Monthly Grocery Planner

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ABSTRACT

In this Paper an attempt has been made to implement a web based application to aid users to plan and organize their monthly shopping list and expenses. The proposed system Is designed keeping in mind the drawbacks of the existing systems. The system not only allows users to organize their monthly grocery shopping in a paper less manner, but also provides a brief analysis on which categories the user shops from, which items the user has missed from the monthly list and other useful data. This application can be used by all grocery shoppers to improve their shopping experience and to stick to a fix budget while shopping.

1 Introduction

Groceries remain an essential part of the purchasing behavior of a consumer and most of the grocery items are essential for livelihood. Grocery products sell all time irrespective of any economic circumstances [1]. It is required by every class in the society whether rich or poor. As grocery shopping is important in society's everyday life, consumers need to plan out their monthly grocery requirements. This will benefit the consumer in two ways. Firstly, it will allow the consumer to analyze their total expense on grocery items. And secondly, this will allow the consumer to focus on the nutrition value and check whether the consumer's monthly diet plan is balanced and good for their health.

The consumer often creates shopping lists to assist with shopping within a retail environment. Up to the present time people use traditional ways of carrying out these activities such as writing on a piece of paper [2] or memorizing items to be bought [3] which are not reliable and eventually leads to time and money loss. Often, consumers don't plan their shopping list while going to stores. This results in consumers either buying unnecessary items or missing out on the necessary ones. Shopping can be more efficient and beneficial to the consumer if they are less likely to forget an item to purchase while shopping and also if the consumer sticks to a monthly shopping plan. The consumer can organize their monthly grocery based on a few metrics that summarize their overall monthly expense on grocery items.

With this information into consideration, we envision an application that helps customers to experience grocery shopping seamlessly and orchestrate their monthly grocery.

2 Background

The everyday task of grocery shopping has been extensively studied in the consumer and retail research community. A survey has been conducted by Bassett R., Beagan B. and Chapman G. observing the connection between family household and grocery store [4]. Their findings include that most of the families create a shopping list while over half of them wrote a list and took it with them on their grocery trips whereas, some individuals maintain a mental list instead of a physical list. There were also a set which made use of a combination of a written list and a mental list and also a set of non-list members[7]. However, technologies have changed since the last decade and due to the extensive use of hand-held devices, consumers prefer not carrying around a piece of paper with their shopping list on it. Instead, it would be convenient for them to carry a list in the form of a digital copy saved on their mobile phones.

The consumer can use an application which runs on their mobile phone to store a collection of items that they would like to buy once they go for shopping in stores. Shekar et al. suggest a phone based grocery shopping application to provide ubiquitous access to a digitally managed grocery list [5]. This application was first of its kind and provided users with a digitally populated list of grocery items from which the consumer can select items to add to their list. Wu et al. implemented a mobile shopping assistant that recommends personalized store promotions based on the consumer's shopping list and categories [6]. However, these applications do not allow the consumer to scan receipts of shopping trips and does provide any analysis about the consumer's grocery shopping.

The purpose of this new application is to overcome the shortcomings in the existing systems to plan the monthly grocery shopping of consumers. We introduce a new web-based application that allows consumers to keep a track of their monthly grocery shopping in which the consumer can create a monthly list of items and add bills of shopping trips. The system then analyzes which items the consumer missed out from his shopping list, the monthly expense, which department the consumer spends their money on and other useful statistics that help the consumer to plan and organize their monthly grocery items.

3 System

In light of the previous research, our goal was to design a system which was better than the existing system and overcomes the disadvantages in previous systems. We created a web based application that can be used by users to create a shopping list and plan their monthly grocery shopping. The backend was designed using Flask and SQlite database was used to store the data. The front-end was designed using HTML, CSS and Javascript. The control flow can be explained in the following figures.

The homepage consists of a navigation bar which contains a log in button. In order to use the system it is necessary for all users to log into their accounts.

Figure 3.1: Home Page

Next, the users log into their accounts using their user name and password.

Figure 3.2: Login Page

If the user is not registered, he can register himself by creating an account. The password is securely stored using encryption in the database.

Figure 3.3: Create User Page

Once the users log into their account, They can see one vertical tab through which they can navigate through the various pages. The default open page is the Products page. The users can browse through a variety of products offered by the grocery store and add these products to their monthly lists. The user can also select the quantity of each product required per monthly basis. The user can update the quantity of a previously added product by selecting it again with the desired quantity.

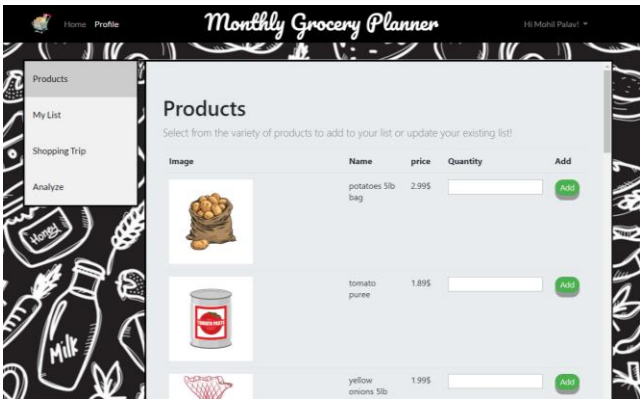

Figure 3.4: Products Page

Next, the users can view their monthly lists on My list tab. The users can also delete products if they do not require it.

