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UrbanMed- A Mobile Application for Online Pharmacy

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Abstract:- In the era of the digital world, selling of product in the online mode is still a difficult task for the local retailer to stay in competition and survive. The proposed system provides the retailer with a platform where he can grow and expand his/her business and sustain financial growth whilst providing the best of service to the customers.

In this modern life almost every person is busy in many life's activities and meeting deadlines. The lack of time in an individual's life puts up a requirement for convenient, easy solutions where one can check the availability of the entities any time, any place and at any location.

The proposed system, UrbanMed, allows the retailer to register his shop, perform entry of his products and then be able to sell medicines online. The Customers in need of medical aid and medicines can purchase from trustworthy Retailer at anytime, anywhere from a location near their vicinity.

Keywords:- *Medicine, E-Pharmacy, Customer, Retailer, Dart, Flutter, Mobile Application, Android OS.*

I. INTRODUCTION

A person in need of the medicines on a regular basis has to visit pharmacy frequently in spite of the busy schedule. He /she has to physically visit the pharmacy and check for the availability of the medicine. In cases where only few of the medicines are available he/she has to visit an alternative pharmacy. This whole process gets tiring and time consuming. Hence we propose a solution of online pharmacy where he/she can order the medicine and have it on hand without wasting the time of moving from one pharmacy to another pharmacy. And then again there is apprehension that pictures which is the trust factor. There is no surety that the medicine received is not a duplicate or an expired one. One option is local pharmacy where the chemist is trusted, so in case of any conspiracy he can visit the pharmacy and can solve the problem without having any mediator in between, rather than going through a long process of returning or exchanging in online pharmacy system.

Hence a system is proposed where one can get the medicines without physical movement and at once convenience and from a trusted and nearby chemist in one.

II. RELATED WORK

[1] Relates to a pharmacy network management system for maintaining, integrating, generating, and delivering a prescription and health history profile over a secured and trusted on-line network. The method and system includes the particular prescription order from a customer via a communication network that connects a plurality of member pharmacies, performing a prescription drug interaction check for the particular prescription order, sending the customer a confirmation email corresponding to the received particular prescription order, determining a pharmacy store location based on at least one of the following: i) if the pharmacy store location is a drive through store location or ii) if the pharmacy store location is a close store location to the customers and displaying at least one closest pharmacy store location to a geographic location indicated by the customer.

[2] Relates to a technique for selling and delivering products to customers using a data network. The data network includes a plurality of subsystems which together form an integrated system for receiving customer orders for selected items, fulfilling the customer orders, and delivering the ordered products to the customers. Moreover, it allows the online merchant to provide a guarantee to the customer that the ordered items will be delivered to the customer at the specified window delivery time.

In [3] a system and method are disclosed for recognizing a pharmacy customer and the prescriptions the pharmacy customer is authorized to pick up. This system includes a customer authorization module to communicate a customer identification to a retail pharmacy sales device, a pharmacy order acknowledgment module to receive a

pharmacy order including an indication of a prescription to be purchased, and a prescription purchase module to communicate a customer authorization for the pharmacy order to the retail pharmacy sales device.

[4] Describes a method for processing a prescription request for a customer that includes information about the geographic location of the customer. The method includes receiving the request at a prescription claims processing center, including the information about the geographic location of the customer. A prescription service provider that operates at a known geographic location is selected from a plurality of prescription service providers, based on the received geographic location. The received prescription request is routed to the selected prescription service provider, for fulfillment by the selected prescription service provider.

[5] States that a patient searching online to buy commonly prescribed psychiatric drugs is primarily presented with rogue online pharmacies that do not require a prescription. It emphasizes the importance of patient education on typical search results. Also societal pressure may increase the use of online pharmacies to purchase prescription psychiatric drug.

[6] Implements online pharmacy based on purchase of medicine decrease the prescription and alterations and thus provide safety and improve the quality of service provided to the customer or patient. It concludes that online platform will be used for ordering of prescription based medications for customers and provide a platform for pharmaceutical retailers.

[7] Found that most of the respondents, who are pharmaceutical workers themselves, would buy medicine on the internet, rather than going to the pharmacy. It was noted that a consultation with a pharmacist is necessary.

