

Assignment-8

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Batch - 38

TASK-1

**generate test cases for a function `is_even(n)`
and then implement the function so that it satisfies all
generated
tests.**

Requirements:

- Input must be an integer
 - Handle zero, negative numbers, and large integers

TASK-2

generate test cases for two functions:

- **to_uppercase(text)**
- **to_lowercase(text)**

Requirements:

- Handle empty strings
- Handle mixed-case input
- Handle invalid inputs such as numbers or None

The screenshot shows a code editor interface with the following details:

- File:** stringcase.py
- Code Content:**

```
1  from typing import Any
2
3  import unittest
4
5
6  def to_uppercase(text: Any) -> str:
7
8      if not isinstance(text, str):
9          raise TypeError("input must be a string")
10     return text.upper()
11
12
13
14  def to_lowercase(text: Any) -> str:
15
16      if not isinstance(text, str):
17          raise TypeError("input must be a string")
18      return text.lower()
19
20
21  class TestStringCase(unittest.TestCase):
22      def test_to_uppercase_basic(self):
23          self.assertEqual(to_uppercase("ai coding"), "AI CODING")
24
25      def test_to_lowercase_basic(self):
26          self.assertEqual(to_lowercase("TEST"), "test")
```
- Terminal:** Shows command-line output of the Python interpreter running the tests.
- Output:** Shows the results of the tests, indicating they all passed.
- Chat:** Shows a todo list and a message about preparing test cases and implementation.
- Problems:** Shows no problems.

TASK-3

Generate test cases for a StudentResult class with the following methods:

- **add_marks(mark)**
- **calculate_average()**
- **get_result()**

Requirements:

- **Marks must be between 0 and 100**
- **Average \geq 40 \rightarrow Pass, otherwise Fail**

The screenshot shows a code editor interface with several tabs open. The active tab is `sum_list.py`, which contains the following code:

```
1
2
3     from typing import Iterable, Any
4     import unittest
5
6
7     def sum_list(numbers: Any) -> float:
8
9         # Quick check that we were given an iterable (but str is iterable; handle separately)
10        if isinstance(numbers, (str, bytes)):
11            raise TypeError("input must be an iterable of numbers (not a string)")
12
13        try:
14            iterator = iter(numbers)
15        except TypeError:
16            raise TypeError("input must be an iterable (like list or tuple)")
17
18        total = 0
19        found_int = False
20        for item in iterator:
21            # Ignore booleans explicitly
22            if isinstance(item, bool):
23                continue
24
25            if isinstance(item, (int, float)):
26                total += item
27                found_int = True
28
29
30    def test_sum_list():
31        assert sum_list([1, 2, 3]) == 6
32        assert sum_list([-1, 5, -4]) == 0
33        assert sum_list([2, '3', 3]) == 5
34        assert sum_list([None, 1, 2.5, 'x']) == 3.5
35        assert sum_list(123) == Error: TypeError: input must be an iterable (like list or tuple)
36
37    def test_type_error():
38        assert sum_list([]) == 0
39        assert sum_list([-1, 5, -4]) == 0
40        assert sum_list([None, 1, 2.5, 'x']) == 3.5
41        assert sum_list(123) == Error: TypeError: input must be an iterable (like list or tuple)
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```

TASK-4

- Generate test cases for a **StudentResult** class with the following methods:
 - **add_marks(mark)**
 - **calculate_average()**
 - **get_result()**

Requirements:

- Marks must be between 0 and 100
- Average $\geq 40 \rightarrow$ Pass, otherwise Fail

The screenshot shows the Visual Studio Code interface with the following details:

- File Explorer:** Shows files: student_result.py, sum_list.py, evenodd.py.
- Terminal:** Shows Python test execution output:

