Software Engineering Group Project
Test Specification

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1. INTRODUCTION

1.1 Purpose of this Document

Before releasing a piece of software thorough testing must take place, this is to ensure that when it is released it performs all the specified functions and performs to the standard specified by the client. Testing must be both broad and specific, looking into surface level functions that the program should perform and ensuring that the expected outcome is present. Also including looking how the system performs when incorrect or incompatible information is purposely passed into the program.

1.2 Scope

This document will specify each test that is to be executed in accordance to the test plan and the test specification given in *SE.QA.06.* It will specify the content of the test and what data will be inserted, giving then the expected output and the pass criteria. This document compiles all tests that are to be carried out into 1 document.

1.3 Objectives

The objective of this document to compile all tests into 1 document. This is to both make the objective accessible when performing the tests. This document is to ensure that when testing takes place that a strict format is followed, this will ensure that the all aspects of the program are thoroughly tested and any tests that fail will give us an insight to where issues are in our program.

2. DETAILS OF TESTING

The test specification is to provide formal formatting and structure to the testing process. This is both for the aid of the client and the project team. By cross referencing the client's specification as to what the program should do, we are able to produce a series of tests that if completed in the expected outcome will demonstrate that out program completes the task set by the client. In addition to that the testing procedure includes tests to provide support for debugging, giving specific tests which require also require specific outcomes will enable all aspects of the program to be tested.

The tests that have been chosen are not just to demonstrate the project works as expected, but also purposely tried to break the program, or to stretch the boundaries of the program to test for any vulnerabilities that will have to be patched. This can be simply testing what the program will do when presented with a character that is not suitable in the datatype, for instance inserting an integer value where a word is supposed to be presented.

The testing table (left to right) includes a *Test Reference*. This will become relevant in the testing results document. Each test has a *Functional Requirement* linked, enabling tests to be cross referenced. *Test content* gives a brief description of the test. Each test has a specific *Input* that is to be followed, and a predicted *Output* which should return if the test is completed successfully. Final column being *Pass Criteria*, this describes what is required for the test to be successful.

3. TESTING TABLE

Test Reference	FR to be met	Test Content	Input	Output	Pass Criteria
SE-F-001	FR 1	Check that the dictionary is successfully imported when the application exits its boot phase	Functional file for data import will be required	The proper display of the words and additional data on the gui	Data is loaded into the dictionary object and a list of words in a scrollable format should appear on the gui for the user in alphabetical order.
SE-F-002	FR 1	Check the dictionary can add single/multiple instances of words (non-duplicates)	{"english":"add (numbers)" ,"welsh" : "adio" ,"wordType":"verb"}, { "english":"add (to something else)", "welsh":"ychwanegu", "wordType":"verb"}	N/A – (maybe a small command line prompt to prove that it has happened…?)	Data loaded into dictionary object and a key comparison check will verify whether a duplicate is detected and is not an exact match
SE-F-003	FR 1	Check the dictionary can add instances of words (shared key word but not meaning)	{"english":"crane (the bird)", "welsh":"kbhjsakub", "wordType":"noun"} {"english":"crane (the vehicle)", "welsh":" kbhjsakub", "wordType":"noun"}	N/A – (maybe a small command line prompt to prove that it has happened…?)	Data loaded into dictionary object and a key comparison check will verify whether a duplicate is detected and is not an exact match
SE-F-004	FR 1	Check the dictionary can add instances of words and reject duplicates if they exist	{"english":"add (numbers)" ,"welsh" : "adio" ,"wordType":"verb"},{"english":"add (numbers)" ,"welsh" : "adio" ,"wordType":"verb"}	Prompt on GUI stating the value already exists and not inserting the duplicate value	Data is taken and compared against the dictionary and is rejected as a replica of the word object already exists
SE-F-005	FR 1	Handling of OOB (Out of Bounds) Arguments for word entries	{"english":"NULL" ,"welsh" : "adio" ,"wordType":"verb"}, { "english":"add (to something else)", "welsh":"ychwanegu", "wordType":"NULL"}	Command Line Prompt noticing word is bugged or invalid	System does NOT crash and can continue to function whilst not including invalid arguments
SE-F-006	FR 1	Initialising the test list as an empty object of the word data type	No input required upon initialisation	See above	List is instantiated with no word objects inserted
SE-F-007	FR 2	Pressing the language switch button on the GUI results in the words being displayed by welsh first followed in the text block by its English equivalent	Prompt from GUI in block testing or using the method call associated with the button to manually cause change in testing	The GUI reflects the prompt from the button and changes the positioning of the welsh and english words on the gui	GUI updates properly by presenting the welsh word first in the GUI display for the words.