[8] States that although e-pharmacy is more liable than local pharmacy especially in remote areas, it should be aimed to establish rules and regulations like upload of scanned prescriptions and patient should be educated toward use of prescription medications. A good and well-designed e-pharmacy system is a requirement.

[9] Targeted the introduction of new mobile services in pharmaceutical market with a purpose of improving communications between pharmacies and their customers. The implemented system holds consolidated information resource that provides relevant information about medicines available in pharmacies in Lviv.

[10] States that rather than discouraging the use of the internet as a medical information(MI) source, health care professionals should direct patients to accurate and reliable sources of online MI and to tools to help evaluate its reliability.

[11] states that e-pharmacy are convenient and less expensive than traditional pharmacies, however, rogue sites are to be made aware which are under Internet surveillance practices. Drugs purchased online offer high level of handiness put forward the privacy of the buyer as well as safeguard traditional procedures of prescribing drugs.

[12] points that online pharmacy is an opportunity for the public to increase the convenience and accessibility for the choice of drugs. It may also enhance the competiveness of pharmaceutical and healthcare industry.

[13] lays some possible way forward for legalization – registry of all companies who are into e-pharmacies will have to register their logo, consumer's verification for authenticity, all potential medicines with under Schedule X and other habit-forming drugs should be banned to consumers to avoid unnecessary consumption, only prescribed medicines to be given, all contact information of pharmacists should be clearly given to consumers, increase consumer's awareness and shift towards safe online purchase behavior.

[14] states that although online-pharmacy is more accountable than local pharmacies particularly in rural areas, proper set of rules should be set up. Patients should be given thorough information like expiry date and batch numbers of the medicine they purchase online. Adopting the Adoption of strategies and platforms of the developed countries to enterprise and strengthen the e-pharmacy system is recommended.

III. SYSTEM ANALYSIS

A. Problem Definition

When a customer needs to purchase medicines on a regular basis he has to make frequent visits to the chemist shop. He has to physically check the availability of the medicines when he runs short of them. In case of urgent requirement he has to hunt for medicines in a number of chemist shops. Apparently, the process is very tedious and time consuming. Besides this, if anyone thinks to order online then they face trust issues and also the duplication of medicines or expired medicines. An aged person at times cannot physically visit the chemist shop for their medicines. In the current system, there is less or no business growth for the local retailers.

B. PROPOSED SYSTEM

Visiting different pharmacies for checking the availability and purchasing the medicines is difficult in the case when the medicine is not easily available and at the same time ordering and purchasing from online leads to trust issues like fraud may take place. Therefore, the proposed system constitutes of the local chemist in the online platform which will resolve issue of the trust factor and also prevents physically moving out for checking the availability of medicines. Secondly, due to the competitive online platform local retailers face the problem of business growth. The new system can provide a platform to the retailer for showcasing their business presence in the market to the people and create awareness of their existence.

