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Price Comparison System for Online Shopping

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ABSTRACT: Price4You is a price comparison system designed to help consumers make informed purchasing decisions and save money on various goods and services online. With the growing preference for online shopping due to its time-saving nature, it eliminates the need to visit multiple physical stores to survey prices. The system is now integrating food and medical product comparison, providing a comprehensive platform for shoppers to find the best deals and make informed choices for their needs. By leveraging web crawlers and web scraping techniques, detailed information on food and medical products will be sourced from various providers. This expanded project offers a one-stop solution for purchasing products at competitive prices, empowering consumers to save time, effort, and money while enjoying the convenience of online shopping.

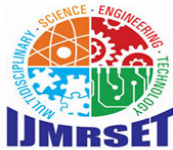
I.INTRODUCTION

The project aims to create an innovative online platform for product comparisons among various online retailers, focusing on e-commerce goods, pharmaceuticals, and food items. The platform aims to provide well-informed judgments to food enthusiasts and individuals seeking medical supplies. It meticulously compares pricing, quality, and availability from numerous retailers, ensuring users have access to all necessary information in one convenient location. This feature is particularly beneficial when comparing pricing and availability of food items and prescription medications. The platform is equipped with advanced search functionality, reliable data storage capabilities, and efficient web scraping modules. These modules enable users to swiftly search for specific goods and compare prices and features offered by various online retailers operating within the food and prescription medicine categories. The platform sets itself apart from competitors by focusing on a unique niche and catering to a broader spectrum of user needs and interests. By combining web crawling and web scraping techniques, the platform allows users to effectively search for products, query a local database for results, and access to all necessary information in one convenient location. This feature is particularly beneficial when comparing pricing and availability of food items and prescription medications. The platform sets itself apart from competitors by focusing on a unique niche and catering to a broader spectrum of user needs and interests. By combining web crawling and web scraping techniques, the platform allows users to effectively search for products, query a local database for results, and seamlessly compare prices and details from various e-commerce platforms.

II. STATE OF ART

A. Literature Review

Y.Thushara [1] Analyzed and also identified whether Google Analytics can be considered as a state-of-the art alternative to collect data for web usage mining. The principle is to cluster customer segments by using automatic discovery and analysis of patterns in E-Commerce website which input data comes from web log of various e-commerce websites. The authors analyzed one of the leading E-Commerce Software (OPENCART) to track the information of the web users. The authors implement into the Google Analytics Tool for the report of traffic information of the users.



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Jawahire Nakash [2] E-commerce is globally increasing business with increasing revenues every year manifold times. This is simple indication of more people moving online for shopping. They have developed many strategies by carefully analyzing the behavior of customers and overcoming the risk involved in online transactions to attract more business and participation from people. The Real Time Product analysis using data mining enables the buyers to compare products from different. Then comparison among products of different E-commerce websites is made by using techniques such as inverted indexing. This way the paper aims to provide a solution which grants power in the hands of the users to purchase genuine products at genuine deal and saving user's time, money and efforts

Arti[3] E-commerce is all about carrying out business on the Web. It is about carrying out transactions, essentially buying and selling products and services by consumers and businesses respectively, on the web. Web is one of the largest sources of information, collection of many files stored in different web servers and its size is also growing rapidly. E-Commerce not only keep your business up and running but also make it tough to stand in the competitive world of e-business. E-commerce has provided a cost efficient and effective way of doing business in the web. Web mining is the application of data mining techniques to discover and extract useful and interesting information from the Web.

III. METHODOLOGY

A. Research Methodology

Stage 1: Project Planning This is the stage where the problem related to the project is identified and the significance of the study is determined. The objective and also scope of study are outlined and the feasibility of the project work is ensured to be developed within the time frame given. The solution to the problem statement is studied and the types of system to be develop and tools used for developing the system are also identified through literature reviews.

