Food Ordering Management using Recommendations

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Abstract—The proposed food ordering management system enables the customer to order the food by selecting the food items from e-menu by registering on the web application or intranet of the institute. The system is useful for a canteen which faces lot of rush during the break time and also if the work in the canteen is manual such as taking food orders at the counter and subsequently calculating the cost. Also, there is dissatisfaction among customers due to delay in orders and orders not being attended for long.These issues are addressed and solved in the proposed system. In this project, we have proposed a system that can simplify most of the manual work in the canteen, from taking orders to calculating bills. Customers can order their food from anywhere in the institution using the website, making it a hassle-free task. The placed order will be displayed on the display screen and the staff will keep the order ready for the customer. Additionally, by making use of Apriori algorithm, recommendations will be provided to the customer. The proposed system will help the administrator of the system to have a clear idea, when and which food items are preferred more on a day-to-day basis.

Keywords— Apriori algorithm, Dataset, Food ordering system, Internet, Recommendations, Smart phone.

I. INTRODUCTION

The basic problem in the food services available at canteens at various institutes and organizations are that, they are not realizing the efficiencies thatwould result from better applications of technology in their daily operations. In canteens, ordering of food and calculation of bill is still a problem. The problem also arises when approximation of all the stock required to be bought has to be handled based on how much food was ordered and what will be ordered the most. There are many reasons leading to delays in services such as taking orders and serving which leads to dissatisfaction among customers.

The project focusses on developing a user-friendly food ordering management system for the customers as well as the administrator. The proposed system will provide facilities to the administrator such as updating the menu, based on the recommendations given by Apriori algorithm and customer-based functionalities which includes placing orders by referring to the recommendations. Ordering of food will be lot easier.

II. LITERATURE REVIEW

2.1 Past work

In the food recommendation system using clustered database [2], the data is clustered after getting the input. Cluster is a set of similar items. Using cluster database speed of the system is increased and a lot of time is saved by reducing the number of comparisons. In this system K-means is used for clustering the items. It is efficient if the amount of data is large. Here ingredients were listed using vectoring.

In an automated food ordering system [3], which will keep track of user orders smartly. This food ordering — system will allow the user to make order or make custom food by one click. This is an android application. The font end was developed using JAVA, Android and at the backend MySQL was used.

The Zigbee based e-menu ordering system [4], is useful for all kinds of restaurants and is affordable. The system has a smarter user interface for placing orders and billing. The system includes graphical representation of menu such that it is user friendly and understandable by illiterate people also. It is low cost alternative to bigger touch panels.

The proposed automated system [5] deals with automation of restaurants, with wireless touch-panel based menu systems. The orders are taken from customers using the digitized menu. Full menu of eatable items is displayed onto the touch panel for selection. Customer orders placed through the touch panels are received in the kitchen without any involvement of waiters. Zigbee was used to have wireless link of touch panels from kitchen to restaurant tables. PIC microcontroller was used for coding of menu on touch panel. The hardware implementation was done on PCB layout. Their proposed system would also take care of all paper work i.e. data handling.

The proposed automated system [6], aimed at minimizing the number of employees at the counter, elimination of

calculation error and avoiding long queues for efficient management. This proposed system had an admin module to help do required analysis. Data mining algorithms like Apriori, K-mean are used to perform association mining and clustering operations.

III.   PROPOSED SYSTEM

3.1   Types of Users and their features

3.1.1   Admin

• Update menu

• Update inventory

• Recommendation (Most Frequently Ordered Dishes)