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IV. SYSTEM DESIGN

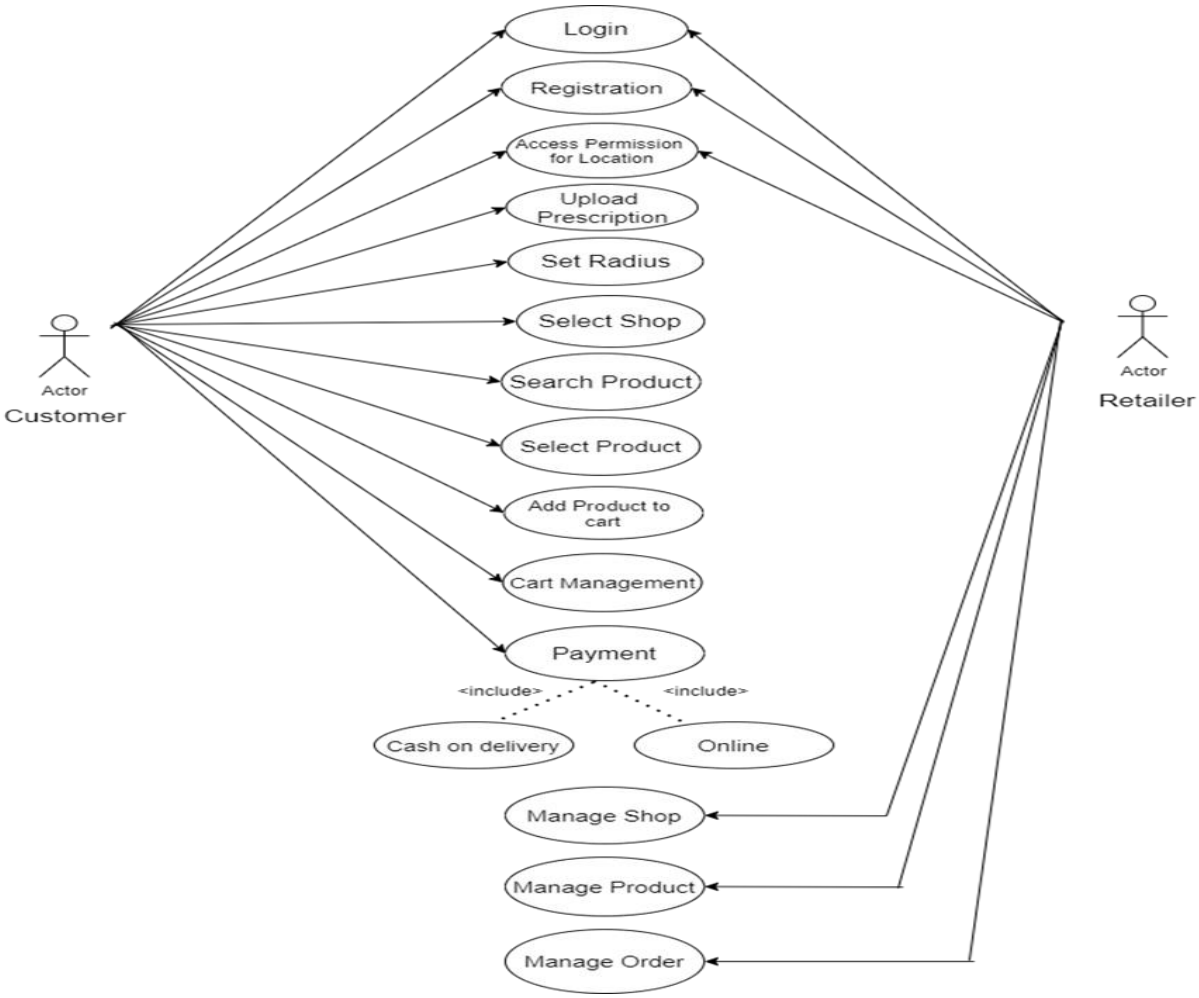

Figure 1- Use Case Diagram

