CS-308-2016 Final Report

Smart Cart

Manik Dhar (Team Leader)

1

Manik Dhar (120050006)

Bijoy Singh Kochar (120050087)

Nishanth Koushik (120050041)

Ranveer Aggarwal (120050020)

Table of Contents

1. Introduction

<Abstract description of the system - name, motivation, what it does, where it is useful>
Shopping is something we spend a lot of our time doing. How many of us have had the frustrating experience where even when purchases a few items, we have to stand in long queues. So we created a smart cart, which lets to securely add content which you wish to buy and purchase from your phone itself. We present the SMART CART project. #NoMoreLines

2. Problem Statement

<Detailed description - what you are supposed to achieve, what problem is your work solving>
The SMART CART will let you create a purchase by doing the following:

- Phone scans the RFID card of your cart
- The Microcontroller now gets assigned to your order
- You can order Content my tapping an RFID card to the RFID sensor of the cart
- Your phone should detect this item
- Your cart should now have the weight of the cart and send information till it detects changes.
- The server maintains if the cart weight is indeed correct or not.
- Tapping multiple times increases the count.
- The count can be changed in the application
- You can login using Google Account

3. Requirements

<All functional and non-functional reqmts mentioned in the final revision of your SRS document>

3.1 Functional Requirements

- RFID tap should detect ID
- Wifi Module should send information
- The weight cell should detect weight
- The application should login
- The server should handle responses

