**EE422C Project 3 (Word Ladder) Test Plan**

*Jonathan Walsh jlw4699  
Andrew Wong aw27772  
Fall 2016*

Our test methodology was to enter pairs of words that had varying word ladder lengths, and also find pairs of words with no word ladder. We tested both modules at the same time by entering a pair of words into the console (we did not use JUNIT) and then printing the outputs of both our BFS and DFS methods. A function called hasDuplicates( ) checked the DFS and BFS outputs for duplicates. We believe that our test cases covered a wide range of inputs by testing pairs of words that had long word ladders and other pairs that had no word ladder. If the pairs had no word ladder, we checked that DFS did not exit the program with a StackOverflowError. However, we were not able to test every possible combination of words within the dictionary.

**Test 1**  
a) Test name

NO\_LADDER\_DFS\_BFS

b) What feature does the test cover – 1-2 phrases or sentences.  
Checks that both BFS and DFS has no word ladder. Also tests DFS’s ability to check for a ladder from end to start, as we get a stack overflow if we try from start to end.

c) Set up for the test – initialization.  
None.

d) Expected output for a good module.  
Ladder between xylyl and smart. Ladder checked for duplicate words.

e) The pass/fail criterion for the test.  
Both functions indicate there is no word ladder. No stack overflow.

f) Any comments, if any.  
Test is expected to run in 3 seconds or less.

**Test 2**

a) Test name

*ZERO\_LENGTH\_LADDER\_DFS\_BFS*

b) What feature does the test cover – 1-2 phrases or sentences.

*Checks for a ladder of zero length between two words that are only one letter apart*

c) Set up for the test – initialization.  
None.

d) Expected output for a good module.  
A zero-length ladder between house and mouse. Ladder checked for duplicate words.

e) The pass/fail criterion for the test.  
No duplicates. A zero-length ladder. No stack overflow,

f) Any comments, if any.  
Test is expected to run in 3 seconds or less.

Test 3  
a) Test name

ONE\_ LENGTH\_LADDER\_DFS\_BFS

b) What feature does the test cover – 1-2 phrases or sentences.  
Checks that both BFS and DFS produce a one-word-length ladder.

c) Set up for the test – initialization.  
None.

d) Expected output for a good module.  
Ladder between cares and darts. Ladder checked for duplicate words

e) The pass/fail criterion for the test.  
Both functions indicate a one-word-length ladder. No duplicates. No stack overflow.

f) Any comments, if any.  
Test is expected to run in 3 seconds or less.

Test 4  
a) Test name

LONG\_LADDER\_DFS\_BFS

b) What feature does the test cover – 1-2 phrases or sentences.  
Checks that both BFS and DFS correctly print a long word ladder

c) Set up for the test – initialization.  
None.

d) Expected output for a good module.  
Ladder between drops and magic. Ladder checked for duplicate words. Ladder is most likely much shorter for BFS than DFS.

e) The pass/fail criterion for the test.  
Both functions indicate there is a word ladder. No stack overflow. No duplicates.

f) Any comments, if any.  
Test is expected to run in 3 seconds or less.

**Test 5**a) Test name

NO\_LADDER\_BFS\_DFS\_2

b) What feature does the test cover – 1-2 phrases or sentences.  
Checks another case where no ladder exists.

c) Set up for the test – initialization.  
None.

d) Expected output for a good module.  
No word ladder is found between money and aloof.

e) The pass/fail criterion for the test.  
Both functions indicate that there is no word ladder. No stack overflow.

f) Any comments, if any.  
Test is expected to run in 6 seconds or less.

**Test 6**a) Test name

EXAMPLE\_TEST\_BFS\_DFS

b) What feature does the test cover – 1-2 phrases or sentences.  
Checks that our BFS method finds the same (shortest) length route as the example given in the PDF, and that our DFS method also finds a word ladder

c) Set up for the test – initialization.  
None.

d) Expected output for a good module.  
A 9-word ladder is found between smart and money. Duplicates are checked for.

e) The pass/fail criterion for the test.  
Both functions indicate that there is a word ladder, and BFS finds a ladder of 9 words. No duplicates. No stack overflow.

f) Any comments, if any.  
Test is expected to run in 6 seconds or less.

**Test 7**a) Test name

QUIT

b) What feature does the test cover – 1-2 phrases or sentences.  
Checks that the /quit command functions correctly

c) Set up for the test – initialization.  
None.

d) Expected output for a good module.  
System exits immediately after the command is entered

e) The pass/fail criterion for the test.  
The program is terminated without further output after /quit has been entered.

f) Any comments, if any.  
Test is expected to run in 3 seconds or less.