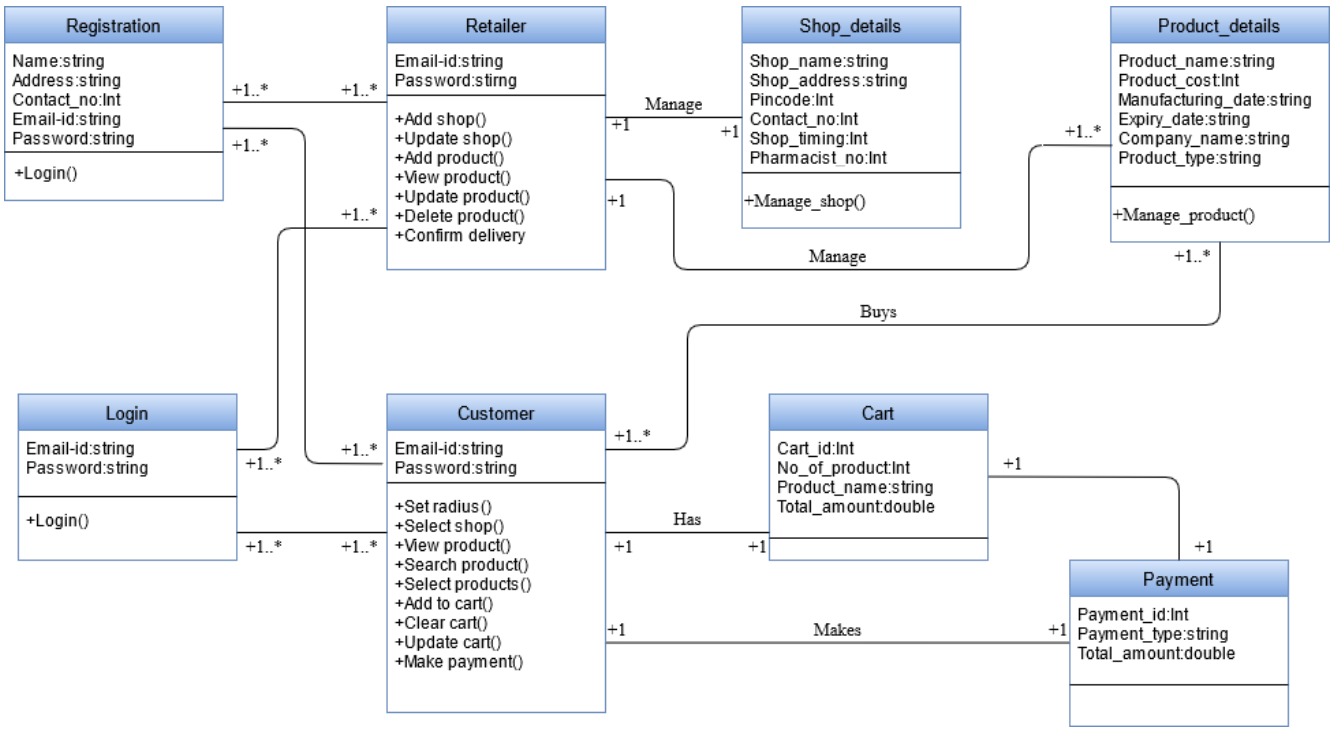

Figure 2- Class Diagram

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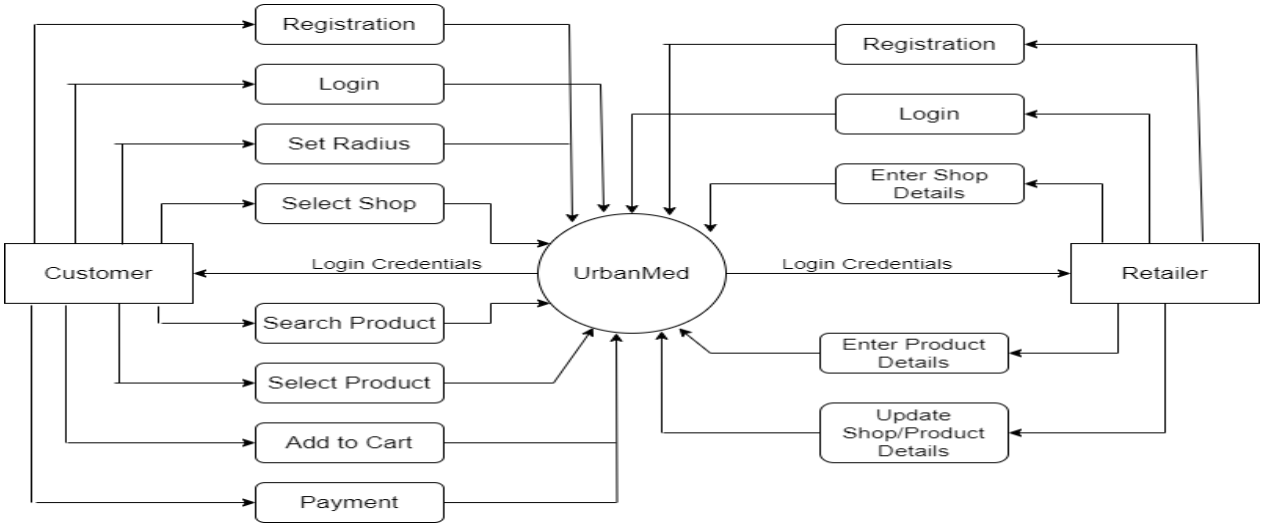

