

Test Procedures and Results (TPR)

Data Mining of Digital Library Usage Data

Team 07

Clients

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Version History

Date	Author	Version	Changes made
4/01/05	Genesan Kim	1.0	<ul style="list-style-type: none">• First draft of document
4/10/05	Genesan Kim	1.1	<ul style="list-style-type: none">• Modified all of section 3, added section 6 and 7
4/22/05	Genesan Kim	1.2	<ul style="list-style-type: none">• Updated all sections

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1. Introduction

1.1 Purpose

The Test Procedures and Results are for preparation for system tests and the results of those tests. It describes the test procedure and specifies the sequence of actions required for each test. All tools as well as files required will be included along with hardware and software specifications. Details of the actual participants of the testing are presented. The test result report will include test summaries and logs.

1.2 References

MBASE Guidelines version 2.4.2

http://cse.usc.edu/classes/cs577a_2004/guidelines/MBASE_Guidelines_v2.4.2.pdf

http://seacliff.usc.edu/~team7/RLCA/LCP_RLCA_F04a_T07_V04.0.pdf

http://seacliff.usc.edu/~team7/IOC/TPC_RLCA_F04a_T07_V2.0.pdf

1.3 Change Summary

4/22/05 All tests were updated with respect to recent changes in requirements, capabilities, and test cases.

2. Test Identification

The following test items are all in their first and final versions as of current time. This includes **TI-01 Input log data import test**, **TI-02 Relationship Generation**, **TI-03 Relationship Clustering**, **TI-04 Visualization**. The test cases included in each of these test items and their descriptions can be found at the following document:

http://seacliff.usc.edu/~team7/IOC/TPC_RLCA_F04a_T07_V4.0.pdf

3. Test Preparation

This section describes what is needed in terms of preparation for the test items stated in section 2 of this document.

3.1 TI-01 Input log data import test

Details of this test item can be found at Section 3 of the TPC:

http://seacliff.usc.edu/~team7/IOC/TPC_RLCA_F04a_T07_V4.0.pdf

3.1.1 Hardware preparation

A workstation with a LINUX operating system.

3.1.2 Software preparation

The new system should be installed on the workstation of test. The specifications of software size and final software version is not available at this time.

3.1.3 Other pre-test preparations

Have a copy of the data log file, make sure that it has the filename "datalog.txt". Have access to the instructions and information found in the "README" file, which can be currently found in the top most directory of the system software. Please take note that this is subject to change.

3.2 TI-02 Relationship Generation

Details of this test item can be found at Section 3 of the TPC:
http://seacliff.usc.edu/~team7/IOC/TPC_RLCA_F04a_T07_V4.0.pdf

3.2.1 Hardware Preparation

A workstation with the LINUX operating system.

3.2.2 Software Preparation

The new system should be installed on the workstation of test. The specifications of software size and final software version is not available at this time.

3.2.3 Other Pre-test Preparations

The tester must have a data log file as described in section 3.1.3 of this document. Also, the tester must have a copy of a another implementation of the same relationship generation algorithm in order to compare the two. This independent unique algorithm will be provided.

3.3 TI-03 Relationship Clustering

Details of this test item can be found at Section 3 of the TPC:
http://seacliff.usc.edu/~team7/IOC/TPC_RLCA_F04a_T07_V4.0.pdf

3.3.1 Hardware Preparation

A workstation with a LINUX operating system.

3.3.2 Software Preparation

The new system should be installed on the workstation of test. The specifications of software size and final software version is not available at this time.

3.3.3 Other Pre-test Preparations

User must have successfully imported a data log file into the system, and has also been successful in generating the relationship matrix (This can be done by the same tester or done prior). The user must have two valid files with the following extensions: .mci and .map files.

3.4 TI-04 Visualization

Details of this test item can be found at Section 3 of the TPC:
http://seacliff.usc.edu/~team7/IOC/TPC_RLCA_F04a_T07_V4.0.pdf

3.4.1 Hardware Preparation

A workstation with the LINUX operating system.

3.4.2 Software Preparation

The new system should be installed on the workstation of test. The specifications of software size and final software version is not available at this time.

3.4.3 Other Pre-test Preparations

A valid h3viewer file that was successfully generated by the graph clustering described in section 3.3.3. The filename with the extension .h3v is necessary.

