



FARMACIA REGINE INVENTORY SYSTEM

SOFTWARE REQUIREMENTS SPECIFICATION

Section	S17
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Date Submitted:	July 5, 2016
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1. Executive Summary

Farmacia Regine is a small enterprise pharmacy located at Pasong Tamo Extension, Barangay Fort Bonifacio, Taguig City. It was founded in 2003 by Regine and Stansean Rapisora. The pharmacy offers branded and generic drugs as well as groceries. Under the guidance of the owner, the operation of the pharmacy is composed of one supervising pharmacist, two assistant pharmacists, and one supervisor.

The inventory is one of the most important records kept by all retailers for it is through this record that the establishment is able to manage items that they currently have, to keep track of what they have sold, and what they have yet to purchase. An inventory, aside from taking note of the quantities of every stock, can also be used to track each items' expiry dates and even attach each item to a certain supplier.

The pharmacist interacts with the store's inventory on a daily basis through logging drugs dispensed to customers, recording newly delivered stock, and managing expired and near-expired items.

2. Overview

2.1. Existing Business Process

Most of the processes occurring in the pharmacy begin with the actions of the pharmacist. The pharmacist has three main responsibilities: dispensing drugs to customers, managing near-expiry and expired items, and restocking items. The three main responsibilities are shown as the three leftmost rectangles in the diagram of the current business process below (see Figure 2-1).

Like other retail establishments, the pharmacy maintains an inventory which notes sales and purchase data made by the pharmacy. The inventory is primarily used as an aid in managing the stock levels of each item for sale. The pharmacist interacts with the inventory on a daily basis, and thus can be called the inventory's primary stakeholder.

The core of the inventory is the product list (see Appendix C-1). This list contains data about all the items that the pharmacy sells as well as other important information describing the items such as their current quantity in stock and their buying and selling prices.

Whenever a customer purchases from the pharmacy, the pharmacist or his assistants record the transaction as a sale in the sales book (see Appendix C-2). At the end of each day, the pharmacist modifies the quantities in the product list, referring to the sales recorded in the sales book. Afterwards, the supervisor receives the sales book and sums up the total sales from the hundreds of recorded transactions.

When certain items of the store are exhausted, the pharmacist, through inspecting every item container, records the exhausted items in the out-of-stock list (see Appendix C-3). The pharmacist may also decide to include items that still have stock, but great customer demand is anticipated. This list is used as an easy reference while calling suppliers for restocking.

Upon the arrival of the ordered stocks, the pharmacist modifies the quantities in the sales book to reflect the restocking. The supervisor archives the receipts and uses them to sum the total purchases made for the day.

Both the sum of sales and the sum of purchases are taken note of in a document that the supervisor submits to the owner called the Daily Report (see Appendix C-4).

Aside from the taking note of the sales and the purchases, the pharmacist is also responsible for managing expired and near-expired items. The pharmacy currently does not have an efficient system in place to consider the items' expiry dates and so the staff usually find out too late that they have expired products at hand. The items are checked of their expiry dates when they are happened upon by the pharmacist upon dispensing them or through the inspection that the pharmacist conducts every so often whenever his time allows.

If an item (usually a drug) is found expired, the pharmacist must separate it from the other items and marked hazardous, following protocols mandated by the Food and Drug Administration. The item is recorded in the Bad Order notebook (see Appendix C-5).

Otherwise, if an item is near-expired, which the pharmacist defines as having an expiry date within the next six months, the pharmacist tags it using a physical cue such as a piece of paper. The pharmacist decides an acting on the item, either calling the supplier for product recall or to simply prioritize its dispensing. The pharmacist makes this decision by determining if the item is a *fast-moving* or *slow-moving* product. The terms *fast-moving* and *slow-moving* describe customer demand for the product; calling items these terms are decided upon by the pharmacist and his assistants subjectively. Items that are for product recall are recorded in the Bad Order list. If the supplier agrees to recall an item, the item will be replaced.

The five lists mentioned here (the Sales Book, the Product List, the Bad Order List, the Out of Stock List and the Daily Report) are all written records on notebooks or on pads of paper.

The pharmacy's current business process can be visualized in the diagram shown in Figure 2-1.