Figure 3- Data Flow Diagram Level 0

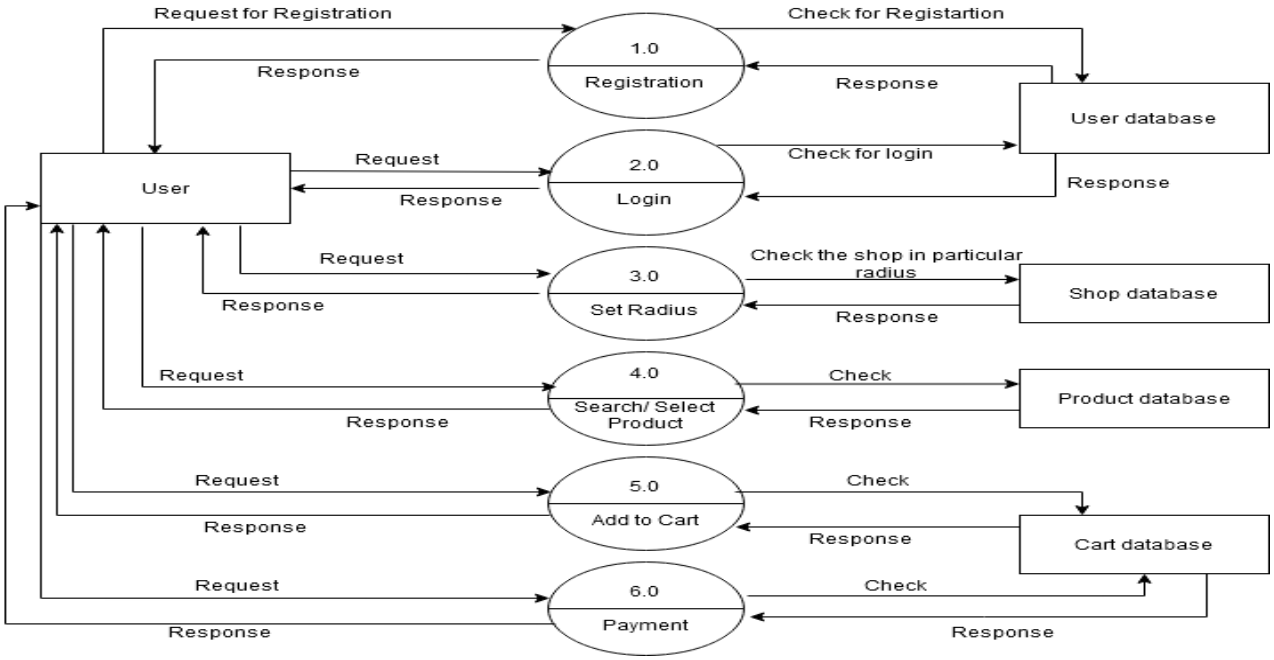

Figure 4- Data Flow Diagram Level 1 of Customer

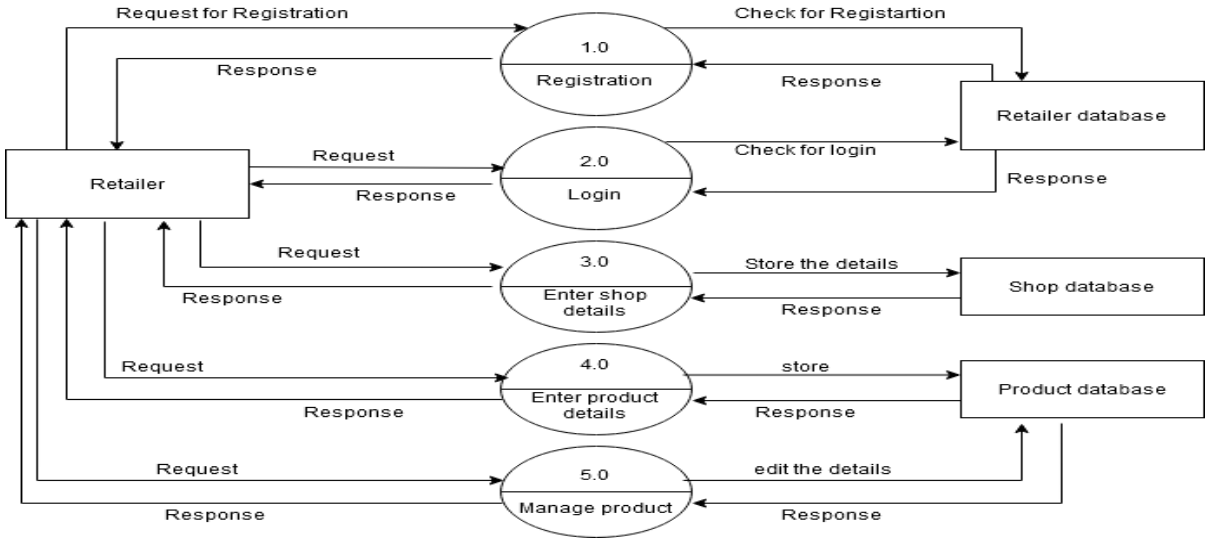

Figure 5- Data Flow Diagram Level 1 of Customer

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V. SYSTEM DESIGN AND IMPLEMENTATION

A. *Proposed Modules*

Customer Module

Login/Registration – required for users who are using the application; Setting the radius- permission for enabling the location which is essential to locate nearby pharmacies; Select Shop- an option for user to select shop of his choice; Search Medicine- the user can search for medicines through a search bar; Add To Cart- user can add medicines to the cart for further process and Payment- the payment for the order is to be done either in the online mode or through Cash-On-Delivery (COD).

Retailer Module

Login/Registration – required for using the application; Add Shop Details- shop details entry that is required for Registering process; Add Product Details – the product details must be mentioned by user to sell the product; Update Shop/Product Details- the details of the shop and product can be updated.

B. *Implementation Setup*

The software application, based on mobile platform Android and Dart which is a programming language used to code Flutter app [15]. Client and server code was implemented and tested. In order to obtain the correct location data the technology PostGIS was used. This technology uses the system Google Geocoding to translate the coordinates of pharmacy into required format. The customers can view the medicine information. The system uses a database that stores medicine data such as name, type, manufacturing date, expiry date and cost. The developed software was built using the client-server architecture and MVC design pattern. Data from database to the mobile application are returned in JSON format. In order to have access to full set of application's functions, the user needs a smartphone based on Android OS and have access to Internet and active geo-location service.