3.2 Non-Functional Requirements

- The force cell should have a box

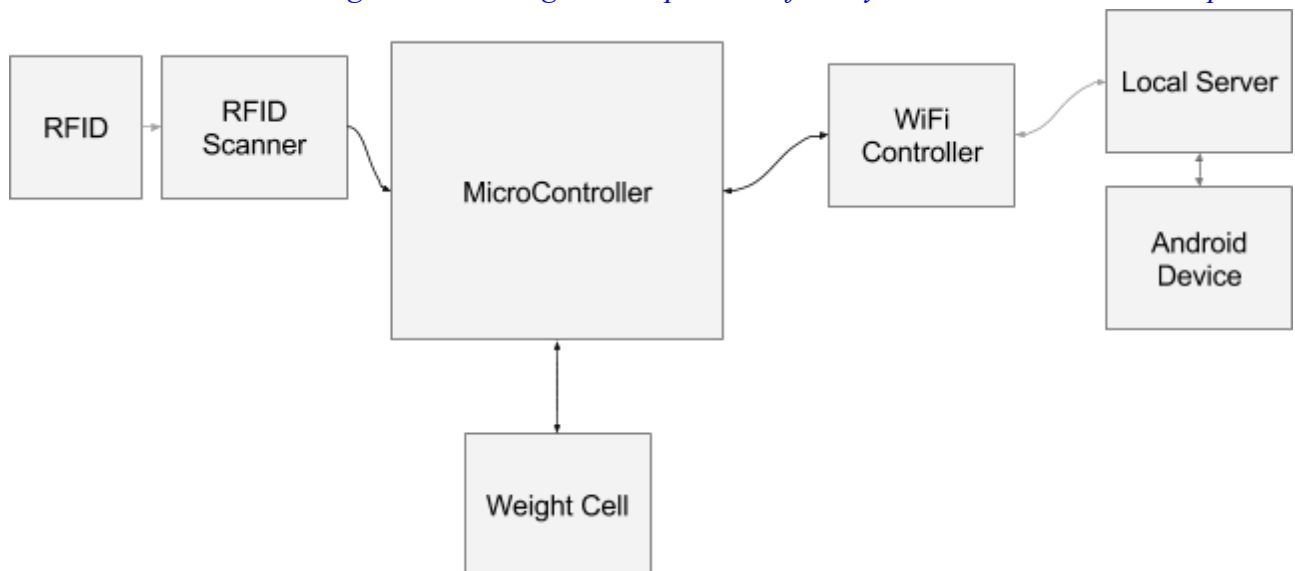### 3.3 Harwdare Requirements

- TIVA Launchpad
- TIVA Wifi Shield CC3100
- HX 711
- Force Cell
- RDIF RC522
    - Android Phone
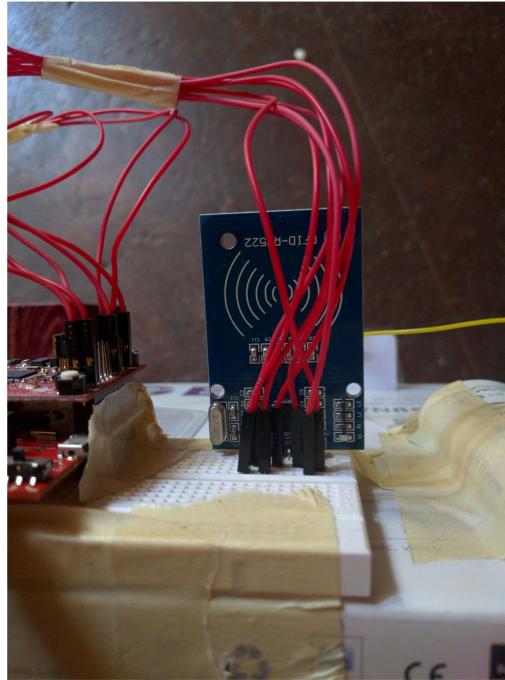   - Server (Local will do)
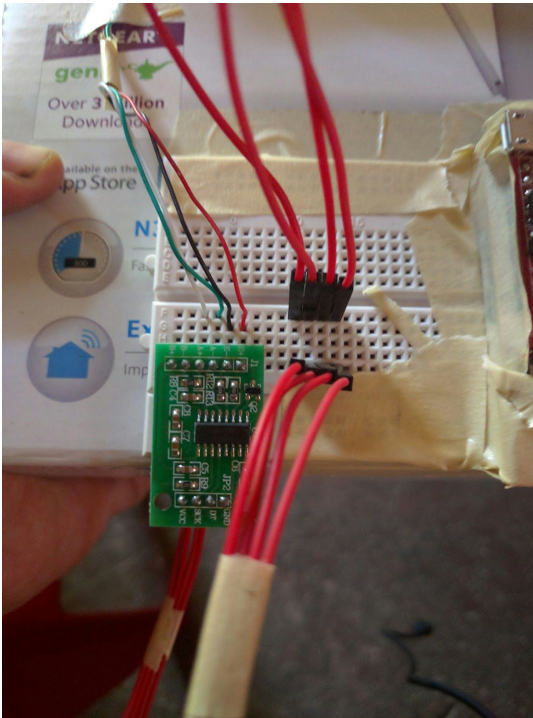
3.4 Software Requirements

- Android Studio
- Python Installation
- Django
- Energia Library

4. System Design

5. Working of the System and Test results

<Provide an in-depth discussion about the working of your system, making use of suitable figures>
- Open App
- Scan the RFID
- Your order gets started
- Use RFID and scan on RFID scanner
- Wait for Blue LED on tap
- Your order should be added on phone

- Add item of corresponding weight on the force cell
- You should get a confirmation on the phone

A number of tests can be done, add items without swiping, adding less items, more items, remove the item from the phone, increase the quantitiy. etc.

<For each functional requirement mentioned in the SRS, mention how you tested it to ensure the functionality worked properly.>
- We rigorously tested each item by multiple iterations of different RFID items, different WIfi routers, Wifi pings, weight objects.

6. Discussion of System

a) What all components of your project worked as per plan?
- All : RFID, TIva, WIfi, HX711, Force Cell, Android, Server

b) What we added more than discussed in SRS?
We added a number of things on the android side like, Authentication, notifications etc.

c) Changes made in plan from SRS:
We removed the LCD after discussing with prof, because it was a better idea wrt battery consumption and user experience.
<Enumerate changes and include reasoning to why there was a change>

7. Future Work

<Mention about re-usable components and list out possible extensions to your work>
The Force Cell weight calibration etc needs to be refined
The TIVA is an overkill, needs to be refined by using custom controller.

8. Conclusions

- We are confident that this product can help the people to save a lot of their shopping time. Given enough refinement, investment and motivation this can be incorportated and can be used in a number of shops.

9. References

Energia : http://energia.nu/

Android Studio : http://developer.android.com/sdk/index.html

Django : https://www.djangoproject.com/

PyCharm : https://www.jetbrains.com/pycharm/