Stage 2: Data Gathering and Analysis Series of studies has been performed to gain further knowledge on the energy and electricity consumption. Also, readings was done to get better understanding on what comparison site is all about, how it helps people to solve problem before buying home groceries product, and example of existing comparison sites to check on the competitors. The data regarding previous researches are gained from research papers written by scholars and have been explained in details in the literature review section earlier. Meanwhile the data regarding consumers were obtained through survey and interview that made online as well as meeting the respondents (shop owners in Perak's area) face to face.

Stage 3: Research on any Existing Similar Systems Next is the study performed to check if any similar system exists. The main objective of doing research on similar existing system is to know how it works, what concept is being applied in the system, what is being computed by the system and how the system helps solving the problem.

Stage 4: Drafting the Main Components of the System After the research on similar existing systems, the next step needed is to identify what will be the main component that made up the system to be developed. In order for the visitors of this website to use it services, they have to register with their basic information such as name, email, etc. The registered users will be subscribed automatically to this website's newsletter. The users shall be able to choose product and related information will be displayed. Other than that, users may add favorite products into their profile so the latest price for the favorite items will be sent personally to the user other than daily mail regarding the promotion for the day.

Therefore user will be able to get directly the information that they are interested in. The main components of this system are:

- Database to store products and users' information
- User able to search the product that they are interested in

Stage 5: Develop System Architecture The next phase to develop the architecture on how the system will works. This will give the clear picture and understanding on how the system will operate and to avoid developing a system that does not solving the problem it intended to solve.



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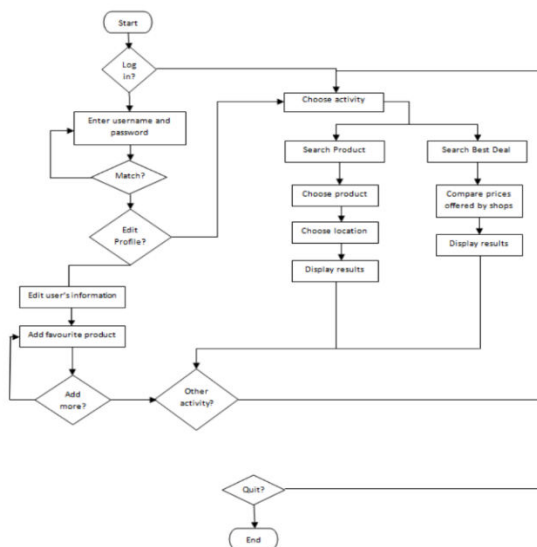


Figure.1: Block Diagram of the Application.

1. Registered Users:

The website requires visitors to sign up before they can use the functions in the website. The registered users will have personal account to this website and they may login using their username and password. The actions that registered users can do with this websites are;

- Login to the website
- Able to edit profile
- Newsletter subscription
- Search groceries products
- View promotion and sales
- Compare prices

2. Admin:

The admin of this website will be responsible to maintain both website and the database. The roles of admin for this website are;

- Receive price lists from sellers
- Update database regularly
- Maintenance of website content and functionality
- Maintain web servers and website
- Manage advertisements regarding sales and promotion from the sellers
- Write report and analyze website user statistics

3. Sellers/Retailers:

Any parties that would like to join and become partner with Price.com. Their roles are to submit the price lists to the admin of Price4You.com. They are also responsible to inform the admin if they want to advertise the new products and also if there are sales and promotion being held at the shop.

Stage 6: Sketching the Interface of the System Once all the functions performed by the system are identified, the last step is to design the interface of the system. Developing the interface of the system will make it easier for the system to be developed during the development phase.



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B. Project Development Methodology

Considering the time constraints to complete this project on time, the most suitable methodology is the Rapid Application Development (RAD) method. There is a set of management techniques that are optimized for speed in RAD which are;

- Prototyping - which is an approach based on creating a demonstrable result as early as possible and do refinements based on how the prototype works, whether it returns the desired result or not.
- Iteration – which is the incremental development based on refinement.