4. Test Procedures

4.1 Input log data import test TI-01

Details of this test item can be found at Section 3.1 of the TPC:

http://seacliff.usc.edu/~team7/IOC/TPC_RLCA_F04a_T07_V2.0.pdf

4.1.1 Test Case TC-01 Well Formed Usage Data Import

Details of this test item can be found at Section 3.1.4.1 of the TPC:

http://seacliff.usc.edu/~team7/IOC/TPC_RLCA_F04a_T07_V4.0.pdf

4.1.1.1 Test Process

- 1.Run the program via command line (For directory specifics refer to the README file
- 2.If there are no processing errors, check the saved data and compare to the input file
- 3.First check if the number of data records is equal to the input
- 4.Then look over data stored to check for corruption
- 5.Test is a pass if 2,3,4 are successful
- 6.If you receive a processing error, stop testing and provide feedback
- 7.If data corrupt or unequal number of records, write it feedback and stop testing

4.1.2 Test Case TC-02 Input Data Size

Details of this test item can be found at Section 3.1.4.1 of the TPC:

http://seacliff.usc.edu/~team7/IOC/TPC_RLCA_F04a_T07_V4.0.pdf

4.1.2.1 Test Process

- 1.Run the program via command line
- 2.If there are no processing errors, then test the next different sized file.
- 3.Repeat this process for 0,1,100,500,1000,5000,10000,50000,100000,150000 data entry size files.
- 4.If you encounter a error for any of them, take note and continue testing until you have complete testing each different sized file.
- 5.Complete success if all file sizes have no processing errors.

4.2 Relationship Generation TI-02

Details of this test item can be found at Section 3.2 of the TPC:

http://seacliff.usc.edu/~team7/IOC/TPC_RLCA_F04a_T07_V4.0.pdf

4.2.1 Test Case TC-02-01 Generating Relationship

Details of this test item can be found at Section 3.2.4.1 of the TPC:

http://seacliff.usc.edu/~team7/IOC/TPC_RLCA_F04a_T07_V4.0.pdf

4.2.1.1 Test Process

1. Assumed that preconditions are successful and previous log files have been imported into the system.
2. Choose a log file to process, and generate a relationship matrix.
3. Use the same file to generate another relationship matrix with the provided different algorithm.
4. Compare the two outputs, if they are identical, then the test is a pass. Finish testing.
5. If the two generated files are not identical, the test is a fail. Stop testing and mark down results.

4.3 Relationship Clustering TI-03

Details of this test item can be found at Section 3.3 of the TPC:

http://seacliff.usc.edu/~team7/IOC/TPC_RLCA_F04a_T07_V4.0.pdf

4.3.1 Test Case TC-03-01 Relationship Clustering

Details of this test item can be found at Section 3.3.4.1 of the TPC:

http://seacliff.usc.edu/~team7/IOC/TPC_RLCA_F04a_T07_V4.0.pdf

4.3.1.1 Test Process

1. Run command to start the relationship clustering.
2. If there is a processing error, the test fails, stop testing
3. If there is no processing error, and output results of a .h3v file, then mark the test as a pass and stop testing.
4. If neither of all of these happen, report in feedback and classify fail as a 'bug'

4.4 Visualization Test TI-04

Details of this test item can be found at Section 3.4 of the TPC:

http://seacliff.usc.edu/~team7/IOC/TPC_RLCA_F04a_T07_V4.0.pdf

4.4.1 Test Case TC-04-01 Displaying the relationship structure tree

Details of this test item can be found at Section 3.4.4.1 of the TPC:

http://seacliff.usc.edu/~team7/IOC/TPC_RLCA_F04a_T07_V4.0.pdf

4.4.1.1 Test Process

1. Open the supplied .h3v file through the command line commands
2. If new window successfully opens with a graphical display of the graph, then the test is a pass
3. If processing error or failure to open graphical window, then the test is a fail. Stop testing and mark down error.