SE-F-008	FR 2	Pressing the language switch button on the GUI results in the words being displayed by English first followed in the text block by its English equivalent	Prompt from GUI in block testing or using the method call associated with the button to manually cause the change in testing	The GUI reflects the prompt from the button and changes the positioning of the welsh and english words on the gui	GUI updates properly by presenting the english word first in the GUI display for the words.
SE-F-009	FR 2	Testing the trees maintain consistent ordering after the have been switched	No direct user input beyond a gui interaction	No visible output, more of a consistency test on the fly	Trees maintain their ordered nature after the language has been switched
SE-F-010	FR3	Scrolling through the active list of words available for display	Check the scroll method actively responds to its method call resulting in the appropriate GUI update	Dynamic/Static updating of the dictionary display on the GUI	GUI scrolls through the list of words available to it, reacting to its minimum and maximum limits
SE-F-011	FR 3	Word being searched by the user	add	Possible matches are displayed with the leading characters	Words matching the criteria given are present
SE-F-012	FR 3	Invalid character added by the user when searching the data set	*	Error message showing none are available	Error message in displaying the list which doesn't exist
SE-F-013	FR 3	Removing additional whitespace around text	" add "	Displays list of words including the characters present in the search ba	Searching continues without considering the additional spaces unless additional characters are added to the search bar after them
SE-F-014	FR 3	Invalid word being searched	addenism	Displays error message that no matches exist	Error message in displaying the list which doesn't exist
SE-F-015	FR 3	Searching for words based upon their leading characters in the English dictionary	add	Dynamic (reducing the list of available words) updating of the dictionary display on the GUI	GUI updating and the search dictionary updates to show a restricted version based upon the user input "add"
SE-F-016	FR 3	Searching for words based upon their leading characters in the Welsh dictionary	ab	Dynamic (reducing the list of available words) updating of the dictionary display on the GUI	GUI updating and the search dictionary updates to show a restricted version based upon the input "ab"
SE-F-017	FR 3	Searching for a word or string excerpt and then switching the language which is being searched from English to welsh	add	Updating of the GUI and Search Dictionary	GUI updating and the app effectively switching between English and welsh and refreshing the list with its new contents

