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Smart Shopping and Delivering System

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Abstract: Online shopping is popular now a days, but this is popular large retailers. This work aims to concentrates on optimizing the current shopping system in a way that it can be adopted by any small-scale retailers, by making use of an e-commerce mobile application, a website to assist retailers, and a centralized delivery system, using latest technologies like Robotic Process Automation (RPA), Global Positioning System (GPS). This system will provide a great platform for all those shops which has trivial recognition to get exposure and will significantly reduce the requirement of human interaction thus saving a lot of time.

Key words: RPA, GPS

INTRODUCTION

Technology has changed so much, so is the rate of people of all ages who are attracted to electronic gadgets. Retailers prefer using electronic devices such as smart card readers, barcodes, and Radio Frequency Identification (RFID) scanners. To optimize the shopping process and to reduce their workload, but all these gadgets cannot be used by small scale retailers. This work concentrates on optimizing the current shopping system in a way that it can be adopted by any small-scale retailers, by making use of an e-commerce mobile application, a website to assist retailers, and a centralized delivery system, using latest technologies like Robotic Process Automation (RPA), Global Positioning System (GPS). The e-commerce mobile application helps customer to plan their shopping, know the availability of the required products in their nearby shops which are registered in the system and get the purchase done according to their diligent. The centralized delivery service will enable all the retailers to make their products available to customers at their doorstep.
The website embedded with robotic process automation enables the retailers to continuously keep track of their stocks, scan invoice and automatically update database using RPA and to maintain all the transactional details in an efficient way. This system will provide a great platform for all those shops which has trivial recognition to get exposure and will significantly reduce the requirement of human interaction thus saving a lot of time.

LITERATURE REVIEW

Wara A.A, 2019 [1] illustrated featured a paradigm system showing code are often used as another to the traditional searching method in some retail stores thereby easing off difficulties sweet-faced by shoppers whereas searching through the employment of their smart phones and at identical time providing chance to harness a number of the potentials of each the QR code technology and their smart phones. RAD style (Throwaway Prototyping) methodology was employed in the event of the system and PHP scripting language was wont to generate the QR codes and coming up with the interface, MySQL Server served because the backend tool for the paradigm system. The developed paradigm was with success tested and illustrated as a website study during a personal establishment.

Jayshree G et al., 2020 [2] proposed a shopping mechanism where used a smart trolly is used. Now a day because of immense run it is very difficult to purchase some items. Once the purchase is done we have to wait near request counter. At the request counter the cashier prepare the bill victimization Universal Product Code reader that may be a time overwhelming method and ends up in long queues at request counter. This work is aimed to solve this problem using RFID reader. Here they are placing RFID in the trolly. All the items in the mall will have RFID tags. Once the item is added to the trolly that will be saved in the memory. As we tend to place the merchandise, the prices can get superimposed to total bill.

Anpat N et al., 2019[3] In this project they tend to are developing Associate in nursing application that is predicated on robot. In this planned system the purchasers got to scan barcode of each product with robot mobile that they want to buy and drop into the go-cart then proceed to checkout at the asking counter. The asking method is sort of irksome and extremely time intense. They've planned a "Smart tram System supported Android" that aims to cut back and probably eliminate the whole waiting time of shoppers i.e. alternative system takes ten minutes whereas our planned system takes five minutes, lower the whole personnel demand from asking counter and increase potency overall.

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Kumar R.S et al., 2018 [4] proposed a method for finding shortest path for goods delivery using Dijkstra's algorithm along with Hadoop environment. It consists of distance matrix with 10,20,30…..100 are considered as cities. It is making use of map reduce model to optimize the delivery time. Here MapReduce Dijkstra's algorithm is compared with other algorithms like Bellman ford algorithm, Throup algorihm and Gobow algorithm which is giving less CPU time with other algorithm

Padaya R et al., 2018 [5] stated that many products were sold via ecommerce because it is easy to access and more efficient. So most of the youths are getting attracted towards that. But shopkeepers with less technological knowledge are not able to enter this area.

They want to enter to this field with less technical knowledge involved in the process. This system will act like a middle ware between shopkeeper and consumer. Here shopkeeper is also getting the information about most searched products in their area and consumer will enjoys the knowledge about availability of the product.

