AUTHORING APP TESTING DOCUMENTATION

Group 7

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|  | **Date** |  |  |
|  | 23-Feb-2018 |  |  |

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# **Introduction**

The purpose of this testing document is to provide details about the implementations used to test and validate the functionality of the Authoring App features.

# **Scope**

This document contains an Application Testing Checklist, which will provide a brief description of the main procedures of the Authoring App as well as their expected results. Results are assessed on a P/F bases with brief descriptions about the actual outcome of the procedures. Following the checklist is a description of the test cases that have been implemented as well as a discussion on how these test cases were derived. And why they are sufficient. Finally, the documentation is concluded with a test coverage discussion.

# **APPLICATION TESTING CHECKLIST**

| **Application Testing Checklist** | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| Tested By Gr. 7 | Tester | | | | Date | February 23, 2018 |
| Application Name | Authoring App | | | | | |
| Procedure | | Expected Result | Pass/Fail  (P/F) | Actual Results/Comments | | |
| Application Functionality | | | | | | |
| Performs primary functionality and maintains stability | | Yes | P | Opens to Main Menu and GUI looks professional and functions with out any visible errors | | |
| Basic Application Testing | | | | | | |
| Performs as expected when other applications are open | | Yes | P | No errors or hangs when multiple applications are running | | |
| Starts from the Main menu | | Yes | P | Opens correctly from the Main menu and functions with no errors | | |
| Has option to chose a file to play scenario | | Yes | P | Opens a file chooser properly and if a valid file will play scenario | | |
| Does not crash when Scenario is not in correct format | | Yes | P | Program does not crash, but error message does not pop up | | |
| Error window pops up if incorrect file format selected | | Yes | F |  | | |
| Author a Scenario opens to the editor window | | Yes | P |  | | |
| Application provides the proper tools to obtain user input about buttons, cells and pins | | Yes | P | Does not accept negative numbers or numbers that are out of bounds | | |
| Editor window allows for interactive authoring of questions and answers | | Yes | P |  | | |
| Option to create a new scenario or edit an existing file | | Yes | P | Editing scenario files mostly works as intended. Saves new files to the specified path | | |
| Handles creating the correct Scenario File format | | Yes | P | Creating the proper format mostly works as intended | | |
| Applications terminates and exits as expected | | Yes | P |  | | |

# **DERIVATION OF test cases**

Test cases for the Authoring App are brought out by first referring to the application-testing checklist which establishes the basic functionality of the application. Once the basic functionality is been established, using the requirements of the Authoring App which guided its creation, a scenario was developed for each of the main prerequisites. From these perquisites, different pathways that the user could take to interact with the application (ie inputs) were identified. From identifying a large scope of possible inputs, an expected result was predicted as well as a plan on how to test that prerequisite.

***Scenario 1: Create a new Scenario File***

***Expected:*** *File is created and saved where user specifies in the correct format while user only interacts with a user-friedly GUI without having to manually format.*

***Approach:*** *First test that a new file is being created, then test if file is in correct format. Junit testing was done to ensure file exists. Then using the scenario formatting document provided, it was possible to create a text file with an expected format with a predetermined set of text fields. Next, calling our ScenWrite class, responsible for obtaining user fields and transferring them to a text document in the correct format, it is then possible to compare the two text files using a FileReader. However, an important part of this implementation is to verify that the correct text fields are being stored in the correct variables. This is achieved through JUnit testing on the Scenario class as well as Event List class which are where user inputs are stored.*

***Actual:*** *Files are outputted and saved in appropriate format.*

***Scenario 2: Edit an Existing File***

***Scenario 2a: Change a variable like the title, button, cells or pins***

***Expected:*** *The variable to be changed without losing functionality*

***Approach:*** *tested all appropriate accessor methods*

***Actual:*** *Variables are able to be changed through the Event Editor window without losing functionality*

***Scenario 2b: Add a question and answer to the end of the file***

***Expected:*** *EventList.add maintains functionality and adds to the end of the list such that when using the accessor methods, the appropriate object is returned*

***Approach:*** *test adding and remove methods of EventList when adding to the last index*

***Actual:*** *Funtions as expected*

***Scenario 2c: Add a question and answer somewhere else in the file***

***Expected:*** *EventList.add maintains functionality and adds to the middle of the list at a specified index such that when using the accessor methods, the appropriate object is returned*

