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Designing an Expert System for Online Grocery Shopping Store

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ABSTRACT

In this digital era consumers prefer online shopping to save time. But in their busy schedules it can be time-consuming to choose items as per their requirements. The area of our project is to create a user friendly and easily available application for purchasing mechanism. This application will be easily available on the internet for users to download it and then install it. To start, offer only the most popular grocery items, like milk and bread, and as the business expands, so can your product line. The operating format for the app would be very easy to establish. Customers would simply log on to the app, select the items they wish to purchase, enter payment and shipping information and wait for their groceries. We propose the solution using an application designed on Android Operating System platform. We choose this platform base since Google's Android is one of the foremost reasons of this mobile revolution.

Keywords : Agrofresh, Online Grocery Store

I. INTRODUCTION

The term "Electronic commerce" (or e-Commerce) refers to the use of an electronic medium to carry out commercial transactions. Most of the time, it refers to the sale of products via Internet, but the term eCommerce also covers purchasing mechanisms via Internet.

A client who purchases on the Internet is called a cyber consumer. E-Commerce is not only limited to online sales, but also covers:

1. Preparation of estimates online
2. Consulting of users
3.Access plan to point of sales
4.Quality assurance
5.Online payment

MOTIVATION

"If shopper continue to value innovation that offer convenience and time-saving solutions they will have less and less direct interaction with the retailers and brands.

Gathering more customer data and using it to achieve long-term shopper loyalty will be critical for retailer and brands going forward. This will likely take the form of artificial intelligence using customer information to predict and fulfil shopper demand via automated delivery."

II. EXISTING SYSTEM

The existing system is an automated system. But it was found to be inefficient in meeting the growing demands of population.

- It is limited to a single system.
- It is less user-friendly.

- It is having lots of manual work (Manual system does not mean that you are working with pen and paper, it also include working on spread sheets and other simple software's).
- The present system is very less secure.
- It is unable to generate different kinds of report.
- User must go to shop and order products.
- It is difficult to identify the required product.
- Description of the product obtained only on manually.
- Accuracy not guaranteed.
- Not in reach of distant users.

III. PROPOSED SYSTEM

In proposed system the customer need not go to the shop for buying the products. Customer can order the product he wishes to buy through the application in his Smartphone. As per the requirement provided by the user, immediate service is provided because the owner's shop is nearby user's residence. This system is purely based on client usage. The development of the new system contains the following activities, which try to automate the entire process keeping in view of the database integration approach.

To debug the existing system, remove procedures those cause data redundancy, make navigational sequence proper. To provide information about audits on different level and also to reflect the current work status depending on organization/auditor or date. Required to build strong password mechanism.

- User friendliness is provided in the application with various controls.
- The system makes the overall project management much easier and flexible.
- It can be accessed over the Internet.
- Various classes have been used to provide file upload and mail features.
- There is no risk of data mismanagement at any level while the project development is under process.
- Report generation feature is provided using
- Crystal Reports to generate different kinds of reports like bar graphs, pie charts and table type charts etc.
- It provides high level of security using different protocols like https etc.

IV. OBJECTIVE AND METHODOLOGY

The scope of objective is very vast as it targets large no of people residing over the local area. The main objective for establishing an online presence are –

1. Promoting a service or product online.
2. Providing product support or customer service.

A. GENERAL CONCEPT OF THE SYSTEM

For grocery shopping, consumer preferences could be formed by combining three aspects, i.e., individual interest, product replenishment, and product promotion. Once the preferences can be precisely estimated, a corresponding recommendation technique is of high potential to be utilized in practical applications.

Firstly, a bipartite network is constructed based on purchasing histories of all users to estimate the individual interest. Note that consumers are likely to accept product recommendations that are similar to what they have bought before.

Also, it is observed that one is willing to accept recommendations from consumers of similar tastes. Thus, by introducing the random walk approach, how much a specific consumer likes a product can be generally estimated.

Secondly, most daily necessities are consumable and are targets of grocery shopping. Therefore, consumers may buy the same product repeatedly. This is regarded as "product replenishment." Note that consumable products normally are with a constant consumption rate. People then have to purchase them periodically. When something is going to be exhausted, the purchasing intent of a consumer becomes firm. In this work, we thus propose a statistical model to estimate this factor of product replenishment.

Finally, a most common strategy to increase the sales of a product is promotion. People always like to do their purchases at a reduced price.

Therefore, to consider the effect of product promotion in the recommendation system is necessary. Specifically, we model the degree of product promotion as well as the customer sensitivity of money saving to estimate the willingness for a consumer to buy a specific product.

B. DATABASE MAPPING

In simple words, data mapping is the process of mapping data fields from a source file to their related target fields. For example, in this the user will receive the otp then he will automatically generated to next page for their personal data filling and their they will be asked to enter their 'full name', 'address', 'landmark' are mapped to the relevant fields in a Delimited file, which is our database destination. Whereas depending on the number, schema, and primary keys and foreign keys of the relational databases data sources, database mappings can have a varying degree of complexity.
Data Mapping Techniques:

Although an essential step in any data management process, data mapping can be complex and time-consuming. The process of connecting data sources, building mappings for data transformation and integration, and validating the transformed data can take up significant developer resources, particularly when the entire process is done manually.

Semi-Automated Data Mapping--in our application we have used Semi-Automated Data Mapping technique because the process involves identifying two data objects that are semantically related and then building mappings between them. Once schema mapping has been done, Java code is generated to achieve the required data conversion tasks.