Wang Y et al., 2021 [6] **T**o ensure the on-time rate wide variety of strategies have been employed. After this also there could still be some delay in delivery. A potential approach to guarantee the time efficiency and prevent potential losses is to upgrade the processing priority of the packages with high delay risk.

This motivates us to accurately limited resources. This paper solves the classification problem where the states of packages corresponding to the unfinished steps are treated as missing values. And missing value problem is solved using maximum likelihood estimation. Finally, the proposed method is validated using real JD Logistics data. Now this proposed method can accurately detect the packages with high delay risk even when they are still in early processsing steps.

Ubale G.R et al., 2018 [7] with the growing quantity of knowledge, the demand of huge information storage considerably will increase. Through the cloud center, information suppliers will handily share information hold on within the center with others. the target of this project is to propose a true time capturing system for shopper provides mistreatment fast Response (QR) code in an exceedingly internet based mostly Application.

During this project, all the details of the products and customers records are hold on cloud. Here we are using Multiplexing and Demultiplexing method to encrypt and decrypt the knowledge from QR code. Customary image codes like 1D barcodes and 2D barcodes with white and black patterns white patterns identifies a product for its worth and basic options however doesn't demonstrate it, what is more not each product that's known, is employed for authenticating manufacturer guarantee.

Sojitra S and Patel R, 2018 [8] This paper will solve the problems of long queue at billing counter using different proposed techniques. In current retail shopping because of barcode billing system there will be a long queue. Because of that there will be a waste of time. And this barcode system is getting outdated due to memory constraints.

METHODOLOGY

This work proposed a smart shopping and delivering system which consist of a centralized delivery service, an e-commerce mobile application that assists customers, and a website to assist the retailers. The methodology used in the various modules of the implemented system is given below.

Customer side e-commerce mobile application: The mobile application can be used by the customer to search for the required products and add them into cart, after adding all the product into the cart, the customer can see the availability of those products in their nearby shops which are registered in the system. This system provides the customer two modes to shop the products. The customer can select the mode to shop.

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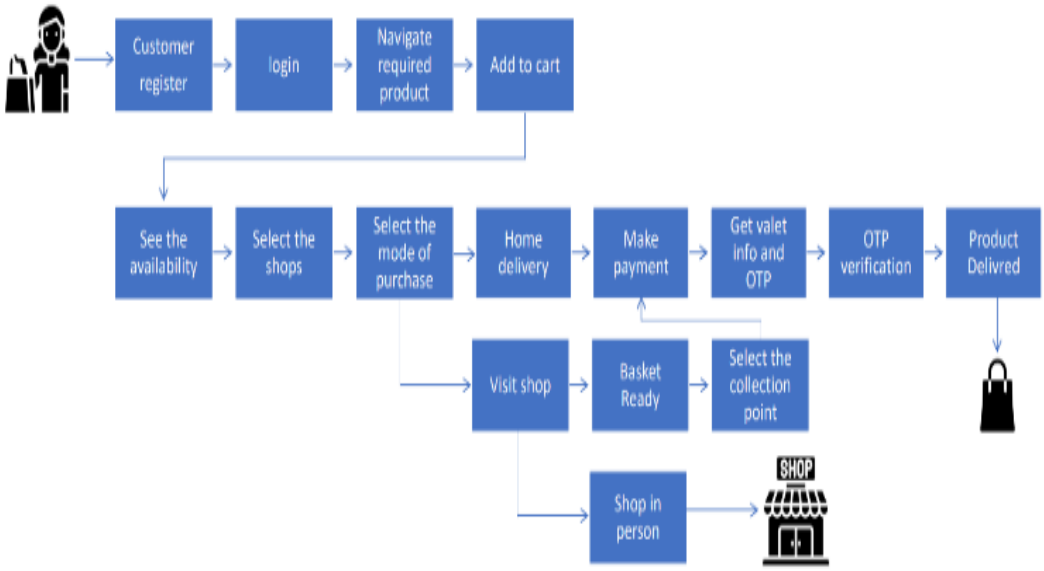

The modes available in the system are listed below:

- Using home delivery service
- Visiting shop

1. Basket ready
2. Shop in person

Using home delivery service mode

In this mode of shopping, the customer doesn't have to visit the shop, instead they can make use of this delivery service provided by this system. The main advantage of this system is that even if products are available in different shops customers don't have to worry about that, all the products will be delivered at the customer's doorstep.

