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| **Tester** | Tah Wen Zhong |
| **Test type** | Integration |
| **Component** | Main program |
| **Number of test suites** | 8 |
| **Number of test cases** | 4 |
| **Status** | Complete |
| **Test file** | main\_program\_test.py |
| **Date of completion** | 12/9/2021 |

Testing the functionality of the Main program

# Description

The table below describes the steps within the main program:

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| --- | --- | --- |
| **Step** | **Description** | **External algorithms used** |
| 1 | Read and process data | - |
| 2 | Feature selection + Pre-processing | Pre-process algorithm, Feature selection algorithm |
| 3 | Model creation | All base and ensemble predictor algorithms |
| 4 | Evaluation | All evaluation algorithms |
| 5 | Output CSV | - |

For testing:

* Test suite (1-5) are dedicated towards testing the individual steps as described in the table above
* Test suite 6 will test the overall process

This document keeps track of the state of the algorithm throughout testing. If a test suite fails, the information of the bug fixes will be documented, and the test will be performed once more with the same test suite.

* Yellow highlight indicates failed test cases
* Purple encoded text indicates test cases that were affected by a previous failed test case
* Red encoded text indicates test cases that cannot run due to a previous failed test case

# Test suite 1 (First test): Read and process data (10/9/2021)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Test case ID | Test case description | Test data/setup | Expected Result | Actual Result | Pass/Fail |
| 1.1 | Check data extracted from read function | test1.arff.txt | The data is extracted correctly | The data is extracted correctly | Pass |
| 1.2 | Process extracted data to separate labels and metrics | test1.arff.txt | Correctly identify the metrics and labels | Failed to extract the correct | Fail |
| 1.3 | Check label conversion function | test1.arff.txt | Labels converted from Boolean/string to integer (0,1) | - | - |
| 1.4 | Successful run with actual dataset | test2.arff.txt  (KC dataset) | Extracted data with labels successfully processed | - | - |
| Bug description | | | * The data extraction function extracts data column with “Defective” as the column name. | | |
| Bug fix | | | * Rework data extraction function to take the last column as label | | |

# Test suite 1 (Second test): Read and process data (10/9/2021)

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| --- | --- | --- | --- | --- | --- |
| Test case ID | Test case description | Test data/setup | Expected Result | Actual Result | Pass/Fail |
| 1.2 | Process extracted data to separate labels and metrics | test1.arff.txt | Correctly identify the metrics and labels | Failed to extract the correct | Fail |
| 1.3 | Check label conversion function | test1.arff.txt | Labels converted from Boolean/string to integer (0,1) | Labels converted from Boolean/string to integer (0,1) | Pass |
| 1.4 | Successful run with actual dataset | test2.arff.txt  (KC dataset) | Extracted data with labels successfully processed | Extracted data with labels successfully processed | Pass |

# Rationale: Test suite 1

The test cases were designed

# Test suite 2 (First test): Feature selection + Pre-processing (10/9/2021)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Test case ID | Test case description | Test data/setup | Expected Result | Actual Result | Pass/Fail |
| 2.1 | Function can use processed data | test1.arff.txt  (After processing) | Output successful, with no errors | Failed to output, error raised | Fail |
| 2.2 | Single feature selection correctly identified | Selection set to only CFS | Output contains result using CFS algorithm | - | - |
| 2.3 | Multiple feature selections correctly identified | Selection set to CFS and RFE | Output contains result using CFS and RFE algorithm | - | - |
| 2.4 | Check k-fold argument correctly passed to pre-processing algorithm | test1.arff.txt  (k\_fold = 10) | Returns 10 train-test splits for all output | - | - |
| 2.5 | Check train size argument correctly passed to feature selection algorithm | test1.arff.txt  (train\_size = 10) | Feature selection outputs contain 10 columns (10 Software metrics) | - | - |
| 2.6 | Successful run, from Step 1 to current step, with actual dataset | test2.arff.txt  (KC dataset) | Output successful, with no errors | Output successful, with no errors | Pass |
| Bug description | | | * The bug was found within the pre-processing algorithm where the number of folds is not passed correctly   (Issue forwarded to testing on Preprocess)   * Test case 2.6 was successful because the default folds value was less than the | | |
| Bug fix | | |  | | |

# Rationale: Test suite 2

# Results

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| **Screenshot 1 (Test file)** |
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| **Screenshot 2 (Test suite 1 output)** |
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