Test Plan
(Automatic Shopping Cart)

Purpose:

The test plan is created during the development or reverse engineering phase and identify all elements that are about to be tested. The test plan should explicitly describe what to test, what to expect, and how to do the testing. Subsequently it should be confirmed what was done, what was the result, and if the result was approved. The main purpose of writing this section is to test every feature of our project, including both the hardware,software aspects and security alarm system using RFID card access system and also performing different testing methodologies to test and check whether they are working optimally or not.

Test objectives:

- Finding problems which came up during the development process of the Cart Hardware.
- To test for Compatibility of the Different components of the Cart Hardware System and Security alarm and Web Based application.
- Gaining Confidence in and providing Information about the level of knowledge of the cart system.
- To Prevent surprise problems before rather than later in the Cart hardware system.
- To Ensure that the finished product met all the user requirements.
- To ensure that the Automatic Shopping Cart fulfill the system requirements specifications.
- To provide training and create confidence among the users of the Automatic Shopping Cart system by creating the impression that was tested and running successfully.
- To check the functionality of security alarm system using RFID card for authorized and Unauthorized access buzzer system

Scope:

The purpose of this report is to find and fix bugs in the project in order to obtain user experience and make our project more effective and error-free. All application functionality has been checked to add products, upgrade products, uninstall items, scan products and search bills to the server feature. This included both the Cart Hardware software and the ASC Web-based program.

Testing Methodologies:

Software testing methodologies are the different approaches and ways of ensuring that a software application in particular is fully tested. Software testing methodologies encompass everything from unit testing individual modules, integration testing an entire system to specialized forms of testing such as security and performance. The purpose of developing these strategies is to ensure completeness when it comes to the project's construction, that it includes all of the system features, is completed within the allotted timeline and budget, and allows for plans to scale the testing efforts even more. Testing strategy will affect test planning, test type, test script development, and test execution tasks.

Black Box Testing:

Black box analysis, also known as behavioral, opaque-box, closed-box testing, is a test method that analyzes the usability of the software / application without knowing much about the internal structure / design of the object being evaluated and compares the input value to the output value. It is a technique which ignores the system's internal mechanism and focuses on the output produced.

White Box Testing:

White Box Testing is a test of the internal coding and functionality of the software solution. It focuses primarily on enhancing security, the flow of inputs and outputs through application, and improving design and usability. White box testing is also known as Clear Box Testing, Open Box Testing, Structural Testing, Transparent Box Testing, Software Based Testing, and Glass Box Testing.

Levels of Testing:

Testing is the method of testing a code object to identify the variations between the input and the predicted output. Also to determine the functionality of the computer object. Analysis measures the quality of the product. Software testing is a process that should be carried out during the development process. In other words, code testing is a method of verification and validation The following test rates are p.

Unit Testing:

It includes testing different modules individually and ensuring the proper functioning of each module. Unit testing is a software testing method by which individual source code units, a set of one or more computer program modules, together with the associated control data, usage procedures and operating procedures, are tested to determine whether they are suitable for use.

Modules Tested:

- Wifi(hotspot) connectivity.
- products scan function in the Hardware.
- add product function in the Hardware.
- remove Button function in the Hardware.
- reset Button function in the Hardware.
- Sand Bill function in the Hardware.
- total amount function display in LCD.
- N# of products displays in LCD.
- Diff Bill ID for each Bill.
- Bill Generated in the System.
- Security alarm Buzzer(authorized access/unauthorized access).

Integration Testing:

This involves testing two or more modules together to ensure the compatibility of the various modules. This is the phase of software testing in which individual software modules are combined and tested as a group. It happens after system testing and before validation tests. Integration testing shall take as its input modules which have been unit tested, shall be grouped into larger aggregates, shall apply tests to define the component.

Functional Testing:

This type deals with the functional requirements or specifications of an application. By providing the input and comparing the actual output with the expected output, different actions or functions of the system are being tested here.

