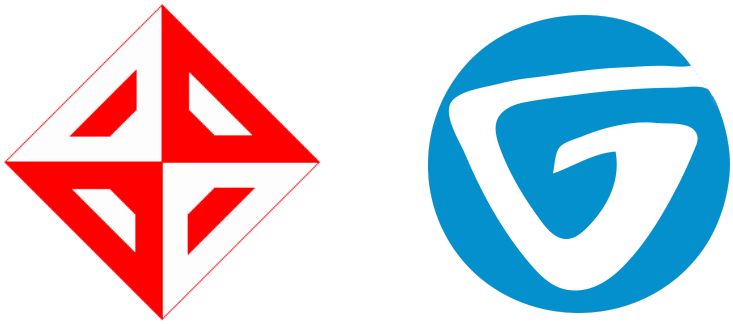

Guideal

SOFTWARE TEST DOCUMENT

(In accordance with IEEE 829 - 2008)

v1.0

Malum

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1. Introduction

These sections below identify this software test document and its scope. These sections also give information about the context in which this document is prepared and about detailed test conditions and results .

1.1 Document Identifier

This document is the Software Test Document of the project Guideal by team Malum. It is based on the IEEE Std 829 - 2008, IEEE Standard for Software and System Test Documentation.

Purpose of this document is, verifying and validating the system's feature, determining undesirable system's behavior and situation. Also, this document provides the team information about:

- Performance
- Bug Detection
- Logically Correctness of the System
- Usability and Reliable of the Product

1.2 Scope

Guideal is a webbased system that will allow instutions to manage their personal/departmental data, evaluate success status of units with respect to the standarts and get reports about personal/departmental improvement or recession according to obtained data. Users will be able to observe their statistics and get recommendations about which study/working areas they should focus on, according to their success analyses and objective criteria (standarts). Basically it will serve all learning management system functionalities; such as subscribing a training, giving tasks, submitting files to tasks, being graded etc. Additionally, user will be able to track her/his own progress over time and get recommendation for her/his future plans.

1.3 References

- IEEE Std 829-2008, IEEE Standard for Software and System Test Documentation
- Software Design Description of Guideal
- Software Requirement Specification of Guideal

1.4 Level in the Overall Sequence

There are three level testing which are unit, component and system testing.

1.5 Test Classes and Overall Test Conditions

Unit testing level covers unit functionalities described in SDD of Guideal. It is performed to verify unit availability as expected.

Component testing level covers functionalities of components described in SDD of Guideal. It is conducted to verify that each component functions as expected.

System testing level covers whole system. It is conducted to verify that communication between components operates as expected.

Hence, test conditions are composed by considering system and user requirements described in SRS Document of Guideal and users' expectation/feedbacks.

2. Details for System Test Plan

These sections below describe test items, the features to be tested and not tested, traceability matrix, evaluation criteria for pass/fail the test and which approaches are used for testing.

2.1 Test Items and Their Identifiers

The test items that are used in this document are identified in SRS document of Guideal so all of test items are found in this SRS document. Guideal is the project that uses a Web Application, Guideal Api and its own plugins such as exam creator, exam reader, grade advisor, e-mail notifier. In order to handle comprehensive testing, Test Cases and Use Cases are given below.

2.1.1 Use Cases

To make reading easer our use cases divided into parts:

- ➢ 00X - User Basic
- ➢ 10X - Adding
- ➢ 20X - Listing
- ➢ 30X - Assigning
- ➢ 40X - Statistics
- ➢ 50X - Updating
- ➢ 60X - Removing
- ➢ 70X - Smart

Guideal project use cases listed as :

- Use Case 001: Login
- Use Case 002: View Profile
- Use Case 003: Logout

- Use Cases 10X: Adding all type of entities
- Use Cases 20X: Listing all type of entities
- Use Cases 30X: Assigning Entities
- Use Cases 40X: Statistics
    - Use Case 401: Show User Statistics
    - Use Case 402: Show Term Statistics
    - Use Case 403: Show Training Statistics
    - Use Case 404: Show Measurement Set Statistics
    - Use Case 405: Show Task Type Statistics
    - Use Case 406: Show Trainer Statistics
- Use Cases 50X: Update(Edit) all type of entities
- Use Cases 60X: Remove all type of entities
- Use Cases 70X: Smart
    - Use Case 701: Grade Advisor Using
    - Use Case 702: Exam Prepare
    - Use Case 703: File Upload
    - Use Case 704: File Download
    - Use Case 705: Api Registration
    - Use Case 706: Exam Reader Using

