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Batch:-04

Task 1: Even/Odd Validator - AI Prompt

Generate unittest test cases for function `is_even(n)` that:

- Accepts only integers
- Handles zero, negative, large integers
- Raises `TypeError` for invalid input

Task 1: Test Cases

```
class TestIsEven(unittest.TestCase):  
    def test_even(self):  
        self.assertTrue(is_even(2))  
    def test_odd(self):  
        self.assertFalse(is_even(7))  
    def test_zero(self):  
        self.assertTrue(is_even(0))  
    def test_negative(self):  
        self.assertTrue(is_even(-4))  
    def test_invalid(self):  
        with self.assertRaises(TypeError):  
            is_even("2")
```

Task 1: Implementation

```
def is_even(n):    if not
isinstance(n, int):
    raise TypeError("Input must be an integer" )
return n % 2 == 0
```

Task 2: String Case Converter - AI Prompt

Generate test cases for:

to_uppercase(text) to_lowercase(text)

Handle empty strings and invalid
inputs.

Task 2: Implementation

```
def to_uppercase(text):    if not
isinstance(text, str):
    raise TypeError("Input must be a string")
return text.upper()
```

```
def to_lowercase(text):    if not
isinstance(text, str):
    raise TypeError("Input must be a string")
return text.lower()
```

Task 3: List Sum Calculator - AI Prompt

Generate test cases for sum_list(numbers):

- Handle empty list
- Handle negatives
- Ignore non-numeric values

Task 3: Implementation

```
def sum_list(numbers):    if not
    isinstance(numbers, list):
        raise TypeError("Input must be a list")
    total = 0    for item in numbers:      if
        isinstance(item, (int, float)):
            total += item    return
    total
```

Task 4: StudentResult Class - AI Prompt

Generate test cases for StudentResult class with:

```
add_marks(mark)
calculate_average()
get_result()
```

Task 4: Implementation

```
class StudentResult:
    def __init__(self):
        self.marks = []

    def add_marks(self, mark):
        if not isinstance(mark, (int, float)):
            raise TypeError("Mark must be numeric")
        if mark < 0 or mark > 100:
            raise ValueError("Mark must be between 0 and 100")
        self.marks.append(mark)

    def calculate_average(self):
        if not self.marks:
            return 0
        return sum(self.marks) / len(self.marks)

    def get_result(self):
        avg = self.calculate_average()
        return "Pass" if avg >= 40 else "Fail"
```

Task 5: Username Validator - AI Prompt

Generate test cases for username validation:

- Minimum length 5
- No spaces
- Only alphanumeric

Task 5: Implementation

```
def is_valid_username(username):  
    if not isinstance(username, str):  
        raise TypeError("Username must be a string")  
    if len(username) < 5:  
        return False    if " " in  
username:      return False  
    if not username.isalnum():  
        return False  
    return True
```