Visiting the shop

Basket ready: As the name implies the basket will be ready and customers just must go and collect it. In this mode of shopping the customer will be making use of the delivery service where the valets will shop the products from the shops of customers choice and make the basket ready. The customer can collect the basket from the shop of their choice.

Shop in person: In this mode of shopping, after visiting the shop, customer scan the unique QR code given to the shops while registering, this will give the layout of the shop in the customer's app. The layout will help the customer to navigate the products which are added in their cart. The customer can use device's camera for scanning barcode to get the details of a particular item and add it to the list. The list can be converted to the bill and sent to the shopkeeper after payment.

This saves the time taken to stand in a line for billing as well as helps the user see the details of each scanned item. It even lets the user have a shopping experience where the user doesn't have to worry about the bill going over the user's budget as they can view the bill at any time and decide what to purchase as well as what they do not need and can delete unwanted items from the list saving them time.

The existing smart shopping systems are expensive to implement and costly to maintain. Using this system will drastically reduce the implementation as well as maintenance cost.

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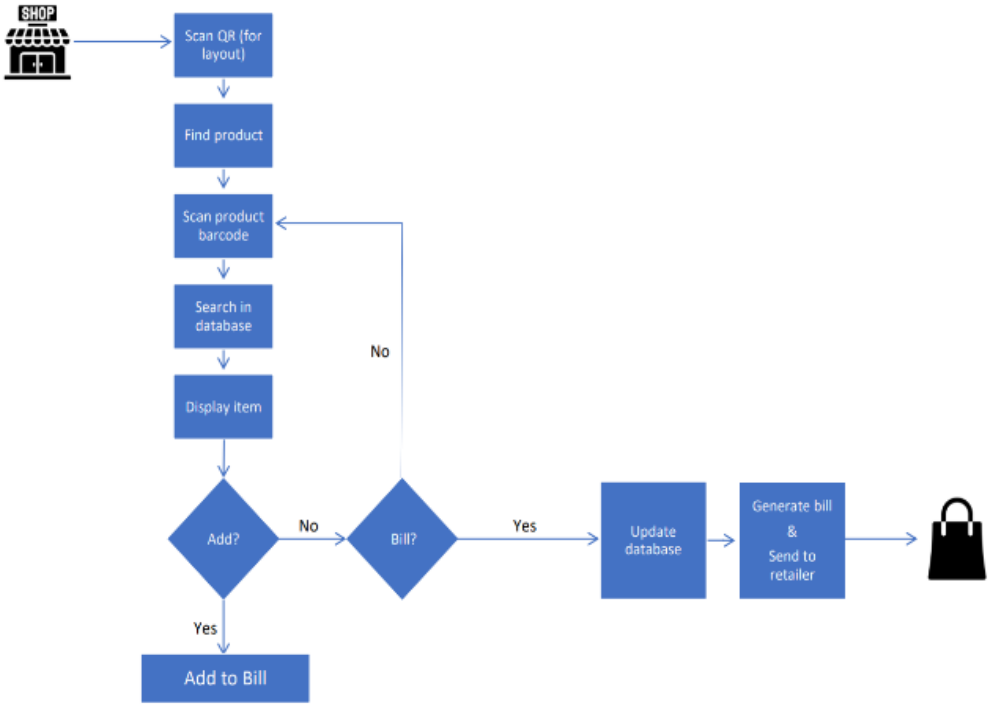
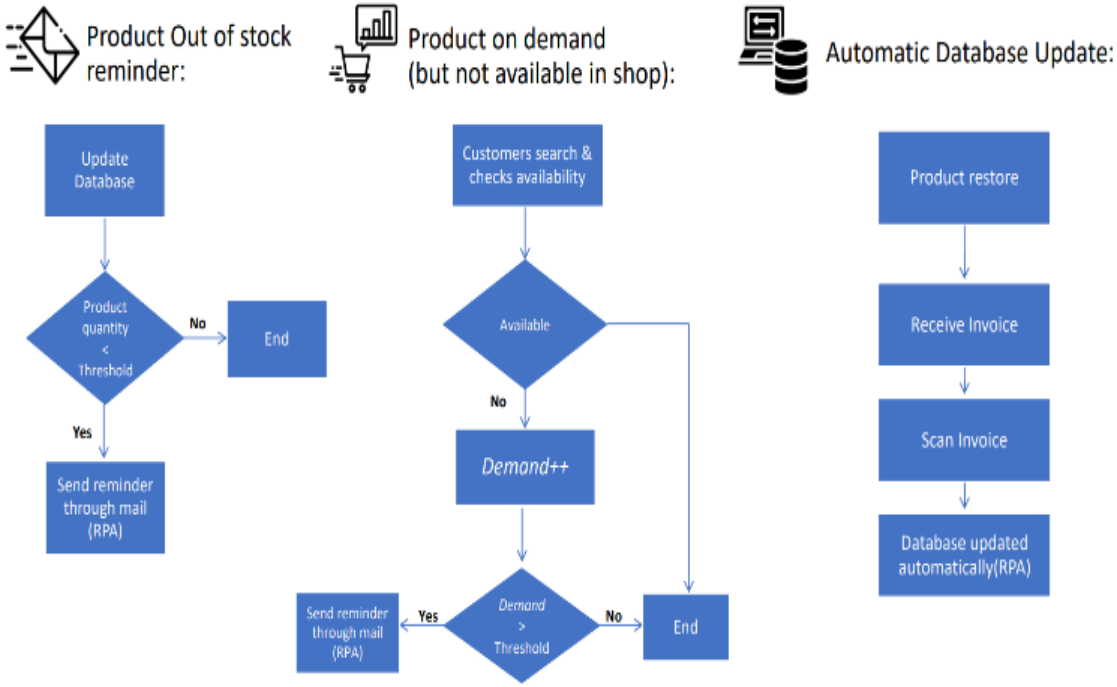


