Unit Testing Report

Please provide your GitHub repository link. ### GitHub Repository URL: https://github.com/Swigstan1810/Milestone1_Group32

The testing report should focus solely on testing all the self-defined functions related to the five required features. There is no need to test the GUI components. Therefore, it is essential to decouple your code and separate the logic from the GUI-related code.

1. Test Summary

Below is a list of all tested functions related to the five required features and the corresponding test functions designed to validate them:

Tested Functions	**Test Functions**
`read_data_file_csv(filepath)`	`test_read_data_file_csv_success()`
	`test_read_data_file_csv_failure()`
`get_records_in_dataframe(food, df)`	`test_get_records_in_dataframe()`
	`test_get_records_in_dataframe_invalid_input()`
	`test_get_records_in_dataframe_type_error()`
	`test_get_records_in_dataframe_empty_dataframe()`
	`test_get_records_in_dataframe_invalid_food()`
	`test_get_records_in_dataframe_missing_food_column()`
`get_sum_value_in_dataframe(food, df)`	`test_get_sum_value_in_dataframe()`
	`test_get_sum_value_in_dataframe_not_found()`
	`test_get_sum_value_in_dataframe_type_error()`
	`test_get_sum_value_in_dataframe_empty_dataframe()`
`get_nutrition_range_filter(nutrient, min_value, max_value, df)`	`test_get_nutrition_range_filter()`
	`test_get_nutrition_range_filter_key_error()`
	`test_get_nutrition_range_filter_type_error()`
	`test_get_nutrition_range_filter_invalid_range()`
`get_highest_lowest_nutrition_level_filter(nutrient, df)`	`test_get_highest_lowest_nutrition_level_filter()`
	`test_get_highest_lowest_nutrition_level_filter_key_error()`
	`test_get_highest_lowest_nutrition_level_filter_type_error()`
`get_list_5food_max_nutrition(nutrient, df)`	`test_get_list_5food_max_nutrition()`
	`test_get_list_5food_max_nutrition_key_error()`
	`test_get_list_5food_max_nutrition_type_error()`
`get_list_5food_min_nutrition(nutrient, df)`	`test_get_list_5food_min_nutrition()`
	`test_get_list_5food_min_nutrition_key_error()`
	`test_get_list_5food_min_nutrition_type_error()`

Tested Functions	Test Functions

get_two_foods_with_nutritions(food1, food2, df)	test_get_two_foods_with_nutritions()
	test_get_two_foods_with_nutritions_not_found()
	test_get_two_foods_with_nutritions_type_error()
	test_get_two_foods_with_nutritions_both_invalid()
	test_get_two_foods_with_nutritions_empty_dataframe()

2. Test Case Details

Test Case 1: read_data_file_csv(filepath)

- **Test Function/Module**
  - `test_read_data_file_csv_success()`
  - `test_read_data_file_csv_failure()`
- **Tested Function/Module**
  - `read_data_file_csv(filepath)`
- **Description**
  - This function tests the CSV reading logic, ensuring that the file is read correctly and handles errors like file-not-found.
- **1) Valid Input and Expected Output**

Input	Expected Output
A valid CSV file with food data	DataFrame with valid food and nutrition columns

- **1) Code for the Test Function**

```
def test_read_data_file_csv_success():
    with patch('pandas.read_csv') as mock_read_csv:
        mock_read_csv.return_value = pd.DataFrame({'food': ['apple'],
        'nutrition_value': [50 df = read_data_file_csv('test.csv')
        assert df is not None
        assert 'food' in
        df.columns
```

- **2) Invalid Input and Expected Output**

Invalid Input	Expected Output
Non-existing file path	Raises FileNotFoundError

- **2) Code for the Test Function**

```
def test_read_data_file_csv_failure():
    with pytest.raises(FileNotFoundError):
        read_data_file_csv('nonexistent.csv')
```
Test Case 2:

- **Test Function/Module**
  - `test_get_sum_value_in_dataframe()`
  - `test_get_sum_value_in_dataframe_invalid_input()`
  - `test_get_sum_value_in_dataframe_type_error()`
- **Tested Function/Module**
  - `get_sum_value_in_dataframe(food, df)`
- **Description**
  - This function calculates the sum of nutrition values for a given food.
- **1) Valid Input and Expected Output**

Valid Input	Expected Output
food: "apple", DataFrame with values	Sum of nutrition values for "apple"