Regression testing:

Regression testing is the method of checking computer program improvements to ensure existing programming still functions with the new changes. It is done after software updates, improvements or any other system maintenance to verify that the current code has not been compromised.

Hardware Testing:

Hardware testing is conducted on a complete, integrated system to evaluate the system's compliance with its specified requirements. Each piece of hardware equipment is also individually tested to see if it works on its own.

Performance Testing:

Quality testing is the method of evaluating a system, network, software program or device's speed, responsiveness, and stability under a workload. Performance testing can require quantitative testing conducted in a laboratory or occur in specific scenarios in the production environment. Typical parameters include speed of transmission, data transfer frequency, network bandwidth, quality of work and reliability.

Usability Testing:

Usability testing is important to develop strategies for finding out how systems work practically when they are delivered to customers.

- Testing Application item like buttons, different tabs.
- Application should be easy to understand
- Instructions provided should be very clear to the end user.

GUI Testing: Interaction between the various components of an application and the user will affect the product's overall efficiency, so this interaction, i.e. the software must also be checked and confirmed if there are no graphical bugs.

Compatibility Testing:

Compatibility Testing is a form of software testing to check if the code can run on different hardware, operating systems, applications, network environments or different devices. Testing for compatibility is a form of non-functional testing.

System Testing:

It is a level of software testing where a complete and integrated software is tested. The purpose of this test is to evaluate the system’s compliance with the specified requirements. This involves testing of the whole system. Here we tested whole Automatic Shopping Cart with web based application and security alarm.

Test Cases Factors:

1. **Test Entry / Exit Criteria**

It specifies the criteria that denote a successful completion of a test phase. The exit criteria are the targeted results of the test and are necessary before proceeding to the next phase of development. Example: 95% of all critical test cases must pass. *(StudyLib, n.d.)*

2. **Test Deliverables**

Test Deliverables is a list of all the documents, tools and other components that has to be developed and maintained in support of the testing effort.
There are different test deliverables at every phase of the software development lifecycle.

Test deliverables are provided **before** testing phase.

- Test plans document.
- Test cases documents
- Test Design specifications.

Test deliverables are provided **during** the testing

- Test Scripts
- Simulators.
- Test Data
- Test Traceability Matrix
- Error logs and execution logs.

Test deliverables are provided **after** the testing cycles is over.

- Test Results/reports
- Defect Report
- Installation/ Test procedures guidelines
- Release notes

3. **Test Suspension / Resumption Criteria**

Specify the critical suspension criteria for a test. If the suspension criteria are met during testing, the active test cycle will be suspended until the criteria are resolved. Example, if our team members report that there are 40% of test cases failed, you should suspend testing until the development team fixes all the failed cases.

4. **Test Environmental / Staffing / Training Needs**

A testing environment is a setup of software and hardware on which the testing team is going to execute test cases. The test environment consists of real business and user

environment, as well as physical environments, such as server, front-end running environment.

Test Cases
(Automatic Shopping Cart)

Unit Testing

1. **Test Entry / Exit Criteria**
   All of the components should be working for passing entry criterial. Exit criterial will only happen if the scenario passes tests.

2. **Test Deliverables**
   Information about all of the main components or building blocks of the application and hardware.

3. **Test Cases / Scenarios**

Checking Connectivity WIFI (Hotspot)

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	Node MCU Module	Assign SSID Username and Password	Device should connect	Hotspot connected	Pass

Checking RFID Reader

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	Scan the RFID Tags	RFID Tag	RFID Tags detail	RFID Tag Number	Pass

Checking Products detail of RFID tags Displayed in LCD

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	Scan the RFID Tags	Product Name, Product Price,	Device should Display NOP, POP	Device should Display NOP, POP	Pass

Checking Total Amount of Products Added Displayed in LCD

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	Scan the RFID Tags	Adding Products	Device should Show Total Amount	Total Amount Displayed	Pass

Checking Number of Products Displayed in LCD

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	Scan the RFID Tags	No of Products	Device should Show No of Products	No of Products Displayed	Pass

