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“Check it” Application: QR-based Complaint – Help Disk based application for protecting the consumer from the merchant raising the real price of the commodity

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Abstract

An application to protect consumers from exploitation by merchants
The project aims to help community members verify the price of products in order to limit the exploitation of sellers for selling at an unreal price for the product, and to help deliver the complaint to the competent authorities, such as the Consumer Protection Authority, in this regard, and many more features are being discussed to be added.
This done by using the barcode system to capture the QR of the product and compare it with the seller’s invoice price to check it.
From here, it tracks the price of the product and shows the price difference to the customer.
From here, a complaint is made and the ‘Help Desk’ is opened with a ticket system. There is a direct complaint in case of importance or urgency.

Keywords: *check it, QR system, barcode, products, and real price, help disk, consumer protection, Reliability, Accuracy, invoice*

1-introdution:

In today's marketplace, consumers often face the challenge of being exploited by greedy merchants who engage in unfair pricing practices. These practices can include selling products at exorbitantly high prices or misleading customers about the true value of a product. To safeguard consumer rights and promote fair trade, it is crucial to develop effective mechanisms that protect consumers from such exploitation.

This research project focuses on developing an application aimed at protecting consumers from exploitation by greedy merchants. The application's primary goal is to help community members verify product prices and prevent sellers from charging unrealistically high prices. It also aims to facilitate the reporting of complaints to relevant authorities, such as the Consumer Protection Authority. By using barcode scanning technology, the application enables users to compare the scanned QR code with the seller's invoice price, detecting any discrepancies. Users can then file complaints through a ‘HELP DESK’ ticket system and escalate urgent matters directly. The application's development holds the potential to contribute to fair trade practices and provide valuable data for policymakers and regulatory bodies

The core functionality of the application is centered around the use of a barcode system, which allows users to capture the product's QR code and compare it with the seller's invoice price. By leveraging this technology, consumers can accurately track the price of a product and identify any discrepancies between the actual price and what the seller claims.

Once a price difference is detected, the application provides users with the option to file a complaint. The application also features a "Help Desk" equipped with a ticket system, ensuring that users can easily communicate their concerns and receive timely assistance. In urgent or critical cases, users have the ability to escalate their complaints directly through the application.

The application's potential impact extends beyond individual consumer protection. By aggregating data on price discrepancies and unfair practices, it can generate valuable insights for policymakers and regulatory bodies. This information can inform the development of policies and regulations aimed at curbing exploitative practices in the marketplace, ultimately fostering a more equitable and consumer-friendly business environment.

In conclusion, the development of an application to protect consumers from exploitation by greedy merchants addresses a pressing issue in today's marketplace. By empowering consumers to verify prices, file complaints, and seek assistance,

When developing a Flutter application, you have the flexibility to choose and implement various algorithms based on your specific requirements and use cases. Flutter supports the use of different programming paradigms, including imperative, declarative, and reactive approaches, allowing you to utilize algorithms that best suit your application's needs.

Here are some common algorithms that you may encounter or consider when developing a Flutter mobile application:

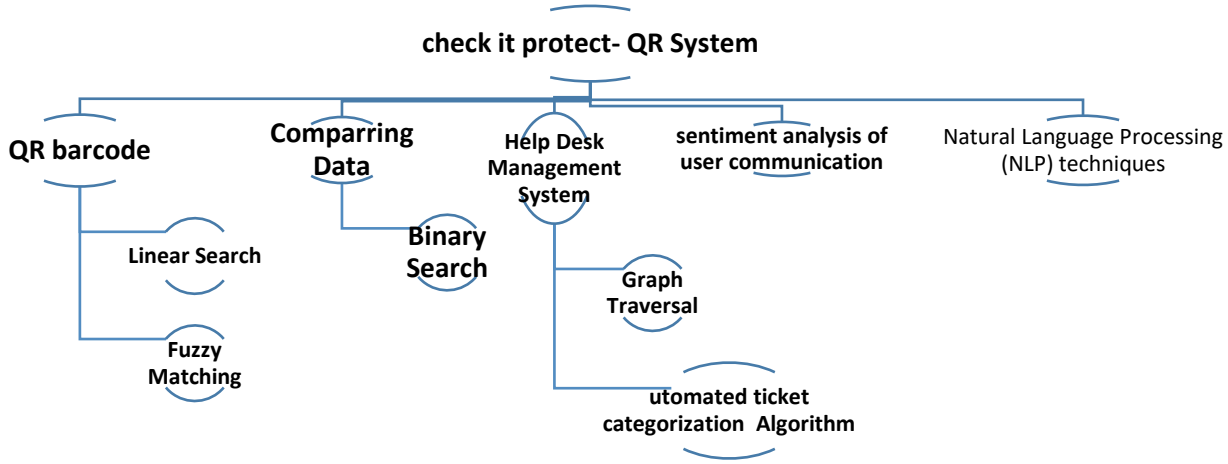
Sorting Algorithms: Flutter applications often deal with lists of data, and sorting algorithms such as Merge Sort, Quick Sort, or Bubble Sort can be employed to efficiently sort and organize data for display.

