

# Software Requirements

## *“Viveres Gaby Software Kit”*

### Object Oriented Programming

IEEE Requirements

Cuzco Yamasca Alex Dario

Diaz Antun Stefany Maricela

García Galarza Jaren Mateo

García Romero Eduardo David

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## **1. Introduction**

In the dynamic world of retail, operational efficiency is key to the sustainable success of any business. In this context, we are pleased to introduce the comprehensive project designed to streamline the management of a grocery store: the Gaby Groceries Software Kit. This innovative set of technological tools aims to revolutionize how grocery stores handle their day-to-day operations, offering a complete range of solutions that span from inventory management to billing and discount management.

At the core of this project is our advanced inventory management system, enabling Gaby Groceries to maintain precise, real-time control over its stock. Paired with a robust billing system, this kit ensures effective and transparent financial management. Furthermore, the ability to handle discounts intuitively and customarily provides the store with a competitive edge by delivering engaging shopping experiences for its customers.

In summary, the Gaby Groceries Software Kit not only simplifies daily operations but also empowers the store's growth and profitability by offering a comprehensive set of tools designed to meet the specific demands of the food retail sector. We are excited to present this complete technological solution, destined to take grocery store management to the next level.

### **1.1. Purpose**

The primary purpose of the Gaby Groceries Software Kit is to equip grocery stores with a powerful and integrated technological solution that enhances overall operational efficiency. By addressing key aspects such as inventory management, billing, and discounts, the project aims to streamline day-to-day operations, enabling store owners to focus more on customer experience and strategic growth. This purpose is grounded in the understanding that in the highly competitive retail landscape, a well-managed and technologically advanced system can be a game-changer for businesses aiming for sustained success.

Furthermore, the project seeks to empower grocery stores to adapt to evolving consumer demands and industry trends. With a robust inventory management system at its core, the Gaby Groceries Software Kit not only helps prevent stockouts and overstock situations but also provides valuable insights for informed decision-making. The purpose extends beyond mere automation; it is about fostering a proactive and responsive approach to store management, ensuring that the store stays agile and responsive in a dynamic market.

Ultimately, the Gaby Groceries Software Kit aspires to be a catalyst for the growth of grocery stores by offering a holistic solution that optimizes processes, enhances customer satisfaction, and positions the business for long-term success in an ever-changing retail landscape. The overarching purpose is to empower grocery store owners with the tools they need to thrive in an increasingly competitive and technologically driven market.

### **1.2. Audience**

The present document is directed towards a dual audience, encompassing both the members of the class to which the project will be presented and the client for whom the software is being developed. For the class audience, the content has been structured to serve as an educational tool, providing a

detailed understanding of the technical and methodological aspects involved in software development. Clear explanations and examples have been included to facilitate comprehension of more complex concepts. For the client audience, the document focuses on highlighting the business benefits of the proposed software, emphasizing how it will specifically address their needs and provide effective solutions. Additionally, technical details have been incorporated in a more concise manner, concentrating on functional aspects that will be most relevant from the end-user perspective. With this dual audience in mind, the document aims to ensure that both educational and business aspects are clearly communicated, meeting the expectations and needs of both parties.

### **1.3. System scope**

The system's scope encompasses all critical areas of a grocery store's operation, ranging from detailed inventory management to the efficient generation of invoices and strategic discount management. With a comprehensive approach, the system aims to optimize the supply chain by providing precise tracking of stocks, minimizing losses due to stockouts or excess inventory. Additionally, it seeks to simplify financial transactions through a robust billing system, empowering store owners to easily manage their financial records and streamline accounting processes.

The system's scope also extends to enhancing the customer experience through efficient discount management. By enabling a personalized and agile application of discounts, the platform aims to elevate customer satisfaction while driving the store's marketing and promotional strategies. Collectively, the system's scope comprehensively addresses the operational and strategic needs of a modern grocery store, aiming to boost efficiency, profitability, and customer satisfaction.

### **1.4. Acronyms and definitions**

In the context of the Gaby Groceries Software Kit, some key definitions include "Inventory Management," referring to the control and tracking of product stocks in the store to ensure timely replenishment and avoid excess. Similarly, the term "Billing" relates to the process of generating and managing invoices efficiently, facilitating accurate and transparent accounting. Among crucial acronyms is "DSMS," representing the Discount Management System, an essential tool for the strategic and personalized application of discounts. As for abbreviations, "EOQ" is used to refer to Economic Order Quantity, a fundamental component for optimizing the supply chain and inventory management.

This set of definitions, acronyms, and abbreviations forms the conceptual framework of the system, providing clarity and conciseness in communication related to grocery store management. These terminologies are designed to streamline the understanding and use of the software, ensuring effective implementation and efficient management for store owners.