4.4.2 Test Case TC-04-02 Search an object ID

Details of this test item can be found at Section 3.4.4.1 of the TPC:

http://seacliff.usc.edu/~team7/IOC/TPC_RLCA_F04a_T07_V4.0.pdf

4.4.2.1 Test Process

1. Given that the graphical window is already open, click mouse button to text field up top and enter name of desired node.
2. Click search button and wait for graph to center itself on search node.
3. If so happens without any errors, then mark the test as pass.
4. If error, mark as a fail and indicate reason for failure.
5. If there is no action upon selection, mark the object name searched and continue testing until desired.
6. If graph centers on incorrect node, mark as fail and indicate reason for failure.

4.4.3 Test Case TC-04-03 Display node information

Details of this test item can be found at Section 3.4.4.1 of the TPC:
http://seacliff.usc.edu/~team7/IOC/TPC_RLCA_F04a_T07_V4.0.pdf

4.4.3.1 Test Process

1. Given graphical window with the visual tree, click on any desired node.
2. If node's parents and children are display on right side panel without any processing errors, the test is a pass.
3. If either error or no action is performed, then mark as a fail and stop testing.

4.4.4 Test Case TC-04-04 Open a webpage for an object ID

Details of this test item can be found at Section 3.4.4.1 of the TPC:
http://seacliff.usc.edu/~team7/IOC/TPC_RLCA_F04a_T07_V4.0.pdf

4.4.4.1 Test Process

1. Click on any desired node on graph
2. Click the view button
3. If webpage is successfully opened with that corresponding node, then test is a pass.
4. If webpage does not open, record node selected and mark as fail.
5. If webpage opens showing an incorrect object, mark as fail and record node selected that corresponds to the incorrect webpage.
6. Perform test for atleast 50 nodes.

5. Test Incident Reports

5.1 TIR-01

5.2 Summary

The test involves TC-02 in terms of testing with varying input sizes. The incident occurred when the input size was 100, and only at this level. Testing was done by IV&V, and there was no received test log therefore it can only be explained in detail.

5.3 Incident Description

All other input sizes passed except for 100 data entries. Expected results were a successful generation of .map and .mci files. The actual output was a processing error and a program halt. Attempts to repeat produced the same results. The testers involved the IV&V, while the specific date and time are unknown. This incident was reported to the development team. The team then looked into the problem and classified it as a code bug which was fixed shortly thereafter. The system has been retested by the development team and the test has been labeled as a pass.

5.4 Impact

The impact was minimal for this one incident. The bug was easily tracked down since this case was the only one that failed out of all other data log sizes. This had no impact on design, procedure, or test-case specifications.

6. Test Log

6.1 TL-01 Scalability Based Testing

This test involves testing various input sizes for the relationship generation algorithm. More info can be found in section 4.1.

6.2 Test Record

Input size (entry)	0	1	100	500	1000	5000	10000	50000	100000	150000
Testing Code	S	S	S	S	S	S	S	S	S	S
Source Code	S	S	S	S	S	S	S	S	S	S
Result	P	P	P	P	P	P	P	P	P	P

6.3 TL-02 Reliability Test

Reliability: Irregular data control test cases and the results.

6.4 Test Record

Test cases	All same ids, in one big session	No relationship in 100* entry input	No relationship in 500* entry input
Testing Code	No relationship matrix generated	No relationship matrix generated	No relationship matrix generated
Source Code	No relationship matrix generated	No relationship matrix generated	No relationship matrix generated
Result	Pass	Pass	Pass

7. Test Summary

Provides an overview of the test results.

7.1 Overall Assessment of the Software Tested

The individual tests were made to be simple and were split up to contain each one capability in order to ensure that each was implemented successfully. The main limitations on the test cases and the test sets are the availability of the data logs. The data logs are provided by the client, and thus since the data log increase with time, the team and testers are limited by the time to get more data.

The main factor that impacts system performance was the size of the data logs. As the data logs get bigger, the system does slow down in computation. The recommended solution would probably lie in the areas of file processing and graph clustering improvements in terms of speed and complexity.

7.2 Impact of Test Environment

The test environment dealt only with the provided data sets. In the near future and in the operational environment, the input data logs may vary and even more so as time increases. There is no way around this due to the fact that real data is recorded every day, and there is no way to attain this future data. Thus in that lies differences between the test and operational environment.

7.3 Recommended Improvements

GUI improvement in terms of labels for side panel.

8. Rationale

CCD-Core Capability Drive through
TRR-Transition Readiness Review

9. Appendicies

None.

9.1 Test Log

None.