Shop keepers side website: The website can be used by the shopkeepers to register themselves into this system. Shopkeepers can use this system for the following purposes:

- Maintain the product database
- Get reminders for products going out of stock through mail using RPA
- Getting notifications about the products searched by customer and was not available in the shop
- Maintaining transaction details



Centralized delivery service: The valet's mobile application can be used by delivery valets to get notifications about the assigned home delivery work.

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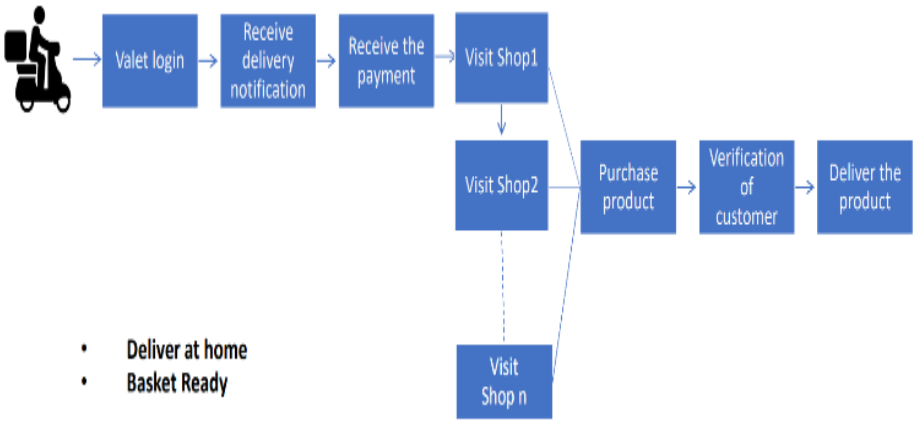

Every valet is tracked using GPS which always send its location to service provider. Service provider keeps the map of all its registered valets based on divided areas/zones.

IMPLEMENTATION

Module 1

Shop keepers side website

The website can be used by the shopkeepers to register themselves into this system. Shopkeepers can use this system for the following purposes:

• Maintain the product database
• Get reminders for products going out of stock through mail using RPA
• Getting notifications about the products searched by customer and was not available in the shop
• Maintaining transaction details

Centralized delivery service

The same mobile application can be used by delivery valets to get notifications about the assigned home delivery work. Every valet is tracked using GPS which always send its location to service provider. Service provider keeps the map of all its registered valets based on divided areas/zones.