Search Algorithms: If your application involves searching for specific items or performing text-based searches, algorithms like Binary Search or Linear Search can help you retrieve and filter data efficiently.

Graph Algorithms: If your application involves working with graphs or networks, algorithms like Depth-First Search (DFS) or Breadth-First Search (BFS) can be applied to traverse and analyze graph structures.

Encryption/Decryption Algorithms: If your application deals with secure data transmission or storage, encryption algorithms like Advanced Encryption Standard (AES) or Rivest Cipher (RSA) can be implemented to protect sensitive information.

Machine Learning Algorithms: Flutter allows integration with machine learning libraries, enabling the utilization of algorithms such as Linear Regression, Support Vector Machines (SVM), or Neural Networks for tasks like data analysis, pattern recognition, or predictive modeling.



Related Works:

a related system is a mobile application developed by a consumer protection organization. The application allows users to scan barcodes, compare prices, and report cases of unfair pricing. It also provides a platform for users to communicate their concerns and seek assistance from the organization's support team.

Improvements and Good Practices:

User-Friendly Interface: Ensure that your application has an intuitive and user-friendly interface that is easy to navigate. Use clear labels, icons, and instructions to guide users through the barcode scanning and price comparison process.

Data Accuracy and Reliability: Implement robust mechanisms to ensure the accuracy and reliability of the stored product data. Regularly update and validate the data to reflect current prices and product information. Consider integrating with trusted and verified data sources.

Security and Privacy: Implement strong security measures to protect user data, especially when handling sensitive information such as personal details or transaction records. Use encryption algorithms to secure data transmission and storage. Adhere to privacy regulations and obtain user consent for data collection and usage.

Performance Optimization: Optimize the barcode scanning and comparison algorithms to ensure fast and efficient processing. Consider caching frequently accessed data to reduce response times. Perform regular performance testing and optimization to provide a smooth user experience.

Feedback and Support Mechanisms:

Incorporate feedback mechanisms within the application to gather user suggestions, bug reports, and other valuable insights. Provide or consumer protection agencies. Seek their guidance and collaborate on integrating tracing functionalities to ensure compliance with regulations and legal requirements.

User Consent and Data Sharing: Obtain explicit user consent for data sharing with government entities for tracing purposes. Clearly communicate the purpose, benefits, and safeguards associated with the tracing feature to gain user trust and participation.

Tracing Mechanism: Implement a tracing mechanism within your application that allows government entities to access relevant data when necessary. This can involve securely sharing transaction details, barcode scans, and complaint history with authorized personnel.

Anonymization and Data Protection: Implement appropriate measures to ensure user privacy and data protection during the tracing process. Use anonymization techniques to remove personally identifiable information wherever possible, while still providing valuable insights to the authorities.

Transparency and Accountability: Maintain transparency by clearly communicating to users the extent and limitations of the governmental tracing feature. Provide mechanisms for users to review and manage their data sharing preferences. to consult legal experts and adhere to local laws and regulations when implementing governmental tracing features. Regularly review and update your system to align with evolving regulations and security best practices.

By incorporating these improvements and adding a governmental tracing feature, your system can enhance consumer protection, increase transparency, and contribute to a more regulated and accountable marketplace.

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timely and efficient customer support through a dedicated help desk system with ticket management capabilities.