VI. RESULT

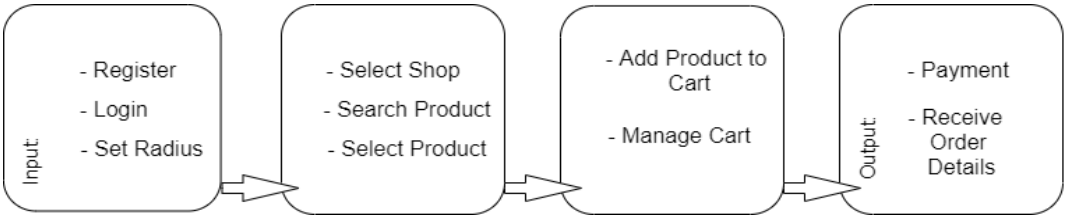

Figure 6 – Customer Input/Output Interface Design

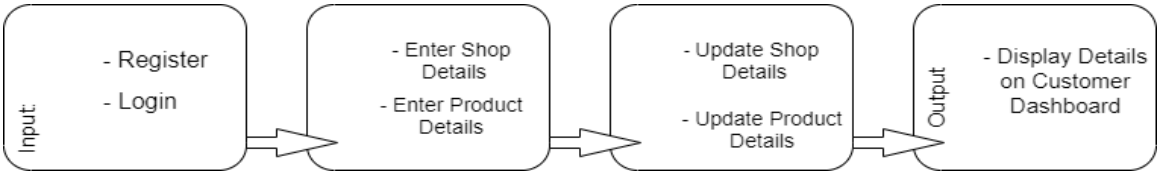

Figure 7 – Retailer Input/Output Interface Design

A. *The Customer*

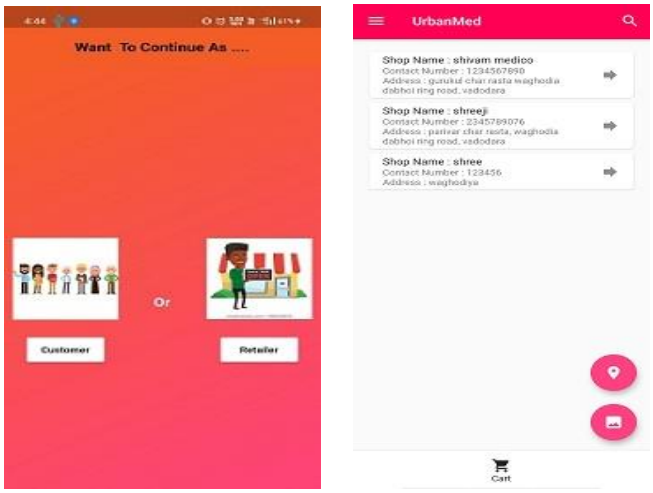

Figure 8 – Splash Screen for login

The application starts with a splash screen which asks login as customer or retailer. The user is then redirected to the login screen. The user has to enter their email and password to login but if they are new to the application then they have to register firstly. If the customer is entering first time in the application, then he has to allow application to access the location.

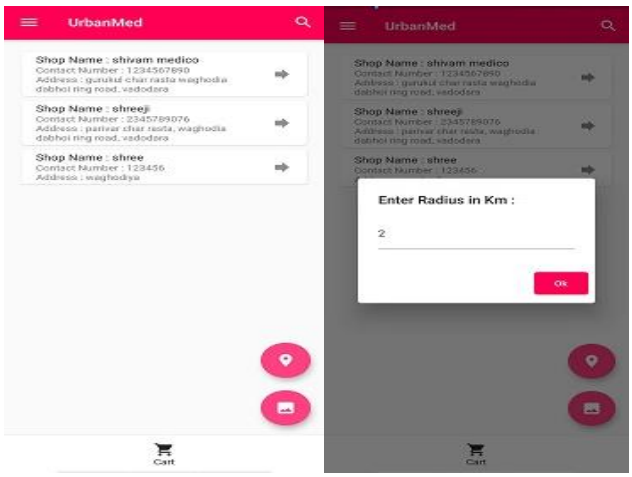

Figure 9 – Update the radius in kilometre

The customer after his registration enters the dashboard where he gets the shop of his area and he can also increase and decrease the radius as per his convenience. He also has an option named "Pharmacy by area" where he can search the shop of a particular area.

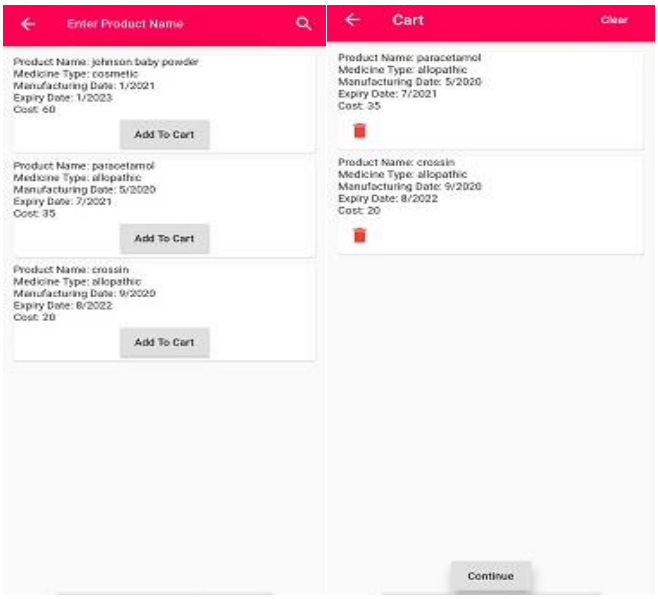

Figure 10 – Add Product to Cart

By selecting on the shop of his choice he can get to see the products of that particular shop and he can also search for the medicine he is willing to purchase. Then he has to add that medicine to cart.

