**CS/SE 6362 - Advanced Software Architecture & Design**

**Test Plan Document**

**February 28th , 2013**

Submitted to:

**Dr. LAWRENCE CHUNG**

Associate Professor,

Department of Computer Science – Software Engineering,

The University of Texas at Dallas,

Richardson, TX-75080

Submitted by:

THE DEVELOPERS LOOP

Team Website:

<http://kwicsystem.appspot.com/Project-KWIC.html>

# VERSION HISTORY

|  |  |  |  |
| --- | --- | --- | --- |
| **Version** | **Changes** | **Date** | **Author(s)** |
| 1.0 | User Manual – Phase I (Interim) | 02/28/2013 | Team |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

Contents

[VERSION HISTORY 2](#_Toc349759324)

[1. INTRODUCTION 4](#_Toc349759325)

[2. RELATIONSHIP TO OTHER DOCUMENTS 5](#_Toc349759326)

[3. SYSTEM OVERVIEW 6](#_Toc349759327)

[4. FEATURES TO BE TESTED/NOT TO BE TESTED 6](#_Toc349759328)

[5. PASS/FAIL CRITERIA 7](#_Toc349759329)

[6. TESTING MATERIALS (HARDWARE/SOFTWARE REQUIREMENTS) 7](#_Toc349759330)

[7. TEST CASES 8](#_Toc349759331)

[8. TRACEABILITY MATRIX BETWEEN REQUIREMENT SPECIFICATION AND TESTCASES 12](#_Toc349759332)

[9. REFERENCES 13](#_Toc349759333)

# 1. INTRODUCTION

This section describes the objectives and extent of the tests. The goal is to provide a specification that can be used by testers and group members to plan and execute the necessary tests in a timely and cost-effective manner for the KWIC project. The renowned company needs a new and simple KWIC software system which later will be used for a web search engine.

This system will do the following:

* The system will allow users to input Unicode characters.
* The system will perform error checking to weed out invalid characters in the input lines.
* The system will perform a circular shift on each line to get a coherent set of circularly shifted output line.
* The system will weed out punctuation characters from the input.
* The system will accept input through the keyboard and the mouse (cut and paste).
* The system will send output to the screen for display.
  1. **Test objectives**

The primary focus of this plan is to ensure that the KWIC system provides the desired level of input and output in an acceptable response time.

* 1. **Extent of tests**

The test scope involves use cases validation, requirements (both functional and non-functional), and system architecture.

# 2. RELATIONSHIP TO OTHER DOCUMENTS

Black box tests are also derived from the functional requirements which are developed from requirement analysis listed in the requirement documents. Performance tests are derived from these nonfunctional requirements. Integration tests are derived from KWIC Software Architecture documents. The architecture design will not only help to determine the approach of tests but also be contributed to integration tests by describing the architecture of this system.

**2.1 Test naming scheme**

The names of test cases will indicate from where they have been derived using a system of prefixes. The following prefixes will be used to denote the tests derived from the following places.

**NFR**  Test cases derived from nonfunctional requirements

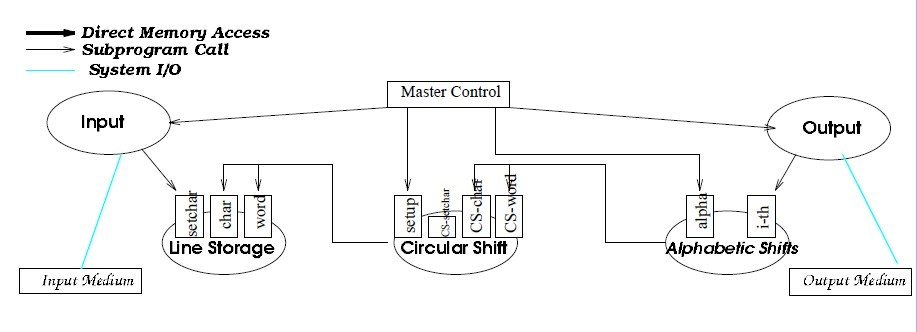
**FR** Test cases derived from functional requirements.

