PROBLEM STATEMENT

Develop a program to implement insertion sort for both in ascending and descending orders for both array and strings. Additionally, perform Test Driven Development (TDD) using Python's unit testing framework.

USER STORIES

1) As a user, I want to sort an array of numbers in ascending order.

Test Case:
Input: [64, 34, 25, 12, 22, 11, 90]
Expected Output: [11, 12, 22, 25, 34, 64, 90]

2) As a user, I want to sort an array of numbers in descending order.

Test Case:
Input: [64, 34, 25, 12, 22, 11, 90]
Expected Output: [90, 64, 34, 25, 22, 12, 11]

3) As a user, I want to sort an array of strings in ascending order.

Test Case:
Input: ['banana', 'date', 'apple', 'plum', 'cherry', 'apricot', 'blueberry']
Expected Output: ['apple', 'apricot', 'banana', 'blueberry', 'cherry', 'date', 'plum']

4) As a user, I want to sort an array of strings in descending order.

Test Case:
Input: ['banana', 'date', 'apple', 'plum', 'cherry', 'apricot', 'blueberry']
Expected Output: ['plum', 'date', 'cherry', 'blueberry', 'banana', 'apricot', 'apple']

5) As a user, I want to display an exception when there exists heterogenous elements in the array.

Test Case:
Input: [1, "string", 23]
Expected Output: "Exception: Non-numeric element found in the array"

REPORT

Test Name	Test Description	Input	Expected Output	Actual Output
test_asc_num	Perform sorting of numeric array in ascending order	[64, 34, 25, 12, 22, 11, 90]	[11, 12, 22, 25, 34, 64, 90]	[11, 12, 22, 25, 34, 64, 90]
test_desc_num	Perform sorting of numeric array in descending order	[64, 34, 25, 12, 22, 11, 90]	[90, 64, 34, 25, 22, 12, 11]	[90, 64, 34, 25, 22, 12, 11]
test_asc_str	Perform sorting of string array in ascending order	['banana', 'date', 'apple', 'plum', 'cherry', 'apricot', 'blueberry']	['apple', 'apricot', 'banana', 'blueberry', 'cherry', 'date', 'plum']	['apple', 'apricot', 'banana', 'blueberry', 'cherry', 'date', 'plum']
test_desc_str	Perform sorting of string array in descending order	['banana', 'date', 'apple', 'plum', 'cherry', 'apricot', 'blueberry']	['plum', 'date', 'cherry', 'blueberry', 'banana', 'apricot', 'apple']	['plum', 'date', 'cherry', 'blueberry', 'banana', 'apricot', 'apple']
test_heterogenous	Exception raised due	[1, "string", 23]	Exception: Heterogeneous array	Exception: Heterogeneous array

SUMMARY

1. test_asc_num() → Passed
2. test_desc_num() → Passed
3. test_asc_num() → Passed
4. test_desc_str() → Passed
5. test_heterogeneous() → Passed

RESULTS

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Expected Output: [11, 12, 22, 25, 34, 64, 90]
Actual Output:   [11, 12, 22, 25, 34, 64, 90]
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Expected Output: ['apple', 'apricot', 'banana', 'blueberry', 'cherry', 'date', 'plum']
Actual Output: ['apple', 'apricot', 'banana', 'blueberry', 'cherry', 'date', 'plum']
.
Expected Output: [90, 64, 34, 25, 22, 12, 11]
Actual Output: [90, 64, 34, 25, 22, 12, 11]
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Expected Output: ['plum', 'date', 'cherry', 'blueberry', 'banana', 'apricot', 'apple']
Actual Output: ['plum', 'date', 'cherry', 'blueberry', 'banana', 'apricot', 'apple']
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Expected Output: Exception: Heterogeneous array
Actual Output: Exception: Heterogeneous array
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----------------------------------------------------------------
Ran 5 tests in 0.004s

OK
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