DATA MINING TOOL USED

Open-Source: In this admin opted an Open-source mapping tools that provide us a low-cost alternative to on-premise data mapping solutions. These tools work better for small businesses with lower data volumes and simpler use-cases.

Database Indexing

Indexing is a way to optimize the performance of a database by minimizing the number of disk accesses required when a query is processed. It is a data structure technique which is used to quickly locate and access the data in a database.Indexes are created using a few database columns.

The first column is the Search key that contains a copy of the primary key or candidate key of the table. These

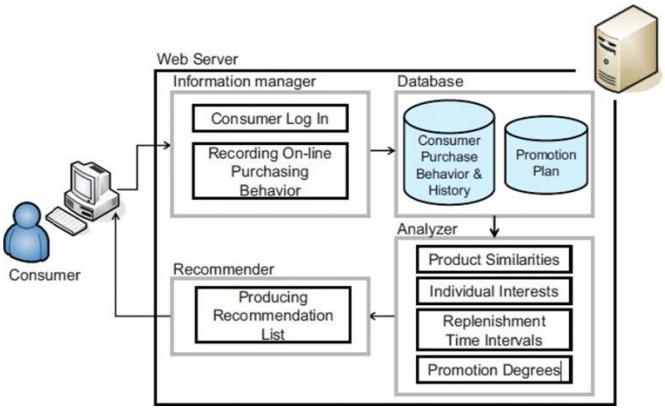
values are stored in sorted order so that the corresponding data can be accessed quickly. The data may or may not be stored in sorted order.

The second column is the Data Reference or Pointer which contains a set of pointers holding the address of the disk block where that particular key value can be found.

C. Recommendation System

The proposed scheme can be divided into four parts, including information manager, database, analyzer, and recommender. The functionalities of each part is illustrated as follows.

1. Information manager: This part is to build consumer profiles such as name,email id, address, etc. On the other hand, when the consumer logs in to purchase products, the information manager begins to record the consumer behavior.
2. Database: This part is to store all on-line purchasing behavior and purchase histories of a consumer. Also, offers of all the products are stored.
3. Analyzer: This part is to analyze database contents for obtaining product similarities, individual interests, replenishment time intervals, promotion degree so as to estimate consumer preferences. Admin uses these consumer preferences to comprehensively evaluate the needs of a consumer.
4. Recommender: This part is to produce a recommendation list for a specific consumer according to the analysis result. The recommendation list shows the products which are most likely to be purchased. In general, this list includes not only replenishment goods but also products on promotion.



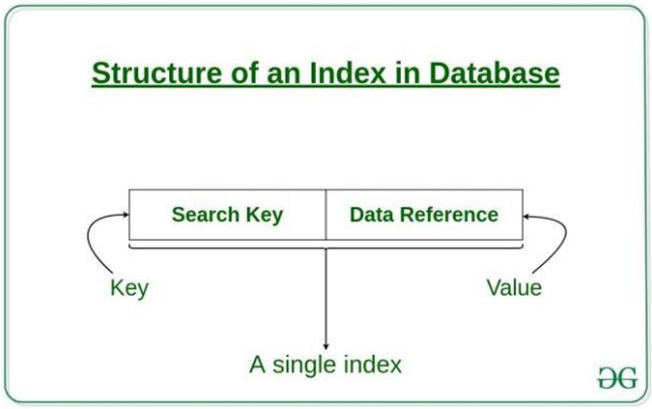
V. PROTOTYPING OF PROPOSED RECOMMENDATION SCHEME

In this work, admin develop a prototype of the proposed scheme to facilitate the empirical studies.
When the consumer starts a shopping session, the shopping basket is empty. Consumer preferences have no value. Subsequently, the consumer put the milk into shopping basket. The proposed scheme computes preferences based on the current basket and the purchase histories. Thus, it can be seen that milk and toast are most frequently purchased together.

The indexing has various attributes:
Access Types: This refers to the type of access such as value-based search, range access, etc.
Access Time: It refers to the time needed to find particular data element or set of elements.
Insertion Time: It refers to the time taken to find the appropriate space and insert a new data.

Deletion Time: Time taken to find an item and delete it as well as update the index structure.

Space Overhead: It refers to the additional space required by the index.



In this admin uses Non-clustered Indexing because a non-clustered index just tells the admin where the data lies, i.e. it gives admin a list of virtual pointers or references to the location where the data is actually stored. Data is not physically stored in the order of the index.

Instead, data is present in leaf nodes. For eg. the contents page of a book. Each entry gives us the page number or location of the information stored. The actual data here(information on each page of the book) is not organized but admin has an ordered reference(contents page) to where the data points actually lie can have only dense ordering in the non-clustered index as sparse ordering is not possible because data is not physically organized accordingly.
The contents page of the array. Each entry gives admin the location of the product stored . The actual data here is not organized but admin has an ordered reference(contents array)to where the data points actually lie.

VI. CONCLUSION

Due to fast moving lifestyle, online shopping has been growing drastically in India. With developed internet penetration, increasing adoption of devices like smartphones, tablets, and laptops, and access to the Internet and the shift in buying behavior among the consumers has contributed to the rapid growth of the online consumer base. The increase of online shopping has become a trendy way for consumers to shop over internet.

Online grocery services meet a number of consumer needs including providing products for niche markets or helping the time starved consumer shop for the mundane weekly groceries.

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