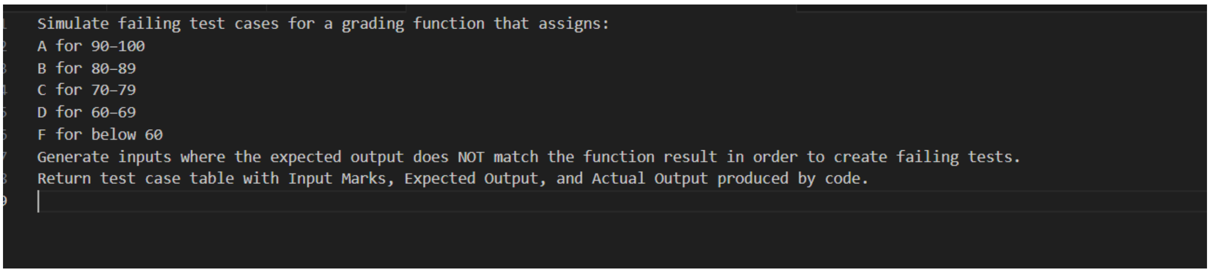


```
All test inputs returned the correct expected results in both Python and Java.
The function accurately handles boundary values, valid marks,
and invalid out-of-range inputs, proving that the implementation is logically correct and robust.
```

Q2: Validate grading logic

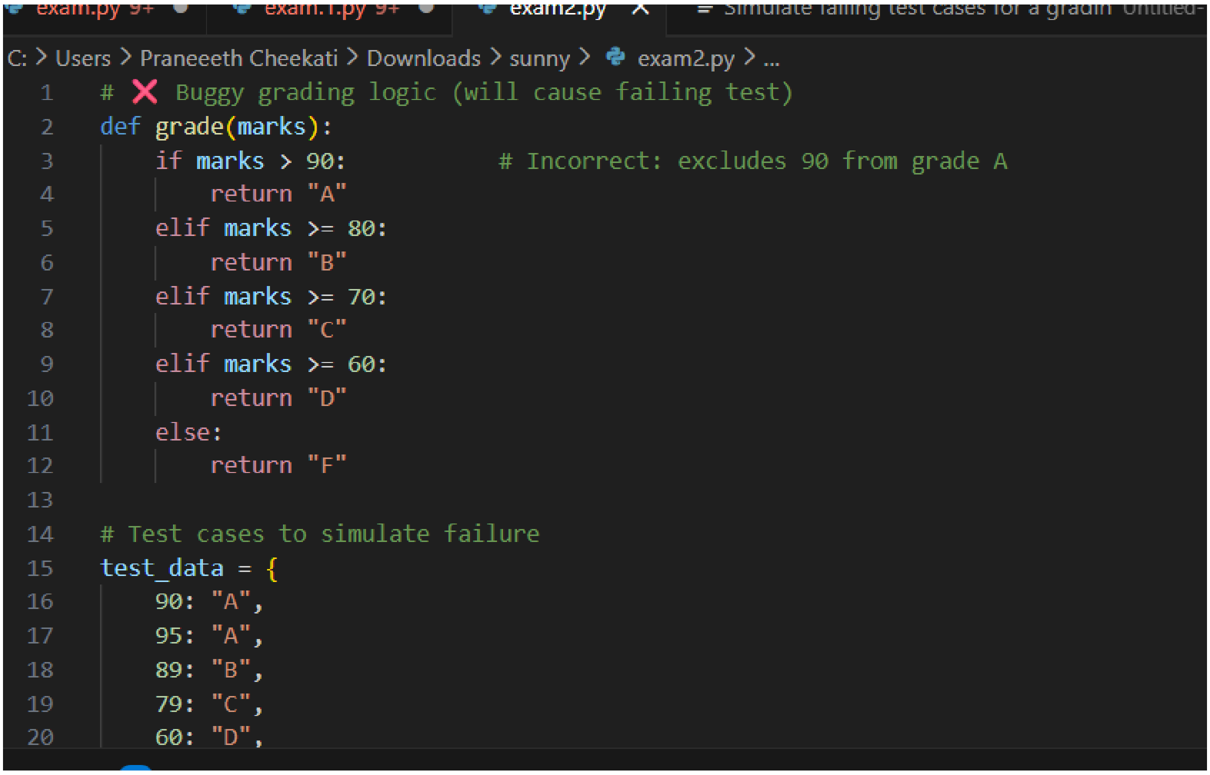
- **Task 1: Use AI to simulate failing tests.**