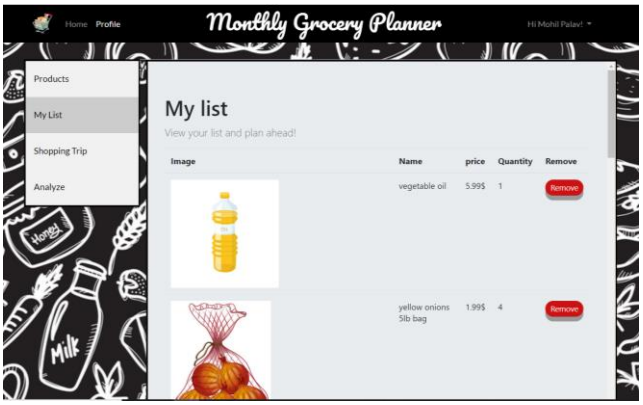

Figure 3.5: My list Page

The users can view their previous purchases with the help of their bill id.

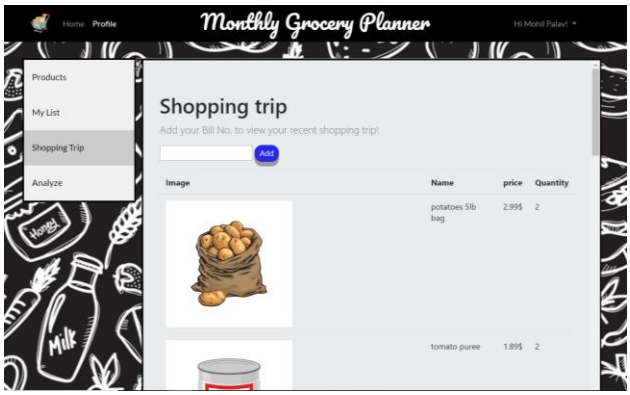

Figure 3.6: Shopping Trip Page

Finally, the users can see an analysis of their previous purchases. The analysis tab shows the products missed during shopping, extra products purchase during shopping and a brief analysis on where the user spends his money.

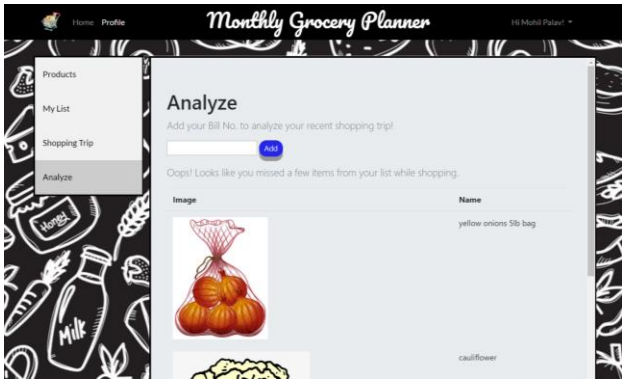

Figure 3.7 (a): Analyze Page showing the missed items

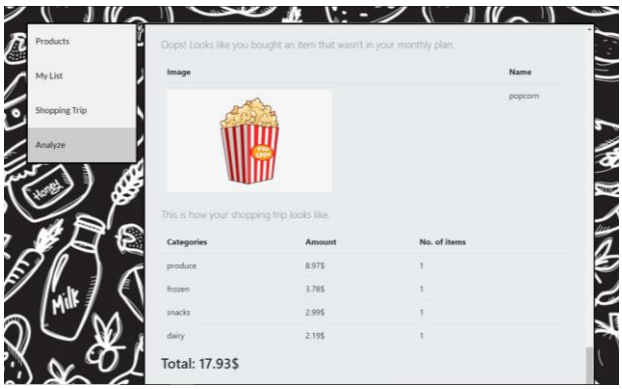

Figure 3.7 (b): Analyze Page showing the extra items and further analysis.

The above web application allows users to personalize their monthly grocery list and allows the user to add their previous purchases which has not been implemented in any previous systems[8]. Apart from this, the system also analyzes the users data which allows users to efficiently plan and organize their monthly shopping. The amount of money the user spends under every category is displayed along with the number of products in each category. This gives a broad idea to the users on which items they are spending their money on.

4 Discussion

The application uses minimal buttons and fields for the ease of use of the user. The user interface is very simple and can be easily understood by the user. This application can be used instead of using a physical list or memorizing the entire list like in traditional ways. This system can easily be integrated with any grocery application. However, this system can be made more intelligent. Various data analytics algorithms can be used to predict user shopping patterns, frequently brought items etc. Smart suggestions can be made to the user suggesting healthier or cheaper alternatives[10]. This user data can also be used by the grocery store to keep a track of their monthly inventory and to plan their own supplies. This system will be more efficient and useful if it was implemented using an application on a handheld device. The user interface can be improved by adding an efficient search box to browse through the grocery products and add a few online shopping features. Thus, to conclude the Monthly Grocery planner system provides an edge over traditional systems and includes a variety of features that are unique and useful.

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