Effective Utilization of Coupons by using Full Stack

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Abstract

The Coupon Management System is a software solution designed to benefit the users by distributing the coupons. The Coupon distribution System offers a user-friendly interface that provides coupons for the consumer and also it reaches out to businesses to the new users. By eliminating the need for manual coupon handling and processing, the system minimizes administrative overhead and human errors, allowing organizations to focus on core activities and strategic initiatives.

Keywords—API Integration, Database Schema Design, Backend Development, Frontend Interface, User Authentication & RESTful Services.

1. Introduction

The Effective Utilization of Coupons by using Full stack development aims to provide businesses with a comprehensive platform to provide new or more customers for the businesses. By leveraging the power of web technologies, this system enables efficient coupon distribution, accurate tracking of coupon usage, and in-depth analysis of campaign performance. The coupon Management System offers businesses a convenient and effective solution to enhance their coupon marketing strategies. The primary objectives of this paper are to present the development process of the coupon Management System, demonstrate its key features and functionalities, and evaluate its effectiveness in improving coupon distribution and tracking processes. Furthermore, we will discuss the potential implications of this system for businesses, marketing campaigns, and consumer behavior.

Full Stack Web Development encompasses a comprehensive range of technologies and skills required to build robust web applications, from the frontend user interfaces to the backend server infrastructure. It empowers businesses to create coupon management systems that are not only user-friendly but also highly customizable. With Full Stack Web Development, companies can bebenefitted by getting more consumers for their products, ensuring a seamless user experience for both customers and administrators. Moreover, the framework enables the incorporation of cutting-edge features like real-time coupon updates and personalized recommendations, enhancing the effectiveness of coupon campaigns.

One of the key advantages of Full Stack Web Development in coupon utilization is its ability to facilitate seamless coupon distribution across various digital channels. Businesses can deploy coupons through websites, mobile web apps, and social media platforms, reaching their target audience more effectively. The backend capabilities of Full Stack Development ensure that coupons are managed efficiently, tracking their usage, setting expiration dates, and applying restrictions as needed. This level of control not only prevents coupon abuse but also enables businesses to tailor their offerings to specific customer segments.

In India back in 2014, after the demonetization, usage of hard cash was reduced resulting in various problems like

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long queues in front of the banks and ATMs. So as a solution, Our Prime minister Sir Narendra Modi brought a new application called BHIM UPI which makes cash digital hence reducing the use of hand cash. So there are new variants for this BHIM but still use that same UPI in their applications named Phonepe & Google Pay. A competition has been created among the newly arrived various UPI applications. To win the competition they often came up with ideas and one such idea was introducing coupons to the users. The sole idea of coupons was to attract users to use their UPI applications but here there arose a problem of coupon expiration that had to be redeemed before they get expired. Users will be receiving coupons that are not very useful for them but they can be used by the users who need them or might be interested in using those coupons.

This interface is designed in such a way that the consumers can upload their coupons which also attracts new users across the internet. This strategy is based on thewastage of coupons over the user's UPI applications. By using this interface users can browse coupons that are available on our website and alsothey can upload coupons of their individual from their applications. This work aims on building a safe and secure platform to host these coupons and distribute them among a wide range of users over the internet. Our project is not just focusing on the coupons and their users but also on the organizations that provide these coupons help these organizations get new users and also they can make the old existing customers still sustain or rely on their company or organization.

This was done to provide secure data sharing across this website and also organizations can reach out to the new users. Users also get new businesses to use in or over their daily routine. Inconclusion, this Project mainly aims or focuses on the coupons and the organizations that provide these astounding coupons in a secure platform & more user-friendly.

2.Literature Survey

As the popularity of e-commerce grows, an electronic coupon (e-coupon) is widely used due to its convenience and portability. In most e-coupon services, the information of e-coupons is managed on a centralized server. However, e-coupon services are often vulnerable to security issues because of centralization. For example, when the e-coupon information which is stored in a centralized e-coupon server is forged, it becomes difficult to match the user and the e-coupon's owner, and an expired e-coupon can be used repetitively (i.e., double-spending). To handle this issue, we propose a new e-coupon service by exploiting a blockchain system to improve the security of the service. To do this, we first design a server to enable the e-coupon service and communicate with the blockchain system. Second, we devise a smart contract on the blockchain system to provide integrity of the e-coupon business logic and the e-coupon's information. We implemented the proposed service on an Ethereum-based blockchain system. The experimental results show that our proposed service improves higher security with a minor performance overhead compared with an existing e-coupon service.[1]

Although the e-coupon market evolves and an e-coupon provides several benefits, there are some challenges. For easy management, most e-coupon services manage e-coupon information in a centralized system. When an e-coupon is used, the e-coupon is validated by using the information in the centralized database system. However, the information can be easily manipulated by an administrator due to the centralization nature so that there can be a forgery and fraudulent usage of an e-coupon. For example, an e-coupon may be redeemed multiple times (double spending), or a malicious attacker may manipulate the discount rate. In the United States, PennLive estimates real e-coupon crime costs to be around $300-$600 million dollars per year.[3]

The electronic nature of e-coupons not only provides coupon providers, such as sellers and marketers, with an efficient way of management but is also convenient for customers. For example, since an e-coupon is provided by digital code, e-coupon providers can distribute the e-coupon to the customers online and easily collect statistics such as downloading and using e-coupons. Also, customers can easily manage the e-coupons via their mobile devices or PCs.