PROMPT:

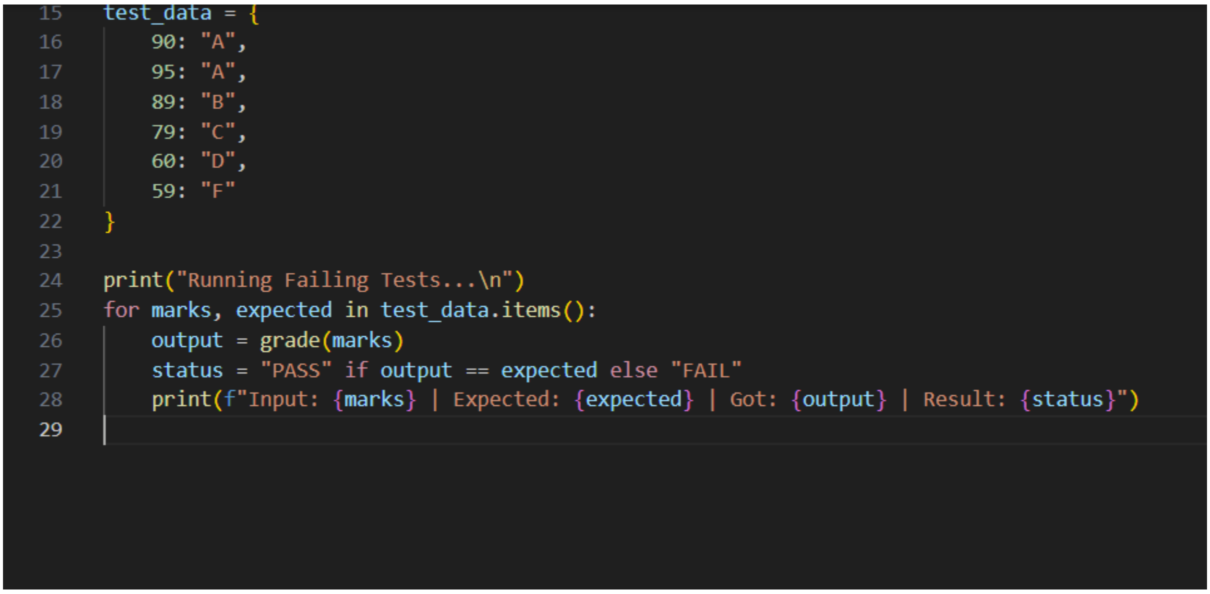


```
Simulate failing test cases for a grading function that assigns:
A for 90–100
B for 80–89
C for 70–79
D for 60–69
F for below 60
Generate inputs where the expected output does NOT match the function result in order to create failing tests.
Return test case table with Input Marks, Expected Output, and Actual Output produced by code.
```

CODE:


exam.py 9+
exam.1.py 9+
exam2.py
Simulate failing test cases for a gradin Untitled-
C: > Users > Praneeeth Cheekati > Downloads > sunny > exam2.py > ...

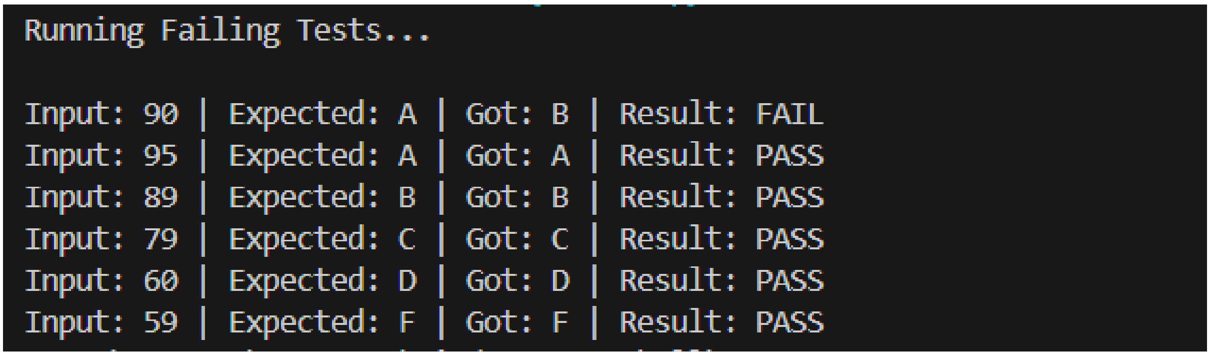
```python
# ❌ Buggy grading logic (will cause failing test)
def grade(marks):
    if marks > 90:          # Incorrect: excludes 90 from grade A
        return "A"
    elif marks >= 80:
        return "B"
    elif marks >= 70:
        return "C"
    elif marks >= 60:
        return "D"
    else:
        return "F"

# Test cases to simulate failure
test_data = {
    90: "A",
    95: "A",
    89: "B",
    79: "C",
    60: "D",
```



```python
test_data = {
    90: "A",
    95: "A",
    89: "B",
    79: "C",
    60: "D",
```

