Canteen management system using the E-wallet

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ABSTRACT

During breaks, there is a huge crowd in the college canteen. Starting from the queue at the coupon counter to the serving counter a lot of time is spent waiting due to which the students and faculty get late for their lectures. Both students and faculty, often wish to have a way to considerably reduce or get rid of this waiting time. One solution to this problem is to have a system by which once the order gets placed it is directly displayed on a monitor in the kitchen. This would avoid the time wasted at the serving counter when a server takes time to deliver previous orders before taking a new coupon and placing it in the kitchen. Also one can have a facility for placing orders in advance so that his/her order is kept ready just for the particular time he/she chooses. The time spent over tendering change can also be reduced by facilitating payments via e-wallet.

Keywords: *E-wallet, Canteen management system, JSP, Javascript, HTML, Bootstrap, Ajax, E-wallet security, ElGamal.*

1. INTRODUCTION

In the college canteen, a lot of time is wasted in queues. The proposed application is mainly beneficial for reducing the time wasted waiting in the queue by sending the orders directly to the kitchen, placing orders in advance & by providing a prepaid wallet facility which saves time spent in tendering change. This time can be used for any other good purpose. The e-wallet proposed in the application is secured using a 2048 bit encryption scheme.

2. USING CMS WITH E-WALLET

The aim of this project is to develop a system which can take orders at the counter and via online application and display them on monitors in the kitchen. We aim to accomplish this task by creating a web application for managing the canteen menu and orders. The web application would make use of HTML5, Javascript, and BootStrap for frontend and JSP for the backend. Appropriate security features shall be implemented to prevent attacks using 2048 bit El-Gamal encryption scheme. For placing orders in advance we will create a web application. The orders placed in advance will have an ORDER ID which shall be used to get the order delivered directly to the serving counter. Payments can be made via cash or e-wallet at the counter. Payments for online ordering can be made only via e-wallet. SMS alerts would be sent for events like 'Order Placed','Order Accepted','Order Declined','e-Wallet Payment Successful','e-Wallet Recharge Successful','e-Wallet Refund Successful' and 'Order Delivered'.

Usage of ElGamal Asymmetric Encryption Scheme

Elgamal asymmetric encryption scheme also is a public key cryptography algorithm. The security of this algorithm lies in the difficulty of calculating discrete logarithm. In the CMS application, the sensitive data involved in a wallet transaction i.e. Account Number/Mobile Number and amount are stored in the database in encrypted format. A 2048 bit key is used for encryption. When operations like recharge, payment, and refund are to be performed the database values are decrypted and then the operations are

performed on the decrypted values. After the operation is completed the values are again encrypted and stored in the database. On the client side, an Ajax call is made for a servlet to get cipher-text in order to encrypt the sensitive data transmission between client and server. An SSL certificate is also installed on the website to ensure further secure transmission of data sent and received by the web application.

3. RELATED WORK

[1] In this paper, the authors have proposed an E-wallet system using El-Gamal Encryption to make it more secure.