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Because of these advantages of e-coupons, Global Mobile Coupons Market 2016-2020 reports that the global mobile coupon market will grow to a compound annual growth rate (CAGR) of 73.14% over 2016-2020 [5].

3.   System Model

The existing system for coupon management offers deals among the companies in their work and they do not offer the deals or coupons across the consumers, They do not offer a service that allows the user to create coupons for their businesses, but instead they just grab the deals from the open businesses and include them in their site. Limited Distribution Channels: Coupon distribution channels are very limited in the existing work as they only display coupons from very few existing businesses. As they only provide the deals from the popularly known sites and redirect them to those respective couponsites.Manual Tracking: The existing system does not allow the users of their site to track coupon usage. They Do not have a service that allows users to track their coupons&it's for the good.Despite the advances made in the field, problemsremain. Theintrinsiccomplexity of telecomdata, privacyconcerns, andthe necessity for interpretability in predictive models remainhot topics in academic and corporate circles. By expanding onprevious studies, we hope to improve our understanding ofcustomerchurnpredictioninthetelecombusiness.Wehopetoaddnuancedinsightsandpracticalapproachesgearedtothe unique issues presented by the telecom sector by focusingprimarilyontheRandomForestandLogisticRegressionalgorithms.

4.   Experimental System

This was proposedas a unique method of sharing the coupons among the users or consumers with the strong encrypted and secured channel. We offer the coupon codes within our site with no third-party blocks like advertisements nor insecure pop-ups, re-directs and infamous surveys. The upcoming gen will be having the over-rated technology which is now mostly under-rated. So, the sole aim of our renewing work is to get adapted to that technology and make easy for the consumers to make their purchases online. This way the sales rate may go up-high and hence increases the GDP (Gross Domestic Product)As the online purchases increases the demand for the coupons might also be increased, this makes the coupon usage more efficient and increases the coupon production or generation. So, this way our coupon management system is efficient and never falling web service.

4.1   Hashing Algorithm

Hash is the practice of making an input or a so called 'message' work in order to generate what are called and considered a fixed size string of characters often represented as the hash value. This is the producing of a hash code or digest, based on the function used and that for each value input there are separate results. Hashing is used as a rule in numerous business sectors, for example, PC science and encryption codes that has Invested usefulness with all them being confirmation of data consistency

```php
    7
    8    if ($_SERVER['REQUEST_METHOD'] === 'POST') {
    9        $name = $_POST['name'];
   10        $username = $_POST['username'];
   11        $password = password_hash($_POST['password'], PASSWORD_BCRYPT, ['cost' => 12]);
   12        $number = $_POST['number'];
   13        $email = $_POST['email'];
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Fig: No : 4.1 Hashing Code Line

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```php
15        if ($stmt_result->num_rows > 0) {
16            $data = $stmt_result->fetch_assoc();
17            if (password_verify($password, $data['password'])) {
18                $_SESSION['logged_in'] = true;
19                $_SESSION['username'] = $username;
```

Fig:No:4.2 De-hashing Code Line

Fig: No: 4.3 Flow chart of coupon system

A flowchart is a graphical representation of a process or workflow, often used to visualize, document, or improve processes in various fields.
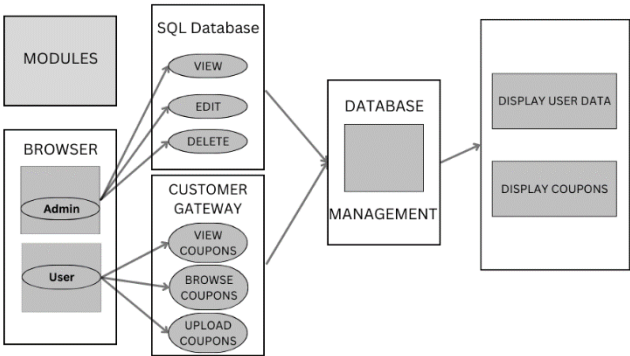
4.2 System Architecture

Fig: No: 4.4 Architecture Diagram

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It is possible that this module an component of the graphical user interface, through which users can operate in the system via web browser.This module is target the system administrator who can manage the whole system, including setting up setting profiles and managing users databases development teams etc.The SOPs detail the procedures that are followed during a given period of time by standard project users who can view and edit their own data, browse coupons; or upload coupons) to conduct common user operations such as viewing and editing, browsing coupon codes and so on.An SQL Database is the database management system used to maintain and store the data packed in this system.This refers to a particular segment or section responsible for dealing with the management of customer information data including on how to input new client accounts that need updating, information about removing customers.This is an "intermediate" component that serves as a link between the system and external ones, other systems or even services. It is likely to undertake roles like authentication, authorization and data transfers.These are retrieval or display methods that transfer and present the user's data or coupons above to be accessed from a database.This is a database administration feature, something to the tune that setup tables, relationship between them and speed it. The architecture in general is aimed to create a program that will offer an inventory of the customer's information and coupons where there are cloud computing, mobility availability, secured data storage, efficient use of unstructured data, interoperability through system integration and scalable technologies.