Checking Complete Working of Remove Button

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	Press Remove button	Mode (Negative)	Device should Mode (-) on LCD	Mode (-) on LCD	Pass
2	Scan the RFID Tags	Mode (-) Product Name, Product price	Device should Remove Product	Remove Product from Device	Pass

Checking Complete Working of ADD Button

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	Press Remove button	Mode (Add)	Device should Mode (+) on LCD	Mode (+) on LCD	Pass
2	Scan the RFID Tags	Mode (+) Product Name, Product price	Device should ADD Product	ADD Product from Device	Pass

Checking Complete Working of Total Bill Button

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	Scan the RFID Tags with Product Detail	Product Name, Product Price	Device should Display NOP, POP	Device should Display NOP, POP	Pass
2	Adding Products	Product Name, Product Price	Device should Show Total Amount	Total Amount Displayed	Pass
3	Press Total Bill button	Total Bill	Device should Show Total Bill	Device should Show Total Bill	pass

4. **Test Suspension / Resumption Criteria**

If any scenario fails, it will be suspended or sent for resumption or for retry.

5. **Test Environmental / Staffing / Training Needs**

Proper environment should be set up, PC, laptop should be up to date and bug free.

Integration Testing

1. **Test Entry / Exit Criteria**

   All of the components should be working for passing entry criterial. Exit criterial will only happen if the scenario passes tests.

2. **Test Deliverables**

   Information about the integration and communication of main components of the application and hardware.

3. **Test Cases / Scenarios**

Checking Complete Pairing of Devices

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	Node MCU Module	Assign SSID Username and Password	Device should connect	Hotspot connected	Pass
2	Pairing with the module	Pairing local IP address	Pair should be successful	Devices paired	Pass

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
4	Transferring commands to Node MCU	Commands sent via Node MCU ESP2866 connection	Node MCU ESP2866 should acknowledge command and act	Node MCU ESP2866 acts	Pass

4. **Test Suspension / Resumption Criteria**

If any scenario fails, it will be suspended or sent for resumption or for retry.

5. **Test Environmental / Staffing / Training Needs**

Proper environment should be set up, PC, laptop should be up to date and bug free.

Functional Testing

1. **Test Entry / Exit Criteria**

   All of the components should be working for passing entry criterial. Exit criterial will only happen if the scenario passes tests.

2. **Test Deliverables**

   Information about all of the main components and the functionalities of the application and hardware.

3. **Test Cases / Scenarios**

Checking Functionality of Node MCU ESP8266 With Web Page

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	Connecting Web page with NodeMCU via Esp2866	WIFI module and signals	WIFI should connect devices	Devices Paired	Pass
2	Signals send via Web Page	Node MCU should recognize Local host IP address	Commands should executed by RFID Reader	Command executed properly	Pass

Checking failed Functionality of Bluetooth Command Recognition

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	Connecting Web page with NodeMCU via Esp2866	WIFI module and signals	WIFI should connect devices	Devices Not Paired	Fail

2	Signals send via Web Page	Node MCU should recognize Local host IP address	Commands should execute by RFID Reader	Command not executed properly	Fail

4. **Test Suspension / Resumption Criteria**

If any scenario fails, it will be suspended or sent for resumption or for retry

5. **Test Environmental / Staffing / Training Needs**

Proper environment should be set up, PC, laptop should be up to date and bug free

Regression testing

1. **Test Entry / Exit Criteria**

   All of the components should be working for passing entry criterial. Exit criterial will only happen if the scenario passes tests.

2. **Test Deliverables**

   Information about all of the main components their updates and condition after the upgrades.

3. **Test Cases / Scenarios**

Testing Device After Upgrading Battery/ Power Bank

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	Replacing the 7V battery with a higher capacity 5V one	Re-establishing connections via the wires	Node MCU should power up	LED powers up	Pass
2	Battery should give a longer duration of function	High capacity of battery	The hardware should stay powered up for longer	The hardware endures for longer	Pass

4. **Test Suspension / Resumption Criteria**

If any scenario fails, it will be suspended or sent for resumption or for retry

5. **Test Environmental / Staffing / Training Needs**

Proper environment should be set up, PC, laptop should be up to date and bug free. Safety measures should be taken as we are dealing with hardware.

