***UNIVERSITY FORCE ARMY ESPE***

**ORIENTED OBJECTS PROGRAMING**

**NAME GROUP: KNOWLEDGE ENCAPSULATED**

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[**https://docs.google.com/document/d/1Lgwihe2MGa4js0sCvZJRVD3IU13C6oK9U3SJ6I6n94I/edit?usp=sharing**](https://docs.google.com/document/d/1Lgwihe2MGa4js0sCvZJRVD3IU13C6oK9U3SJ6I6n94I/edit?usp=sharing)

**PROBLEM**

We need a system that allows us to control the **inventory** and **sales prices** in a **Pet Shop**, since imbalances in profits and differences in product entry and exit records have been detected.

To understand what the program needs to do, you first need to understand a little about inventory management, updating prices, and applying discounts and taxes. However, we will keep things simple and only deal with the recording of **entries** and **exits** of pet supplies (such as food, toys, accessories), along with the calculation of **final prices** with **discount** and **VAT** (Value Added Tax) included.

**SUMMARY**

In the commercial field, correct **inventory** management and price control is essential to maintain profitability and transparency in a pet shop. Without automated monitoring, errors in price calculations, stock losses, or inconsistencies in profits may occur.

A system that records the entries and exits, tracks **OrderDetail** information, and automatically applies discounts and VAT would allow managers and **Employees** to have exact control of stocks and generated profits. This guarantees efficient management, aided by structured **Reports** that keep the total inventory value up to date.

**BACKGROUND**

In the **Cumbayá** sector, **Pet Shops** play an important role in supporting animal welfare and pet maintenance in the area. Most of these businesses work with a variety of brands and product types, serving dogs, cats, and other pets. Our Pet Shop in Cumbayá opened its doors **in 2025**.

Since our opening, we have noticed that we rely on **manual methods** to record product entries and sales, which, even in this initial phase, is already causing mistakes in stock control, incorrect pricing, and inconsistencies in profit calculations. For this reason, it is necessary to implement a **simple computer-based system** that can record the entry and exit of items, automatically apply **discounts and VAT**, and keep track of the total inventory value. By introducing this system, the store will have more accurate control of its stock and finances, reducing human error and improving efficiency in daily operations.

**Market Study:** A study is being carried out which shows how customer preferences in Cumbayá are rapidly evolving in 2025, driving demand for high-quality pet care products.

**INITIAL MARKET ANALYSIS (2025)**

The pet products market in Cumbayá in **2025** presents a highly dynamic environment that can be analyzed through the performance of the brands we handle in our opening phase.

Each brand of food or accessory represents an investment opportunity. Preliminary data from our first months of operation show that **premium food brands** (e.g., Taste of the Wild, Royal Canin) have maintained superior profitability. **Lower-cost brands** have had stable participation but with tighter profit margins, reflecting a clear preference from the local customer for the quality and durability of products for their pets.

This initial observation reveals the critical importance of **accurate price updates** and **automated inventory systems** from the start of operations. By monitoring the performance evolution of each product category, the store can predict profitability trends and make smarter purchasing decisions to maximize profits during this first year of operation.

| **Product Category** | **Registered Items (Est.)** | **Dominant Product Type (Ex.)** | **Estimated Average Profit Margin (2025)** | **Key Operational Observation** |
| --- | --- | --- | --- | --- |
| **BALANCED FOOD (Dry Food)** | High | Premium and Standard Food | 20% - 25% | Category with the highest stock volume and turnover; requires strict expiration control. |
| **MEDICINE /SUPPLEMENTS** | Moderate | Antiparasitic, Vitamins | 35% - 40% | Highest profit margin; crucial control of batch number and temperature. |
| **SNACKS / WET FOOD** | High | Treats and impulse food | 15% - 20% | Impulse purchase products; sensitive to discounts and promotions. |
| **AGROPET / OTHERS** | Variable | Accessories, Hygiene, Various | 30% - 45% | High margin but lower turnover; higher risk of error due to diversity of items. |

**ANALYSIS CONCLUSION**

The table demonstrates that the profitability of the Pet Shop in Cumbayá is strongly influenced by the **Medicine/Supplements** and **Accessories/Others** categories, even though **Balanced Food** dominates the volume. This highlights the need for a system that not only records entries and exits but also automatically calculates and applies the differentiated margins per category and VAT, ensuring accurate price control from the start of the operation.

**PRICES**