1. When 1st customer places an order, algorithm (Service provider system picks the nearest valet to purchase on behalf of customer and allocate the recently booked order into the service provider app running on valets' mobile application) works same as it works for OLA/UBER etc.
2. Now, suppose there are multiple orders in same area and valet1 is purchasing for one customer and valet2 is free a. Now allocation of appropriate order for next customer will be decide on the basis of destination set by next customer.
   i. For valet1: - if next customer also wants the order to be delivered into same area/zones defined by the service provider the system will allocate the order to this valet
   ii. else repeat the step 1
3. If no valet available in the area/zone, then it picks the valets which is going in same area/zone and allocate the same order in valets' mobile application.

Module 2

In this project is to develop a smart shopping and delivering system which consist of a centralized delivery service, an e-commerce mobile application that assists customers, and a website to assist the retailers.

Customer side e-commerce mobile application

The mobile application can be used by the customer to search for the required products and add them into cart, after adding all the product into the cart, the customer can see the availability of those products in their nearby shops which are registered in the system.

This system provides the customer two modes to shop the products. The customer can select the mode to shop. The modes available in the system are listed below:

• Using home delivery service
• Visiting shop

1. Basket ready
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Using home delivery service mode

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Visiting shop

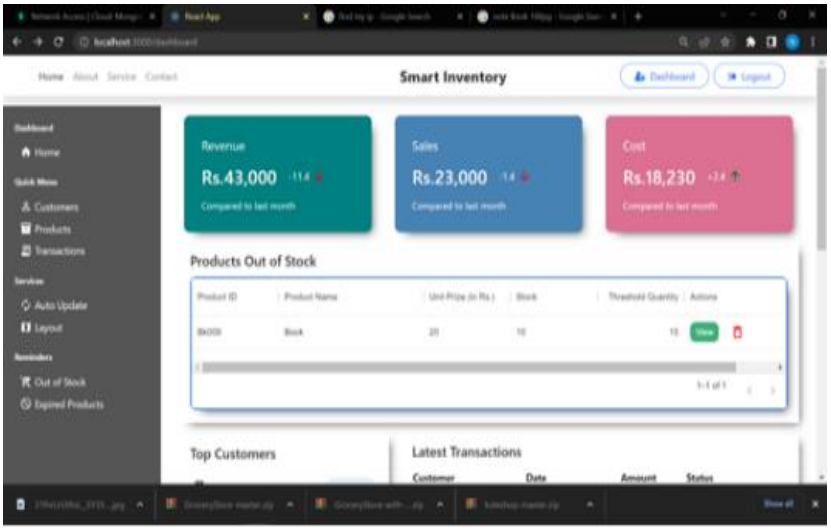
In this mode of shopping, the customer will have to visit the shop.

i) Basket ready: As the name implies the basket will be ready and customers just must go and collect it. In this mode of shopping the customer will be making use of the delivery service where the valets will shop the products from the shops of customers' choice and make the basket ready. The customer can collect the basket from the shop of their choice.

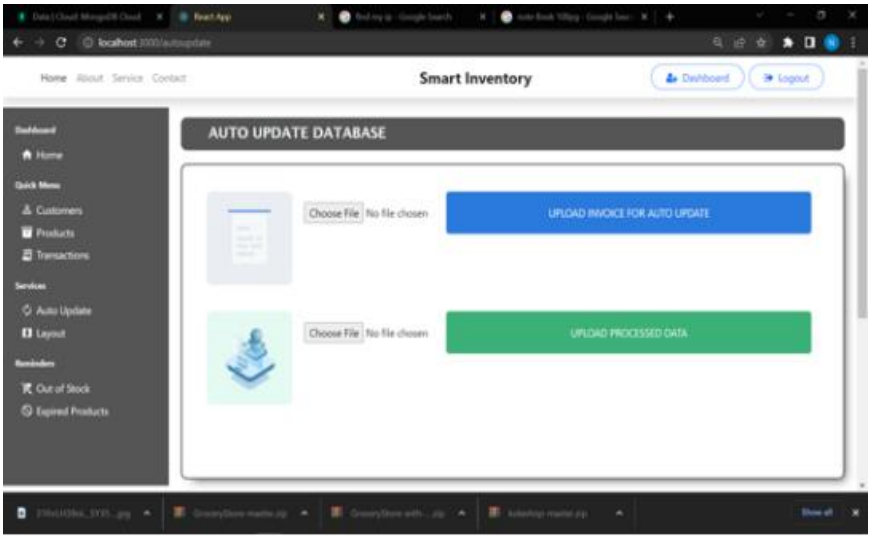
ii) Shop in person: In this mode of shopping, after visiting the shop, customer scan the unique QR code given to the shops while registering, this will give the layout of the shop in the customer's app. The layout will help the customer to navigate the products which are added in their cart. The customer can use device's camera for scanning barcode to get the details of a particular item and add it to the list. The list can be converted to the bill and sent to the shopkeeper after payment. This saves the time taken to stand in a line for billing as well as helps the user see the details of each scanned item. It even lets the user have a shopping experience where the user doesn't have to worry about the bill going over the user's budget as they can view the bill at any time and decide what to purchase as well as what they do not need and can delete unwanted items from the list saving them time. The existing smart shopping systems are expensive to implement and costly to maintain. Using this system will drastically reduce the implementation as well as maintenance cost.