2.1.2 Test Cases

- Test Case 1: Login
- Test Case 2: View Profile
- Test Case 3: Logout
- Test Case 4: Adding all type of entities
- Test Case 5: Listing all type of entities
- Test Case 6: Assigning entities
- Test Case 7: Show User Statistics
- Test Case 8: Show Term Statistics
- Test Case 9: Show Training Statistics
- Test Case 10: Show Measurement Set Statistics
- Test Case 11: Show Task Type Statistics
- Test Case 12: Show Trainer Statistics
- Test Case 13: Update all type of entities
- Test Case 14: Remove all type of entities
- Test Case 15: Measuring grade advisor accuracy with 3 different strategies
- Test Case 16: Exam Prepare
- Test Case 17: File Upload
- Test Case 18: File Download
- Test Case 19: API Registration
- Test Case 20: Exam Reader

2.2 Test Traceability Matrix

TC Name\UC Name	UC-001	UC-002	UC-003	UC-10X	UC-20X	UC-30X	UC-401	UC-402	UC-403	UC-404	UC-405	UC-406	UC-50X	UC-60X	UC-701	UC-702	UC-703	UC-704	UC-705	UC-706
TC-1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TC-2		X																		
TC-3			X																	
TC-4				X									X	X						X
TC-5				X	X	X														
TC-6				X		X	X	X	X	X	X	X				X			X	X
TC-7							X													
TC-8								X												
TC-9									X											
TC-10										X										
TC-11											X									
TC-12												X								
TC-13													X							
TC-14														X						
TC-15															X					
TC-16																X		X		
TC-17																	X			
TC-18																		X		
TC-19																			X	
TC-20																				X

Figure 1: Test Traceability Matrix

2.3. Features to be Tested

Firstly in Guideal, the functional properties are to be tested. While testing functional properties we use specific parameters and inputs in order to see the software's behavior and see the related errors. After the test of functional properties the nonfunctional features are to be tested. The nonfunctional features include properties like performance, reliability and storage requirements.

To test non-functional features, a database which has 2000 users, 11 terms, 210 trainings and 196000 grades were created.

2.4 Features not to be Tested

Hibernate performence will not be tested.
Database access, SQL performances will not be tested.
Glassfish thread pool performance will not be tested.
Jquery page processing performance will not be tested.

We are not testing the third party libraries performance.

2.5 Approach

Components, functionalities of GUIDEAL will be tested in black-box manner. Several web pages from the platform will be tested by using services provided in the user interface directly.

Functionalities of GUIDEAL API will also be tested in black-box way. Commands will be in JSON objects that are sent to the server. Related validation messages, returned objects will be observed in testing.

2.6 Item Pass/Fail Criteria

This testing report uses to different fault categories. Deficiency which is fault that do not block the software from its functionality and defect which is fault that stops or break down the software from running and it does not meet the requirements.

Evalutaion is will be based on three criteria: pass, fail and conditional pass. Pass means that after applying the test case there will be no defect or deficieny. Conditional pass means that there will be one or more deficieny but no defect which makes system useless. Fail means that after test case there will be a defect and system does not meet requirements.

After applying test cases, the failed and conditionaly passed cases will be analyzed and changes which make them working correctly will be made. After the changes are done then we will evaluate the situation and select a case in terms of regression. There may be no regression which means there is no need for regression testing because nothing on the general program structure is affected by the change. There may be regression which means the segment of the code where the change is made should be evaluated and some test cases may be run again. Lastly there may be full regression which means the changes affected general program structure so all changes should run again.

2.7 Test Deliverables

There will be two test deliverables for GUIDEAL. First deliverable is Software Test Document, which includes test cases that are stated in Section 4 of this document.

The other test deliverable for testing is Test Report that will be created with respect to IEEE STD 8292008 and presented in Section 5. In this test report, testing activities' results will be summarized, testing activities' results will provide evaluations based on test results.

3.Test Management

3.1 Planned Activities and Tasks; Test Progression

To create plan SDD will be analyzed and the parts of the system which are error prone will be found out. The test cases which are necessery will be determined and they will be catogerized according to the use case categories which are mentioned in SDD.

The inputs which are used in test cases will be decided and their expected outputs and results will be determined and described.

At the end, the real outputs will be gathered and will be listed as a table to show how the system works and what should be done in further steps of the development.