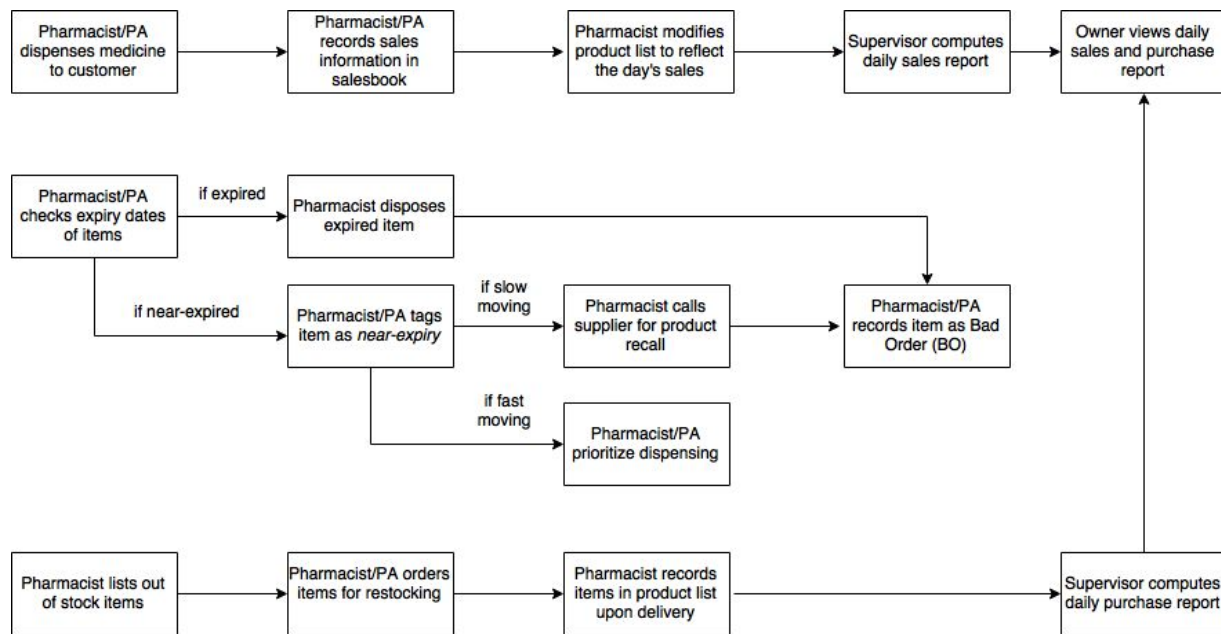


Figure 2-1. Diagram of the existing business process

2.2. Data Requirements

Each item in the inventory must have a name, a buying price, a selling price, a status and a demand. The prices are significant up to two decimal places. Items can be set to “selling” or “discontinued.” By default, an item’s status is set to “selling.” The demand can be set to “low” or “high”.

Restocked items are grouped into batches. Each batch is defined by which item it is and its expiry date. The expiry date can be represented in the form month-day-year or in the form month-year.

A sales record contains a reference to the item sold, quantity, total sales, and date. It must have these four attributes defined. The total sales is derived from the item’s selling price multiplied by the quantity. The date must be expressed in the form month-day-year.

2.3. Roles in the Business Process

There are various employees involved in the business process of Farmacia Regine. The roles of these employees are summarized in Table 2-1.

Role	Description of Tasks
Pharmacist	<ul style="list-style-type: none">● Dispenses items to customers● Records sales in the sales book● Modifies the product list to reflect the sales and purchases● Lists out-of-stock and critical items● Orders items for restocking● Checks expiry dates of items● Tags items as near-expired● Records items in the Bad Order notebook● Disposes expired items● Calls supplier for product recall
Assistant Pharmacist	<ul style="list-style-type: none">● Dispenses items to customers● Records sales in the sales book● Modifies the product list to reflect the sales and purchases● Lists out-of-stock and critical items● Orders items for restocking● Checks expiry dates of items● Tags items as near-expired● Records items in the Bad Order notebook
Supervisor	<ul style="list-style-type: none">● Computes the daily sales and purchase report
Owner	<ul style="list-style-type: none">● Evaluates the daily sales and purchase report to create the monthly income statement

Table 2-1. Employee Roles and Tasks in Farmacia Regine

3. Problem Analysis

ID	Description	Cause	Symptoms	Impact
1	Recording daily date for the inventory and report generation is a tedious task that consumes most of the work time of the employees.	Manual counting of stocks and report generation through writing in a notebook.	A lot of time is inefficiently used by the employees creating the inventory and generating reports instead of doing actual pharmacy service.	The pharmacy will be providing poor service to its customers as a consequence of this. Additionally, the staff member who is currently handling the inventory cannot concentrate on his primary task.
2	Expired or near-expired items are difficult to keep track of.	The near-expired items are only tagged when the Pharmacist happens upon it.	The personnel find out about expired or near-expired items too late.	There is a risk that the pharmacy will be giving out expired products to customers, which might endanger the consumer's health.

Table 3-1. Problem Analysis table

Two problems relating to product management have been identified relating to dealing with the inventory and keeping track of expired or near-expired items. The software solution focuses on solving these two problems. The software will primarily benefit the pharmacist, allowing the pharmacist to allot his time for other duties in the establishment.

4. Software Solution

4.1. Objectives

The inventory software aims to decrease the amount of time that the staff allot in managing the inventory, allowing them to focus on their other duties in the pharmacy instead. The following are the specific objectives of the software:

- To provide a facility that modifies the product list during sales or purchase;
- To provide a facility for informing the pharmacist of expired and near-expired items in the inventory;
- To generate various reports automatically for monitoring out-of-stock items, expired and near-expired items, as well as the daily sales;
- To remove the need for manually computing the total sales of each day;

4.2. Characteristics

The following are the non-functional requirements of the software:

- The solution must be **easy-to-use**. The current system makes use of simply writing down on pieces of paper; the software must be as intuitive enough to use;
- The solution must be **fast**. Multiple transactions happen in a single day. Taking note of the sales and purchases must take the least possible time.
- The solution must be **reliable**. The system must decrease the subjective decision-making and memory work of the pharmacist and the other staff, especially with evaluating item demand and checking the items' expiry dates.