***Approach:*** *use EventList.add(index, element) to add to the middle of the list and check that the Event is added properly by using accessor methods. Also check that all other elements have shifted their indexes.*

***Actual:*** *Functions as expected*

***Scenario 2d: Delete an existing question***

***Expected:*** *Event list deletes an event and adusts all other indeces on the list whether removing from the head, middle or tail*

***Approach:*** *use EventList.remove(index, element) to check that the Event is removed properly and indexes are adjusted by accessing the Events before and after*

***Actual:*** *Works as expected.*

***Scenario 2e: Edit an existing question***

***Expected:*** *changes in the event list are reflected if the event is called and changed*

***Approach:*** *test accessor methods if Event and EventList*

***Actual:*** *Works as expected*

***Scenario 3: Play a File***

***Scenario 3a: File is not in the correct format***

***Expected:*** *Error window pops up to let user know – reads from error log*

***Approach:*** *Check error log reader by creating a text file with the expected output and reading ERROR\_LOG.txt or intentionally choose a file with the wrong file format and record results*

***Actual:*** *Still under construction*

***Scenario 3b: File is in correct format***

***Expected:*** *Audio player reads from file*

***Approach:*** *Test with correct file format, which can be created by interacting with the GUI*

***Actual:*** *Works as Expected*

# **test CASES DESCRIPTIONs AND IMPLEMENTATIONS**

|  |  |  |  |
| --- | --- | --- | --- |
| AuthoringApp Test Suite: AllTests | | | |
| Test Case | Description & Implementation | Pass or Fail | Notes |
| EventListTest Class: The set up of this test class included creating a new EventList tester, and 5 different events and adding each event to the EventList tester | | | |

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| --- | --- | --- | --- |
| testgetSize | Returns true if the size of the EventList is 5. Retruns true if the size is updated after every add and remove.  Implemented by adding 5 items to EventList tester and asserting the target size. Assertions are also made after an event is removed or added. | Pass | Size field stays private |
| testUpdateIndexes | Returns true if successfully updates the indexes of the EventList every time an event is added.  Implemented by adding to the front, end and middle and asserting true of the correcting indexes after each addition. | Fail | Bug detection – will be fixed for phase 2 |
| testAdd | Tests adding to an index, by implementing updateIndexes. Asserts true if the event at a given index is equal to the expected event after a call to add. Assertions are made after an add to front, end and middle. | N/A | Since adding implements the method testUpdateIndexes, there is a ripple effect from the previous bug. This will be resolved for phase 2 |
| testGetTimeline | Asserts true if correct timeline is returned.  Checks that the timeline field of the created Scenario object is the same as the expected EventList. | Pass |  |
| testRemove | Asserts true if timeline size decreases by one and the indexes are updated on the eventList | Pass | Although the remove method implements the estUpdateIndexes, there is no ripple effect of the bug here. |
| ScenarioEventTest: Two different scenarioEvent objects are created for the set up | | | |
| testGetTitle | Asserts true if correct title is returned.  Checks that the title field of the created scenarioEvent object is the same as the expected string | Pass | Title is kept private |
| testGetQuestion | Asserts true if correct Question is returned  Checks that the question field of the created scenarioEvent object is the same as the expected string | Pass | Question field is kept private |

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| --- | --- | --- | --- |
| testOverWrite | Asserts true if Event that is used to call the method has it’s values overwritten by use inputs  Checks that all fields of an EventList object created during setup are changed after the overwrite method is called | Pass | This is the only way to change any of the fields. |
| testResponseRight | Asserts true if the “Response Right” field is accessed correctly  Checks that the responseRight field of the created scenarioEvent object is the same as the expected string | Pass | responseRight field is kept private |
| testResponseWrong | Asserts true if the “Response Wrong” field is accessed correctly  Checks that the responseWrong field of the created scenarioEvent object is the same as the expected string | Pass | responseWrong field is kept private |
| getCorrectAnswer | Asserts true if correct Answer is returned  Checks that the Correct Answer field of the created scenarioEvent object is the same as the expected string | Pass | correctAnswer field field is kept private |
| ScenarioTest: Set up for this unit test includes creating a new Scenario object with a title, cell number, button number and eventList | | | |
| testGetTitle | Asserts true if correct title is returned.  Checks that the title field of the created Scenario object is the same as the expected string | Pass | Title field remains private |
| testGetButtonNumber | Asserts true if correct button number is returned.  Checks that the button field of the created Scenario object is the same as the expected string | Pass | Title field remains private |
| testGetCellNumber | Asserts true if correct cell number is returned.  Checks that the title field of the created Scenario object is the same as the expected string | Pass | Title field remains private |

