Fotoball

CSC509: Testing & Integration Plan

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Rev 1.0

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Table of Contents

1.0 Introduction

1.1 Purpose - The main purpose of the system integration and testing is to validate the hardware and software.

This is to make sure the product released is ready to be used by the public. The Integration phase includes test cases for each module, as well as testing to ensure that every module ties together properly.

1.2 Scope - The integration testing routines follow the "White Box" approach to test and integrate the software. The white box approach will help us to understand the behavior of each module and to build quality software. Integration is carried on a modular approach.

2.0 Modular

2.1 Validation Requirements

2.1.1 Validation Requirements

Requirement Number	2.1
Requirement Name	Validation Requirements
Requirement Description	Validation is handled via the mobile device's internal security system
Pre-conditions	
Procedures	Since our system will not verify individual users, just individual balls, validation can be piggy-backed to the mobile system's verification. The app will live within the device's existing ecosystem, thus transferring any user clearances to the device's operating system. If a user is provisioned to use the device, they are provisioned to use the application.
Post Conditions	The system will return the message: user the validation is completed.
Test Results	PASS/FAIL

2.2 User Interface Requirements

2.2.1- User Interface - GUI

Requirement Number	2.21
Requirement Name	User Interface – GUI for Fotoball
Requirement Description	All users can access the GUI for Fotoball
Pre-conditions	The user must have the application installed on the phone.
Procedures	1. Using your mobile device, locate the Fotoball application 2. Click on the application 3. The user will be see the Main Fotoball screen.
Post Conditions	The Fotoball GUI can be controlled by the user
Test Results	PASS

2.2.2 User Interface - To Allow authorized individuals to view the Fotoball

Requirement Number	2.22
Requirement Name	User Interface
Requirement Description	Allow authorizing individuals to live stream from Fotoball
Pre-conditions	The user must be logged into the system.
Procedures	1. On the Main screen, click activate ball. 2. Now the user will be asked for the required Fotoball details 3. Enter the details and proceed
Post Conditions	The system will display a message that confirms the fotoball access and live stream
Test Results	PASS

2.3 Performance Requirements

2.3.1 - Performance Requirements - Booting up/ live stream authentication

Requirement Number	2.31
Requirement Name	Performance Requirements – Booting up and Live stream authentication
Requirement Description	Users will be able to boot into the hardware through Fotoball application and access the live stream.
Pre-conditions	User must have the required access details for Fotoball. Measuring it using a chronograph
Procedures	1. Open the application 2. Click on the activate ball 3. Enter the required fotoball authentication 4. Click on submit (<5 seconds)
Post Conditions	The system will verify the details and show the live stream from fotoball device
Test Results	PASS

2.3.2- Performance Requirements – Accessing video and live streaming it back to the application

Requirement Number	2.32
Requirement Name	Performance Requirements – Accessing video and live streaming it back to the application.
Requirement Description	The User will be able to access the video and live stream it from the fotoball hardware into the application.
Pre-conditions	User must have the fotoball hardware and authentication requirements for accessing live stream. Have a time measurements device available. (chronometer)

Procedures	1. Open the application in mobile device 2. Click on the activate ball option 3. Using your chronometer, be ready for calculating the performance 4. Enter the required fotoball authentication and click submit 5. Start the chronometer simultaneously when you click submit 6. Measure the time taken from accessing the live stream to the application (It should be less than 5 seconds)
Post Conditions	The System will be in live feed window
Test Results	PASS

2.4 User Platform Requirements

2.4.1 Test User Platform Requirements

Requirement Number	2.41
Requirement Name	User Platform Requirements
Requirement Description	The User platform is to be initially tested in a desktop environment using an Android-like simulator
Pre-conditions	The User needs a Device with an Android Operating System
Procedures	1. Find an Android device or simulator 2. Verify that it is running Android version 5.0 or later 3. Connect the Device to the System. 4. Install the application initially from an external source that is provided to the user
Post Conditions	• If the Application is successfully installed, it will open. • If the Application is not successfully installed, it will prompt the user “Application installation failed”
Test Results	Pass if all the Post Conditions are met.

2.5 Fotoball Device Access requirements

2.5.1 Test Fotoball Device Access requirements- full name

Requirement Number	2.51
Requirement Name	Fotoball Device Access requirements
Requirement Description	The Fotoball device will contain specific name and IP address to access it. The user will need to know the details of the Fotoball to access it
Pre conditions	The User needs to be in Main page
Procedures	1. Enter the Name 2. Enter the IP Address. 3. Enter the valid information (network, port number) 4. Click Submit after entering the above information.
Post Conditions	The User will access the Fotoball live stream if all the information matches it.
Test Results	Pass if all the Post Conditions are True.

2.5.2 Test User Account Requirements - Registered Fotoball

Requirement Number	2.52
Requirement Name	User Account Requirements – Registered Fotoball
Requirement Description	The User account contains registered fotoball device.
Pre conditions	The User needs to be in the Main menu and add a fotoball device to their account
Procedures	• The User needs to fill valid information for the rest of the form to register the fotoball device
Post Conditions	• The Default User is assigned to a Fotoball device
Test Results	Pass if all the Post conditions are True

2.6 Hardware Requirements

2.6.1 Power Test

Requirement Number	2.61
Requirement Name	Power Test
Requirement Description	Verify that Fotoball is able to be charged and retain charge
Pre-conditions	Battery < 50% charged
Procedures	1. Power on Fotoball 2. Open the Fotoball 3. Check if the power LED lit 4. Use volt meter measure across +5V and Gnd and check the power for camera 5. Plug in Fotoball to a charger 6. Check battery voltage 7. Wait for 2 minutes 8. Check if battery voltage went up.
Post Conditions	Battery > 50% charge
Test Results	PASS only if all post conditions are true, FAIL otherwise.