5. User Stories

5.1. User Story 1

User Story: As the pharmacist, I can add new items to the product list so that I can monitor if it is sellable or not.	
Estimate: 1 day	Priority: 10
Precondition: The pharmacist has an item to add into the system.	
Scenario: <ol style="list-style-type: none">1. The pharmacist inputs the name of the new item.2. The pharmacist inputs the buying price of the new item.3. The pharmacist inputs the selling price of the new item.4. The pharmacist clicks the “Add” button.5. The system validates the input.	
Post-condition: The pharmacist has successfully added an item. The item is stored in the database. The system displays feedback that the addition was successful.	
Acceptance Criteria: <ol style="list-style-type: none">1. Test that the pharmacist can enter the name of the new item.2. Test that the pharmacist can enter the buying price of the new item.3. Test that the pharmacist can enter the selling price of the new item.4. Given that the pharmacist clicks the “Add” button, test that the pharmacist can see feedback that the product list now contains the newly added item.5. Given that the pharmacist clicks the “Add” button and has entered an item name already in the list, test that feedback is shown, disallowing its addition to the list.6. Given that the pharmacist clicks the “Add” button and has left any field blank, test that feedback is shown cueing what fields were left unfilled.7. Test that the item and its attributes have been stored in the database.	

5.2. User Story 2

User Story: As the pharmacist, I can label items as “discontinued” so that these items will not be reordered.	
Estimate: 4 hours	Priority: 15
Precondition: The pharmacist chooses to discontinue an item from the system, and that there already are existing items in the system.	
Scenario: <ol style="list-style-type: none">1. The pharmacist selects the name of the item he wants to discontinue.2. The pharmacist confirms discontinuation.	
Post-condition: The pharmacist has successfully discontinued an item in the database. Feedback is shown that the selected item is now discontinued.	
Acceptance Criteria: <ol style="list-style-type: none">1. Test that the pharmacist can select an item name from a selection of current items' names.2. Given that the pharmacist has clicked the “Discontinue” button without selecting any item, test that feedback is shown to prompt the pharmacist about choosing from the selection.3. Test that the pharmacist can confirm or cancel the discontinuation after clicking the “Discontinue” button..4. Test that the item’s status attribute is correctly updated in the database.	

5.3. User Story 3

User Story: As the pharmacist, I can view the list of items that are out of stock or below the reorder point so that I can easily determine which items to reorder.	
Estimate: 4 hours	Priority: 20
Precondition: The pharmacist wants to view the list of items that are out of stock and that there already are existing items in the system.	
Scenario: <ol style="list-style-type: none">1. The pharmacist views the list of items that are out-of-stock and below or those below the reorder point.	
Post-condition:	
Acceptance Criteria: <ol style="list-style-type: none">1. Test that the pharmacist can see a list of items displaying the item name and remaining quantity.2. Test that the items are listed in alphabetical order according to status; out-of-stock items are listed first, followed by items below the reorder point.	

5.4. User Story 4

User Story: As the pharmacist, I can view the product list so that I may use it as a reference on products available in the pharmacy.	
Estimate: 4 hours	Priority: 11
Precondition: The pharmacist wants to view the product list and that there are existing items in the system.	
Scenario: <ol style="list-style-type: none">1. The pharmacist views the product list.	
Post-condition:	
Acceptance Criteria: <ol style="list-style-type: none">1. Test that the pharmacist can see a list of items displaying the item name and remaining quantity, buying price, and selling price.2. Test that the items are listed in alphabetical order.	

5.5. User Story 5

User Story: As the pharmacist, I can update the quantity and add expiry dates to the product list as a record of restocked items.	
Estimate: 2 days	Priority: 10
Precondition: The pharmacist has restocked items to record and that these items already exist in the system.	
Scenario: <ol style="list-style-type: none">1. The pharmacist enters the quantity of items of a certain brand variation.2. The pharmacist selects the name of the item.3. The pharmacist enters the items' expiry date.4. The system validates the input.	
Post-condition: The database has been updated. Feedback is displayed showing success of restocking.	
Acceptance Criteria: <ol style="list-style-type: none">1. Test that the pharmacist can enter the quantity of delivered stock.2. Test that the pharmacist can select an item name from a selection of current items' names.3. Test that the pharmacist can select the new delivered item's expiry date from three selections: month, day, and year.4. Test that the year drop-down contains the range from current year to four years from now.5. Given that the pharmacist enters a quantity, selects an item name, and clicks the "Add" button, test that feedback is displayed showing the item name and its added quantity (e.g., "20 pcs. Neozep added.");6. Given that the pharmacist incompletely provides the expiry date and clicks the "Add" button, test that feedback is displayed cueing what dropdowns needed selection.7. Test that the modified quantities and expiry dates are updated correctly in the database.8. Test that the restocked items are represented in the database as a batch of items described by the item name and expiry date.	

5.6. User Story 6

User Story: As the pharmacist, I can record the transaction details every time a customer purchases since it will form part of the daily sales report.	
Estimate: 2 days	Priority: 10
Precondition: The pharmacist wants to record a sales transaction and that items already exist in the system.	
Scenario: <ol style="list-style-type: none">1. The pharmacist selects the date of the transaction.2. The pharmacist enters the quantity of the product sold.3. The pharmacist selects the name of the item sold.4. The system validates the input.	
Post-condition: The sales transaction is stored in the database. Feedback is displayed showing success of recording.	
Acceptance Criteria: <ol style="list-style-type: none">1. Test that the pharmacist can enter the quantity of sold item.2. Test that the pharmacist can select an item name from a selection of current items' names.3. Test that the pharmacist can choose to set the transaction date to today, or to set it manually at a different date.4. Given that the pharmacist chooses to set the date manually, test that the pharmacist can set the date through three dropdowns: month, day, and year.5. Test that the one day before the current date is the default selection for the three dropdowns.6. Given that the pharmacist clicks the "Add" button and with all fields filled out, test that feedback is shown confirming its addition to the database (e.g., "Transaction added.")7. Test that the inputted transaction details are stored in the database.8. Test that the quantity of the item is deducted from the item with same name and with the earliest expiry date.9. Given that the pharmacist leaves any field blank and clicks the "Add" button, test that there is feedback shown, cueing the fields that need input.	

