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# Cashless Canteen Management System

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***Abstract:*** ***The ultimate aim of the cashless canteen management system is to automate the existing traditional system which is manual, with the support of computerized equipment and full-featured computer applications, so that their valuable data can be retained for a prolonged period of time with quick access and management. The appropriate software and hardware are readily accessible and easy to use. There is a huge line in the institution cafeteria throughout the break. From the wait at the payment desk to the serving point, a ton of time is spent waiting for the food, because of which, students and the faculty get late for their lectures. All teachers and students do want to figure out a way to that or get rid of this waiting period. One way to resolve the issue would be to have a software arrangement in which, once the order has been put, it can be projected directly on the cafeteria monitor. This will prevent out the time people spend at the payment desk as the server needs time to fulfill the previous orders before taking a fresh receipt and setting it up in the cafeteria. Even, we could have the program to post orders in such a manner that his / her order is processed ready for the particular period that he / she prefers. The time wasted on waiting for change can also be diminished by enabling online payment. The project's main objective on Cashless Canteen Management System is to manage canteen, product, and sales information. It manages all the details of canteen, product, orders and users. The project is completely built at the administrative end and thus only admin is guaranteed the access.***

***Keywords: Canteen Management.***

## I. INTRODUCTION

Lots of time is spent in queues at a college canteen. The proposed software is effective in cutting the amount of time spent in the queue to send orders straight into the kitchen, placing orders before and with the option to use a card payment system that reduces time spent in tendering changes. This time can be used for any other purpose that must be relevant. Cash payment in canteens is nowadays the only option for making the payment. The situation was well adapted for small canteens. For some large canteens, credit card facilities are offered but this is very unusual. The major downside of cash payment system is that the user seems to want to carry the cash all time. And he / she has to pay the correct sum else there might be issues in providing the balance money. The owner should hold some register as he needs to provide the consumers of the canteen via coupons. Once the owner of a canteen gives a coupon for the last number then the buyer could lift the coupon. On such a situation a student account is maintained in a notebook. Canteen owner writes sales regularly and the balance is reported at the end of the month. These typically paper based files can get damaged or destroyed, as well as student account data can get lost. With the emergence of digital pills and simple touch screen application menus, the whole new surface could be bypassed. This electronic menu was the first-time which orders can be taken successfully. There is no need to run back and forth to a distant terminal, when usually the terminal is with the server. Almost every order is associated with a person seat at the table, and orders are developed one customer at a time, just like on paper, but with greater accuracy. Even products can be easily transferred, switched or altered through the entire kitchen and the price can be calculated in real time. The focus of this task is to build a system that would take orders at the counter as well as through online application, and view them in canteen monitors. To accomplish this project by growing a web application to manage the menu and orders at the canteen. The Internet technology would use JavaScript for frontend reaction, JavaScript node for backend reaction. There will be canteens in nearly all the schools, institutes and companies. The existing system is basically a cash and paper-based system. It takes a lot of time for the payment and methodology as the customer pays the actual amount and wait for the alteration. Order can be placed by paying by cash. Web application is created for placing orders in advance. The orders placed in advancement shall have an ORDER ID it shall be used to deliver the order to that of the serving counter without delay. Payments for online ordering can be made only by card.

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## II. LITERATURE SURVEY

### [1] Canteen management system using the E-wallet

In this paper, system can take orders at the counter and through online application and display them on monitors in the kitchen. The internet application would make use of HTML5, two Java script, two and Boot Strap for frontend and JSP for the backend. Appropriate protection aspects shall be implemented to prevent attacks the usage of 2048 bit El-Gamal encryption scheme. For placing orders in advance, we will create a web application. The orders placed in enhance will have an ORDER ID which shall be used to get the order delivered at once to the serving counter. Payments can be made through cash or e-wallet at the counter. Elgamal asymmetric encryption scheme also is a public key cryptography algorithm. The security of this algorithm lies in the issue of calculating discrete logarithm. The 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 done the values are again encrypted and stored in the database. A 2048-bit key is used for encryption.

On the consumer side, an Ajax call is made for a servlet to get cipher-text in order to encrypt the sensitive data transmission between consumer and server. An SSL certificate also installed on the website to ensure further secure transmission of data sent and received through the web application.

**[2] In-Time Billing Process for Canteen Management System**

In-time billing technique for canteen management device indicates canteen admin will give a RFID to their customers which can be either students or staffs and in case of an organization, it can be employees. This system is very effective. It is very much useful for the people who go to canteen regularly, may be daily. They do not have to bring the cash with them anymore. Each and every registered customer will get a card and person can do recharge with whatever amount he wishes to have. This project says that only invoice has to be produced for the canteen timings and other times the consignment has to stop producing. With this system we can entirely change the complete functioning of the canteen. Is it possible to get refund of the amount remaining in the card? The report of individual user has to be prepared on weekly basis or monthly basis. For this task to provide fine solution and also In-Time only consignment need to be produced. To achieve that, the customers are allowed only in the specified timings.