This project requires a rapid prototyping which will involve methods like iterative development and software prototyping. This methodology is also chosen due to the possibility if there might be functionality and performance compromising so the process of fixing the problems will be done promptly. The benefits of using this methodology is it allows any changes to be made during the development phase if there is a need to review and recheck at any other phase of project development. This is important as it provides flexibility throughout completing the project such as debugging process. There are four main phases in RAD which are analysis and quick design, prototyping cycles, testing and implementation phase.

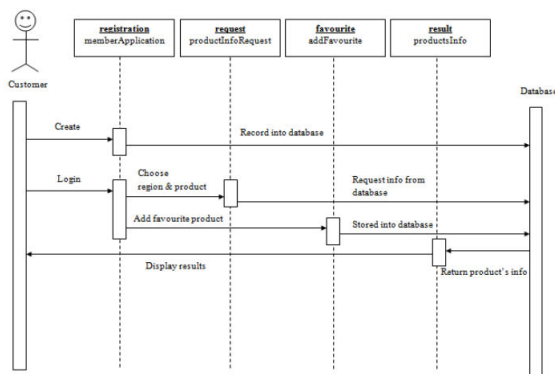


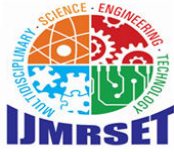
Figure.2: Use case Diagram

1. Design Analysis:

This phase has been covered up during the FYPI whereby the process of defining goals into defined functions and operation of the intended web system were being done. The designs of the website including its layout, process diagrams and other documentations also included in this phase. Basic layout for Price4You.com has four main menus which are “About Us”- this page will basically have the information regarding the website and its functionality. Next is “Let’s Make a Deal” page that will bring users to the website’s main function which is users will be able to search the home groceries product that after users have chosen which region that the users wanted to know. Then the website will check on the database and retrieve the information needed and it will give return results of the shops offering the products along with the location of the shops sorted according to the cheapest price. Users also able to see the promotion offered by the shops by choosing the tab ‘On Sale’. It will show the product, shop’s name, shop’s location and the promotion price. However, this function requires member’s login therefore users need to create an account first and login to this website before they can use the website’s functions. “Testimonial” page will show the comments from the users that are satisfied with the service provided by this website meanwhile the “Contact Us” page will provide contact information of the website’s admin in order for users who want to give further enquiries regarding the system as well as for the sellers that want to join in advertising with Price4you.com.

2. Prototyping Development:

This phase consists of 3 main categories namely; build, demonstrate and refine. These 3 steps are performed in cycle order, where it starts with building the system. The development of the system began and is performed part by part. The website was developed starting from the HTML according to the designated layout for its main interface. Then, the



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HTML will be connected with PHP language and the MySQL as the database to store all the information especially the products' information. Each completed part is then demonstrated to check for its functionality. The results should be matched with the expected results whereby the information will be filtered according to the location chosen by users and it needs to be sorted according to its price with the cheapest will be at the top. If there are any requirements or new functionality being identified, the system will be refined, where the building process will start again from where it has initially completed. These 3 steps cycles after one another until its functionality achieve satisfaction.

3. Testing Phase:

This phase checks for errors, bugs and functionality of the website. There are five types of testing which are; regression test, internal testing, unit testing, application testing and stress testing. Internal testing get the every function or component being tested which also called as white-box testing because all details are visible to the test. Meanwhile unit testing tests the interaction of many functions but impound the test within one unit which also known as blackbox testing because it focused on the details of the interface that visible to the test. Next is the application testing that deals with the entire system. The project is ready for implementation after pass all of these tests.

4. Implementation Phase:

After all the testing performed is completed and passed, the system is ready for the implementation. The PriceWar.com has received a positive response and will be considered to be used soon. This is the final phase of the system development and hence, the system is expected to be fully functioning as it intended for.