5.7. User Story 7

User Story: As the pharmacist, I can manage the documentation of expired and near-expired items so that I am able to appropriately tag, recall the supplier, or dispose.	
Estimate: 1 day	Priority: 15
Precondition: The pharmacist wants to view the near-expired and expired items in the inventory and wants to take action with these items.	
Scenario: <ol style="list-style-type: none">1. The system lists items that are expired and near-expiry.2. The pharmacist selects an item from the list that he wants to act on.3. The pharmacist confirms taking action.	
Post-condition: The system removes the expired and near-expiry items from the list.	
Acceptance Criteria: <ol style="list-style-type: none">1. Test that the pharmacist can see a list of current items, displaying the item name and expiry date.2. Test that if the various items of the same product have varying expiry dates, the earliest expiry date is displayed alongside the item name.3. Test that the table groups the items according to status; expired items are shown first, followed by the near-expired. The groupings are ordered according to their expiry dates.4. Test that all items in the table have a "Remove" alongside them.5. Test that clicking on the "Remove" option erases the item from the list.6. Test that the system indicates those medicine whose expiry month is the current month as expired.7. Test that the system indicates those medicine whose expiry month within 6 months of current month as near-expired.	

5.8. User Story 8

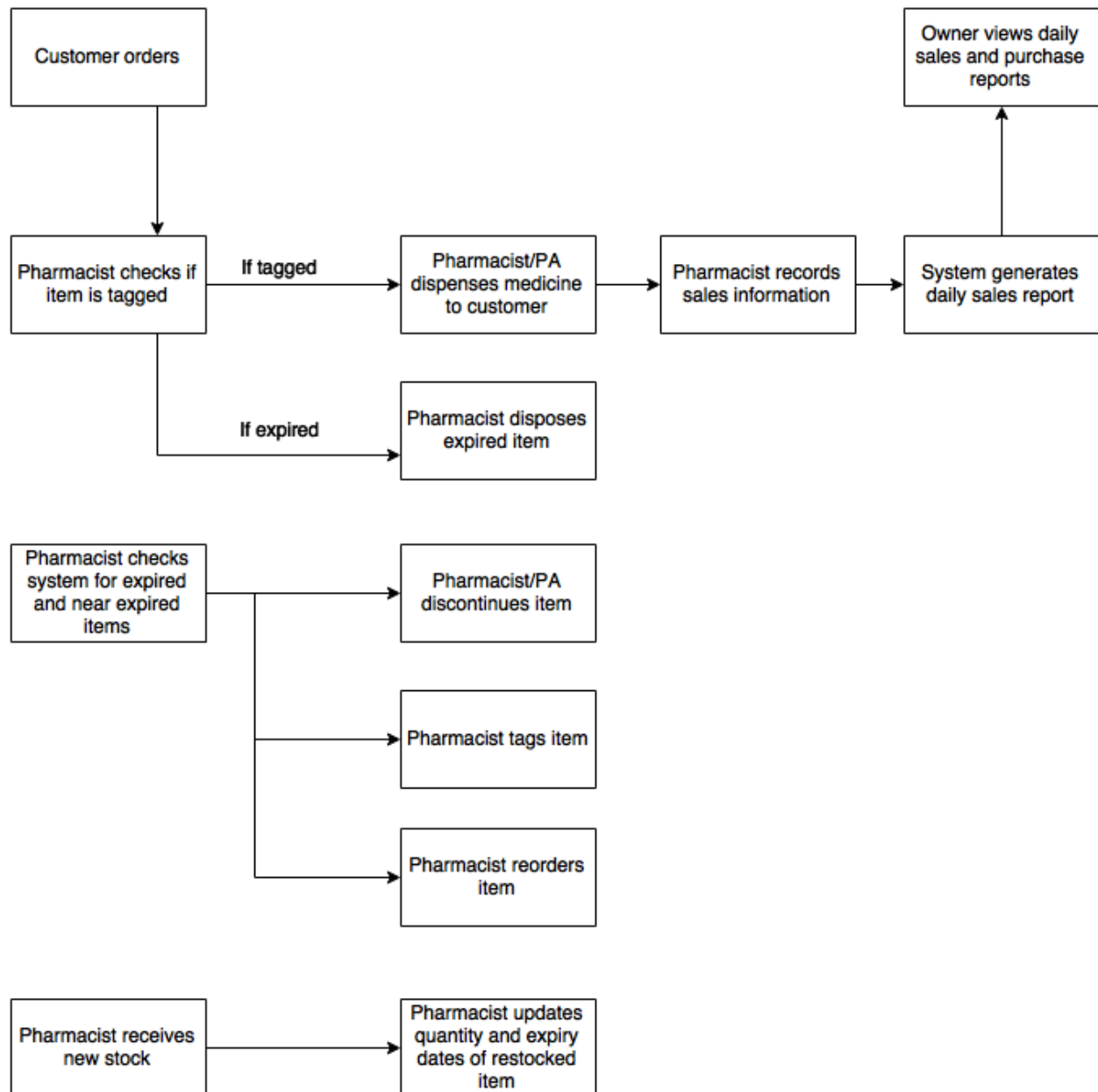
User Story: As the owner, I can view the sales report as basis for the computation of the monthly sales report and the monthly income statement.	
Estimate: 2 days	Priority: 20
Precondition: The owner wants to view the sales reports.	
Scenario: <ol style="list-style-type: none">1. The owner selects a filter that narrows the view of the data.2. The system displays the filtered data.	
Post-condition:	
Acceptance Criteria: <ol style="list-style-type: none">1. Test that the owner can view the daily total sales.2. Test that the owner can view the weekly total sales.3. Test that the owner can view the monthly total sales.	