3.2 Environment/Infrastructure

Test process has following hardware and software needs:

- Hardware Needs: The devices which will form the hardware components of the system shall have internet access as the system has web. Therefore, modem, WAN-LAN, Ethernet cross-cable.
- Software Needs: GUIDEAL system is web. IE 9 and above, Firefox 4.0 and above or Chrome 8.0 and above and works on operating systems that support these browsers.

4. Test Case Details

In this section, the listed and detailed explanation of each test case accompanied by their environmental and procedural requirements, dependencies, inputs and outcomes. Environmental requirements clarify that in order to apply all test cases, whole system must be implemented and any web browser must be installed to computer.

For each test case, there are 7 fields; Test Case Identifier, Objective, Inputs, Outcomes, Environmental Needs, Special Procedural Requirements, Intercase Dependencies. Test case id is unique for each test case and is used for identifying test cases.

Objective of the test case explains why this test is applied on the project. Inputs are the input list of the test case which are used as parameters. Outcomes are the expected results of the cases. Environmental needs are the necessary parts to run the test.

4.1 Functionality Testing

TC Identifier	TC1
Objective	Login
Inputs	Username, password
Outcomes	User password is check with database and if user is registered, it is logged in else rejected request
Environmental Needs	Server should run
Special Procedural Req.	
Intercase Dependencies	

Figure 2: Login Test

TC Identifier	TC2
Objective	View Profile
Inputs	Username
Outcomes	User redirected to user profile page which is given as username. In redirected page, user personal informations which are defined in ER diagram as a User Table are represented
Environmental Needs	Server should run, database should run
Special Procedural Req.	
Intercase Dependencies	TC1

Figure 3: View Profile Test

TC Identifier	TC3
Objective	Logout

Inputs	Username
Outcomes	Session which assigned to logged in user should be closed. User and server relation is broken after now.
Environmental Needs	Server should run
Special Procedural Req.	
Intercase Dependencies	TC1

Figure 4: Logout Test

TC Identifier	TC4
Objective	Adding All Type of Entities
Inputs	Object as described in ER diagram
Outcomes	Related object is added into database.
Environmental Needs	Server should run, database should run
Special Procedural Req.	
Intercase Dependencies	TC1, TC6

Figure 5: Adding All Type of Entities Test

TC Identifier	TC5
Objective	Listing All Type of Entities
Inputs	Entity Type
Outcomes	Entities which are stored in databased are listed. These entities type should be same as given entity type

Environmental Needs	Server should run, database should run
Special Procedural Req.	
Intercase Dependencies	TC1, TC4, TC6

Figure 6: Listing All Types of Entities Test

TC Identifier	TC6
Objective	Assigning All Types of Entities
Inputs	Object1Id, Object2Id
Outcomes	As a given inputs, object1Id is associated to object2Id. It should be stored in database as a given relation.
Environmental Needs	Server should run, database should run
Special Procedural Req.	
Intercase Dependencies	TC1, TC4

Figure 7: Assigning All Types of Entities Test

TC Identifier	TC7
Objective	Show user Statistics
Inputs	userId
Outcomes	For a given userId, user grades should be taken from database and listed as a graph/charts. These charts should inform user to his training success, task success and measurement criteria success according to taken data.
Environmental Needs	Server should run, database should run
Special	

Procedural Req.	
Intercase Dependencies	TC1, TC6

Figure 8: Show User Statistics Test

TC Identifier	TC8
Objective	Show Term Statistics
Inputs	termId
Outcomes	For a given termId, user grades which are related with given TermId should be taken from database and represented as a charts. Charts should inform user to his training success, task success and measurement criteria success according to taken data.
Environmental Needs	Server should run, database should run
Special Procedural Req.	
Intercase Dependencies	TC1, TC6

Figure 9: Show Term Statistics Test

TC Identifier	TC9
Objective	Show Training Statistics
Inputs	trainingId
Outcomes	For a given trainingId, user grades which are related with given trainingId should be taken from database and represented as a charts. Charts should inform user to his training success, task success and measurement criteria success according to taken data.
Environmental Needs	Server should run, database should run
Special Procedural Req.	