- **1) Code for the Test Function**

```
def
    test_get_records_in_dataframe
    (): df = pd.DataFrame({
        'food': ['apple', 'banana', 'carrot'],
        'nutrition_value': [50, 70, 30]
    })

    result =
    get_records_in_dataframe('apple', df)
    assert len(result) == 1 assert
    result['food'].iloc[0] == 'apple'
```

- **2) Invalid Input and Expected Output**

Invalid Input	Expected Output
food: "orange", DataFrame	DataFrame should be empty
food: "invalid food", DataFrame	DataFrame should be empty

- **2) Code for the Test Function**

```
@pytest.mark.parametrize("food", ['invalid food', 'another
invalid']) def
test_get_records_in_dataframe_invalid_input(sample_df,
food): result = get_records_in_dataframe(food, sample_df)
assert result.empty, f"No records should be found for
{food}."
```

Test Case 3:

- **Test Function/Module**
  - `test_get_sum_value_in_dataframe()`
  - `test_get_sum_value_in_dataframe_not_found()`
  - `test_get_sum_value_in_dataframe_type_error()`
  - `test_get_sum_value_in_dataframe_empty_dataframe()`
- **Tested Function/Module**
  - `get_sum_value_in_dataframe(food, df)`
- **Description**
  - This function calculates the sum of nutrition values for a given food.
- **1) Valid Input and Expected Output**

Valid Input	Expected Output
`food: "banana", DataFrame`	`Sum of nutrition values for "banana"`

- **1) Code for the Test Function**

```
def test_get_sum_value_in_dataframe(sample_df):
    result = get_sum_value_in_dataframe('banana',
    sample_df) assert result == 70
```

- **2) Invalid Input and Expected Output**

Invalid Input	Expected Output
`food: "invalid food", DataFrame`	`Sum should be 0`

- **2) Code for the Test Function**

```
def test_get_sum_value_in_dataframe_not_found(sample_df):
    result = get_sum_value_in_dataframe('invalid food',
    sample_df) assert result == 0
```

Test Case 4:

- **Test Function/Module**
  - `test_get_nutrition_range_filter()`
  - `test_get_nutrition_range_filter_key_error()`
  - `test_get_nutrition_range_filter_type_error()`
  - `test_get_nutrition_range_filter_invalid_range()`
- **Tested Function/Module**
  - `get_nutrition_range_filter(nutrient, min_value, max_value, df)`
- **Description**
  - This function filters the DataFrame for foods within a specified nutrition range.

- **1) Valid Input and Expected Output**

Valid Input	Expected Output
`nutrient: "nutrition_value", min: 50, max: 100`	`5`

- **1) Code for the Test Function**

```python
def test_get_nutrition_range_filter(sample_df):
    result = get_nutrition_range_filter('nutrition_value', 50, 100,
    sample_df) assert len(result) == 4
```

- **2) Invalid Input and Expected Output**

Invalid Input	Expected Output
`nutrient: "invalid_nutrient", min: 50, max: 100`	`Raises KeyError`

- **2) Code for the Test Function**

```python
def test_get_nutrition_range_filter_key_error(sample_df):
    with pytest.raises(KeyError):
        get_nutrition_range_filter('invalid_nutrient', 50, 100, sample_df)
```

Test Case 5:

- **Test Function/Module**
  - `test_get_highest_lowest_nutrition_level_filter()`
  - `test_get_highest_lowest_nutrition_level_filter_key_error()`
  - `test_get_highest_lowest_nutrition_level_filter_type_error()`
- **Tested Function/Module**
  - `get_highest_lowest_nutrition_level_filter(nutrient, df)`
- **Description**A brief de
  - This function identifies the foods with the highest and lowest values for a specified nutrient.
- **1) Valid Input and Expected Output**

Valid Input	Expected Output
`nutrient: "nutrition_value"`	`Highest and lowest foods for "nutrition_value"`

- **1) Code for the Test Function**

```
def test_get_highest_lowest_nutrition_level_filter(sample_df):
    highest, lowest =
    get_highest_lowest_nutrition_level_filter('nutrition_value', sample_df
    assert highest['nutrition_value'].iloc[0] >=
    lowest['nutrition_value'].iloc[0]
```

- **2) Invalid Input and Expected Output**

Invalid Input	Expected Output
nutrient: "invalid_nutrient"	Raises KeyError

- **2) Code for the Test Function**

```
def test_get_highest_lowest_nutrition_level_filter_key_error(sample_df):
    with pytest.raises(KeyError):
        get_highest_lowest_nutrition_level_filter('invalid_nutrient', sample_df)
```

Test Case 6:

- **Test Function/Module**
  - `test_get_list_5food_max_nutrition()`
  - `test_get_list_5food_max_nutrition_key_error()`
  - `test_get_list_5food_max_nutrition_type_error()`
- **Tested Function/Module**
  - `get_list_5food_max_nutrition(nutrient, df)`
- **Description**
  - This function retrieves the top five foods based on the maximum values of a specified nutrient.
- **1) Valid Input and Expected Output**

Valid Input	Expected Output
nutrient: "nutrition_value"	DataFrame with top 5 foods for "nutrition_value"

- **1) Code for the Test Function**

```
def test_get_list_5food_max_nutrition(sample_df):
    result = get_list_5food_max_nutrition('nutrition_value',
    sample_df) assert len(result) <= 5
```

- **2) Invalid Input and Expected Output**

Invalid Input	Expected Output
nutrient: "invalid_nutrient"	Raises KeyError

- **2) Code for the Test Function**

```python
def test_get_list_5food_max_nutrition_key_error(sample_df):
    with pytest.raises(KeyError):
        get_list_5food_max_nutrition('invalid_nutrient', sample_df)
```

Test Case 7:

- **Test Function/Module**
  - `test_get_list_5food_min_nutrition()`
  - `test_get_list_5food_min_nutrition_key_error()`
  - `test_get_list_5food_min_nutrition_type_error()`
- **Tested Function/Module**
  - `get_list_5food_min_nutrition(nutrient, df)`
- **Description**
  - This function retrieves the bottom five foods based on the minimum values of a specified nutrient.
- **1) Valid Input and Expected Output**

Valid Input	**Expected Output**
`nutrient: "nutrition_value"`	`DataFrame with bottom 5 foods for "nutrition_value"`

- **1) Code for the Test Function**

```python
def test_get_list_5food_min_nutrition(sample_df): result =
    get_list_5food_min_nutrition('nutrition_value', sample_df)
    assert len(result) <= 5
```

- **2) Invalid Input and Expected Output**

Invalid Input	**Expected Output**
`nutrient: "invalid_nutrient"`	`Raises KeyError`

- **2) Code for the Test Function**

```python
def test_get_list_5food_min_nutrition_key_error(sample_df):
    with pytest.raises(KeyError):
        get_list_5food_min_nutrition('invalid_nutrient', sample_df)
```

Test Case 8:

- **Test Function/Module**
  - `test_get_two_foods_with_nutritions()`
  - `test_get_two_foods_with_nutritions_not_found()`
  - `test_get_two_foods_with_nutritions_type_error()`
  - `test_get_two_foods_with_nutritions_both_invalid()`
  - `test_get_two_foods_with_nutritions_empty_dataframe()`

- **Tested Function/Module**
  - `get_two_foods_with_nutritions(food1,food2, df)`
- **Description**
  - This function retrieves the nutrition values for two specified food items.
- **1) Valid Input and Expected Output**

Valid Input	**Expected Output**
`food1: "apple", food2: "banana"`	`DataFrame with nutrition values for both foods`

