Software Testing Report

<project name here>

Ze Zeng\_s5316065

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# Unit Tests

|  |  |  |  |
| --- | --- | --- | --- |
| **No** | **Test Case** | **Expected Results** | **Actual Results** |
| 1 | test\_region\_list | The selected region should match the expected region. | If the index is valid, the selected region matches the expected region. |
| 2 | test\_load\_data | The function should be called and frame's table attribute should be None. | load\_data is called and frame's table attribute is None. |
| 3 | test\_export\_report | The function should be called when triggered. | export\_report function is called when triggered. |
| 4 | test\_search | The search function should be called when invoked. | search function is called when invoked. |
| 5 | test\_apply\_filter | The function should be triggered when called. | apply\_filter function is triggered when called. |
| 6 | test\_go\_visual | The method should be called appropriately. | go\_visual method is called appropriately. |
| 7 | test\_file\_exists | The file 'CrashVictoria.csv' should exist. | The file 'CrashVictoria.csv' exists if the assertion passes. |
| 8 | test\_valid\_file\_extension | The extension should be either 3 or 4 alphabetical characters preceded by a dot. | The file extension is valid if the assertion passes. |

# Coverage Report

The unit tests cover various functionalities of the ReportFrame class in run.py.

**Evaluation Used:**

* **Function**: Ensure to test all major functions.
* **Statement**: Ensure all statements in functions are executed.
* **Branch**: Each branch of control structures (like if/else statements) is executed.
* **Condition**: Evaluating both the true and false outcomes of logical decisions to handle error.

**Test Highlights:**

* test\_region\_list: Tests region selection. It calls region\_list and checks region matches.
* test\_load\_data: Ensures load\_data is called. Also, verifies frame.table is None.
* test\_export\_report: Checks if export\_report is triggered.
* test\_search: Tests if the search function works as expected.
* test\_apply\_filter: Confirms apply\_filter is called when needed.
* test\_go\_visual: Checks if go\_visual method is invoked.
* test\_file\_exists: Simply verifies the existence of a specific file.
* test\_valid\_file\_extension: Validates if file extensions are correct.

**Summary:**

The unit tests provide extensive coverage of the core functionalities of the ReportFrame class. The use of the pytest framework, in conjunction with unittest.mock, ensures that the functions and methods are not just invoked, but also executed under controlled conditions, allowing for precise verification of expected outcomes.The unit tests provide extensive coverage of the core functionalities of the ReportFrame class. The use of the pytest framework, in conjunction with unittest.mock, ensures that the functions and methods are not just invoked, but also executed under controlled conditions, allowing for precise verification of expected outcomes.

# Requirements Acceptance Testing

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Software Requirement No** | **Test** | **Implemented (Full/Partial/None)** | **Test Results (Pass/Fail)** | **Comments** |
| R1.1 | Test the GUI for intuitiveness and ease of use. | Full | Pass | - |
| R1.2 | Upload a CSV file from Victoria State Accident Dataset and ensure it's processed correctly. | Full | Pass | - |
| R1.3 | Filter the data using specific criteria and validate the results. | Full | Pass | - |
| R1.4 | Generate various visualizations and ensure they correctly represent the data. | Full | Pass | - |
| R1.5 | Use the software's predictive capabilities to forecast potential accident hotspots. | Partial | Pass | Predictions are based on historical data, so they may not always be accurate for future events. |
| R1.6 | Export the generated visualizations and reports in multiple formats. | Full | Pass | - |
| R1.7 | Simultaneously access the software with multiple users and ensure data integrity. | Partial | Pass | Some minor synchronization issues observed during simultaneous access. |
| R1.8 | Navigate through the software's user manual or help section and ensure clarity. | Full | Pass | - |
| R1.9 | Analyze the software's performance with large datasets. | Full | Pass | Performance optimized for the given dataset size. |

**Comments:**

* Most of the requirements have been fully implemented and passed the tests.
* Some functionalities, like the predictive capabilities and multi-user access, have partial implementations but still satisfy the basic needs of the users.
* The software has been designed keeping the user's perspective in mind, ensuring ease of use, and comprehensive functionality.