Intercase Dependencies	TC1, TC6

Figure 10: Show Training Statistics Test

TC Identifier	TC10
Objective	Show Measurement Set Statistics
Inputs	measurementSetId
Outcomes	For a given measurementSetId, user grades which are related with given measurementSetId should be taken from database and represented as a charts. Charts should inform user to his training success, task success and measurement criteria success according to taken data.
Environmental Needs	Server should run, database should run
Special Procedural Req.	
Intercase Dependencies	TC1, TC6

Figure 11: Show Measurement Set Statistics Test

TC Identifier	TC11
Objective	Show Task Type Statistics
Inputs	taskTypeId
Outcomes	For a given taskTypeId, user grades which are related with given taskTypeId should be taken from database and represented as a charts. Charts should inform user to his training success, task success and measurement criteria success according to taken data.
Environmental Needs	Server should run, database should run
Special Procedural Req.	
Intercase Dependencies	TC1, TC6

Figure 12: Show Task Type Statistics Test

TC Identifier	TC12
Objective	Show Trainer Statistics
Inputs	trainerId
Outcomes	For a given trainerId, user grades which are related with given trainerId should be taken from database and represented as a charts. Charts should inform user to his training success, task success and measurement criteria success according to taken data.
Environmental Needs	Server should run, database should run
Special Procedural Req.	
Intercase Dependencies	TC1, TC6

Figure 13: Show Trainer Statistics Test

TC Identifier	TC13
Objective	Update All Types of Entities
Inputs	Object as a described in ER diagram
Outcomes	Object which is stored in database and objectId is equal to given as a input objectId is updated to given object as an input.
Environmental Needs	Server should run, database should run
Special Procedural Req.	Given as an input object id should be stored in database before.
Intercase Dependencies	TC1, TC4

Figure 14: Update All Types of Entities Test

TC Identifier	TC14

Objective	Remove All Types of Entities
Inputs	ObjetId
Outcomes	Object which is stored in database and objectId is equal to given as a input objectId is removed from database.
Environmental Needs	Server should run, database should run
Special Procedural Req.	ObjectId should be related a object which stored in database
Intercase Dependencies	TC1, TC4

Figure 15: Remove All Types of Entities Test

TC Identifier	TC15
Objective	Measuring grade advisor accuracy with 3 different strategies
Inputs	Course grades, assigment based or total type selection
Outcomes	Grades are associated with advised grade letters according to given type selection. Accuracy should be over %70.
Environmental Needs	Server should run, database should run
Special Procedural Req.	
Intercase Dependencies	TC1

Figure 16: Measuring Grade Advisor Accuracy Test

TC Identifier	TC16
Objective	Exam Prepare
Inputs	taskIds
Outcomes	According to given taskIds, task object should be taken from database and exam paper prepared as a PDF format

Environmental Needs	Server should run, database should run
Special Procedural Req.	TaskIds should be associated database objects
Intercase Dependencies	TC1, TC6

Figure 17: Exam Prepare Test

TC Identifier	TC17
Objective	File Upload
Inputs	File
Outcomes	File should be saved on Guideal servers and related informations are stored in database
Environmental Needs	Server should run, database should run
Special Procedural Req.	
Intercase Dependencies	TC1

Figure 18: File Upload Test

TC Identifier	TC18
Objective	File Download
Inputs	File Id
Outcomes	By using fileId, database object should be retrived from database. According to taken object infomation, file should be prepared as a zip format and present to user
Environmental Needs	Server should run, database should run
Special	

Procedural Req.	
Intercase Dependencies	TC1, TC16

Figure 19: File Download Test

TC Identifier	TC19
Objective	API Registration
Inputs	userId
Outcomes	By using hash algorithms API key should be generated and associated with userId. Save these information to database. Generated API key should be presented to user.
Environmental Needs	Server should run, database should run
Special Procedural Req.	
Intercase Dependencies	TC1, TC6

Figure 20: API Registration Test

TC Identifier	TC20
Objective	Exam Reader
Inputs	Scanned exam paper as a image file
Outcomes	Image file should be analyzed and by using image processing algorithms scanned image information should be stored into database.
Environmental Needs	Server should run, database should run
Special Procedural Req.	
Intercase	TC1, TC4, TC6

Dependencies	

Figure 21: Exam Reader Test

5. System Test Report Details

5.1 Overview of Test Results

We tested all the cases and they all passed. Performance concerns will be handled later.

5.1.1 Test Environment

- Server which uses GlassFish
- Web Browser (IE 9 and above, Firefox 4.0 and above or Chrome 8.0 and above)

5.2 Detailed Test Results

Test Case ID	Status
TC1	pass
TC2	pass
TC3	pass
TC4	pass
TC5	pass
TC6	pass
TC7	pass
TC8	pass
TC9	pass
TC10	pass
TC11	pass
TC12	pass
TC13	pass

TC14	pass
TC15	pass
TC16	pass
TC17	pass
TC18	pass
TC19	pass
TC20	Image Reader Accurancy: %80 It should be increased later.

Figure 22: Test Results Table