5.9. User Story 9

User Story: As the pharmacist, I can export the lists to an external file so that I may be able to have a printed copy if the need arises.	
Estimate: 5 days	Priority: 90
Precondition: The pharmacist wants to have a copy of any of the records in the system.	
Scenario: <ol style="list-style-type: none">1. The pharmacist selects the record he wants to have a copy of.	
Post-condition: The system generates a file containing the selected record. Feedback is displayed showing successful exporting.	
Acceptance Criteria: <ol style="list-style-type: none">1. Test that each list can be exported to an external file2. Test that the exported list has the appropriate header (List name - mm/dd/yy)3. Test that the exported file has the appropriate filename (List name - mm/dd/yy)4. Test that the data exported is accurate.5. Test that the pharmacist may create multiple copies of the external file	

Appendix A: Improved Business Process

The diagram below shows the improved business process of the client once the inventory system is in place and being used.



Appendix B: Interview Transcript

INTERVIEWERS

Alex Carpo (AC)
Karl Crespo (KC)
Nico Rapisora (NR)

INTERVIEWEES

Sean Rapisora (SR), Co-owner of Farmacia Regine
Jerome Bacani (JB), Pharmacist at Farmacia Regine

START OF INTERVIEW

KC – Good afternoon, it is 5 PM.

NR – So first introduce po namin sarili namin. Ako si Nico Rapisora, project manager ng software engineering team namin.

AC – Hello. Ako si Alex Carpo. I'm an analyst for our group.

KC – Ako naman po si Karl Crespo, analyst din po for our group

NR – Before we continue, pwedeng taglish ang mode of conversation natin. So first question -- oo nga po mag introduce po muna kayo -- sorry.

SR – Hi, I'm Sean Rapisora, owner of the pharmacy.

JB – I'm Jerome Bacani, the supervisory pharmacist in Farmacia Regine.

KC – I'll just take down notes nalang po of what you're going to say.

NR – Okay so. First question muna, yung tasks niyo. What are your tasks in the pharmacy?

SR – Actually, my wife is the one managing the pharmacy, Farmacia Regine; I'm just giving assistance. Ikino-consult niya ako for some requirements ng pharmacy, whether it's financial, sa tax, o regarding sa pharmacy.

NR – Si sir?

JB – Ako naman, supervisory pharmacist sa Farmacia Regine. Usually, I dispense the drugs. Over the counter drugs, prescription drugs, I dispense it. So what I do is that I monitor the inventory of the pharmacy. So tinitignan ko kung alin yung mga drugs or items, products na mababa na yung unit sa pharmacy. So once na kaunti na yung particular product, ina-alert ko na yung pharmacy assistant at personnel, para makapag purchase order na kami doon sa mga distributor namin. So that way hindi kami mawawalan ng stock.

NR – Ie-emphasize lang po namin yung goal ng today's interview. Ang end goal namin for this interview is to identify kung ano ang problem sa pharmacy, kung dapat at kailangang ba itong gawan ng software solution. Kasi hindi naman lahat ng problem kailangan ng software solution. So, i-check pa namin kung tama ba ito at ano ang problema talaga. Okay so, para makuha sa record, gaano katagal na po kayo nagtatrabaho sa Farmacia Regine?

SR – Nagstart ako ng pharmacy, unofficially pa, 2003. Then officially, 2006 naging registered na kami. Yung whole operation ng pharmacy matagal na. More than 10 years.

NR – Si sir?

JB – Ako, nasa Farmacia Regine ako from April (2016) nung na-hire ako until the present.

NR – Nainform naman po siguro kayo na inventory ang focus ng interview. Kasi nainform na kami na merong concern tungkol sa inventory system. So, first question: How is the inventory created at present? Paano siya ginagawa ngayon? Sino ang gumagawa?

JB - As of now ginagawa namin is manual inventory. So ginagawa namin, every lagayan ng product -- drugs, cosmetics, food, or any item. Tinitignan namin kung ilan nalang ang natitira. Araw-araw namin binibilang kung ilan yung product. For example, Erythromycin. Titignan namin yung lagayan ng Erythromycin kung ilan. So manually bibilangan namin, o ita-tally namin. So ganun nangyayari inventory. Dapat din namin makita kung anong product ang slow-moving or fast-moving. Day-to-day basis naming ginagawa yung inventory. Pero meron pa kaming tinatawag na bi-annual inventory which is twice a year. So na-inform naman ako ni Ma'am na January 2 ang first inventory, then June 30 ang second inventory. So meron day to day basis at meron din bi-annual which is twice a year.