2.6.2 Communication Test

Requirement Number	2.62
Requirement Name	Communication Test
Requirement Description	Ensure Fotoball is able to wirelessly sync with mobile device
Pre-conditions	Fotoball not connected
Procedures	1. Power on Fotoball 2. Wait for 2 minutes 3. Check if you can see the Fotoball wireless SSID 4. Connect to Fotoball wireless SSID 5. Ping Fotoball IP address.
Post Conditions	Fotoball connected

Test Results	PASS only if all post conditions are true, FAIL otherwise.

2.7 Database Requirements

2.7.1 Type Check Test

Requirement Number	2.71
Requirement Name	Type-Check Test
Requirement Description	Ensure Fotoball database is immune to invalid input
Pre-conditions	
Procedures	1. Connect to Fotoball database via backend 2. Attempt to input erroneous data types for each relation of each table
Post Conditions	No invalid inputs allowed
Test Results	PASS only if all post conditions are true, FAIL otherwise.

2.7.2 Concurrency/Stability Test

Requirement Number	2.72
Requirement Name	Concurrency and Stability Test
Requirement Description	Ensure each Fotoball element can only be accessed by one external source at a time
Pre-conditions	At least 1 Fotoball loaded into database
Procedures	1. Connect to Fotoball database via backend 2. Attempt to access/change information from source A 3. Attempt same access from source B
Post Conditions	Source B access is denied
Test Results	PASS only if all post conditions are true, FAIL otherwise.

3.0 System Integration

3.1.1 Integration Phase -1 - Testing system components independently

The first step of system integration plan will consist of making sure each one of the system components are working as given in the requirement specification. This consists of making sure the hardware and software are thoroughly testing and integrated. In the Fotoball Application, the main system components is fully operational and tested independently before trying to integrate or try to test any interaction with any of the other mayor system components. The phase-1 will validate the system have all the necessary components to start with a formal system integration. The integration phase will include, testing the application, hardware and the database independently

Phase 1 Integration Testing:

- Testing the application installation
- Testing GUI and classes that don't have dependencies
- Testing the hardware to make sure it is working
- Testing database installation and finding tables are created.

3.2.1– Integration Phase -2 – Database and Communication

The Phase 2 of the system integration will consist of integrating the database system with the application. As part of this phase, we will test the communications interfaces. In addition, this phase includes testing the functionality and the interaction between the server and the application

Phase 2 Integration Testing:

- Testing Wireless communication between the application and hardware
- Testing Server

3.3.1– Integration Phase -3 Functionality and Performance

The Phase 3 of the system integration will consist of testing the functionality of integrated modules and performance. As a part of this test, we will conduct the performance test of the live stream from the hardware to the system GUI.

Phase 3 Integration Test

- Testing Functionality
- Testing Performance

3.4.1– Integration Phase -4 –Complete system Integration software and hardware

The Phase 4 of the system integration will test and integrate all the system components as a one whole system. This will include testing both the hardware and software component together

Phase 4 Integration Test

- Testing Wireless between all systems simultaneously (Hardware/Software)
- Testing client to database request
- Testing database to fotoball
- Testing system performance requirements.

4.0 Testing Schedule

Test Schedule ID:	FbT-0001
Product ID / Name:	Fotoball
Product Version:	v1.0
Created On:	Document created on April 01, 2015
Review On:	Document reviewed on April 08, 2015
Review By:	Cipoletta, David Herrera, AbrAhAm Jilling, Adam Rejeleene, Rick
Current Status:	Test & Integration Plan In Progress

Test Step	Start Date	End Date	Responsibility / Comments
1. Hardware Requirements	Jan 29,	Feb 19,	

	2015	2015	
2. Fotoball Device Access requirements	Feb 23, 2015	Feb 26, 2015	
3. User Interface	Mar 02, 2015	Mar 05, 2015	
3.1 GUI installation	Mar 02, 2015	Mar 05, 2015	
3.2 Login access	Mar 02, 2015	Mar 05, 2015	
4. Database Requirements	Mar 09, 2015	Mar 12, 2015	
5. Performance Requirements	Mar 23, 2015	Mar 26, 2015	
5.1 Live Streaming Authentication Performance	Mar 23, 2015	Mar 26, 2015	
5.2 Live Streaming Performance	Mar 23, 2015	Mar 26, 2015	
6. System Integration	Mar 30, 2015	Apr 02, 2015	
6.1 Testing system components independently	Mar 30, 2015	Apr 02, 2015	
6.2 Database and Communication	Mar 30, 2015	Apr 02, 2015	
6.3 Functionality and Performance	Mar 30, 2015	Apr 02, 2015	

6.4 Complete system Integration software and hardware	Mar 30, 2015	Apr 02, 2015	
Prepare Final Test Report	Apr 09, 2015	Apr 13, 2015	
Review / Approve the Final Test Report	Apr 13, 2015	Apr 16, 2015	Final test will be performed a week prior the last day of class
Test Step	**Start Date**	**End Date**	**Responsibility / Comments**