### **1.5. References**

Different bibliographies will be used that refer to the structuring of a good organization, user-friendly interfaces, the portability of the agenda, the progressive change of technologies and, finally,

documentation that provides the necessary information to identify the limits and opportunities of the product.

## **1.6. Document overview**

The project document for the Gaby Groceries Software Kit presents a comprehensive solution designed to transform the operational management of grocery stores. With a focus on efficiency, the project addresses key aspects such as inventory management, billing, and discount management. The overview highlights the significance of this technological solution in a dynamic retail environment, where responsiveness to market demands and process optimization are crucial for sustainable success.

The document outlines the core functionality of the system, emphasizing its ability to provide precise, real-time tracking of stocks, thus optimizing the supply chain and reducing losses due to stockouts or excess inventory. Additionally, it underscores the robustness of the billing system and the flexibility in discount management, highlighting how these features contribute to more efficient financial management and engaging shopping experiences. In summary, the project aims to offer grocery stores a comprehensive tool that not only automates processes but also enhances informed decision-making and customer satisfaction.

## **2. General Description**

In the work environment of "Viveres Gaby," we encounter a wide variety of customers, some more familiar with modern technologies than others. This scenario poses a significant challenge, as the software we are developing for the store could be mishandled if there is not a minimum level of familiarity with technological devices. It is crucial that, as part of the implementation of the new software, didactic resources and technical assistance be provided to ensure a smooth and beneficial transition, partly for the customers but especially for the store owners or managers who will be consistently using the upcoming software.

Furthermore, the essential functionalities of "Viveres Gaby's" software are closely tied to the performance of the latest operating system. Considering the diversity of devices in use, it is necessary to maintain constant updates to prevent these features from becoming obsolete on older devices. This approach will ensure that customers can make the most of the advantages offered by the software.

### **2.1. Product perspective**

The introduction of software at "Viveres Gaby" redefines store management, providing a fresh perspective in terms of efficiency and control. With capabilities to monitor inventory in real-time, generate invoices automatically, and comprehensively manage available products, this system provides a comprehensive tool to optimize daily operations. Automation not only improves accuracy in inventory tracking and billing but also simplifies product management, allowing for quick adjustments and a clearer view of sales trends. Ultimately, this technological implementation positions "Viveres Gaby" for sustainable growth by streamlining processes and freeing up resources for strategic business approaches.

### **2.1.1. *System interfaces***

The system we are developing prioritizes the implementation of a robust encryption system, thus ensuring data security without compromising the privacy of our clients. Additionally, it is essential that the system interface is easy to debug to address any errors that may arise over time, facilitating efficient maintenance. Another essential point is adaptability; it is intended that the interface should be flexible enough to incorporate new features and meet emerging requirements that may be posed by, in this case, the store owner. This strategy ensures not only the current stability and security of the system but also its ability to evolve and adapt as technology and business needs progress.

### **2.1.2. *User Interfaces***

The user interface is also crucial, expected to maintain the same level of security or even enhance it. Although our product is tailored for small business owners, particularly those running a store like "Viveres Gaby," we acknowledge that the content stored in the notebook may contain confidential information voluntarily provided by trusting customers. For ethical and confidentiality reasons, the product aims to provide more secure and reliable communication between the system and the store owner. This ensures the protection of valuable information and strengthens customer trust in the security of their data when interacting with the user interface.

### **2.1.3. *Hardware interfaces***

The hardware interface for the "Viveres Gaby" store aims to encompass all essential physical connections and components that enable effective communication between the computer system and devices necessary for key functions such as inventory management, billing, and product control. This involves the implementation of point-of-sale terminals with touchscreens, laptops, and mobile devices. In addition, barcode readers are connected to the system, allowing for automatic inventory updates. Similarly, secure payment terminals and a robust network infrastructure complete the hardware interface, providing a physical and efficient connection between the computer system and key devices to optimize daily operations at "Viveres Gaby."

### **2.1.4. *Software interfaces***

The perspective of the software interface at "Viveres Gaby" focuses on a comprehensive system that enhances store operations, addressing crucial functions such as inventory management, billing, and product control. The software designed for the store must be intuitive and efficient, allowing users to perform tasks seamlessly, from recording sales to updating inventories. Moreover, the software interface should be user-friendly, providing an intuitive experience that makes the range of possible actions visible and accessible, whether through key combinations or mouse functions. The effectiveness of the software translates into more efficient store management, improving productivity and the overall experience for both staff and customers at "Viveres Gaby."

