System Test Documentation

Android Data Entry Application Suite for Beeminder

ARES

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1.Introduction

1.1 Document Identifiers

This document is a first version of the test document of the project Android Data Entry Application Suite for Beeminder.

Intended audiences are Beeminder application users.

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1.2 Scope

The Android Data Entry Application Suite for Beeminder project is developed for supplying easy and reliable data entry for Beeminder and friendly usage with six sub application.

This document is prepared by referring to IEEE Std. 829-2008. The purpose of this document is to describe the entire test effort for the Android Data Entry Application Suite for Beeminder project. There will be one level of testing, so test documentation is limited to System Testing. Although the software-based systems consist of software, hardware and users, the test phase for this project will be focus on the software and users mainly.

In the Software Requirements Specification document, the functional requirements and the use cases of the project were specified. The test cases described in this document will be according to the those functional requirements and use cases. The results of operations will be controlled if they are reliable and true or not.

1.3. References

IEEE. IEEE Std. 829-2008 IEEE Standard for Software and System Test Documentation. Previous reports of the team, namely SRS and SDD.

1.4 Level in the overall sequence

For System Level Testing we tested the use cases defined in SRS Document. For User Acceptance Testing we tested different functional and nonfunctional scenarios that may be used within the system.

1.5. Test classes and overall test conditions

We basically covered integration test and system test concepts. We tested the integration of the Beeminder Server connection over API and Character Recognition Server and whether the system works as intended.
As an acceptance test we tested the overall system according to the scenario written in Section 2.

2. DETAILS FOR SYSTEM TEST PLAN

In this section, all the test items, their identifiers, traceability matrix, and all the features to be tested and not tested will be covered. After these parts, approach and item pass/fail criteria will be discussed. As the last part of this section, test deliverables will be mentioned.

2.1. Test Items and Their Identifiers

Use cases are mentioned in the SRS Document, at the section 3.2. At this point of our project, we have some updates for these use cases, and in this section, the updated use cases will be discussed. Test items and their identifiers can be listed as follows :

UseCase 1 : Connection with Beeminder Server
UseCase 2 : Data Submission For Applications
UseCase 3 : Take Photo and Send to the Server
UseCase 4 : Return Recognized Digital Number from Server

UseCase 5 : Habit Control Timer Working
UseCase 6 : Push-up Proximity Sensor Working
UseCase 7 : Time Tracker Chronometer Working
UseCase 8 : Smart Reminder Notification Display
UseCase 9 : Smart Reminder Getting a Reply From the User
UseCase 10 : Internet Absence

In the aforementioned use cases all application will be tested whether they can connect to Beeminder and a real task correctly. After that, all applications will be tested whether user can reach the task's all correct information or not. Lastly, all applications will be tested whether data submission occurs correctly or not.

For the Weight Loss Control Task, we will check the taking photo part and whether the digital numbers can be read correctly by Android.

For the Habit control Task, we will check whether our timer starts from zero after data submission, and starts from the last elapsed time value if the Internet is used at the same day, before.

For the Push-up Task, we will check whether the sensor for counting user's push ups number works correctly, or not.

For Time Tracker Task, we will check the chronometer whether works correctly or not.

For Smart Reminder Task, we will check the notification display. In addition, getting a reply from user will also be checked.

For our general application suite, we will check whether entering to our all applications is successful, or not, and whether in the Internet Absence our application suite works well or not.

2.2. Test Traceability Matrix

All columns show the use case numbers as identified in the previous part of this section. Rows show the test case identifier numbers. For every use case, we have one test case.

	U1	U2	U3	U4	U5	U6	U7	U8	U9	U10
T1	X									
T2		X								
T3			X							

T4				X						
T5					X					
T6						X				
T7							X			
T8								X		
T9									X	
T10										X

2.3. Features to be Tested

All of the features that we will test are the functional features of our application suite. These functionalities are our use cases as we mentioned in section 2.1.

2.4. Features not to be Tested

Since the user interface is designed for easy functionality, there will be no need for design test cases, after we completed these functionality test cases. In addition, we will not test the Beeminder Application side functionalities, since it is Beeminder Application's responsibility. That is, after we successfully connected to Beeminder, we will not consider about Beeminder server side. In addition, we used libraries for sensor of Push-up application and Weight Loss Control Application. For these libraries, we will not provide with test cases.