Hardware Testing

1. **Test Entry / Exit Criteria**
   All of the components should be working for passing entry criterial. Exit criterial will only happen if the scenario passes tests.

2. **Test Deliverables**
   Information about all of the main hardware components and their condition.

3. **Test Cases / Scenarios**

Testing Device Connection via Wires

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	Powering up the Node MCU via battery/ power Bank	Establishing connections to the Node MCU via Soldering with Wire	Node MCU LED should power up	LED power ups	Pass

Checking Connectivity WIFI (Hotspot)

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	Node MCU Module	Assign SSID Username and Password	Device should connect	Hotspot connected	Pass

Checking RFID Reader

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	Scan the RFID Tags	RFID Tag	RFID Tags detail	RFID Tag Number	Pass

Testing Node MCU Code Uploading

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	Powering up Node MCU	Establishing connections to the Node MCU via wires	Node MCUs LED should power up	LED power ups	Pass
2	Connecting the Node MCU with a laptop via USB cable	USB ports and cable	The laptop should recognizes Node MCU	Node MCU recognized	Pass
3	Using the Arduino IDE to interact with the board	Uploaded code to the Arduino IDE	Code should be uploaded to the Arduino IDE	Code uploaded	Pass
4	Checking functionality of uploaded code	Commands sent to the Arduino to check uploaded code	Node MCU should perform its programmed functionalities	Functionalities performed	Pass

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	Connecting RFID Reader to a preprogrammed Node MCU with an LED	Connecting the RFID Reader to via wires	RFID Reader should be connected properly	RFID Reader connected	Pass

Testing Battery Rating

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	Using a multimeter to measure specification of battery	Battery	The voltage and ampere rating of battery should be revealed(5V)	Specifications are revealed completely	Pass

4. Test Suspension / Resumption Criteria

If any scenario fails, it will be suspended or sent for resumption or for retry

5. Test Environmental / Staffing / Training Needs

Safety measures should be taken as we are dealing with hardware.

Performance Testing

1. **Test Entry / Exit Criteria**
   All of the components should be working for passing entry criterial. Exit criterial will only happen if the scenario passes tests.

2. **Test Deliverables**
   Information about responsiveness and load bearing capabilities of the application and hardware.

3. **Test Cases / Scenarios**

Testing Load Time for Login Web Page:

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	Launching web page	(CARTIGO)login page with username and password	login web page should launch	login web page launches	Pass
2	Measuring time taken for application to launch	Time taken to load	Web page should launch faster	The launch is fast	Pass

Testing for Username and Password is Valid :

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	enter valid username and password in login page	username and password	logged in to Homepage	login to Homepage	Pass

Testing for Username and Password is not valid :

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	enter incorrect username and password in login page	username and password	Redirect to Login page	Redirect to Login page	Pass

Testing add products to Database:

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	Navigate to Add product from Homepage	add new products	display add product box	add product box displayed	Pass
2	Enter RFID, Name,price	RFID,Name and Price	product should be added to database	product added to Database	Pass

Testing Update products to Database:

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	Navigate to Add product from Homepage	update products	display update product box	update product box displayed	Pass
2	Update RFID, Name,price	RFID,Name and Price	product should be Updated to database	product Updated to Database	Pass

Testing Delete products from Database:

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	Navigate to Add product from Homepage	delete products	product should be deleted from database	product deleted	Pass

Testing search products through ID from Database:

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)

1	Navigate to Search product from Homepage	product ID	display product information	Products information displayed	Pass

Testing Searching Bill through ID from Database:

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	Navigate to Search Bill from Homepage	Bill ID	display ID and amount of BIll	BillID and amount displayed	Pass

Testing Get Bill with Bill ID from via total bill Button in Hardware:

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	Navigate to get Bill from Homepage	bill ID, total amount, time/date	should display bil formatl	Bill displayed	Pass

4. Test Suspension / Resumption Criteria

If any scenario fails, it will be suspended or sent for resumption or for retry

5. Test Environmental / Staffing / Training Needs

Proper environment should be set up, PC, laptop or smartphone should be up to date and bug free. Safety measures should be taken as we are dealing with hardware.