5. Results and Discussions

First, we suggest that our customers learn something about us when landing on pages of any of our websites and even check out samples they can use to know almost everything while they are visiting there. For the test case, we expect that there is a good button placed on the top right corner with sign-up phrase. It would take them to our site login or registration where they can sign up and enter their required details. At the registration stage accordingly their password might be in case therefore they are required to design a security question and answer this could help them with getting back. In case a user would attempt to enter on the site, he or she will be supplied directly towards our main internet site that exhibits all coupons which one might consider and take care of their charge account settings. Further, in this regard it is also possible to upload the filers via coupon with smartphones.
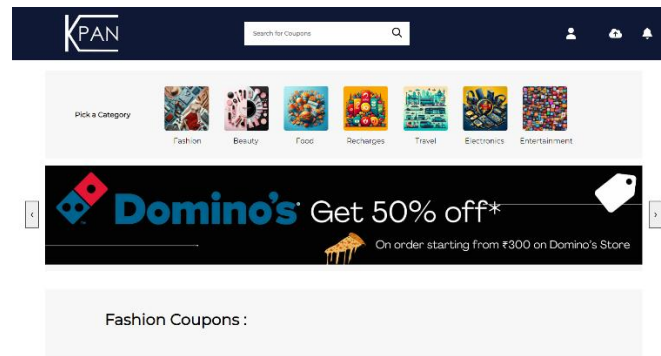

Fig: No:5.1Register

Fig: No:5.2Login
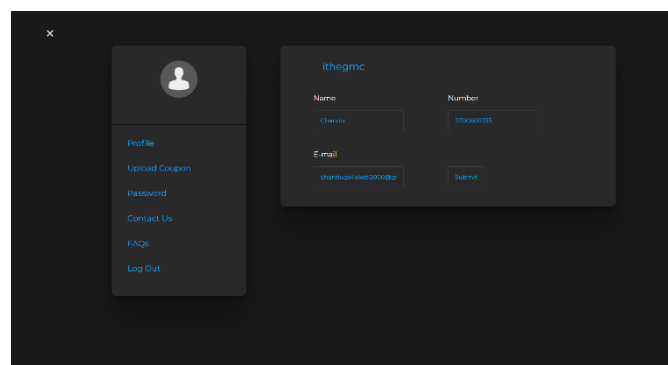
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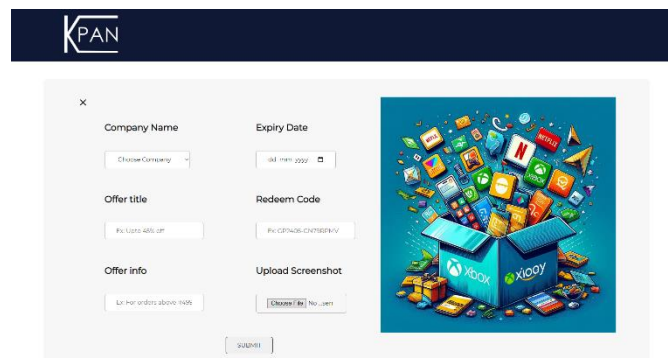**Fig: No:5.3Interface**

Fig: No:5.4User profile

Fig: No:5.5Upload page

Conclusion

To sum up, modern strategies of coupon management focusing on reducing labor and administration costs, as well as providing accessible user interface for employees make far better to officially conduct promotional activities within an organization in comparison with legacy approaches. This system is a tactical tool which aims to serve business entities in order to ensure effective coupon administration.

That is why the system of coupon management overcomes challenges to help businesses maintain the credibility of their promotional campaigns and increases knowledge concerning customer behavior. Thus, this data-based approach allows businesses to perfect marketing techniques, adapt promotions to particular target groups and in the endestablish

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sustainable returns for cost practices. In this vein, the effective integration and relatively user-friendly interface contribute to a positive client encountering the coupon management system. The availability in different channels and platforms encourages a broader reach of the audience putting their trust on an existing brand which contributes to satisfaction. On the other hand, businesses may benefit due to loyalty from customers that rewarded by customized offer they carryout on their side and hence investing in couponing is not a loss but an investment. However, in the digital era, where rapid changes become a common thing and decisions are based on data processing, coupon management system becomes one of the most important tools employed by modern marketers. Its scalability and adaptability make it an ideal solution for any businesses accompanying all size and genres. In this fastsetting world where consumers are becoming more demanding by the day and if there happens to be emerging technologies, then coupon management system is still an important tool for all those businesses that wish to maintain relevance in their markets without any need for generation of new coupons.

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