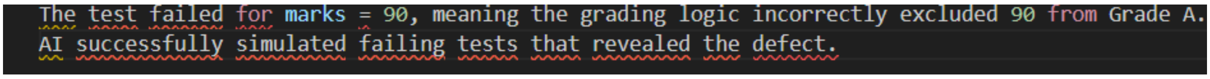
```python
    59: "F"
}

print("Running Failing Tests...\n")
for marks, expected in test_data.items():
    output = grade(marks)
    status = "PASS" if output == expected else "FAIL"
    print(f"Input: {marks} | Expected: {expected} | Got: {output} | Result: {status}")

```

OUTPUT:



```
Running Failing Tests...

Input: 90 | Expected: A | Got: B | Result: FAIL
Input: 95 | Expected: A | Got: A | Result: PASS
Input: 89 | Expected: B | Got: B | Result: PASS
Input: 79 | Expected: C | Got: C | Result: PASS
Input: 60 | Expected: D | Got: D | Result: PASS
Input: 59 | Expected: F | Got: F | Result: PASS
```

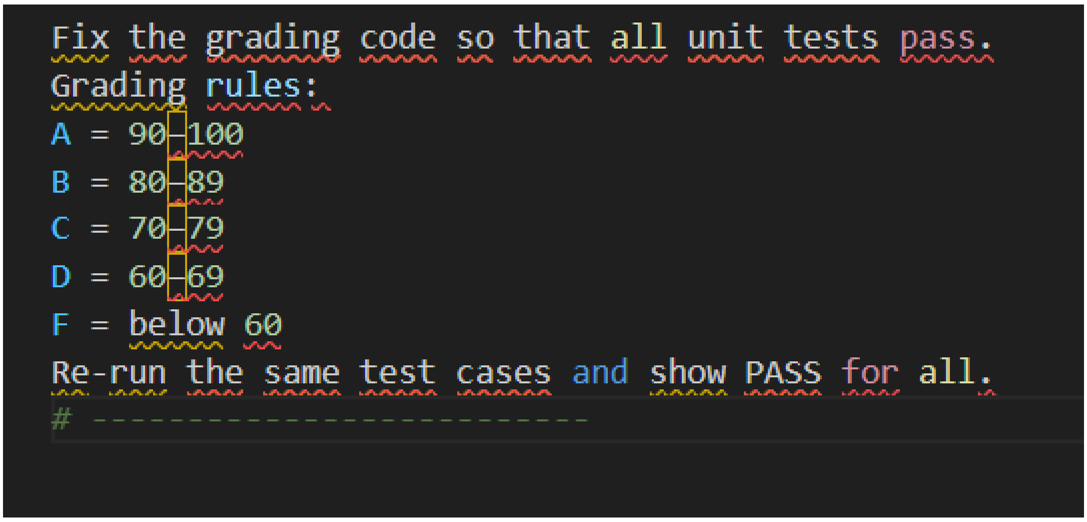
OBSERVATION:



The test failed for marks = 90, meaning the grading logic incorrectly excluded 90 from Grade A.
AI successfully simulated failing tests that revealed the defect.