If a test is derived from a particular requirement number or component design number, the test names will contain the requirement number or name after prefix followed by an underscore. After the prefix and the number or name identifier, the test name shall contain a brief but descriptive name.

# 3. SYSTEM OVERVIEW

This section, focusing on the structural aspects of testing, provides an overview of the system in terms of the components that are tested during the unit test. The granularity of components and their dependencies are defined in this section.

**3.1 Software Architecture Overview**



An excerpt from KWIC Software Architecture

# 4. FEATURES TO BE TESTED/NOT TO BE TESTED

This section, focusing on the functional aspects of testing, identifies all features and combinations of features to be tested. It also describes all those features that are not to be tested and the reasons for not testing them.

**4.1 Features to be tested**

The following are the major functionalities of KWIC system that needed to be tested in the testing process.

- The input area should be able to input phrases or text.

- The output area should be provided and presented line by line in each shift.

**4.2 Items that will not be tested**

Third party and Off-The-Shelf components

* It is assumed that 3rd party components were evaluated and the pros and cons properly weighed before choosing that component with our software. The interfaces to those components will be tested, but not the functionality or performance of those components.

Infrastructure components

* Performance tests will be done during system test with respect to GUI response time.

# 5. PASS/FAIL CRITERIA

This section specifies generic pass/fail criteria for the tests covered in this plan. They are supplemented by pass/fail criteria in the test design specification. Note that “fail” in the IEEE standard terminology means “successful test” in our terminology.

The KWIC (Key Word in Context) index system shall accept an ordered set of lines, where each line is an ordered set of words, and each word is an ordered set of characters. Any line shall be “circularly shifted" by repeatedly removing the first word and appending it at the end of the line. The KWIC index system shall output a listing of all circular shifts of all lines in ascending alphabetical order.

At this point with current development stage we will check if all input area and output area are functioning properly. Later as we progress with development and add more functionality to this system, we will add more things and extend the scope of test plan as well..

# 6. TESTING MATERIALS (HARDWARE/SOFTWARE REQUIREMENTS)

This section identifies the resources that are needed for testing. This should include the physical characteristics of the facilities, including the hardware, software, special test tools, and other resources needed (lap space, etc.) to support the tests.

**6.1 Facilities**

The test team will need a lab area for the test processing. The open lab is a good choice for the test place. The lab area contains several multiple power outlets on each side of the room and chairs in the room would also allow for easy-access test team technical discussions.

**6.2 Hardware**

For the test team, an optimized environment is needed, involving several PCs and

Laptops with web browsers supported to Java applet.

**6.3 Software**

Software required to this system is basically a client PC or laptop with proper configured Internet Explorer 8.0 or newer version and Firefox 3.5 or newer version. Test processing also need different OS including Windows 7 and Linux.

# 7. TEST CASES

This section, the core of the test plan, lists the test cases that are used during testing. Each test case will be described in detail.

**7.1 Test specifications derived from the non-functional requirements**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **TestCase** | **Test case identifier** | **Test items** | **Input specifications** | **Output specifications** | **Environmental needs** | **Special procedural requirements** | **Inter-case dependencies** |
| 1 | NFR 1\_Understandable. | Input area, circular shift area and output area | The input and output text font is readable with meaningful text; the system is presented by a proper color | The text font is over 10; the system’s background color is different from the text color so that users can easily read what he/she typed and system output. | Web browser on client PC or Laptop. | None | None |
| 2 | NFR2\_Portable. | Different OS and Web browsers | Input area, circular shift area and output area. | Readable and understandable input text and output text. | PC or laptop that installed Windows 7, Windows XP, Linux with Internet Explorer 8 or newer and Firefox 3.5 or | None | None |
| 3 | NFR5\_Performance | Output area | Input text and check the response time of output area. | Less than 1% time’s response has more than 2 seconds. Note: An input of 10 lines was tested and output was obtained in less than a second | Web browser on client PC or Laptop. | None | This test case relies on the availability of KWIC |
| 4 | NFR6\_ User-friendly | User manual, Balloon Help in input area, Circular shift area and output area. | 1.Click ‘User Manual’ link to access the user manual,  2. Move mouse to each element and stay for several seconds. | 1.A User Manual document shall be provided with the application on the Developers Loop Team website  2. A label will appear and show what this element does. | Web Browser on client PC or Laptop. | None | None |
| 5 | NFR8\_Adaptable | Input area, circular shift area, output area. | Input text and check the output area in Godzilla search engine (to be developed in phase II). | Readable and understandable input text and output text | Web Browser on client PC or Laptop. | None | None |
| 6 | NFR7\_Responsive | Output area. | Input text and check the response time of output area. | Less than 1% time’s response has more than 2 seconds. Note: An input of 10 lines was tested and output was obtained in less than a second. | Web browser on client PC or Laptop. | None | This test case relies on the availability of KWIC |