2.5. Approach

In this document, there will be a black box approach. That is, user will interact with the system and the results of this interaction will be evaluated. These interaction types will be taking a photo, clicking some buttons and using Push-up sensor. After that, we will evaluate the results so that we can determine whether our application suite works correctly, or not.

In case of any failure, we will try to fix the problematic part and apply all the test cases again, in order not to corrupt any other use case parts of our application suite when trying to fix this problem.

2.6. Item Pass/Fail Criteria

Our pass criteria will be the expected results of the actions as specified in 3.2th section of our SRS document. If there is an unexpected behavior of the system and/or an unexpected side effect of the system, it means a failure for this test case.

2.7. Test Deliverables

Our only test deliverable is our STD. In the sections 1, 2 and 3 we cover level test plans, in section 4 we cover level test case and in the section 5 we cover level test report.

3. Test management

3.1. Planned activities and tasks; test progression

We carry out individual tests for any functionality of the program. Specification of the test cases can be found at Section 2. All cases are tested with different values or conditions of related variables or situations respectively. Therefore first we had to decide on those values and conditions then start testing. Tests are conducted in such a way that we are able to see the effects of any error or bug on any related piece. All the details and outcomes of tests can be found at Section 4.

3.2 Environment/infrastructure

This section gives brief information about the prerequisites of the project. Although all of the case specific environmental needs are explained in detail in Section 4, this section gives the global needs of the project.

- Android Operating System
- Internet connection
- Beeminder application on the android device
- Beeminder account

4. Test case details

	Test case identifier	tc01
	Objective	Verification of User Account in Beeminder in order to use the application
	Inputs	It is checked if there is Beeminder Application installed and if the user has already logged into the Beeminder Account
	Outcome(s)	If yes , the user is redirected to the list page where there are 6 applications
	Environmental Needs	Internet Connection
	Special Procedural Requirements	**-**
	Inter-Case Dependencies	**-**

	Test case identifier	tc02
	Objective	Data Submission
	Inputs	The data is submitted to the Beeminder Account of the user
	Outcome(s)	The data is accepted and noted that the task for the moment is over.
	Environmental Needs	Internet Connection
	Special Procedural Requirements	**-**
	Inter-Case Dependencies	**-**

	Test case identifier	tc03 & tc04
	Objective	Take Photo and send to Server & Return recognized Digital Number from Server
	Inputs	The photo is taken and and using SSOCR it is recognized and it is asked to the user if (s)he meant it . If yes , it is submitted to the Beeminder Account of the user. If no the user tries again until it is true.

	Outcome(s)	The data is accepted and noted that the task for the moment is over.
	Environmental Needs	Internet Connection
	Special Procedural Requirements	**-**
	Inter-Case Dependencies	**-**

	Test case identifier	tc05
	Objective	Habit Control Timer Working
	Inputs	The time passed in social networking websites or other purposed websites are recorded and directly added to Beeminder account of user
	Outcome(s)	The data is accepted and noted that the task for the moment is over.
	Environmental Needs	Internet Connection
	Special Procedural Requirements	**-**
	Inter-Case Dependencies	**-**

	Test case identifier	tc06

	Objective	Push-up Proximity Sensor Working
	Inputs	The user does his/her push-ups and it is counted by proximity sensor of the cell phone by putting it on the floor where the push-ups will be done. The sensor recognizes the chest of the user and counts the number of push-ups and this data at the end is submitted to the account of the user. The sensor detection distance is equal to 2.5 cm.
	Outcome(s)	The data is accepted and noted that the task for the moment is over.
	Environmental Needs	Internet Connection
	Special Procedural Requirements	**-**
	Inter-Case Dependencies	**-**

	Test case identifier	tc07
	Objective	Time Tracker Chronometer Working
	Inputs	The user starts the time for doing a task which was created in the Beeminder Account. If the time is over it is submitted to the Beeminder Account of the user.
	Outcome(s)	The data is accepted and noted that the task for the moment is over.
	Environmental Needs	Internet Connection