**[3] Cloud Based Canteen Management System**

This paper suggests a platform for automating the whole process more conveniently for both the canteen and the buyers on the cloud. There is no hardware components and installations are required with the help of Cloud Computing technology. Cloud computing is extremely cost effective relative to the ownership of individual parts. The proposed cloud-based program fills the gap between the canteen and its use. The system provides a Radio Frequency Identification card, which will be used for each customer's purchases at the counter. In addition, a new form of buying and paying through a mobile device, where deductions are made directly from the customer's account, which is helpful in reducing the queues. Accounts can be recharged through online transfers and e-wallets. The web application and mobile application will be hosted on the cloud. The overall tiring administration of a canteen business can be accomplished easily. There is no need for long delays in queue, orders can be placed more easily accordingly. There is no need to be maintain paper-based records. Data migration to the cloud is only required once. Entire Canteen Business is automated. The other method involves the process of paying with a smart card that only deals with payments. The RFID card offers a cashless billing scheme, but the method of recharge is via real money.

## III. EXISTING SYSTEM

Because the present technology is book-based, it has a huge downside of data supremacy, calculations ought to be rendered manually. Another threat is that the data can be easily manipulated or lost. The cash payment also has a big drawback, the user needs to have cash carried with him/her. And he/she wants to pay the precise amount in any other case there is problem for the final amount. If the billing person provides a slip signed for remaining amount to be paid, he/she has to carry that along when he/she goes to canteen next time. One big concern is that in educational institutions, students / staffs will have food in the same cafe over the course of their studies or employment. In such instances a record of student's purchase is maintained in a bill book. The person in the bill counter manages the students' order and bill reports on a regular schedule, then at the month's end amount to be paid by individual customer is evaluated. This system has problem of maintaining paper primarily based records. Such records are in danger of being ruined, and the student payment report information might be missed. Also, the current system provides RFID card to the customers, they can recharge this card with the amount they need. If the amount gets exhausted, again the customer's account has to be recharged. With this id the student/staff can do their purchase in the canteen by waving this card but the drawback is that the card can also get lost or get scratched.

## IV. PROPOSED SYSTEM

The proposed system would make use of ReactJs for frontend and NodeJS for backend. This system is generally advantageous for avoiding spending time waiting in the queue by posting orders directly to the kitchen without delay and also by scheduling orders ahead of time. It is achieved by having a card payment that reduces time spent on the bill counter for payment and tendering adjustments. It saves time and also the technique dealing with is easy.

### A. Scope

The system proposed focuses at canteen business process automation i.e. to digitalize all the processes and management of canteen.

- Efficient use of resources through rising productivity by automation
- The application provides a report that could be used for different purposes, such as accounting management and reference for future.
- It satisfies the requirement of users.
- Understanding the working of system is not complicated in case of both the users and the admin.
- Easy to operate.
- Have a good UI.
- Scalable.

### B. Functionalities

- The System enables searching facilities based on various factors. Such as Canteen, Orders, Products, Quantities, Report and Users.
- The proposed system also takes care of managing the order details, availability details, order details, payment details and user details.
- Shows the information and description of the canteen orders, products, payment and users.
- To increase the efficiency of canteen management.
- It deals with monitoring the information and transactions of product.

- Editing, adding and updating of records is improved which results in proper resource management in canteen data.
- It manages and generates the report of sales of the products.
- The SSL certificate provides security to data transmission between the user site and the server and the payment gateway.
- The system automatically sends payment receipt to the mail id provided by the user at the time of payment.
- It provides integration of records of orders at the administrator site.

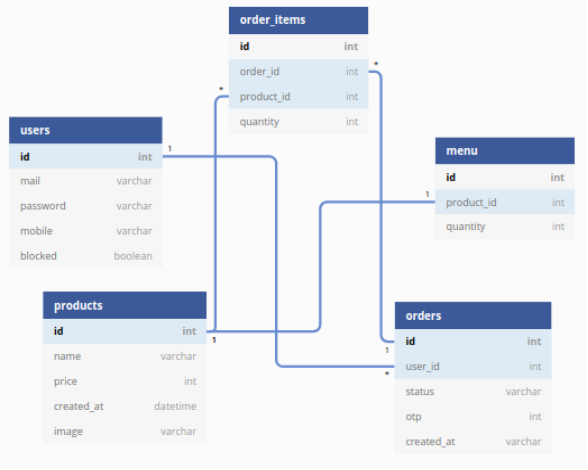
### C. Modules

- Canteen Management Module: Complete canteen details is managed using this module
- Orders Module: Customer's orders can be managed using this module
- Product Module: Used for the management of the products information
- Login Module: This module of is for existing clients of the site. The user already registered here can login and view the available products and they can do the Purchase over here.
- Users Module: Used to monitor the users of the program.
- Signup Module: New customer can register and create account at this part of project. Here customer means student/staff who enters into the website
- Admin Module: Used for managing and updating products and orders information
- Report Module: Used for generating the report at admin site
- Payment Module: After selection of the products the user can pay their related amount for products selected in this module.