[2] In this paper, authors have proposed a whole CMS system which is taken in mind before creating the new system.
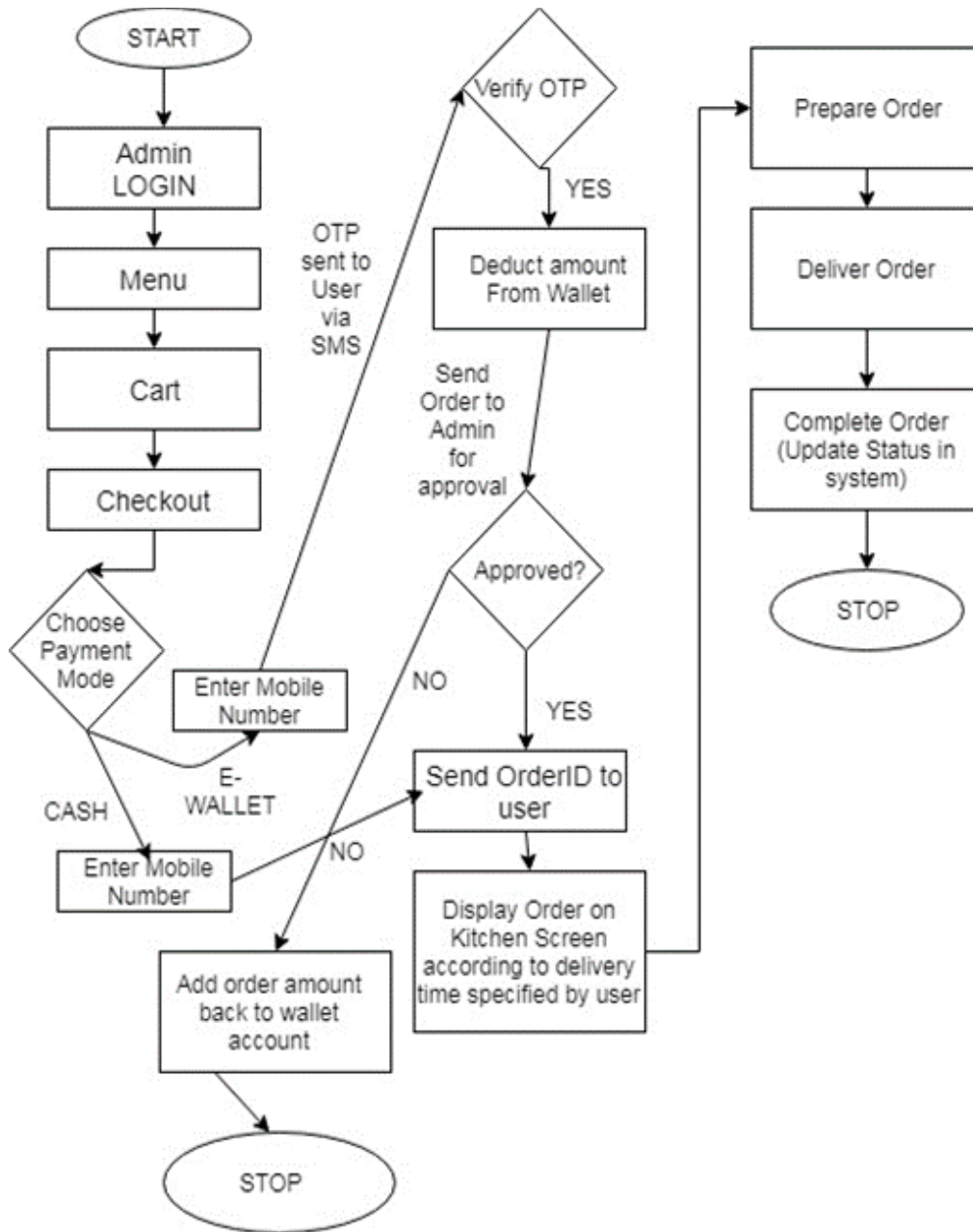
4. PROPOSED SYSTEM

