



System Test Plan for *Shop Smart*
'The Self-Checkout on Wheels'

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System Test Plan

The Shop Smart system test plan will focus on five major categories:

- The RFID system, which includes the reader and the tags
- The BeagleBone system, which includes the board, battery and WiFi module
- The BeagleBone and RFID reader enclosures
- The GUI application
- The android smartphone application

By testing these categories we hope improve the functionality of our proof of concept model and to create a very well working prototype.

RFID Reader and Tags		
Test Type	Test Case	Expected Results
Physical Inspection	Functionality of the RFID tags	Data from the RFID tags can be read successfully and without lag
	Range of the RFID reader	The RFID tags can be read by the RFID reader within a range of 20cm

BeagleBone Black Board, Battery and WiFi Module		
Test Type	Test Case	Expected Results
Electrical Testing	Power Input	Sufficient amount of power must be drawn from an external battery, and it should be enough to maintain the entire BeagleBone system
	Power Supply	Verify that the power is being supplied to each of the individual components installed on the board
	Battery	Verify that the battery can provide sufficient power to all the components of the system for at least 2 hours
	Connectivity of the LCD Cape	Confirm that the male pins of the LCD cape can successfully connect with the BeagleBone board via the respective female pins of the expansion header
	Insulation	Electric circuitry is enclosed within an insulating material
Compatibility Testing	LCD Cape, WiFi Module and RFID Reader	Each of these components are detected on the BeagleBone board

BeagleBone and RFID Enclosures		
Test Type	Test Case	Expected Results
Physical Inspection	Touchscreen, Battery and WiFi Module	Ensure that the touchscreen module is visible through the enclosure cutout, and that the battery, BeagleBone board and WiFi module are all hidden away behind the enclosure
	BeagleBone System Enclosure	Verify that the BeagleBone system enclosure is tamper-proof and cannot be opened by a user
	RFID Reader Enclosure	The RFID reader is securely contained within its boxed enclosure and is tamper-proof/cannot be removed by the user

GUI Application		
Test Type	Test Case	Expected Results
Software Testing	UI Testing	The user interface is responsive and user is able to easily switch back and forth between the different menu screens
	RFID Tags	The tag's name and price appear on the screen every time a tag is scanned by the reader
	Total Amount	The total amount that the user has to pay gets updated with every single addition or removal of items from the list
	Payment	The payment feature will become active once a user finishes shopping
	Delete items	The user should be able to delete undesired items from their shopping list
	Initialization of the system after a transaction is complete	New users will not be able to see the items from a previous transaction
	Import a list from the smartphone application	The user should be able to successfully see their smartphone application's shopping list on the GUI that is displayed on the shopping cart
	FTP File Transfer Server	The FTP file transfer server should always be running in the background of the application
	FTP File Transfer Connection	The FTP server should only be connected to one specific WiFi hotspot at any time

Smartphone Application		
Test Type	Test Case	Expected Results
Software Testing	UI Testing	The user interface is simple and easy to use
	Scroll through items	Users should be able to scroll through the list of items available on the application
	Selection of items	Users should be able to select the items they want to add to their shopping list
	Store the list of items onto an SD card	Users should be able to store the list of items as a text file on their phone's SD card
	Transfer the list of items to the BeagleBone Black board	Users should be able to transfer the list of items to the GUI, and the lag time should not be more than 5 seconds for this process
	FTP File Transfer	The android application should be able to communicate with the FTP server that is running on the BeagleBone board