#### **2.1.5. *Communication interfaces***

The communication between the hardware and software interfaces at "Viveres Gaby" is optimized for efficient data transfer. Devices such as point-of-sale terminals and barcode readers are connected through a robust network. Scanned information is automatically transferred to the software, updating inventories instantly. Bidirectional communication facilitates coordination between key functions like inventory management and billing, ensuring smooth operation. Security measures are implemented to protect data integrity during transfer. In summary, the communication between these interfaces is designed to be effective and secure, facilitating the cohesive operation of the store.

#### **2.1.6. *Memory restrictions***

Each entry in the notebook will be stored in the client's device's internal memory, meaning that the product size will increase based on the number of entries. It is crucial for the program to leverage the device cache, both to expedite the opening of annotations and to efficiently manage storage. The goal is that, when dealing with plain text, the created files can be easily saved as .txt, whereas for multimedia files used in annotations, compression or cloud storage can be employed instead.

### **2.2. Product features**

In a broader context, a store is a retail space that offers a wide range of products to meet the diverse needs of its customers. Enhancing the physical store experience are key features such as organized product displays, easy navigation, and a well-structured design to facilitate efficient shopping. Highlights in this case of the system to be implemented include stringent control of item availability, from groceries and essential products to specialized items. The store aims to provide a convenient shopping experience through features such as clear signage, user-friendly payment processes, and potentially incorporating technology for seamless transactions. In essence, the store is designed to cater to a diverse clientele, providing a variety of functions to meet the preferences and needs of each customer

### **2.3. User functions**

In this case, the system will be used by the owners of the store, meaning they would be the direct users. As mentioned earlier, prior guidance will be provided to ensure the proper use of the software, allowing them to fully leverage the system. In this context, the user functions are directly linked to monitoring the system's proper functioning to provide excellent service to their customers

### **2.4. Restrictions**

To ensure the proper use of the system in your store, the following restrictions will be implemented. Firstly, the installation of the software will be restricted to devices pre-authorized by the store owner. This will help maintain control over the devices on which the system is installed. Additionally, a stringent authentication process will be established to ensure that only the store owner has access to

the system, safeguarding confidential information and ensuring data security. Furthermore, an activity logging system will be implemented to monitor any access or modifications to the system, providing an additional layer of security and traceability. These restrictions are designed to optimize security and the efficient operation of the system, focusing on the specific needs of the store owner.

## **2.5. Dependencies**

The dependencies of the system to be implemented in the store encompass aspects such as the compatible operating system, a suitable database for storing key information, an internet connection for online functions, specific hardware like scanners and point-of-sale terminals, necessary libraries and frameworks, security requirements to protect data, and the importance of maintaining regular updates. Ensuring that these elements align with the software requirements is crucial to ensure efficient and secure operation of the system in the store environment.

## **2.6. Future requirements**

As technology continues to advance, and various systems with diverse purposes emerge, future system requirements for "Viveres Gaby" are crucial. Considerations include integration with mobile devices to streamline processes, connection with e-commerce platforms for consistency, incorporation of mobile and contactless payment methods, automation systems for personalized marketing campaigns, enhancement of customer management with loyalty programs, scalability assurance for adaptation to growth, reinforcement of security measures, and implementation of continuous updates and consistent technical support. All these efforts aim to optimize inventory management, discounts, and sales efficiency in the "Viveres Gaby" store.

## **3. Specific requirements**

For the correct fulfillment of the requirements of the product "Viveres Gaby Software kit"(name of the project), it will be necessary for the developers to be fully committed to good programming, to maintain the confidentiality of the product until the maintenance phase and to prevail professional ethics when writing their own code. Once the developer's role in the project has been clarified, the functional and non-functional requirements of the software are listed in detail:

### **3.1. Functional requirements**

#### **1.- Inventory Management:**

- The system should enable efficient entry and updating of inventory.
- Providing real-time information on product availability.

#### **2.- Point of Sale (POS):**

- It should facilitate fast and secure transactions.
- Generating receipts or invoices for each transaction.



### **3.- Customer Management:**

- It must allow the registration of customer information, such as name, address, and contact details.
- Facilitating quick search and retrieval of customer information.

### **4.- Promotions and Discounts:**

- The system should be capable of applying promotions and discounts according to marketing strategies.

### **5.- Security:**

- The system must implement security measures to safeguard customer and business information.
- It should feature secure login functions and access control.

## **3.2. External interface requirements**

### **1.- Network:**

- Bandwidth and speed requirements to ensure efficient communication between devices and servers.

### **2.- Regulations and Compliance:**

- Compliance with legal regulations and industry standards, such as tax regulations and data privacy.

### **3.- Integration with Suppliers:**

- Requirements for integration with external supplier systems, such as payment platforms or delivery services.