Figure 11 – Customer Checkout

Then the user can view his selected products in the cart and has an option for Cash On Delivery (COD) or online payment while checking out. If the user chooses to go with online payment, then he will be directed to the payment page where he will get different options for his payment. After the successful payment his process gets completed and he can see his order history if he wishes to or else he can logout.

B. The Retailer

The application starts with a splash screen which asks you to enter as customer or retailer. The user is then redirected to the login screen. The user has to enter their email and password to login but if they are new to the application then they have to register firstly.

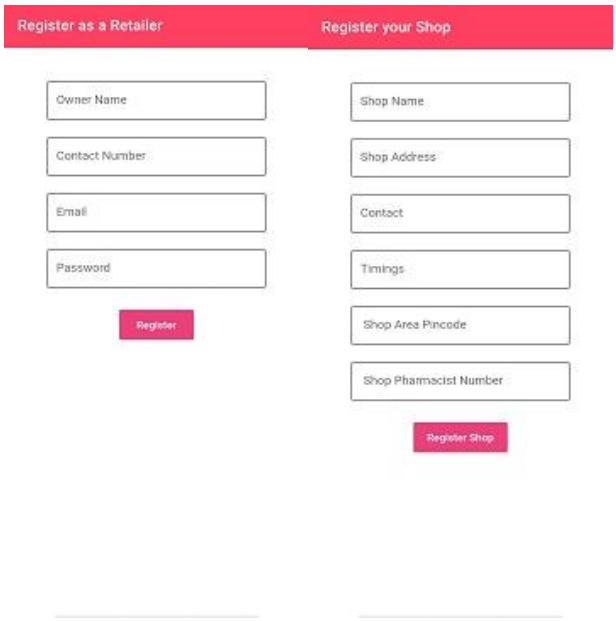

Figure 12 – Retailer Registration

The retailer has to enter his shop details and register his shop in the application. If the retailer is entering first time in the application, then he has to allow application to access the location. Then the retailer has to login.

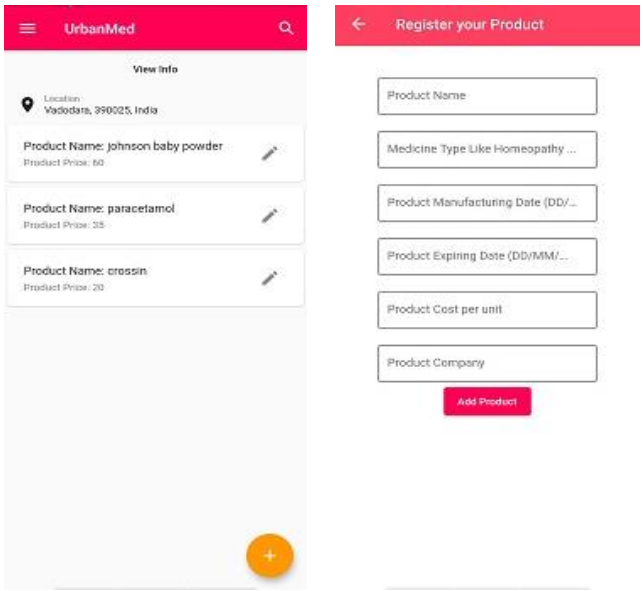

Figure 13 – Add Product Details

Therefore, now the retailer has to enter the products of his shop in the application.

Figure 14 – Product Search

The retailer can now search for his product in his product list, he can update the details of his product and can also delete the product if the product is out of stock or unavailable. After he is done with his work he can now logout.

CONCLUSION

The system will prove helpful to both the customers and retailers wherein it provides convenience to customers and a platform for exposing their business for the retailers. The benefits of the application includes – saves precious time, 24/7 availability, more quantity of medicines available, easy access to customer or patient, additional choice of products, helps to avoid nuisance such as going out in bad weather, standing in long queue etc.

FUTURE ENHANCEMENTS

In the near future, the search facility by image criteria can be implemented and medical prescription module can be incorporated.

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