Usability Testing

1. **Test Entry / Exit Criteria**
   All of the components should be working for passing entry criterial. Exit criterial will only happen if the scenario passes tests.

2. **Test Deliverables**
   Information on how it is easy for a user to use the application and hardware.

3. **Test Cases / Scenarios**

Checking Apparel of Navigation of web page:

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	Checking Interface of web page	Login,Navigation tab and buttons on webpage	It should be easy to understand	Interface is simple	Pass

Checking Apparel of Navigation pages:

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	Checking Navigation of pages on web page	Text used on buttons or tabs	Text should be plenty and not obscured	Text are clear to understand	Pass

Checking Relevancy of Information

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	Webpage having data from database in search product and search Bill	product details and bill details	Application should show relevant information	Information is relevant	Pass

4. **Test Suspension / Resumption Criteria**

If any scenario fails, it will be suspended or sent for resumption or for retry

5. **Test Environmental / Staffing / Training Needs**

Proper environment should be set up, PC, laptop or smartphone should be up to date and bug free.

GUI Testing

1. **Test Entry / Exit Criteria**
   All of the components should be working for passing entry criterial. Exit criterial will only happen if the scenario passes tests.

2. **Test Deliverables**
   Information about the interface, design and style of the application.

3. **Test Cases / Scenarios**

Checking Alignment of Elements

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	Checking Alignment of buttons	Buttons on pages	Buttons should be of same size and alignment	Buttons are properly aligned	Pass

Checking Alignment of tabs

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	Checking Alignment of tabs	tabs on Homepage,search , and search Bill	tabs should be of same size and alignment	Tabs are properly aligned	Pass

Checking Visibility of Elements

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	Checking Visibility of buttons	login,homepage, search products, search bill	Buttons should be clear	Buttons are properly visible	Pass

Checking Visibility of Elements

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	Checking text display of tabs used for switching screens	Tabs on the bottom and top of the application	text tabs should be clear and appropriate	tabs are proper	Pass

4. **Test Suspension / Resumption Criteria**

If any scenario fails, it will be suspended or sent for resumption or for retry

5. **Test Environmental / Staffing / Training Needs**

Proper environment should be set up, PC, laptop or smartphone should be up to date and bug free.

Compatibility Testing

1. **Test Entry / Exit Criteria**

   All of the components should be working for passing entry criterial. Exit criterial will only happen if the scenario passes tests.

2. **Test Deliverables**

   Information regarding the devices that can support the application and hardware.

3. **Test Cases / Scenarios**

Testing Application working and failure on Various Devices

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	Open webpage on Google chrome	Login form	Google chrome should run without trouble	Login form Displays Application runs	Pass

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	Open webpage on Internet explorer	Login form	Internet explorer should run without trouble	Login form Displays Application runs	Pass

Checking Working Slow and Success

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	Open webpage on Opera Mini	Login form	Google chrome should run without trouble	Login form Displays Application runs slowly	Pass

4. **Test Suspension / Resumption Criteria**

If any scenario fails, it will be suspended or sent for resumption or for retry

5. **Test Environmental / Staffing / Training Needs**

Proper environment should be set up, PC, laptop or smartphone should be up to date and bug free. Safety measures should be taken as we are dealing with hardware.

System Testing

1. **Test Entry / Exit Criteria**
   All of the components should be working for passing entry criterial. Exit criterial will only happen if the scenario passes tests.

2. **Test Deliverables**
   Information about all of the main components working together as an end product.