```
lakkia Ravindreddy@lakkis-MacBook-Air ~ % /usr/bin/python3 /Users/lakkia Ravindreddy/sum_list.py
sum_list([]) -> 0
sum_list([1, 5, -4]) -> 0
sum_list([1, 5, 3]) -> 5
sum_list(None, 1, 2.5, 'x') -> 3.5
sum_list(123) -> Error: TypeError: input must be an iterable (like list or tuple)
● lakkia Ravindreddy@lakkis-MacBook-Air ~ % /usr/bin/python3 /Users/lakkia Ravindreddy/sum_list.py
sum_list([], 2, 3) -> 0
sum_list([1, 5, -4]) -> 0
sum_list([0, 1, 3]) -> 3
sum_list(None, 1, 2.5, 'x') -> 3.5
sum_list(123) -> Error: TypeError: input must be an iterable (like list or tuple)
● lakkia Ravindreddy@lakkis-MacBook-Air ~ % /usr/bin/python3 /Users/lakkia Ravindreddy/student_result.py
marks: [70.0, 80.0, 30.0]
average: 60.0
result: Pass
● lakkia Ravindreddy@lakkis-MacBook-Air ~ % /usr/bin/python3 /Users/lakkia Ravindreddy/student_result.py
marks: [70.0, 80.0, 30.0]
average: 60.0
result: Pass
△ lakkia Ravindreddy@lakkis-MacBook-Air ~ %
```

- Output Panel:** Shows test results and progress update.
- Terminal Bottom:** Shows command line interface with Python version and Go Live button.

TASK-5

Test-Driven Development for Username Validator

Requirements:

- Minimum length: 5 characters
- No spaces allowed
- Only alphanumeric characters

Example Test Scenarios:

`is_valid_username("user01") → True`

`is_valid_username("ai") → False`

`is_valid_username("user name") → False`

`is_valid_username("user@123") → False`

Expected Output 5

A username validation function that passes all AI-generated test cases.

The screenshot shows the Visual Studio Code interface with several tabs open: "Welcome", "Untitled-1", "username_validator.py", "sum_list.py", and "evenodd.py". The "username_validator.py" tab contains the following Python code:

```
1  from typing import Any
2  import unittest
3
4
5  def is_valid_username(username: Any) -> bool:
6
7      if not isinstance(username, str):
8          return False
9
10     if len(username) < 5:
11         return False
12
13     if " " in username:
14         return False
15
16     if not (username.isalnum() and username.isascii()):
17         return False
18
19     return True
20
21
22 class TestUsernameValidator(unittest.TestCase):
23     def test_valid_username(self):
24         self.assertTrue(is_valid_username("user01"))
25
26     def test_too_short(self):
27         self.assertFalse(is_valid_username("a"))
```

The "PROBLEMS" panel shows no errors. The "TERMINAL" panel shows the output of running the tests with Python 3:

```
lakkiravindreddy@lakkis-MacBook-Air ~ % /usr/bin/python3 /Users/lakkiravindreddy/student_result.py
● lakkiravindreddy@lakkis-MacBook-Air ~ % /usr/bin/python3 /Users/lakkiravindreddy/student_result.py
marks: [70.0, 80.0, 30.0]
average: 60.0
result: Pass
● lakkiravindreddy@lakkis-MacBook-Air ~ % /usr/bin/python3 /Users/lakkiravindreddy/username_validator.py
is_valid_username('user01') -> True
is_valid_username('ai') -> False
is_valid_username('user name') -> False
is_valid_username('user@123') -> False
is_valid_username('abcde') -> True
is_valid_username('') -> False
is_valid_username('None') -> False
is_valid_username('12345') -> False
● lakkiravindreddy@lakkis-MacBook-Air ~ % /usr/bin/python3 /Users/lakkiravindreddy/username_validator.py
is_valid_username('user01') -> True
is_valid_username('ai') -> False
is_valid_username('user name') -> False
is_valid_username('user@123') -> False
is_valid_username('abcde') -> True
is_valid_username('') -> False
is_valid_username('12345') -> False
lakkiravindreddy@lakkis-MacBook-Air ~ %
```

The "OUTPUT" panel shows the command "python3 /Users/lakkiravindreddy/username_validator.py --test". A modal dialog box is open in the bottom right corner asking "Run zsh command?", with options "Allow" and "Skip".