**7.2 Test specifications derived from the functional requirements**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **TestCase** | **Test case identifier** | **Test items** | **Input specifications** | **Output specifications** | **Environmental needs** | **Special procedural requirements** | **Inter-case dependencies** |
| 7 | FR1\_Input Unicode character | Input area display | Type Unicode characters using the key board. | Key board typed Unicode characters are displayed as expected. | Web Browser on client PC or Laptop | USB or PS/2 Keyboard is expected to work with this system. | None |
| 8 | FR5\_Input pasted Ascii character | Input area display | Paste Ascii characters using the key board(Ctrl+v) or mouse | Pasted Ascii characters are displayed as expected. | Web Browser on client PC or Laptop | USB or PS/2 Keyboard is expected to work with this system. | None |
| 9 | FR3\_ShiftEachLine. | Input area and output (circular shift) area. | Input more than one line with more than one word. | Each circular shifted line should be displayed in the output text box. | Web browser on client PC or Laptop. | None | None |
| 10 | FR4\_Invalid Input | Input text and phrases | Input text contained noise words and invalid characters such as .,"[]?!:'~@#$%^\*()`\_+-={};/><|\ | Should display an error message in the screen. | Web browser on client PC or Laptop. | None | This test case depends on the dictionary of noise words and invalid characters |
| 11 | FR2\_Output Language | Input text’s character set | Input text – Unicode or Ascii characters. | The system should accept the users input and display the output in English Language on screeen. | Web browser on client PC or Laptop. | None | None |
| 12 | FR6\_Delimiter | Input area and output areas | Input text and phrases involving spaces | Output text should display the circular shifted words considering the space as delimiter between the words | Web browser on client PC or Laptop | None | None |
| 13 | FR7\_Max character | Input area | Enter more than 2048 characters (including the delimiters) | User should NOT be able to input more than 2048 characters. | Web browser on client PC or Laptop. | None | None |

# 8. TRACEABILITY MATRIX BETWEEN REQUIREMENT SPECIFICATION AND TESTCASES

|  |  |  |
| --- | --- | --- |
| **FR** | **Functional**  **Requirements** | **Test Cases** |
| FR1 | Input Unicode characters | TC 07 |
| FR5 | Input pasted Ascii characters | TC 08 |
| FR3 | ShiftEachLine | TC 09 |
| FR4 | Invalid Input | TC 10 |
| FR2 | Output Language | TC 11 |
| FR6 | Delimiter | TC 12 |
| FR7 | Max characters | TC 13 |

|  |  |  |
| --- | --- | --- |
| **NFR** | **Non-Functional**  **Requirements** | **Test Cases** |
| NFR1 | Understandable | TC 01 |
| NFR2 | Portable | TC 02 |
| NFR5 | Performance | TC 03 |
| NFR6 | User-friendly | TC 04 |
| NFR8 | Adaptable | TC 05 |
| NFR7 | Responsive | TC 06 |

# 9. REFERENCES

[1] <http://www.utdallas.edu/~chung/SA/syllabus.htm>

[2] <http://bazman.tripod.com/planframe.html>

[3] <http://en.wikipedia.org/wiki/Test_plan>

[4] <http://en.wikipedia.org/wiki/Test_plan#IEEE_829_test_plan_structure>

[5] <http://www.sqatester.com/documentation/testplansmpl.htm>