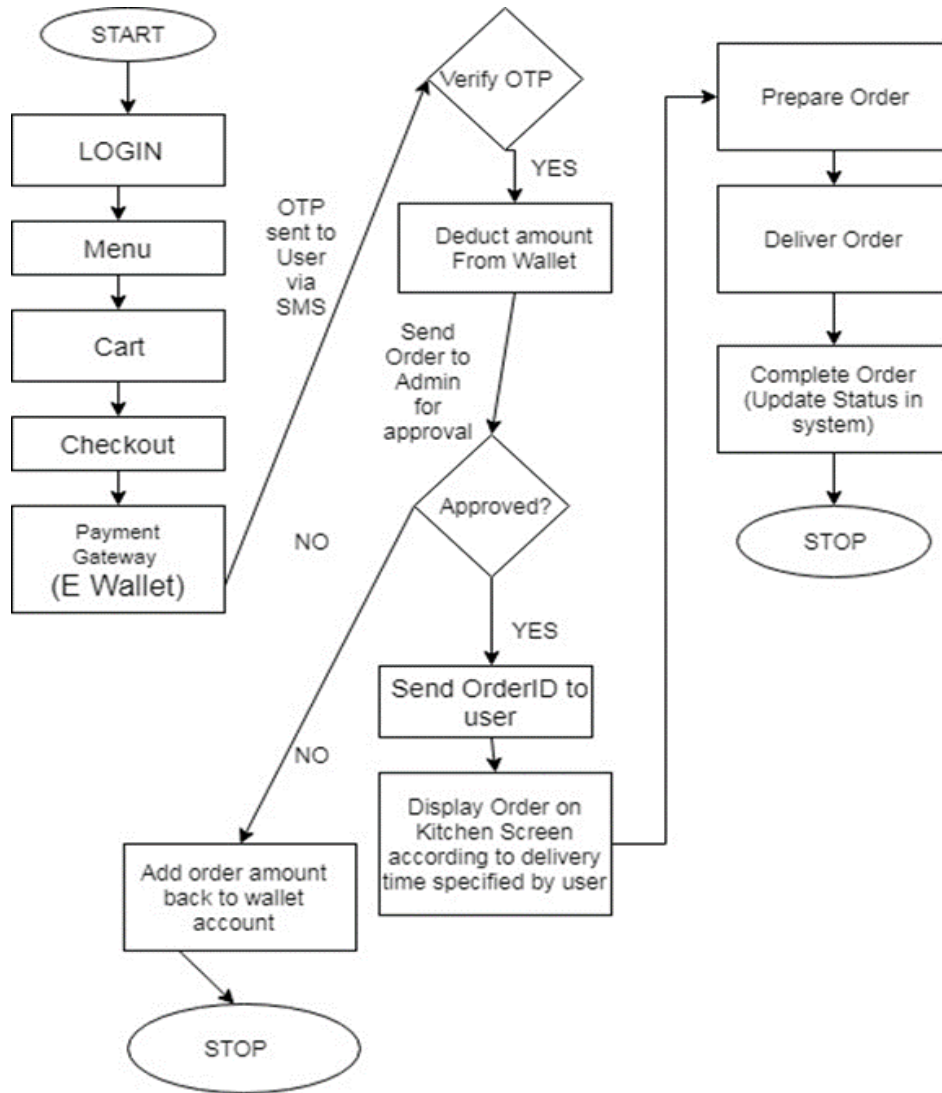**Figure 1: Counter ordering system's working**

Figure 2: Online ordering system's working

● **Place Order**

There are two ways of placing an order, through the online ordering feature or through the canteen counter. The online ordering feature shall be available to users who log in only and have a valid balance in their E-wallet. The counter ordering facility shall be available only to the administrator through administrator login.

● **Make Payment**

There are two modes of payment, E-wallet, and Cash. Online orders can be paid only through E-wallet. The E-wallet payment can be used at the counter also. Cash payment option is also present at the counter. Since the E-wallet is prepaid it needs to be recharged at the counter by paying cash to be able to use. Recharge function is available in administrator login.

● **Display Order**

The items of a placed order shall be displayed on the screens in the kitchen which indicate the cooks to prepare the items. When the order is delivered its status is updated.When the status of the order is updated to "COMPLETE" it goes off the screen.

Corresponding Text Alerts are sent to the customer throughout the process. The whole System is created using JSP as a scripting language.

5. RESULTS AND CONCLUSIONS

- One of the strengths of ElGamal is its non-determinism-encrypting the same plaintext multiple times will result in different ciphertexts, since a random k is chosen each time.
- El-Gamal encryption is used in the free GNU privacy Guard Software, recent versions of PGP, and other cryptosystems.
- ElGamal Public key Encryption scheme is a good choice for providing security to an e-wallet.
- This paper discusses the crowded canteen issue and finally proposes a working solution for the same. It further discusses the importance of the El-Gamal encryption for the security of the E-Wallet.

6. REFERENCES

[1]Key generation algorithm design combination of RSA and ElGamal algorithm,
Ni Made Satvika Iswari Faculty of Engineering and Informatics Universitas Multimedia Nusantara Tangerang, Indonesia satvika@umn.ac.id   2016 8th International Conference on Information Technology and Electrical Engineering (ICITEE), Yogyakarta, Indonesia, 978-1-5090-4139-8/16/$31.00 ©2016 IEEE

[2]Computational Resources for mobile E-wallet System with observers,
Eligijus Sa;alausas', Jonas Muleravicius', Inga Timofejeva Kaunas University of Technology, Department of Applied Mathematics, Studentu St. 50, LT-51368, Kaunas 978-1-5386-0394-9/17/$31.00 ©2017 IEEE

[3]Canteen Food Ordering Android System,
Abhishek Singh, Amit Tanwar, Aditya Sawant, Chaitanya Parulekar, Kunal Yadav, IT Department, MUMBAI University, International Journal on Recent and Innovation Trends in Computing and Communication, ISSN: 2321-8169