### **4.- Internet Connection Availability:**

- Dependency on the availability and stability of the internet connection for functions like payment processing and real-time updates.

## 5.- Physical Security:

- Requirements for the physical security of devices and servers hosting the system.

## 6.- Browser Compatibility:

- If the system includes web-based interfaces, it's essential to specify compatible browsers.

## 7.- Business Policies:

- Requirements related to internal company policies, such as operating hours, maintenance periods, etc.

## 8.- Software Updates and Maintenance:

- Procedures and requirements for software updates and system maintenance.

### 3.3. System characteristics

- **Advanced Inventory Management:** The system will feature advanced inventory management functionality, allowing detailed and real-time tracking of stock. This will ensure timely replenishment and reduce losses due to stockouts or excess inventory.
- **Comprehensive Billing System:** It will include a comprehensive billing system that simplifies and automates the invoice generation process. This facilitates accurate and transparent accounting, enhancing the financial efficiency of the store.
- **Strategic Discount Management:** The system will have a discount management tool that allows for the strategic application of personalized discounts. This will not only boost marketing strategies but also enhance the overall customer experience.
- **Intuitive and User-Friendly Interface:** Designed with an intuitive and user-friendly interface, the system will facilitate easy adoption and efficient management by store personnel.
- **Analytical Reporting:** It will include analytical reporting features that provide store owners and managers with valuable insights into business performance and market trends.
- **Integrated Point of Sale (POS):** The system will have an integrated point of sale, streamlining transactions within the physical store. This feature will enable efficient payment processing and smooth management of in-store sales.
- **Security and Data Protection:** Robust security measures will be implemented to protect sensitive store information, ensuring the confidentiality and integrity of data.
- **Continuous Updates and Support:** The system will offer regular updates and continuous technical support to ensure that the store has access to the latest features and is backed up in the event of any technical issues.

### 3.4. Non-functional requirements

- **System Performance:** The system should maintain efficient performance even during peak loads, ensuring fast response times for transactions and inventory queries.
- **Data Security:** A robust security system will be required to protect inventory information, financial transactions, and customer data, ensuring the confidentiality and integrity of the information.
- **Continuous Availability:** The system should be continuously available, with minimal downtime to ensure that the store can conduct operations without interruptions.
- **Scalability:** The system should be scalable to accommodate the store's growth, allowing the addition of new products, branches, or features without compromising performance.
- **Hardware and Software Compatibility:** It should be compatible with a variety of hardware and software to ensure seamless integration with the devices and systems already in use in the store.
- **Ease of Maintenance:** The system should be easy to maintain, with regular updates and straightforward procedures to ensure operational continuity and prompt issue resolution.
- **Regulatory Compliance:** The system should comply with relevant industry standards and regulations, ensuring that the store operates in accordance with applicable legal and business norms.
- **Interoperability:** The system should be interoperable with other technological solutions the store may use, facilitating smooth integration with existing or future management systems.

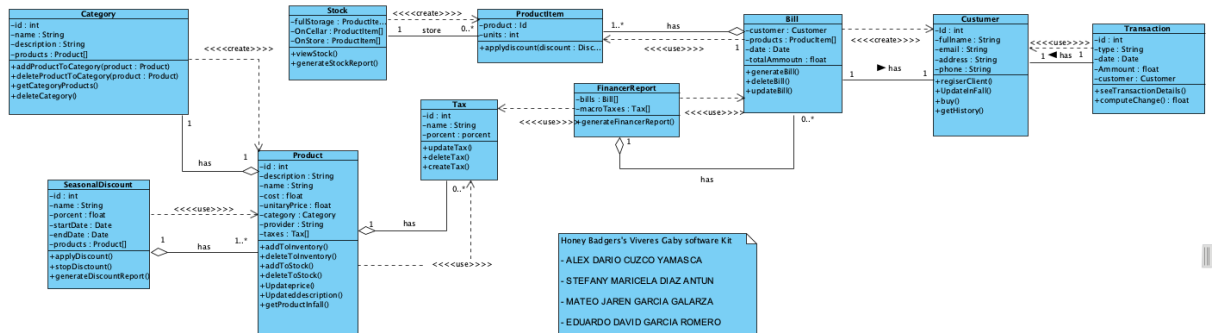
## 4. Appendices

At the time of writing this version of the software requirements specification document, there are no optional appendices to expand the information presented either statistically or graphically. At the moment of presenting the project approach and reaching more target customers, the respective statistical documentation will be attached that will allow visualizing the formats established between programmer-client.



## 5. Diagrams

### 5.1. Class Diagram



## 6. Creators

Cuzco Yamasca Alex Dario

Diaz Antun Stefany Maricela

García Galarza Jaren Mateo

García Romero Eduardo David