- **1) Code for the Test Function**

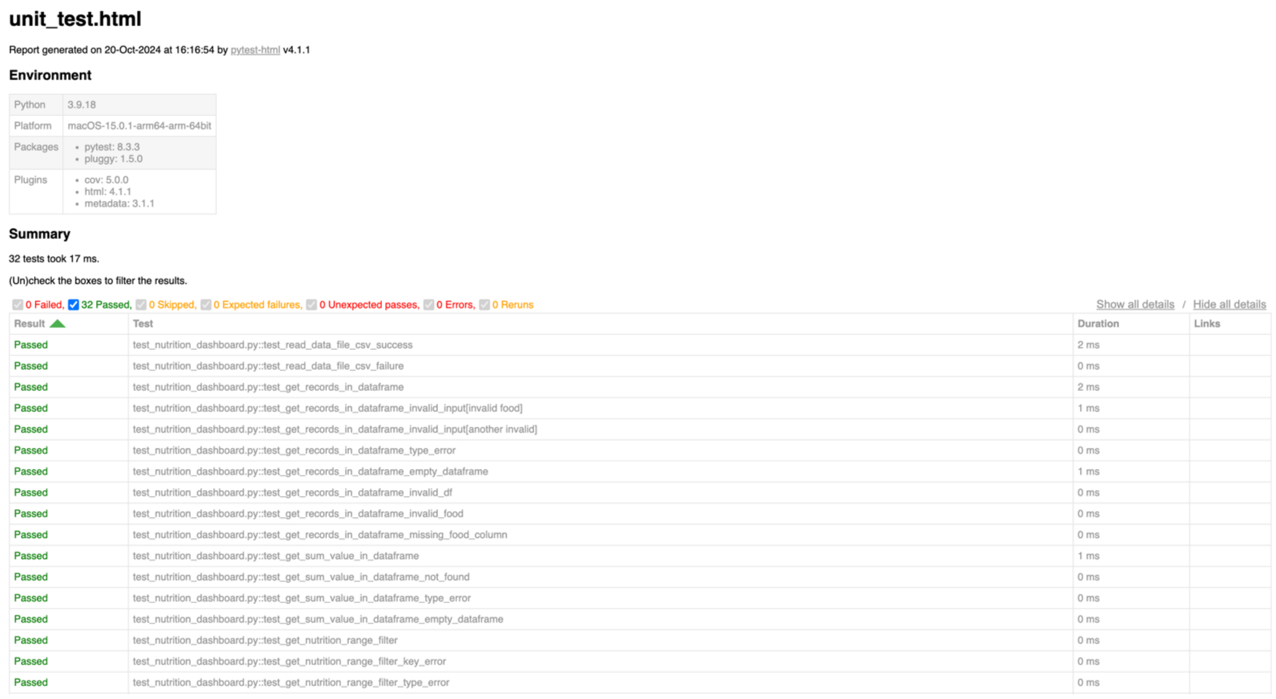
```
def test_get_two_foods_with_nutritions(sample_df):
    result = get_two_foods_with_nutritions('apple', 'banana',
    sample_df) assert len(result) == 2
```

- **2) Invalid Input and Expected Output**

Invalid Input	**Expected Output**
`food1: "invalid food", food2: "banana"`	`DataFrame with nutrition for "banana" only`
`food1: "invalid food", food2: "invalid food""`	`Empty DataFrame`

- **2) Code for the Test Function**

```
def test_get_two_foods_with_nutritions_not_found(sample_df): result
= get_two_foods_with_nutritions('invalid food', 'banana', sample_df)
assert len(result) == 1
```
unit_test_summary



unit_test.html

Report generated on 20-Oct-2024 at 16:16:54 by pytest-html v4.1.1

Environment

Python	3.9.18
Platform	macOS-15.0.1-arm64-arm-64bit
Packages	• pytest: 8.3.3 • pluggy: 1.5.0
Plugins	• cov: 5.0.0 • html: 4.1.1 • metadata: 3.1.1

Summary

32 tests took 17 ms.

(Un)check the boxes to filter the results.

0 Failed, 32 Passed, 0 Skipped, 0 Expected failures, 0 Unexpected passes, 0 Errors, 0 Reruns

Show all details / Hide all details

Result	Test	Duration	Links
Passed	test_nutrition_dashboard.py::test_read_data_file_csv_success	2 ms	
Passed	test_nutrition_dashboard.py::test_read_data_file_csv_failure	0 ms	
Passed	test_nutrition_dashboard.py::test_get_records_in_dataframe	2 ms	
Passed	test_nutrition_dashboard.py::test_get_records_in_dataframe_invalid_input[invalid food]	1 ms	
Passed	test_nutrition_dashboard.py::test_get_records_in_dataframe_invalid_input[another invalid]	0 ms	
Passed	test_nutrition_dashboard.py::test_get_records_in_dataframe_type_error	0 ms	
Passed	test_nutrition_dashboard.py::test_get_records_in_dataframe_empty_dataframe	1 ms	
Passed	test_nutrition_dashboard.py::test_get_records_in_dataframe_invalid_df	0 ms	
Passed	test_nutrition_dashboard.py::test_get_records_in_dataframe_invalid_food	0 ms	
Passed	test_nutrition_dashboard.py::test_get_records_in_dataframe_missing_food_column	0 ms	
Passed	test_nutrition_dashboard.py::test_get_sum_value_in_dataframe	1 ms	
Passed	test_nutrition_dashboard.py::test_get_sum_value_in_dataframe_not_found	0 ms	
Passed	test_nutrition_dashboard.py::test_get_sum_value_in_dataframe_type_error	0 ms	
Passed	test_nutrition_dashboard.py::test_get_sum_value_in_dataframe_empty_dataframe	0 ms	
Passed	test_nutrition_dashboard.py::test_get_nutrition_range_filter	0 ms	
Passed	test_nutrition_dashboard.py::test_get_nutrition_range_filter_key_error	0 ms	
Passed	test_nutrition_dashboard.py::test_get_nutrition_range_filter_type_error	0 ms	