• Sales for each day, week and month

3.1.2   Staff

• View orders placed by customer

• Prepare ordered food

• Serve food once ready

3.1.3   Customer
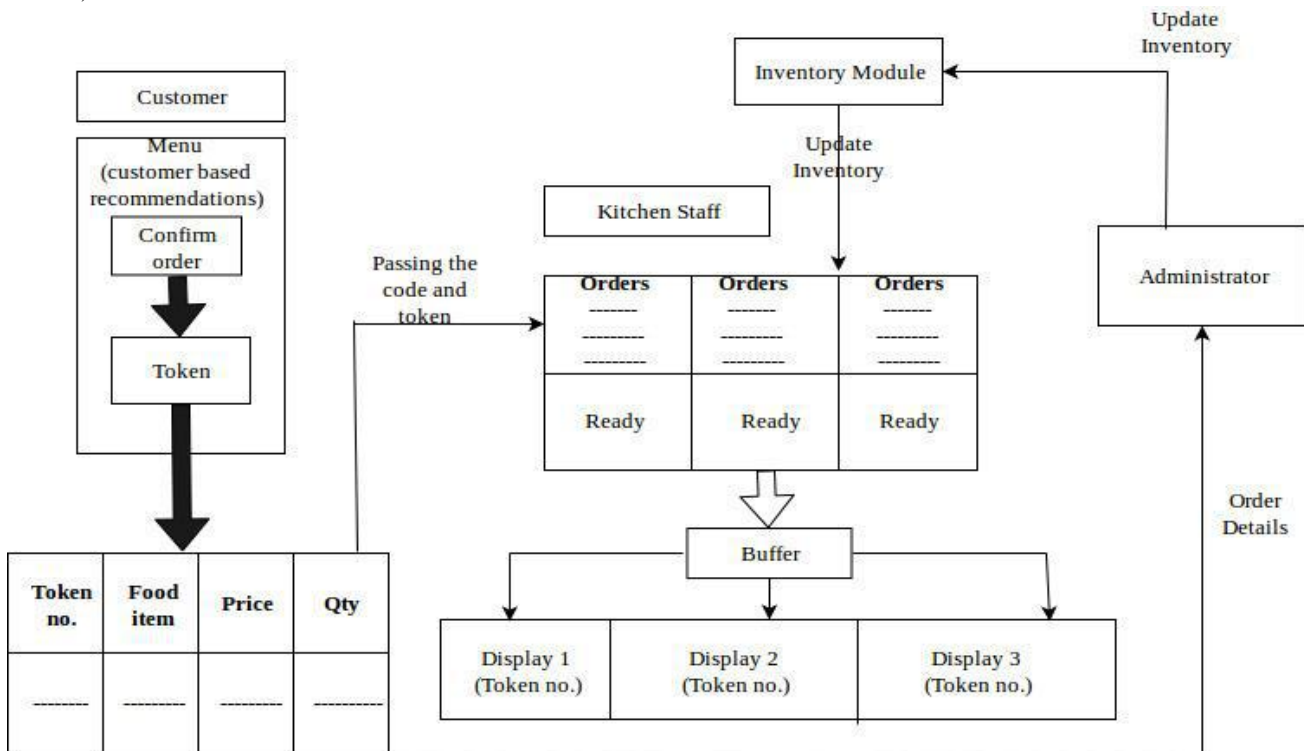
• View Menu

• Place an Order

• View Bill
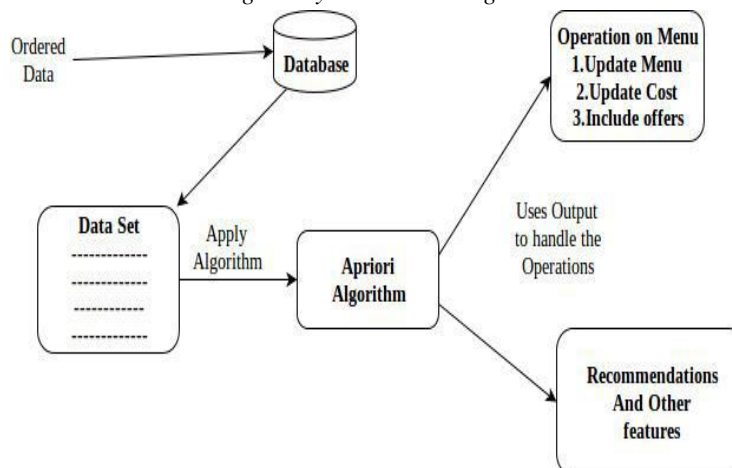

Fig 3.1 System Flow Diagram

Fig 3.2 Admin Module

3.2 System flow analysis

The proposed system will be used by three types of users, mainly the customers, the kitchen or canteen staff and the administrator. Thus, the processes of the entire system can be divided into the three modules (as shown in fig 3.1) namely the admin module, the kitchen or canteen staff module and the customer module.

The food ordering management system will enable the customer to view the e-menu along with the recommendations, after viewing which, customers can place their order. Once the order is confirmed, bill will be generated along with a token.

The order data along with the token generated will be buffered and displayed onto the screen near the canteen staff. The canteen staff can view the order, prepare and serve it. The order details will be sent to the admin module for further processing.

From the above figure **Fig 3.2** it can be seen that all the order details will act as an input to the Apriori algorithm and the output of the algorithm are the recommendations (as shown in fig 3.3) that are used for several purposes such as to determine most frequently ordered food item, update inventory and update menu.

Aitd Canteen

Home   Food Items   Order Details   Analysis   Recommendations

Inventory   Log out

R_Id	Food Id	Food Name
504	2006	MON_Chole
505	2024	MON_Banana_Shake
506	2029	TUE_NonVeg_Fried_Rice
507	2032	TUE_Butterchicken
508	2035	TUE_Gobi_Manchurian
509	2038	TUE_Chicken_Roll
510	2044	TUE_Bread
511	2045	TUE_Sprite
512	2061	WED_Biryani
513	2077	WED_Papaya_Shake
514	2087	THU_Chole
515	2098	THU_Bread
516	2109	FRI_Fried_Rice
517	2121	FRI_Chops
518	2137	SAT_NonVeg_fried_Rice
519	2138	SAT_Fish_Thali
520	2140	SAT_Butterchicken
521	2143	SAT_Gobi Manchurian
522	2154	SAT_Dew
523	2159	SAT_Banana_Shake
524	2001,2006	,MON_Chole
525	2029,2032	TUE_NonVeg_Fried_Rice,TUE_Butterchicken
526	2061,2077	WED_Biryani,WED_Papaya_Shake

Fig. 4.1 GUI for viewing recommendations

IV.   IMPLEMENTATION

We have developed a web-based application for our system. The implementation of the system is done using PHP, HTML, CSS, jQuery, Ajax, Bootstrap, JavaScript and the datasets are stored in MySQL database.

The hardware required for our application includes Android Smart phone and a desktop or laptop with browser and internet connection.

In our application Apriori plays an important role. We have considered six months order details of a canteen as an input to the Apriori algorithm and we obtain recommendations as shown in fig 4.1. The recommendations are the most frequently ordered food items, which the admin could use to update the menu and increase his profit.

V.   CONCLUSION

Even though the existing system uses certain technologies in their food ordering system, the customer queue is not managed properly. The system proposed in this project eliminates most of the manual work and has no issues regarding customer queue, as the food is ordered online through web application. The proposed system eliminates calculation errors of bills and also provides many facilities to the admin module which includes all the required analysis of orders, profit values and stock. The proposed system uses Apriori algorithm for providing recommendation to the customers. This also makes the system more efficient as the admin has a clear idea about which food item was ordered the most. This will help him provide a better menu for the customer which will result in increase in profit. The future enhancement of the proposed system could be adding online payment system.

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