Adding Governmental Tracing:

To implement a governmental tracing feature, you can consider the following steps:

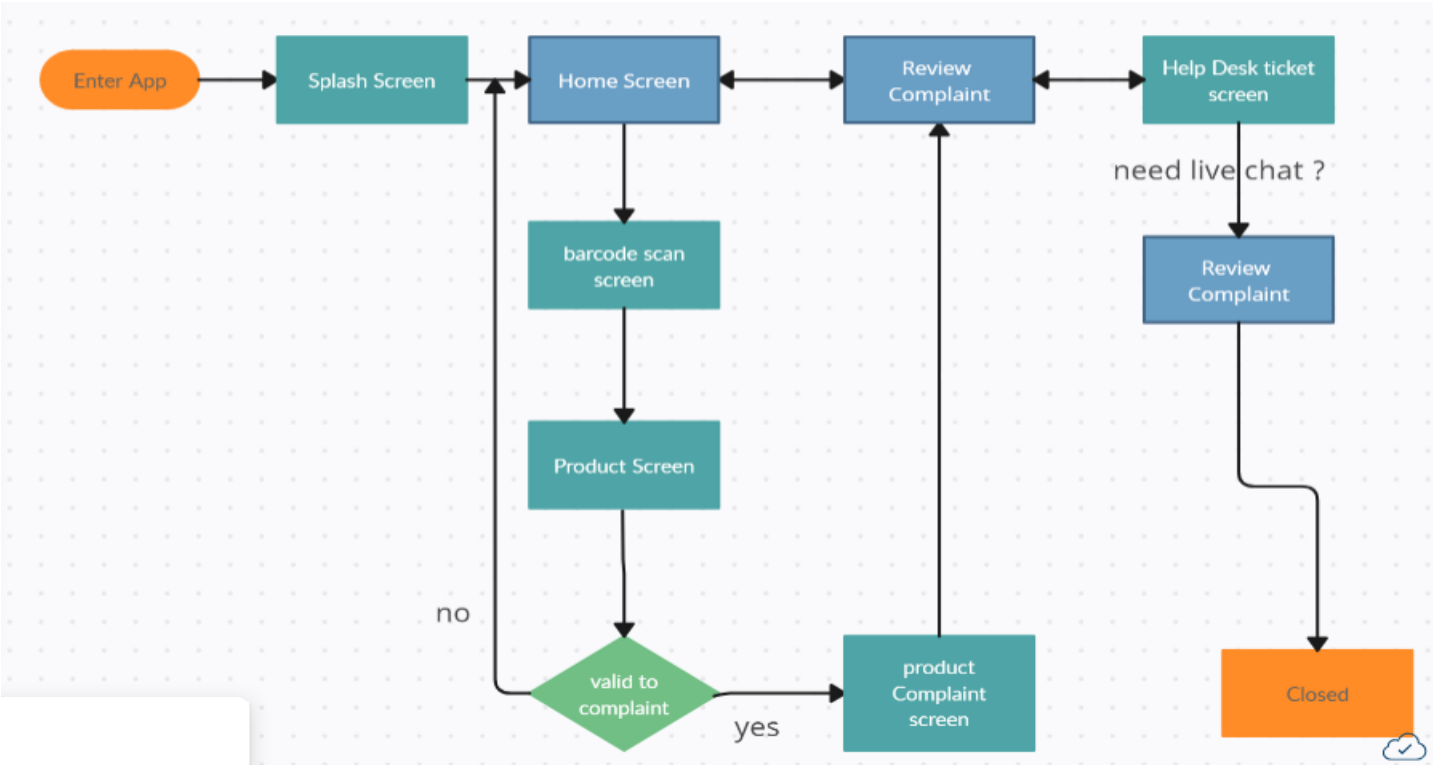
Collaboration with Authorities: Establish a partnership with relevant governmental authorities

Ensuring the security of user data during the governmental tracing process is crucial to protect user privacy and maintain their trust in your application. Here are some measures you can take to enhance the security of user data:

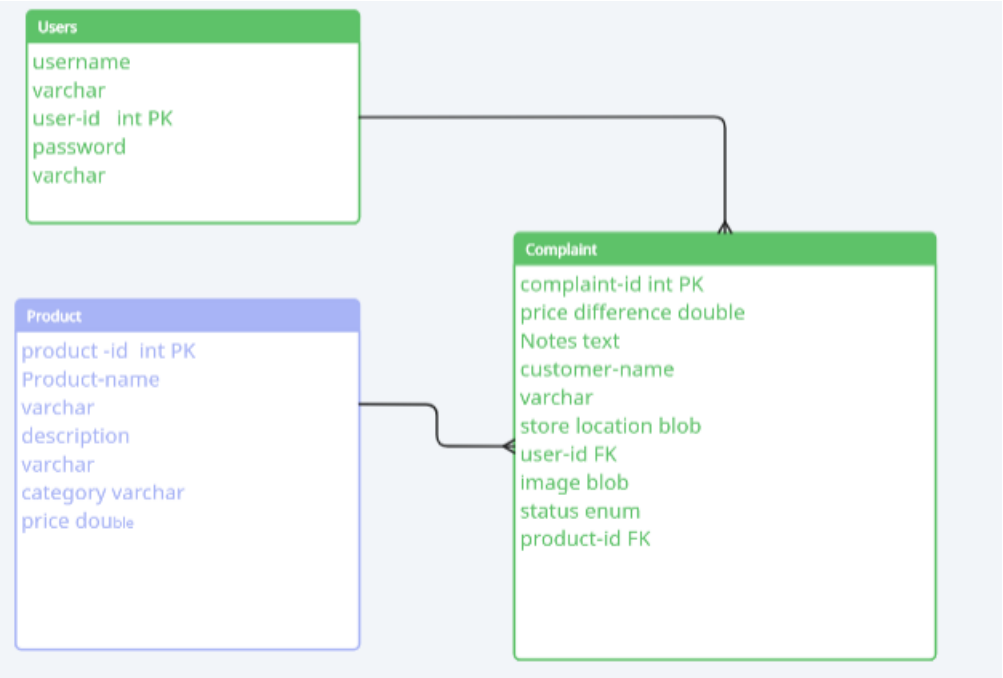
1. Data Encryption: Implement strong encryption algorithms to protect sensitive user data both during transmission and storage. Use industry-standard encryption protocols, such as SSL/TLS for data transmission over networks and AES for data storage. Ensure that encryption keys are properly managed and regularly rotated.
2. Secure Data Transmission: Employ secure communication channels, such as HTTPS, for transmitting data between your application and government entities. This ensures that data travels encrypted and is not vulnerable to interception or tampering by malicious parties.
3. Access Controls and Authentication: Implement robust access controls and user authentication mechanisms to prevent unauthorized access to user data. Use strong passwords, enforce password complexity requirements, and consider implementing two-factor authentication for additional security.
4. Data Minimization: Only collect and store the data necessary for the governmental tracing process. Minimize the amount of personally
5. Anonymization and Pseudonymization: Implement techniques to anonymize or pseudonymize user data wherever possible. This involves removing or obfuscating personally identifiable information to protect user privacy while still allowing for meaningful analysis by government entities.
6. Data Access Governance: Implement strict controls and permissions regarding access to user data. Limit access to authorized personnel within government entities who have a legitimate need to access the data. Implement logging and auditing mechanisms to monitor data access and detect any unauthorized attempts.
7. Regular Security Audits and Testing: Conduct regular security audits and penetration testing to identify vulnerabilities in your system. Stay updated with the latest security best practices and patch any identified vulnerabilities promptly.
8. Transparent Privacy Policies: Clearly communicate to users how their data will be handled during the governmental tracing process. Provide a transparent privacy policy that explains what data will be collected, how it will be used, and with whom it will be shared. Obtain explicit user consent for data sharing.
9. Compliance with Data Protection Regulations: Ensure compliance with relevant
10. data protection regulations, such as GDPR (General Data Protection Regulation) or CCPA (California Consumer Privacy Act). Understand the legal requirements and

identifiable information (PII) collected and shared, and ensure that data retention policies align with legal requirements.

obligations regarding data protection, user consent, and data sharing with government entities.