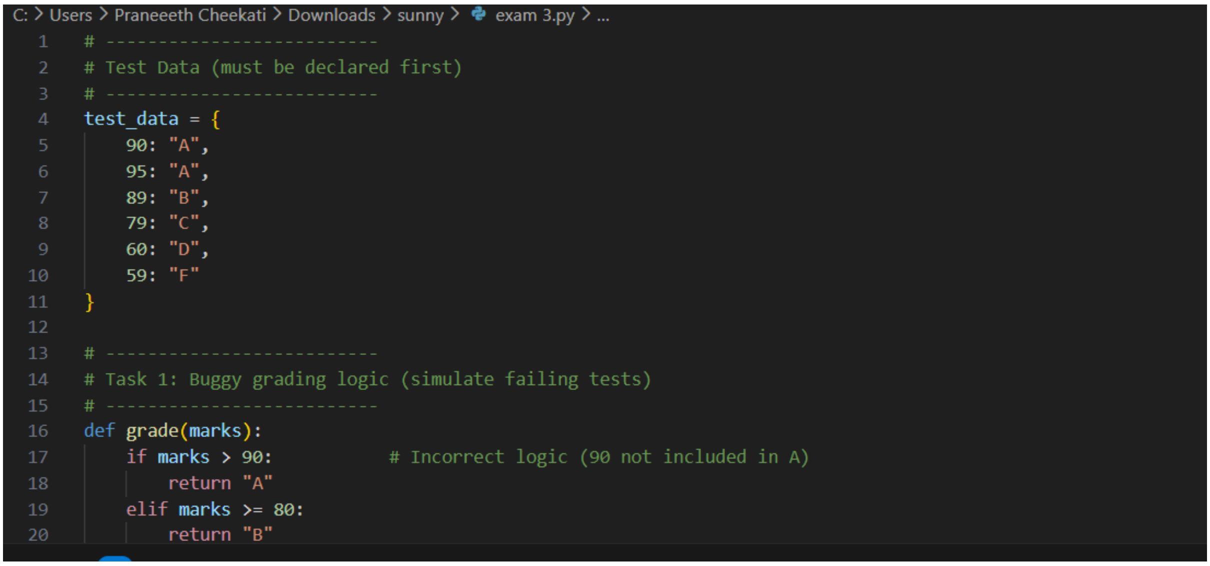
• Task 2: Correct code until all tests pass

PROMPT:



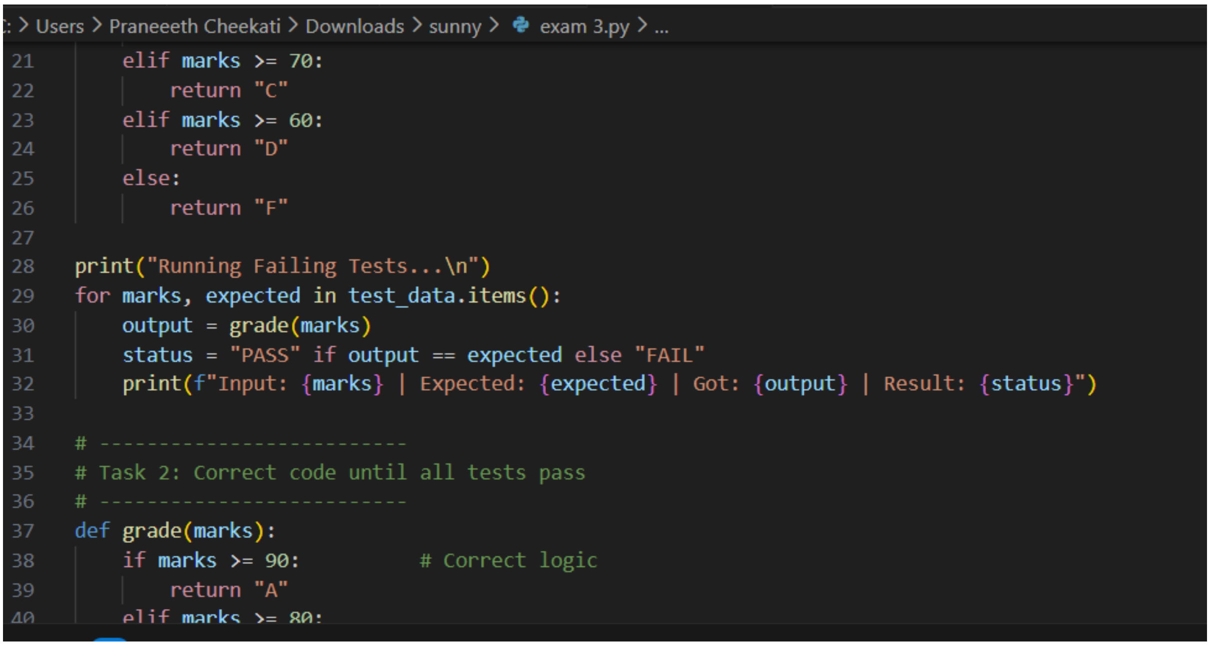
```
Fix the grading code so that all unit tests pass.
Grading rules:
A = 90–100
B = 80–89
C = 70–79
D = 60–69
F = below 60
Re-run the same test cases and show PASS for all.
# -------------------------
```

