

Inventory-Reorder System

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ABSTRACT

I have developed an inventory reorder system designed for households. IOT based inventory reorder system is smart grocery shopping list creator, which re-defines grocery shopping. This system helps us to maintain a grocery list of items we bought and create a common reorder list based on the expiry date and on number of people who share the product. This IOT based solution regenerates the captured barcodes which simplifies reordering online as we can use any modern app like Walmart and Price-chopper to just scan the barcode and add it to your cart.

1 INTRODUCTION

Today we have many solutions for maintain grocery shopping list but in the present times ravaged by COVID19 where people prefer to shop online this IOT solution is easier to use and more accurate as we don't have to search the product in each app we can use any phone which can scan and search the same product and add it into your cart. Further how the solution works will be explained in the further sections.

2 DESIGN

Next, we will discuss about the software and hardware concepts used to build the IOT project.

2.1 Software

2.1.1 Python

The core code is written in python we use many libraries to accomplish this we will zbar, OpenCV, firebase-admin. Zbar library is used to read barcodes we primarily read EAN-13 codes which are primarily used in North-America to encode the barcode

information of the product. OpenCV is an image processing library which captures the video stream from the camera and send images one by one to the zbar library to read the barcode. Finally, we have the firebase admin library to connect to the google firebase database to push the bought grocery list.

2.1.2 DroidCam.

Droid cam is and android app which will help us to use and android phones camera as a web camera, we had to primarily use this as the mobile phone's camera is wireless so is easier to scan products.

2.1.3 PHP

We have designed a website to see the reorder list using PHP as the server this will be running on the internet and can be accessible in any device this website is responsive can be viewed on the phone.

2.1.4 My-SQL

We store the reorder list locally in the website using the My-SQL database as storing it on the fire base will be very expensive.

2.2 Hardware

2.2.1 Laptop

The python code is running on my laptop which is the core part which basically helps read barcodes and push it into the firebase database this code can run on any device which can run python code and have a camera. Also, the website to show the reorder list is running locally on my laptop but can be accessed on any device within the WiFi network.



a) Mobile phone



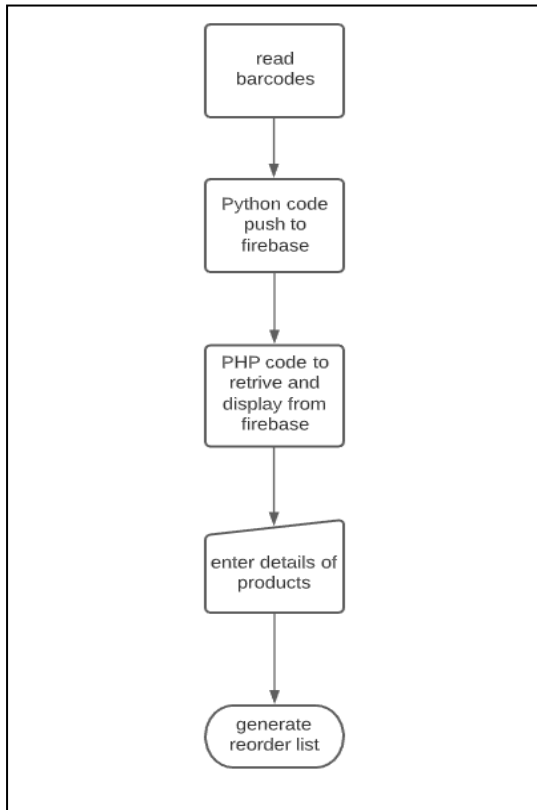
b) Laptop

2.2.2 Android Phone

Additionally I am using the mobile phone's camera as my webcam to read the barcode as the using this phone with droidcam the phones camera is very clear and is mobile and we can read barcodes on big products which we probably cant lift to the laptop.

3 IMPLEMENTATION

Top level working of the IOT is that Python code processes the barcodes and pushes them into google firebase's *Realtime database* next when you access the PHP website it retrieves the data from the firebase database it generates the reorder list and we need to enter some details on who bought the product, how many people share the product? Shelf life of product etc and stores it in a SQL table, we also have an opportunity to delete the items we have ordered later in the second page.



Now additionally in the 1st step we have an option to manually enter the product and the barcode. Next on the website we must enter the number of people who share the product. Based on the algorithm which calculates the reorder date on various parameters on what category is the product? number of people who share it? What the shelf life of the product is? Next, we generate the reorder list and display it with the barcodes these barcodes can be screened with any Walmart app or Price-chopper and easily added to your cart of whatever app you use.

Items Bought by: Gaurav

Sno	Category	Code	Shelf life*	Name	Shared by*
1	food	0051500241776	90	peanut butter	<input type="text" value="1"/>
2	health	0031604025182	365	Vitamins	<input type="text" value="2"/>
3	health	0681131248754	365	equate body lotion	<input type="text" value="3"/>
4	health	0012044038918	180	old spice	<input type="text" value="4"/>

*. the shelf life is in days and shared by informs how many people use the product

a) The 1st page on the website listing all the details of the product and we must enter the details of how many people are sharing it.

You have the generated barcodes below. Use any of the online grocery apps to scan and buy!

Delete	Product Name	Barcode	Category	Bought date	Reorder Date
<input checked="" type="checkbox"/>	Vitamins		health	2020-11-29	2021-01-28
<input type="checkbox"/>	equate body lotion		health	2020-11-29	2021-01-28
<input type="checkbox"/>	old spice		health	2020-11-29	2021-01-28

b) This is the second page which regenerates the barcodes from the code in the database and we also have an option of deleting ordered items from the database.

5 CONCLUSION

I had selected this problem as I wanted to solve a particular issue that I had faced as a roommate where maintaining reorder list is quite hard. This solution can be easily adapted to many other cases of inventory management in places like large kitchens or restaurants and I believe that my solution helps ease this issue to manually maintain grocery list.

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