SE-F-018	FR£	Searching for a word or string excerpt and then switching the language which is being searched from welsh to english	ab	Updating of the GUI and Search Dictionary	GUI updating and the app effectively switching between English and welsh and refreshing the list with its new contents
SE-F-019	FR 4	Mark Up of words for practice list (Logic behind this test is yet to be understood as I am unsure about some of back end structures that will be used)	No direct user input beyond a gui interaction	List updates to reflect the change to the list (no GUI/HUD alteration/prompt required)	List/mark up value updated to reflect the inclusion of the word into the test list
SE-F-020	FR 4	Mark Up of words for the practice list so that they are no longer included on it	No direct user input beyond a gui interaction	See above	List/mark up value updated to reflect the removal of a word from the test list
SE-F-021	FR 4	Check validity of word being added to the list to make sure it hasn't just been inserted	{"english":"add (numbers)" ,"welsh" : "adio" ,"wordType":"verb"},	No GUI response as it will be successfully added	Word is checked and is accepted and kept within the dictionary
SE-F-022	FR 4	Check validity of word being added to the list to make sure it hasn't just been inserted	{"english":"add (numbers)" ,"welsh" : "*NULL*" ,"wordType":"*hjbiybdyb*"},	GUI output of an error message	Word is checked and rejected and is hence thrown out of the dictionary
SE-F-023	FR5	Check that the user can enter an English word into the dictionary along with a Welsh translation and part of speech	Enter the word "hear" for the English translation, enter "clywed" for the Welsh translation, and enter "verb" for the part of speech	The information should be added to the dictionary and the practice list.	Data is added correctly
SE-F-024	FR5	Check that the user cannot enter information without first adding all the necessary information	Enter the word "hear" for the English translation, leave the Welsh translation empty and the part of speech	The program should throw an error to the user telling them to input all information	Data is not added, and correct error is shown to user
SE-F-025	FR5	Check that newly added words into the dictionary also shows up in the practice list.	On completion of SE-F-018, there should be a Welsh and English word in the practice list, the word "clywed" should show up in the user's practice list.	The program should display the newly added words into the practice list	Newly added data is visible on the practice list
SE-F-026	FR5	Check that words can be removed from the dictionary	Enter the word "hear" for the English translation, enter "clywed" for the Welsh translation, and enter "verb" for the part of speech. Then, move to the dictionary and remove the newly added word.	The application should remove the word from the screen and the dictionary	The word is deleted from the application.

SE-F-027	FR5	Check that the user cannot enter too much information into the word boxes when adding new words into the dictionary.	Enter a massive amount of data into the name box (50 characters), enter the same for the Welsh translation, and enter 'verb' for the part of speech	The application should flag both text entries for being too long and prompt the user to lower the	The application throws an error to the user prompting them to change the information to a smaller amount and doesn't enter the
SE-F-028	FR5	Check that the user cannot enter numbers when adding new words into the dictionary	Enter "123" for the word, enter "456" for the Welsh translation. Enter "verb" for the part of speech	The application should flag both boxes as being incorrect due to the numbers.	The application correctly flags the two boxes and prompts the user to change it. The data is also not added to the dictionary.
SE-F-029	FR5	Check that the user cannot enter special characters into the dictionary.	Enter "!?@" for both text inputs/translations and select 'verb' as the part of speech.	The application should flag both boxes as being incorrect due to the special characters being present.	The application correctly flags the two boxes and prompts the user to change it. The data is also not added to the dictionary.
SE-F-030	FR6	Check that verbs are prefaced by "to" in the system when being displayed to the user	Enter the word "hear" for the English translation, enter "clywed" for the Welsh translation, and enter "verb" for the part of speech. Select the newly added word and it should be prefaced by "to".	The system should display "to hear"	The system correctly places "to" in front of the noun in the English translation.
SE-F-031	FR6	Check that words that are selected as 'other' are prefaced by nothing	Complete SE-F-001, and SE-F-003, select the word that is 'other'	The system should display nothing in front of the word.	The system should not show anything in front of the selected word
SE-F-032	FR6	Check that nouns are stated as being masculine or feminine	Select a noun from the dictionary open its properties	The system should state if it is masculine or feminine	The application correctly shows which nouns are masculine or feminine
SE-F-033	FR7	Check that the practice list is loaded from JSON	Exit the program, restart the program, and view the practice list.	The application should remember the words that the user has submitted	The application remembers the words that the user has submitted
SE-F-034	FR8	Check that the system correctly produces flash cards for English words	Request for a flash card of words "abbey", "music", and "zero" in English	Flashcards of the specific words	Flashcard should have matching word in Welsh
SE-F-035	FR8	Check that the system correctly produces flash cards for Welsh words	Request for a flash cards of the words "malwoden", "llyfregellydd", and "cacen gaws" in Welsh	Flashcards of the specific words	Flashcard should have matching word in English
SE-F-036	FR9	Check that the system correctly produces multiple choice question	Request multiple choice question for English words "everywhere", "language", and "row"	Multiple-choice questions	Correct answer should return correct.
SE-F-037	FR9	Check that the system correctly produces multiple choice question	Request multiple choice question for Welsh words "bai", "cyfansoddwr", and "ffrwyth/au"	Multiple-choice questions	Correct answer should return correct.
SE-F-038	FR9	Check that the system randomly selects alternative answers	Request 100 multiple-choice questions for the word "idea"	Multiple multiple-choice questions	All possible answers except for the correct answer should be different