	Special Procedural Requirements	**-**
	Inter-Case Dependencies	**-**

	Test case identifier	tc08 & tc09
	Objective	Smart Reminder Notification display & Smart Reminder get reply from user
	Inputs	the user accepts a notification in a random time during the day and in the notification it will ask if the user has done a TASK ID = TEST. If yes , it is accepted as data and submitted to the account of the user , If not , it becomes a reminder for the user.
	Outcome(s)	if there is a data sent it is accepted and noted that the user finished the task , otherwise it behaves as a reminder telling the user that (s)he should do the task.
	Environmental Needs	Internet Connection
	Special Procedural Requirements	**-**
	Inter-Case Dependencies	**-**

5. System test report details

5.1 Overview of test result

All use cases specified in Section 2 are tested during the test procedure.

5.2 Detailed test result

1	**Test case identifier**	tc01
	Feature to be tested/ associated use-case .	Uc01/ Connection with Beeminder Server
	Test results	Test result is PASS. While user enter to the any application, authentication will be required to open a session for a user. By the way the Beeminder android application must be installed to a device to get successful result.

2	**Test case identifier**	tc02
	Feature to be tested/ associated use-case .	Uc02/ Data Submission for applications
	Test results	Test result is PASS. After finishing a task, result will be directly added to Beeminder account of user while a click on the task submission done. Test Case 1 and 2 are tested for all applications.

3	**Test case identifier**	tc03
	Feature to be tested/ associated use-case .	Uc03/ Take Photo and send to Server
	Test results	Test result is PASS. While taken photo in jpeg format will be directly sent to configured Server of seven segment character recognition. The test result proved that there is not any such problem in the Server and Client side. While

		testing phase for large sized image the problem arose in Server side for handling large sized image and dark photo seen instead of required image. The problem solved and the result was successful.

4	**Test case identifier**	tc04
	Feature to be tested/ associated use-case .	Uc04/ Return recognized Digital Number from Server
	Test results	Test result is Unsuccessful. The taken photo is gotten by Server side. But some pictures need to crop before recognition and sometimes taken photo can be blur. Due to those features seven segment character recognition library returns unwanted result. To prevent and cope with those problem we are working on to crop image in Client side and then send to Server for recognition. Works on those problems are still continuing.

5	**Test case identifier**	tc05
	Feature to be tested/ associated use-case .	Uc05/ Habit Control Timer Working
	Test results	Test result is PASS. The time for internet usage can be controlled inside of Habit Control application. The time passed in social networking websites or other purposed websites are recorded and directly added to Beeminder account of user.

	Test case identifier	tc06
	Feature to be tested/	Uc06/ Push-up Proximity Sensor Working

6	**associated use-case .**	
	Test results	Test result is PASS. The sensor worked correctly but for a device not supplying sensor a problem occurred and prevented by adding a button for recording push up task. The sensor detection distance is equal to 2.5 cm.

7	**Test case identifier**	tc07
	Feature to be tested/ associated use-case .	Uc07/ Time Tracker Chronometer Working
	Test results	Test result is PASS. Chronometer worked correctly for selected time interval. Any problem related to this feature was not recorded.

8	**Test case identifier**	tc08
	Feature to be tested/ associated use-case .	Uc08/ Smart Reminder Notification display
	Test results	Test result is PASS. For random time interval a notification will shown to related with entered task to determine a task is done or not. The result proved that the notification works correctly while there is a task on the user list

9	**Test case identifier**	tc09
	Feature to be tested/ associated use-case .	Uc09/ Smart Reminder get reply from user
	Test results	Test result is PASS. A prompt will shown in notification display to recognize whether task is done or not. The test result shows that the use

		case is working correctly

10	**Test case identifier**	tc010
	Feature to be tested/ associated use-case .	Uc010/ Internet Absence
	Test results	Test result is Unsuccessful. While there is not any internet connection for Weight Loss Control application the problem will occur. The recognition for seven segment display works only there are exist Internet connection for connecting Server. Also for remaining applications data submission and Beeminder connection require Internet connection.

5.3 Rationale for Decisions

Rationale for decision is to maximize the sequence of the test with minimal effort.

5.4 Conclusion and recommendations

Each test case is tested more than 1 time to determine confidence case of application. Some tests are failed and the modification on them are done directly, but for others the work on them is still continuing. Most of the tests passed test cases successfully.