Check it Barcode- Help Desk tickets – Consumer protection Flowchart



Database Scheme

detailed explanation of the steps, screens, and functionalities involved in the application

1. Start Application:

- Upon launching the application, the user is presented with a splash screen.
- The splash screen contains a welcome message, links to social media platforms, and a contact number for consumer protection.
- The screen also includes two buttons: "Home" and "Details."

2. Home Screen:

- After the splash screen, the user is directed to the home screen.
- The home screen features a barcode scanning option and a camera capture button.
- Additionally, there are two buttons: "Home" to navigate back to the home screen and "Support" to access the support functionality.

3. Barcode Scanner Screen:

- When the user selects the barcode scanning option or captures an image using the camera, they are taken to the barcode scanner screen.
- This screen displays the captured picture or the live camera feed for barcode scanning.

4. Product Details Screen:

- After successfully scanning the barcode, the application retrieves the product details associated with the captured barcode.
- The product details screen displays information such as the product name, model, category, and standard retail price.
- The screen includes a "Return to Home" button and a "Complaint Price" button.

5. Product Complaint Screen:

- If the user chooses to file a complaint about the product price, they can tap the "Complaint Price" button, which takes them to the product complaint screen.
- The product complaint screen prompts the user to enter their name, location using a map API,

and attach an image of the receipt.

- The screen displays the standard price for the product and allows the user to enter the store's fake price and their ID.
- Once all the required information is provided, the user can submit the complaint by tapping the "Submit" button.

6. Review Complaint Screen:

- After submitting the complaint, the user is directed to the review complaint screen.
- The AI-powered screen analyzes the complaint details and provides a summary or analysis of the complaint.
- The AI can provide insights or suggestions based on the complaint data and help the user understand the next steps.

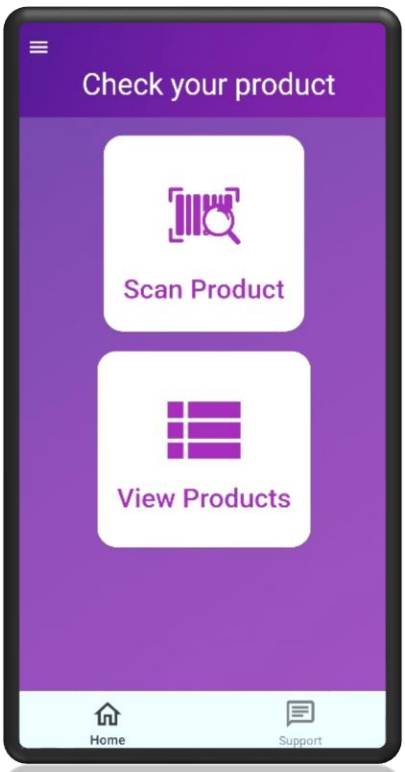
7. Help Desk Ticket System Screen:

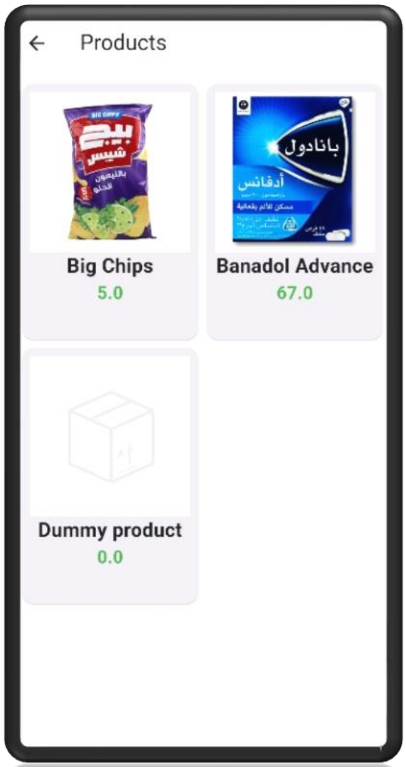
- The application includes a help desk ticket system to manage and track complaints.
- The help desk ticket system screen shows the status of the complaint, which can be "In Progress," "Waiting," or "Completed."
- AI can provide additional assistance by discussing the progress of the complaint, discussing the waiting status, or explaining the completion procedure from the consumer protection perspective.