### D. Technologies Used

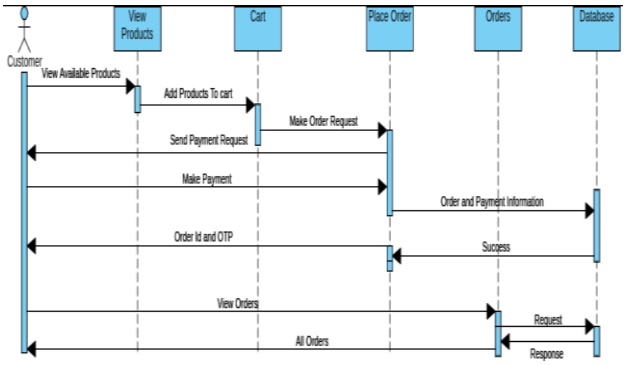
- Frontend: React
- Backend: Node
- Database: Postgres
- ORM: Sequelize
- Authentication: jwt
- Payment: Stripe
- Server: NGINX

## V. TABLE STRUCTURE



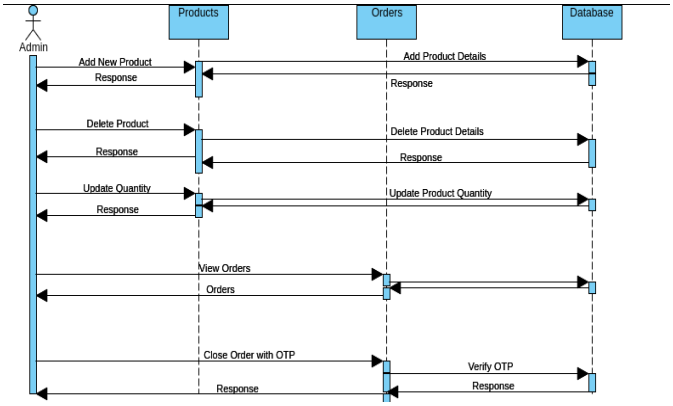

## VI. SEQUENCE DIAGRAM

### A. Sequence diagram for placing orders



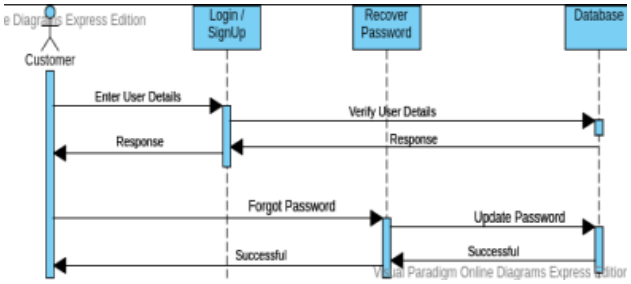

### B. Sequence diagram for managing orders and products by admin

Admin can add new products, delete existing products, update quantity, can view orders and close orders with OTP.

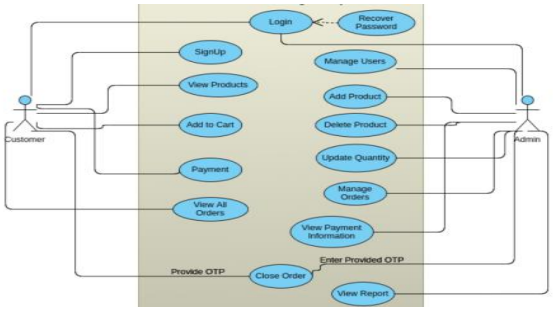



### C. Sequence diagram for login process

Customer can enter the user details and can recover the password if forgotten and can update the new.




## VII. USE CASE DIAGRAM



## VIII. RESULT & DISCUSSION

The customers and canteen management team are provided with the application deployed in the cloud which is accessible through a browser thus optimizes the old, time consuming and paper-based process of the canteen business by digitalizing complete process. With this upgradation, the customers can order before they leave their class room or staff room and the payment can also be done seamlessly with the help of online payment method. The canteen management have the benefit of avoiding paper usage, there is no need of extra man power in bill counter and they can manage the old data easily which will be useful for future.

## IX. CONCLUSION & FUTURE WORK

The advantage of the use of this system is that the scale or size of the business does no longer make any difference to the system. This platform can be enforced on both small and large-scale businesses. Due to the user-friendly interface of the application, the particular viewer of the program doesn't have to be educated exclusively and can use the application easily. Admin can monitor and maintain of track of the entirety going on in his business which gives him a better manage over his business. The fully automated system eliminates the need to manipulate details in terms of the amount of food items sold on a regular basis, items available in the store. This study addresses the large-scale institution canteen business issue and ultimately suggests a working solution to the same.

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