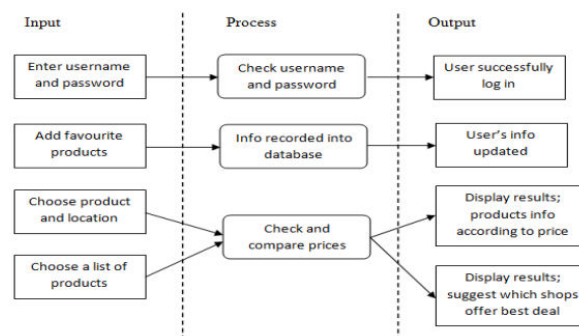


Figure.3: IPO DIAGRAM

IV. RESULT AND DISCUSSION

Our online product comparison website offers a wide range of products, catering to food enthusiasts and medical supplies users. We provide educated judgments, price comparisons, quality assessments, and availability information to simplify the buying experience. We must navigate regulatory compliance, ensure data accuracy, prioritize security, maintain content quality, establish a viable monetization strategy, educate users on the platform's limitations, and offer responsive customer support. Our platform evolves to meet user needs, focusing on regulatory compliance, data accuracy, security, content quality, and user education. By continually refining our services, we aim to become a trusted destination for foodies and those seeking critical medical supplies.



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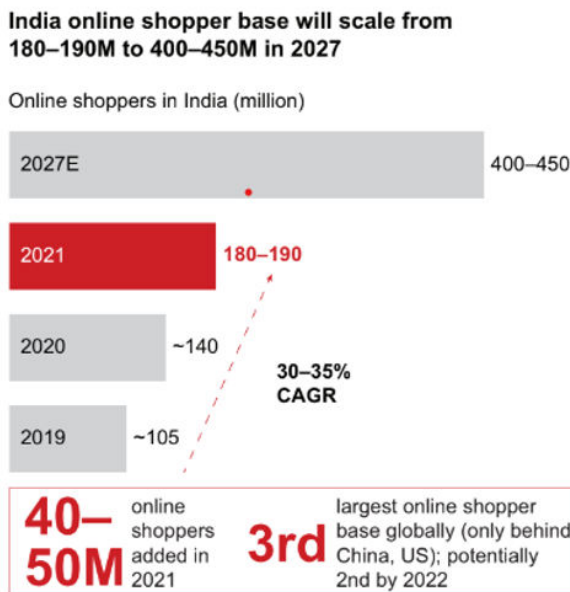


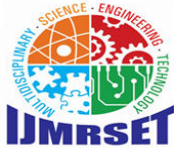
Figure.4: Estimated Online Shoppers in India

V. CONCLUSION

The web-based product comparison system uses web mining to assist users in making informed online shopping decisions. It helps users analyze and compare prices across various e-commerce websites, enabling them to identify the lowest price for a product. The platform offers a better understanding of the pricing landscape, allowing users to make informed choices. It also allows users to compare products with similar specifications within the same category, saving time and effort. This streamlines the product comparison process, allowing users to make more efficient purchases. The website consolidates strategies, best offers, and promotions from major online stores, simplifying the shopping experience by providing a comprehensive view of available deals. This allows users to confidently make purchases online, knowing they have access to a wide range of options and the most advantageous offers.

VI. FUTURE WORK

The platform incorporates advanced machine learning algorithms that analyze users' browsing and purchase history to deliver hyper-personalized product recommendations. This not only enhances the overall user experience but also encourages repeat visits and promotes customer loyalty. Furthermore, the platform offers an array of enhanced filtering and sorting options, enabling users to refine their searches based on specific criteria. Users can now filter their search results based on factors such as user reviews, shipping options, and seller ratings, ensuring that they find exactly what they are looking for. In addition to this, the platform has successfully implemented AI-powered chatbots that provide real-time assistance to users with any inquiries they may have. Users can now receive immediate help and guidance on a wide range of topics from these intelligent virtual assistants. To further assist users in making informed decisions, the platform also offers comprehensive data analytics and insights. This includes access to historical price data and product popularity, allowing users to analyze trends and make better purchasing decisions. Finally, the integration of voice search capabilities and virtual assistants has revolutionized the way users interact with the platform. Users can now search for products and compare prices effortlessly using simple voice commands, making the shopping experience more convenient and user-friendly.



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