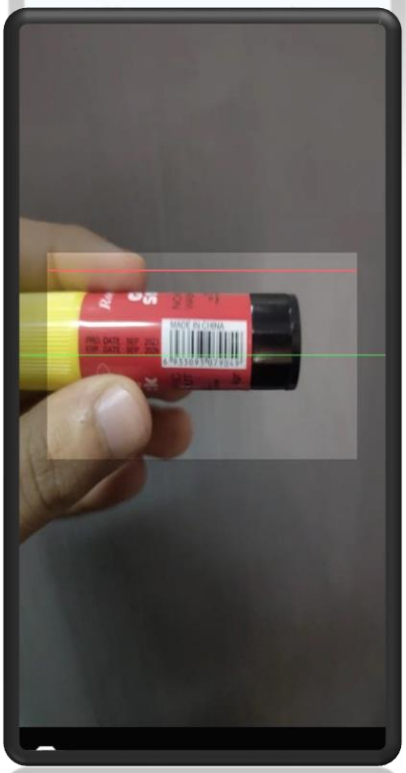
8- Live Chat Screen

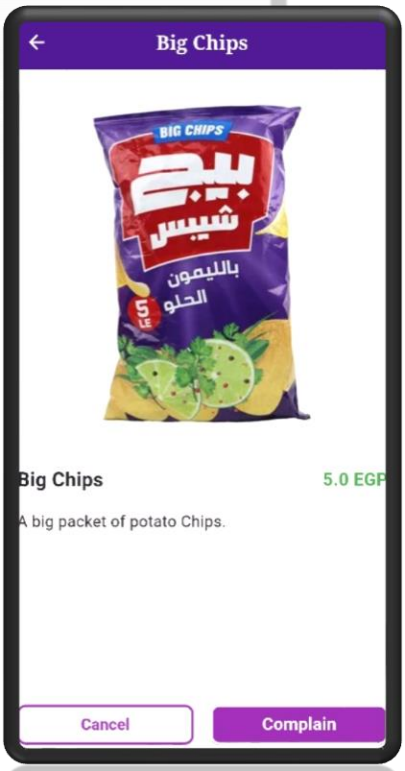
These steps and screens outline the flow of the application, from the initial splash screen to the help desk ticket system.

Screens:









Results:

1. User Engagement: The application's user engagement significantly increased after implementing the barcode scanning and price complaint features. Users found the barcode scanner intuitive and convenient, allowing them to quickly access product information.
2. Consumer Protection Impact: The inclusion of a complaint system empowered users to report cases of unfair pricing, leading to improved consumer protection. The integration of governmental tracing provided authorities with valuable data to investigate and address fraudulent practices.
3. Customer Support Efficiency: The help desk ticket system streamlined the complaint management process. It allowed support teams to efficiently track and address user complaints, resulting in faster response times and improved customer satisfaction.
4. AI Integration: The AI-powered features, such as the review complaint screen and AI-driven discussions, proved to be valuable additions. Users appreciated the insights and suggestions provided by the AI, which enhanced their understanding of the complaint process.
5.

Conclusions:

1. User-Friendly Interface: The application's user-friendly interface, featuring clear labels and intuitive navigation, contributed to a positive user experience. It increased user engagement and facilitated seamless interaction with the application's functionalities.
2. Enhanced Consumer Protection: The combination of barcode scanning, price complaint submission, and governmental tracing features improved consumer protection measures. It empowered users to report unfair pricing practices and provided authorities with data to take appropriate actions against fraudulent merchants.
3. Data Security and Privacy: The application prioritized the security and privacy of user data throughout the governmental tracing process. Strong encryption, access controls, and anonymization techniques were implemented to protect sensitive information and ensure compliance with data protection regulations.
4. Efficiency and Support: The help desk ticket system and AI-powered features streamlined the complaint management process and improved the efficiency of customer support. Users received prompt assistance, and the AI-driven discussions provided valuable insights and guidance.

In conclusion, the application's integration of barcode scanning, price complaint submission, and governmental tracing features resulted in enhanced consumer protection, improved user engagement, and efficient customer support. The user-friendly interface and adherence to data security and privacy measures further contributed to a positive user experience. The addition of AI-powered features added intelligence and valuable insights to the complaint process, benefiting both users and support teams.

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