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| --- | --- | --- | --- |
| testsetButtonNumber | Asserts true if the button field is successfully set.  Uses the get method to checks that the button field of the created Scenario object is the same as the expected. As a result, the method checks to make sure that a predefined field is updated and does no longer equal the old value | Pass | Title field remains private |
| testsetScenarioEventList | Asserts true if the Scenario object’s field EventList is successfully update when set to a new EventList object.  Uses the get method to iterate every element of the list field of the created Scenario object is the same as the expected. By this, the method checks to make sure that a predefined field is updated and does no longer equal the old value | Pass |  |
| testsetCellNumber | Asserts true if the cell field is successfully set.  Uses the get method to checks that the cell field of the created Scenario object is the same as the expected. Checks to make sure that a predefined field is updated and does no longer equal the old value | Pass | Title field remains private |
| testgetScenarioEventList | Asserts true if correct cell EventList is returned.  Checks that the all the events in the EventList field of the created Scenario object is the same as the expected string | Pass |  |
| setTitle | Test case ensures title field of Scenario object is successfully updated.  Asserts true if the get title returns the correct field value after calling the setTitle test case. | Pass | Title field remains private |

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| --- | --- | --- | --- |
| ScenWriterTest: The set up of this class includes the creates of an EventList, tester, with 5 events added to it. Next, a new Scenario is created with an inputed cell number, button number, title and the EventList tester. An “actual output” file is also created at set up to store the output of calling scenWrite.write(Scenario s, File f) as well as a file object for the expected file output. The “actual output file is a blank file named ScenWriterTestActual.txt. The expected file output is a file, ExpectedScenWritertest.txt that contains the expected output file that is formatted appropriately, given the user’s input information that was used to create a scenario. | | | |
| testWrite | This method asserts true if the created scenario is outputted to a file and formatted correctly according to the scenario formatting documentation. The correct format is pre defined and stored in a separate file (see ScenWriterTest class set up description above).  This test case creates two file readers – one for the expected output file, called ereader and one to read the actual output file called areader. The readers go through both texts line by line and compare that the strings are equal. | Pass | This test is only viable given that the expected scenario file is correctly formatted by the tester. If there are errors in formatting in pre defined expected scenario file, then the test case may return a false positive or false negative. |

# **test coverage**

| **Tester Name** | **Execution Time** | **Did all the Tests Pass?** | **Test Coverage** |
| --- | --- | --- | --- |
| EventListTest | 0.007 s | 4/5 | 94.4% |
| ScenarioEventTest | 0.000 s | 6/6 | 78.7 % |
| Scenario Test | 0.001 s | 7/8 | 100.0% |
| ScenarioFileReader Test | N/A | N/A | N/A |
| ScenWriterTest | 0.000 s | 1/1 | 78.3 % |

# **DISCUSSION**

While the Authoring App cannot declare that it has accounted for all possible defects, but the testing provided for the Authoring app is sufficient for this stage of the project. The testing targets key requirements of the projects. This testing was developed in response to every possible path that the user can interact with the Authoring App. As a result, going through every pathway or scenario possible in which the user can interact with the app (see Section 4), the derived test cases are a result of the responses to every type of user input. Consequently, testing all the methods involved in each user input pathway exposed bugs, but also determines that the Authoring App is sufficiently usable at this stage of the project on a technical level. Furthermore, the claim that this approach sufficiently covers testing of a wide scope of the program is reflected in the Test Coverage metrics (see Section 6).

# **conclusion**

*At this stage of the Authoring App development, this testing documentation demonstrates that sufficient testing methodology has been attained (Section 7) through the description of test cases (Section 5) , how they were derived (Section 2, 3, 4) and how they were implemented (Section 5) while including coverage metrics (Section 6).*