System Test Plan for a Customizable Rewards Allocation System

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# System Test Plan

## NFC Transaction Terminal Microcontroller Circuit Optimizations

|  |  |  |
| --- | --- | --- |
| Test | Steps | Validation Result |
| NFC Chip Interfacing | The Raspberry Pi can initialize the NFC chip with a readable URL | Pass/Fail |
| Open Transaction | The Raspberry Pi can accept a POST request which opens a transaction on the API and programs the NFC chip with the redemption URL | Pass/Fail |
| Remote Support | Microcontrollers will be sent preprogrammed to the business, if support is required remote access to the device will be possible. Requires appropriate router/modem setup. | Pass/Fail |

## QR Code Based Transactions

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| --- | --- | --- |
| Test | Steps | Validation Result |
| Redeem points | QR code should be generated for the desired redeem amount. Merchant can then scan the code for customers to redeem. | Pass/Fail |
| Assign points | QR code should be generated for each transaction to assign correct points to customers. | Pass/Fail |
| Scanning distance | QR code should be scannable within 10 cm distance. | Pass/Fail |

## Merchant Control App Usability

|  |  |  |
| --- | --- | --- |
| Test | Steps | Validation Result |
| Enter total Payment | From the total payment page, merchant should be able to enter the total amount that user purchased | 1 (Poor Usability) to 5 (Great Usability) |
| Enter total Inventory Item | From the Inventory Item page, merchant should be able to enter the total number of items that user purchased | 1 (Poor Usability) to 5 (Great Usability) |
| Open QR Code Reader | From the home page, merchant should be able to scan QR code and perform transaction | 1 (Poor Usability) to 5 (Great Usability) |

## Digital Wallet App Usability

|  |  |  |
| --- | --- | --- |
| Test | Steps | Validation |
| Sign Up / Login User | Pass in a username and password as arguments; success should return an ID for the user. New users will be presented with an app walkthrough. | 1 (Poor Usability) to 5 (Great Usability) |
| Discover Businesses | On the Explore page users should be able to navigate businesses and view their details. From a business’s page they can add their reward card to their wallet | 1 (Poor Usability) to 5 (Great Usability) |
| Collect Rewards | From the Wallet page, users can select a card and open the Scan screen where they can scan their QR Code or tap with NFC to collect rewards. On success new points balance shown with animation. | 1 (Poor Usability) to 5 (Great Usability) |
| Redeem Points | From the Wallet page, users can select a card and display their QR code where the business can scan it to redeem points. | 1 (Poor Usability) to 5 (Great Usability) |

## Improve Backend API Cloud System

|  |  |  |
| --- | --- | --- |
| Test | Steps | Validation Result |
| Open Transaction | Pass a transaction amount and business ID in addition to the number of items OR ID’s of inventory items; returns an ID to the created transaction object | Pass/Fail |
| Close Transaction | Pass a transaction ID and user ID; allocates rewards to the user for the business based on the businesses distribution model / transaction data; returns an updated point balance | Pass/Fail |
| Redeem Points | Pass a user ID, business ID, and a point balance to deduct points from the user’s digital card for the business; creates a transaction record and returns an updated point balance or an error when insignificant points | Pass/Fail |

## NFC Transaction Terminal Microcontroller Casing

|  |  |  |
| --- | --- | --- |
| Test | Steps | Validation Result |
| NFC Communication | It should be possible to scan the NFC signal from the chip when it is encased | Pass/Fail |
| Casing safety | Users should be able to tap their phones on the microcontroller without risk of injury from sharp corners | Pass/Fail |