AC – Just a follow up question. By fast and slow moving, do you mean how popular an item sells?

JB – Yes. Fast-moving products are those products that are usually dispensed or bought by the patient or customer. Then slow moving are those products or items that do not move at all, or no patient or customer buys those products.

NR – So yung fast-moving products tsaka slow-moving products may certain number of units po ba? So what do you mean by that? Tinatansya niyo ba?

JB – As of now, ginagawa namin is assumption or tansyahan. Makikita namin weekly mauubos ang isang product. So by that malalaman namin or ma-assume namin na fast-moving ang product na iyon. Weekly namin siyang binibili at weekly din namin siyang ino-order. By that, naka-categorize namin ang product na iyon as fast moving.

AC – Another follow up question. What are the usual problems you run into, the current issues you are handling in the process of inventory?

JB – Right now we are handling the inventory in a tedious manner. Since it's a day to day task just to monitor a product. It's a tedious process and time consuming. Instead of assisting and dispensing, almost all the time I have, I am doing inventory. Instead of me doing dispensing, or patient counseling, all my time has been devoted in inventory. Those are the problems I have with the current process.

NR – So gaano katagal po ba yung mga process na iyon? Umaabot po ba ng isang araw?

JB – Usually umaabot siya ng 6 hours kapag ako lang gumagawa. So I work 8 hours daily. I can only help the assistant pharmacist in the remaining 2 hours. So kapag mas maikli ang aking oras sa inventory, mas madami akong magagawa sa pharmacy.

NR – So nabanggit kanina na ginagawa yung inventory nang January at June. Tapos merong daily inventory at bi-annual inventory. Yung daily inventory, paano po yung documents? Sino po may hawak ng documents?

JB – Usually ang nakakakita ng documents ay ako, minsan I show it din sa owner at sa assistant doon, siya yung nag-pu-purchase ng mga products. Weekly kasi umorder kami ng products. So almost lahat ng tao sa pharmacy sees the inventory.

NR – Yung bi-annual inventory the same din naman po?

JB – Yes. I think.

NR – May documents po ba kayo na available? Sample inventory?

JB – Meron ako dala ngayon in excel form. Wala lang hard copy.

NR – Okay lang po kung email nalang?

JB – Okay.

KC – Nasaan po ba yung documents?

JB – Naka USB.

NR – Pwede kunin nalang namin diyan mamaya? Okay. So who are the different people in the pharmacy and who are involved in creating the inventory?

SR – Usually yung owner, pharmacist, pharmacist assistant, and other personnel sa kabilang store to make it faster. So yung bi-annual inventory, it takes almost 2 days para matapos lahat ng items. Kaya nag-re-require ng additional personnel sa pag-inventory kasi manual nga ang pag count ng items -- kung ilang yung mga naiwan, ilang ang sold items.

NR – So ilang tao?

SR - Kailangan ng 5 tao para magawa iyon.

NR – Gaano ba ka-importante ang inventory? What business decisions depends on the results of the inventory?

SR – Una, para malaman ko kung ilan yung items na nabenta at ilan ang naiwan. From there malalaman natin yung term from the military na “critical point” or “re-order point”. Ito ang magbibigay saamin ng notice na kailangan na kumuha ng additional stock ng particular product. Isa sa mga pinaka importante

iyon. Second, as mentioned ng pharmacist natin. Dito natin malalaman ang fast-moving at slow-moving item. Then kung may dagdag naman sa inventory kasi nakadikit naman doon sa product yung expiration date nung product maisama na siya sa inventory kung anong item yung malapit na mag-expire at kung may item na kailangan na i-pull out kasi expired na. Isa din yun sa mga importante.

NR - So meron yung determining the critical point at meron din yung determining the fast or slow moving na product at saka meron din yung expiration, pero as of now, alin doon sa tatlo, o yung tatlo ba ay na fulfill ng Manual Inventory?

SR - Na fufulfill naman siya, pero sinabi ko nga, malaking trabaho ang kailangan. Minsan yung sa expiration, hindi siya na fufulfill, nakakaligtaan iyon kasi busy yung pharmacist sa pag didispense nung item to the extent na napapabayaang yung inventory.

JB - I think sa business position, mahalaga na nakikita during the inventory kung may losses sa profit or may products na nawala or nasira. In that way, makikita natin kung ano yung mga problem during those time frame na nag inventory check ka from January to June 30, so nakikita mo yun. Another thing is nakikita mo during inventory kung kumikita ba yung pharmacy kasi I think during the inventory titingnan mo yung mga product na nabenta, nawala doon sa stock, ibig sabihin na-dispense mo, then makikita mo doon kung ilan yung nadispense mo imultiply mo yung unit price then makikita mo yung total na kikitain mo, then by that mapapansin mo kung by that month nagtatalo yung unit price na nabenta mo and kung ano yung hawak nung pharmacy, so that way makikita mo kung kumikita ba talaga o hindi. Second, kung makikita mo, parang follow up siya para makita mo kung ipagpapatuloy mo pa yung business kasi makikita mo doon kung worth it ba ituloy pa kasi mababa yung sales or profit at doon mo rin makikita na lumalago din yung business mo kung makikita mo na mataas yung profit mo that month or that year. Yun yung mga decision na makukuha mo from the inventory.