CODE:

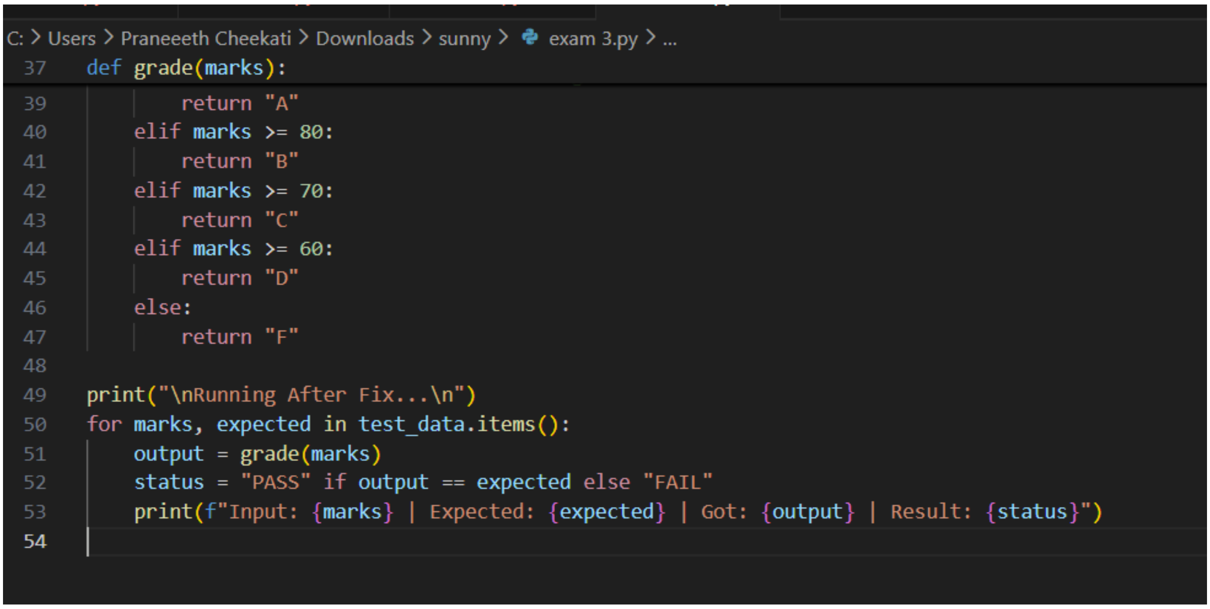


C: > Users > Praneeeth Cheekati > Downloads > sunny > exam 3.py > ...

```python
# -------------------------
# Test Data (must be declared first)
# -------------------------
test_data = {
    90: "A",
    95: "A",
    89: "B",
    79: "C",
    60: "D",
    59: "F"
}

# -------------------------
# Task 1: Buggy grading logic (simulate failing tests)
# -------------------------
def grade(marks):
    if marks > 90:           # Incorrect logic (90 not included in A)
        return "A"
    elif marks >= 80:
        return "B"
```