Website Snap shots

Shopkeeper Dashboard:



Database Auto update:



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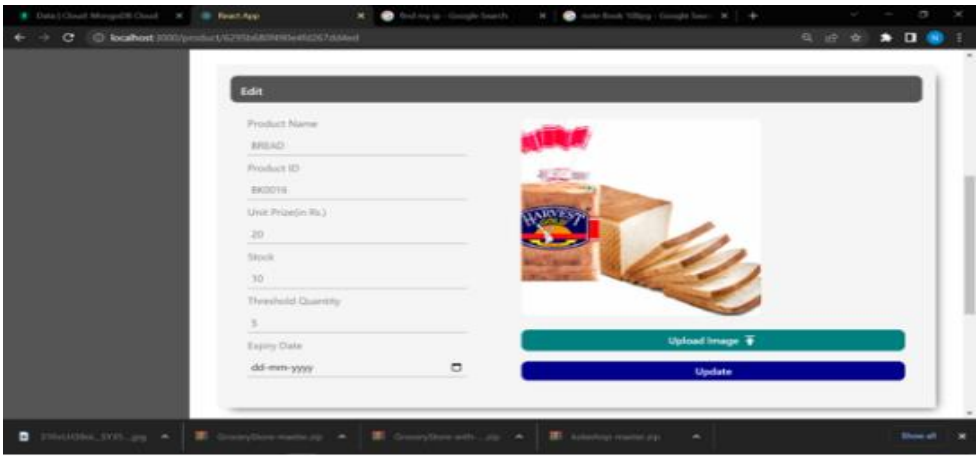
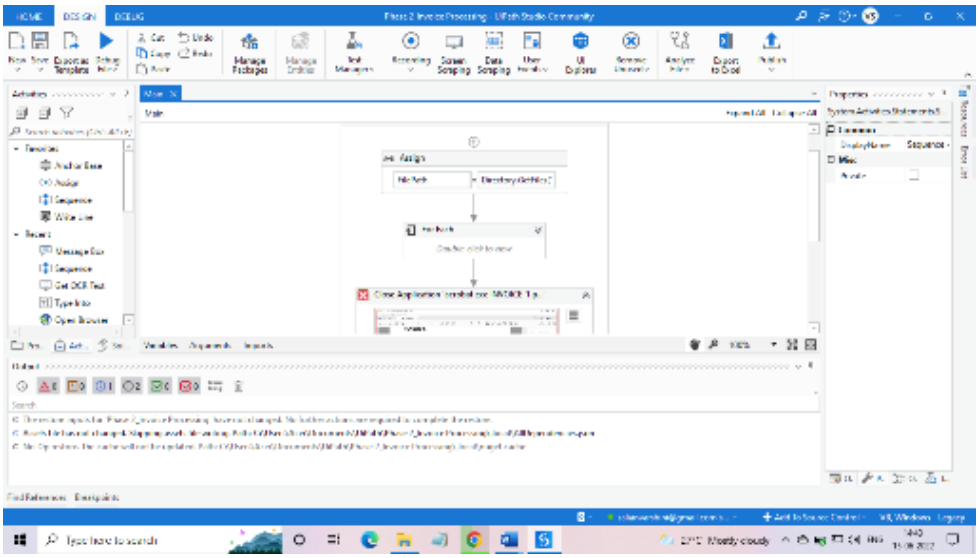
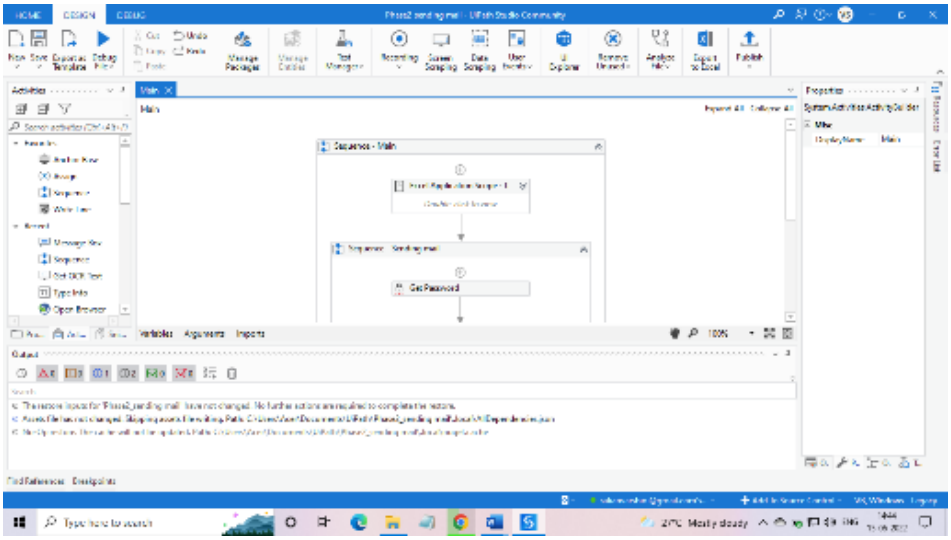
Edit Products:



RPA Invoice Processing:



RPA Mail Bot:



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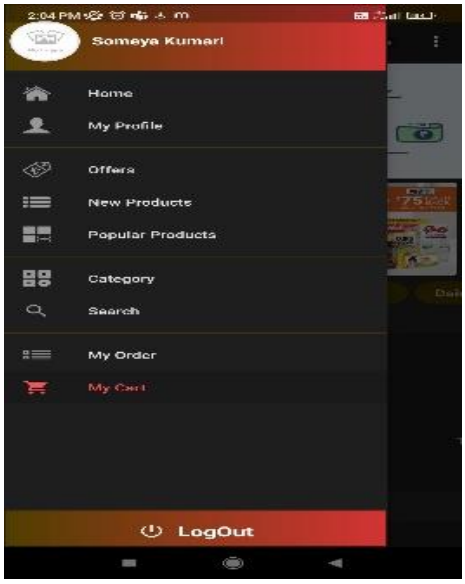
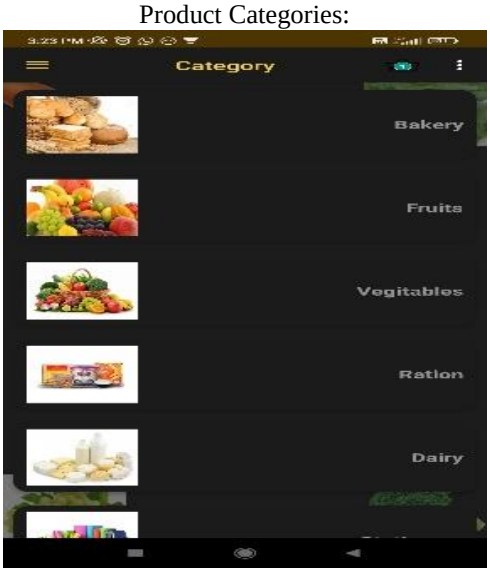
SNAP SHOTS OF MOBILE APP

Customer Dashboard:



Product Categories:



CONCLUSION

The proposed model is easy to use, low-priced and does not require any special training. This model provides platform for all those shops which has trivial recognition to get exposure. As the system is becoming smart, the requirement of manpower will decrease, which further adds to the cost efficiency thus benefiting the retailers. The time efficiency will increase phenomenally since this system will eliminate the waiting queues. More customers can be served in same time thus benefiting the retailers and customers as well. The customers can plan their shopping, know the availability of products in the nearby shops and purchase according to their diligent. The centralized delivery system will help shopkeepers to reach out to their customers in the most efficient, optimized manner, and customers to get their products in optimal time with security at their door step.

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