SR - Additional ko lang doon sa inventory, malalaman mo rin doon kung may item talaga na hindi talaga nag momove, might as well, wag ka na mag order noon from the supplier kasi nandoon lang siya sa shelf, walang bumibili. Matutulog lang yung money doon eh, sayang lang pera doon.

NR - Syempre yung inventory maraming action na nakakabit doon, meron yung purchasing, meron din yung dispensing. Doon muna tayo sa ordering, pag nag-order yung customer, sino ang nag proprocess? How do you process it? Or paano nirerecord?

JB - Right now yung ginagawa namin is when you dispense something or any item in the pharmacy, we take note, we list it manually in a notebook then later on I will tally all the items and put it in the laptop, that way I can see which items or products that has been bought within that day.

NR - So ikaw po yung in-charge sa pag tatally?

JB - Sometimes the Pharmacy assistants compute everything on the notebook, I only see the products that are sold within that day and then I put it in the laptop.

NR - Pag may trinatrack po na order, ano po yung mga information na kasama doon? So yung pangalan nung gamot? Gano'n ba?

JB - Usually, pag makikita mo yung notebook na ginagamit, nakasulat doon yung name of the drug, the unit price and the quantity. Also, since pharmacy ito, nakalagay doon yung ilang milligrams and dosage.

NR - So how are these information used?

JB - First, kaya namin inirerecord kasi for financial purposes, makikita mo kasi doon kung magkano yung nabenta. Second, meron kasing tinatawag na "inspection" sa pharmacy, during that inspection tinitingnan yung mga purchasing order, kung anu-ano yung mga drug na na-dispense and yung prescription. During that, kung makikita nila na nag-dispense ka ng drug, pero walang prescription magkakaroon ng problema during the inspection.

NR - So doon naman tayo sa pag-deliver ng gamot. Trinatrack niyo rin po ba kung sino yung distributor? And do you take note kung anong company yung gumawa ng gamot?

JB - Usually, tinatake note namin ang mga pangalan ng distributor, and also the manufacturing company ng distributor. Nilalaman din namin ang mga bagong products ng distributor, kung may promo sila kagaya ng; if you buy a box of Erythromycin, will you also get another for free?

SR - Additional sa sinabi niya. Required din ng FDA; Food and Drug Administration na malaman kung sino ang distributor. Kung authorized distributor ba iyon.

NR - So yung manufacturing company at tsaka yung distributor...

SR - [Oo, kasi] Required [na malaman] kung authorized o legal ba ang paggawa nila ng gamot.

NR - So ano po ang process niyo to check which medicine are near-expiry? 'Di ba nabanggit niyo kanina ang "critical point"? So, at the end of the day po ba, binibilang niyo po ang expired? Pagka-deliver chine-check po ba agad ang expiry date? Ano po ang process sa pag-check ng expiry date?

SR - Before, ginagawa namin nung wala pa yung pharmacist namin. Ang ginagawa is icheck agad yung expiration at take note namin kung kailan mag expire. Tapos, pagka 6 months before expiration na siya, binabantayan na yung gamot na iyon hanggang sa mag-expire siya. Or kung pwede i-pullout; ipapalitan namin sa distributor or sa company ng gamot. Para maiwasan ang pag-dispense ng expired na gamot sa pasyente. Yun ang pinakamalaking purpose nun.

NR - So diba 6 months...

SR - 6 months start na ng pagbabantay ng gamot na malapit na mag-expire.

NR - Ngayon din po ba 6 months pa rin?

JB - Ngayon since meron na tayong regular inventory, nakikita natin ang products na dapat lagyan ng tag na near-expiry. That way, araw-araw tinitignan namin kung ano ang near-expiry products. For example may bagong dating na product. May isang problem na napansin ko na during nag-delivery ang isang distributor. Meron akong dala ngayon dito na documents. Ganito ang example ng isang purchase order. Makikita mo yung pangalan ng products, unit price, amount, pero wala yung expiry date. Since tedious ang process, pero busy ako sa inventory at dispensing, yung pharmacist assistant busy din. So yung part na ito ay mabilisan dapat, dahil kailangan namin makita agad. So dati di namin nakikita kaagad yung expiry date kapag dineliver sa amin. That way, makikita namin kung ano dapat ang una namin ibenta. Nakikita namin 2 months or 3 months mag expire na pala ang product. Pwede namin ma-prevent ito kung

nakita namin kaagad ang expiry date. Ayun ang isang problem. So ngayon ang ginagawa ko as first-aid sa problema na iyon ay araw-araw mag-inventory. Kapag nakita ko na mag expire na ang isang produkto, sasabihan ko na sila.

NR - So araw araw niyo po ini-isa-isa ang gamot?

JB - Araw araw.

KC - Pwede po ba picturan namin, for reference po?

JB - Nagdala ako ng tatlong document galing sa tatlong malaking distributor ng pharmacy. So ito sila. Actually ito na mismo ang documentation namin. Ito na yung copy namin. Wala na kaming ibang way, for example ilalagay ko pa siya sa laptop. Di ko na siya nagagawa kasi another workload pa iyon. Instead na makatulong ako sa pharmacy assistant. Yung problem namin ay walang expiration sa papel ang pinadalang product saamin. So sometimes nagugulat nalang kami na mag-expire na pala ang isang produkto. Pwede namin i-take note ang expiry date ng bagong produkto kung mabilis ang daily inventory namin. That way, ma-solusyonan namin ang problema.