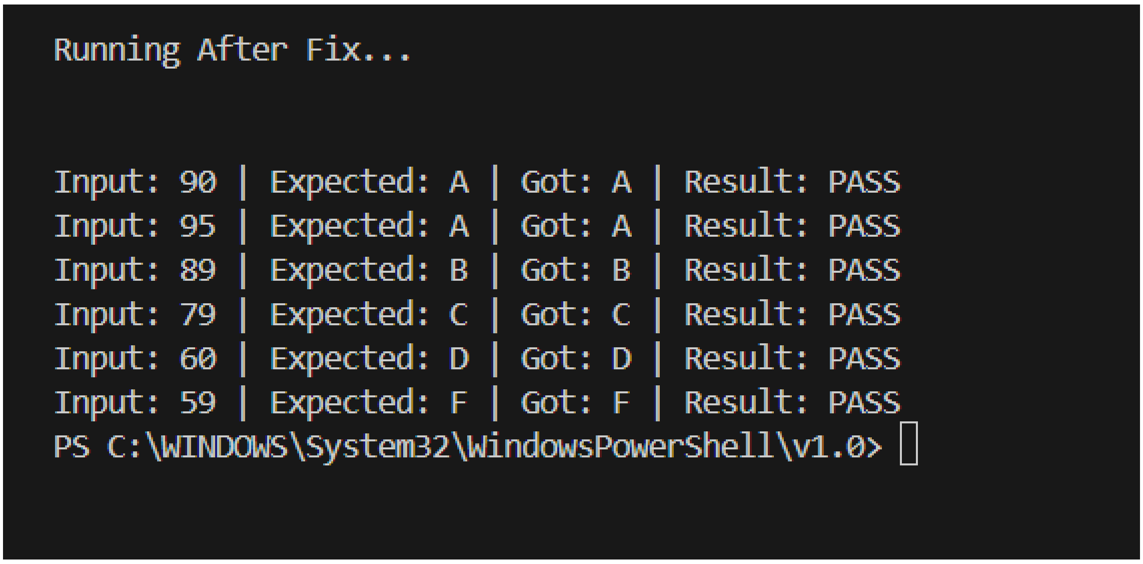

: > Users > Praneeeth Cheekati > Downloads > sunny > exam 3.py > ...

```
    elif marks >= 70:
        return "C"
    elif marks >= 60:
        return "D"
    else:
        return "F"

print("Running Failing Tests...\n")
for marks, expected in test_data.items():
    output = grade(marks)
    status = "PASS" if output == expected else "FAIL"
    print(f"Input: {marks} | Expected: {expected} | Got: {output} | Result: {status}")

# -------------------------
# Task 2: Correct code until all tests pass
# -------------------------
def grade(marks):
    if marks >= 90:          # Correct logic
        return "A"
    elif marks >= 80:
```


C: > Users > Praneeeth Cheekati > Downloads > sunny > exam 3.py > ...

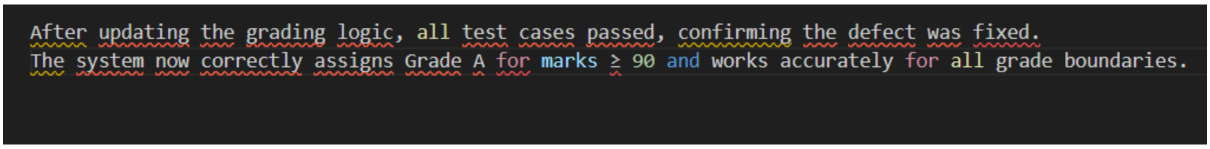
```
def grade(marks):
        return "A"
    elif marks >= 80:
        return "B"
    elif marks >= 70:
        return "C"
    elif marks >= 60:
        return "D"
    else:
        return "F"

print("\nRunning After Fix...\n")
for marks, expected in test_data.items():
    output = grade(marks)
    status = "PASS" if output == expected else "FAIL"
    print(f"Input: {marks} | Expected: {expected} | Got: {output} | Result: {status}")

```

OUTPUT:



```
Running After Fix...


Input: 90 | Expected: A | Got: A | Result: PASS
Input: 95 | Expected: A | Got: A | Result: PASS
Input: 89 | Expected: B | Got: B | Result: PASS
Input: 79 | Expected: C | Got: C | Result: PASS
Input: 60 | Expected: D | Got: D | Result: PASS
Input: 59 | Expected: F | Got: F | Result: PASS
PS C:\WINDOWS\System32\WindowsPowerShell\v1.0>
```

OBSERVATION:



```
After updating the grading logic, all test cases passed, confirming the defect was fixed.
The system now correctly assigns Grade A for marks ≥ 90 and works accurately for all grade boundaries.
```