SE-F-039	FR9	Check that the system only produces a single correct answer	Request 100 multiple-choice questions for the word "ar unwaith"	Multiple multiple-choice questions	There is no more than one correct answer
SE-F-040	FR9	Check that the system only produces only one meaning of the word	Request 100 multiple-choice questions for the word "artist" and "hope"	Multiple multiple-choice questions	None of the alternatives should mean the same thing
SE-F-041	FR9	Check that the system correctly produces translate word question	Request for question words "be", "bracket", and "less" in English	Three questions	Questions are English words and inputting correct Welsh trasnslations returns correct
SE-F-042	FR9	Check that the system correctly produces translate word question	Request for question words "be", "bracket", and "less" in English	One question	Question is an English word and inputting wrong Welsh word returns wrong
SE-F-0434	FR9	Check that the system correctly produces translate word question	Request for question words "parod", "esgus", and "siop bapur" in Welsh	One question	Question is a Welsh word and inputting correct English word returns correct
SE-F-045	FR9	Check that the system correctly produces translate word question	Request for question words "parod", "esgus", and "siop bapur" in Welsh	One question	Question is a Welsh word and inputting wrong English word returns wrong
SE-F-046	FR9	Check that submitting a blank answer fail	Request for translate word question words "artist" and "esgus"	One question	Submitting blank answer returns an error
SE-F-047	FR9	Check that the system correctly produces a "match words quiz"	Clean practice list and add words "perhaps", "ready", "soon",and "hope" and their translations then request for a "match words quiz"	One quiz	Words are from "practice list" and should have matching word from the other language. When correctly solved, should return correct.
SE-F-048	FR9	Check that the words in the "match words quiz" is jumbled up	Clean practice list and add words "perhaps", "ready", "soon",and "hope" and their translations then request two quizzes for the same words	Two quizzes	The order of the words in the quiz is not the same
SE-F-049	FR9	Check that the "match words quiz" cannot be created when practice list has fewer than four words	Empty practice list and request for a "match words quiz"	Error	System returns an error
SE-F-050	FR10	Check that the system correctly produces tests	Request for random tests	Random set of tests	Random set of tests is made
SE-F-051	FR10	Check that tests produced are random	Request for random tests	Random set of tests	The tests appear by a similar amount
SE-F-052	FR10	Check that the score is increased after every correct answer	Request random test	Score	The score is increased by a fixed amount when test is solved
SE-F-053	FR10	Check that the score is correctly	Multiple correct tests	Score	The score is incremented to the expected result

		totalled at the end of the tests			
SE-F-054	FR10	Check that "match words quiz" does not appear when there are fewer than four words in the practice list	Request 15 random quizzes with practice list witch fewer than four words	Random Quizzes	"match words quiz" does not appear

REFERENCES

[1]   Software Engineering Group Projects: Quality Assurance Plan. C. J. Price. SE.QA.01. 2.2 Release.

[2]   Software Engineering Group Projects: General Documentation Standards. C. J. Price. SE.QA.02. 2.3 Release.

[3]   Software Engineering Group Projects: Test Procedure Standards. C. J. Price. SE.QA.06. 2.0 Release.

DOCUMENT HISTORY

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0.1	N/A	04/03/2020	Initial creation and input of data	Mal102
0.2	N/A	05/03/2020	Editing admin aspects of document (references etc.) and finishing body of document.	Mal102
1.0	N/A	05/03/2020	Finalisation of document	Mac127
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