3. Test Cases / Scenarios

Checking Overall Navigation

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	login to Webpage	logo image on Home screen	Webpage should loads without any issues	loads successfully	Pass
2	Navigating through screens	Symbols/text or tabs for all three interfaces	Navigation should be without any issue	Navigation is successful	Pass
3	adding products	product name and price and RFID tags	should add products	products added	Pass
4	update products	product name and price and RFID tags	should update products	products updated	Pass
5	delete products	product name and price and RFID tags	product deleted	products deleted	Pass
6	search products	product ID	should display product information	products information displayed	Pass
7	Search Bill ID	Bill ID	should display bill information	Bill ID and amount displayed	Pass
8	get Bill	get bill with products, price and , quantity and RFID tags	should print bill format	print bill format	Pass
9	Logout	Logout button	should logout from webpage	logged out from webpage	Pass

Checking Software and hardware Reliability

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	Loading webpage with hardware in other device	Login form and connectivity with Hardware	webpage and Hardware should connect without any issues	connectivities problems	Fail

Checking overall Status of components

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	Supplying power to the Automatic Shopping Cart via power bank	Connecting the power bank to the hardware	Hardware should power up	Hardware powers up	Pass
2	Checking supply to Cart	LED on of ASC Cart	LED should light up	LED lights up	Pass
3	Checking supply to Node MCU	LED on of WIFI node MCU module	LED should light up	LED lights up	Pass
4	Checking status of adding products to Cart	scanning the products to add	products should be added by scanning	Products added to Cart	Pass
5	Checking status of removing products to Cart	press the remove button then scan products	product name and price should be reduced accordingly	Product and product price is reduced from the amount and cart	Pass
6	Checking status of total bill to the Cart	products, price quantity,total amount and Bill ID	get the print bill with bill ID accordingly	print bill with Bill id and products	Pass

RFID Security Alarm System:

Hardware Testing:

6. **Test Entry / Exit Criteria**
   All of the components should be working for passing entry criterial. Exit criterial will only happen if the scenario passes tests.

7. **Test Deliverables**
   Information about all of the main hardware components and their condition.

8. **Test Cases / Scenarios**

Checking security alarm system working (Idea):

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	Connecting the USB cable connection	Connecting the USB cable to the hardware	Hardware should power up	Hardware powers up	Pass
2	Checking Arduino IDE port connection	connect with port which will let LED & Buzzer on	LED should light up and buzzer initialize	LED light up and Buzzer initializes	Passl
3	Giving RFID Card authorized Number are in the program	RFID Number Access	RFID number given in authorize access should run on authorize condition accordingly	Buzzer run in authorize conditions applies	Pass
4	Giving RFID Card Unauthorized Number that are not in the program	RFID Unauthorized Card	RFID number has no access should run on Unauthorize condition accordingly	Buzzer runs in Unauthorize condition applies	Pass

Checking Overall security Alarm system(Idea);

Step No.	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	Connecting the USB cable connection	Connecting the USB cable to the hardware	Hardware should power up	Hardware should power up	Pass
2	Checking Arduino IDE port connection	connect with port which will let LED & Buzzer on	LED should light up and buzzer initialize	LED light up and Buzzer initializes	Passl
3	Verifying the Bill	Bill with Bill ID and products	Bill should have the products added in the cart	Bill with associated cart products have authorize card	Pass
4	Driving Cart through the person given Card should be scan in hardware	Authorized access	Buzzer will buzz normal	Buzzer buzz 2(low) and message:access	Pass
5	Driving Cart through the person given Card should be scan in hardware	Unauthorized access	Buzzer will not buzz normal	Buzzer buzz 3(HIGH)and alert message:not-acces	Pass
6	Driving Cart through the person can scan any RFID Card in hardware	Unauthorized access	Buzzer will not buzz normal	Buzzer buzz 3(HIGHand alert message:not-acces)	Pass
7	ARduino IDE is connected with Hardware	Arduino IDE,Port ,Serial Monitor	System connected and Buzzer should run when Card scanned alert message generated in arduino IDE	System connected and Buzzer run when Card scanned and alert message generated in arduino IDE	Pass