NR - Yung mga expiry-date po ba naka-take note sa isang notebook o document?

JB - Actually wala kaming documentation ng expiry date. Umaasa lang kami sa daily inventory namin.

NR - So, ganun din po ba sa out of stock?

JB - Out of stock, yun yung isang problem namin. Kasi dati nung hindi ko pa sinisimulan ang inventory, nagugulat kami kasi wala na yung product, malalaman nalang namin kung may bumili na. Yung first-aid namin ay araw-araw na inventory.

NR - So doon po sa near out-of-stock doon po ba natin ginagamit yung term na “critical point”. Yun yung point na kailangan na mag re-order?

SR - Yung “out-of-stock”, ‘yun yung totally wala ng stock. Yung “critical point” meron ka pang kaunting stock. Kunwari malapit na maubos, yun na yung critical level or re-order point.

AC - Just a follow up question. What is the usual critical point?

SR - Depende din kung fast-moving or slow-moving ang item. Kung fast-moving ang item, mas higher ang critical point.

JB - For example, yung product na fast-moving, which are usually antibiotics [like] amoxicillin. Considered critical point if you have 20 units of amoxicillin. That is considered as critical point. Kasi 20 na lang ang meron ka pero araw-araw, nag-dispense ka nang sampu-sampu, etc. So sa isang araw napansin ko ang usual benta or dispensing nang isang amoxicillin is a day or during 8 hours will be 30-50 depending on the day. So makikita mo na kapag kaunti na lang ang stock mo, critical na iyan. Then another, kapag slow-moving ang product, for example mga pinapahid katulad ng petroleum jelly, yun yung mga stock na twice or thrice [lang na] hinihingin nang customer, so ang critical point niya ay mas mababa.

NR: So as of the moment, parang tantiyahan yung basis din?

JB: Yun nga tantiyahan, kasi 20 units na lang mapapansin mo na mauubos na siya kapag hindi ka nakapag-order agad, kinabukasan wala ka nang ibebenta.

AC: Meron kayong computer sa pharmacy?

JB: May ginagamit na computer kaso pang financial purposes lang. Wala regarding sa pharmacy, sa products talaga or regarding inventory or point of sales. Pero as of now, I use my laptop, yung ginagawa ko lang is trial and error muna kasi tedious pa rin siya.

KC: So, follow up question po. So lahat inililista lang sa notebooks?

JB: Yes. Yung mga kailangan naming information, ilinalagay sa notebook, then I transfer to my laptop.

NR: Pero may plano po kayo namang bumili ng computer?

JB: Meron.

NR: So what kind of computers do you know how to operate?

JB: Yung usual, regular desktop, laptop.

NR: Kasi po may nabanggit ka kanina na may mga taong involved sa inventory bukod po sa pharmacy assistant?

SR: Computer literate po naman siya.

NR: Okay. So lahat po ba nang involved, literate po sa paggamit ng computer? Basic, halimbawa sa Excel?

SR: Yeah.

KC: So, what we are going to do is recap everything. I took down notes as good as I can. So first, your names are Sean Rapisora and Jerome Bacani. For the tasks in pharmacy, so what you do Mr. Rapisora is that you do the requirements of pharmacy in financial situations. And, ikaw po Mr. Bacani, you dispense the drugs and monitor the inventory of the pharmacy and tell others to order new stock if it is critical, po. So, for the question of how long have you been in the pharmacy po, unofficially, you started in 2003, and registered officially in 2006. And for you, Mr. Bacani po, you started since April 2016.

So for the question of how is the inventory created at present, Mr. Bacani, what you do is inventory and do it on a daily basis, there is also annual inventory which takes place twice a year and inventory is created by determining the stocks available and you said po, that is very tedious and time consuming. So, for how long the inventory process is: Since you said you only have 8 hours a day, 6 hours of those is devoted to inventory. And you only have 2 hours to assist in the pharmacy. And to you, Mr. Rapisora, you said that it takes 2 days with 5 people to do the inventory? Is that right?

SR: For the semi annual. Every 6 months inventory.

KC: Sige po. Next question is, who holds the documents of the inventory? Mr. Bacani you said that you take care of the documents? You're the only one po?

JB: Almost all of those in the pharmacy has access to the documents. Anyone who needs the documents, meron silang access. Ako, the owner, the pharmacy assistant. If they need any documents available, any of them can access.

KC - Okay. So are the different people in the Pharmacy. Mr. Rapisora, you said the owner, the pharmacist, the assistant, and other personnel from another store. Does this mean that you borrow employees from another pharmacy?

SR - Yes.

KC - What is the importance of the inventory? According to Mr. Rapisora; to know the number of items that has been sold and has been left, to indicate the critical level - means that we need to get more stock of a specific item, to determine the fast moving and the slow moving items, to know when to pull out the expired items, and with manual inventory; it can be fulfilled but it is very tedious. For Mr. Bacani. For the business decision. To determine the losses in the inventory such as missing, broken, or stolen items, to determine if the pharmacy is earning, to determine if the business is worth it to be continued. And you made an additional remark; if an item is not moving, it is best not to order that item again. So the next question po. In ordering what is the process? So Mr. Bacani said that when you dispense, you manually take note in a notebook, and later on that day you tally all the items and put it on a laptop. Kaninong laptop po iyon?

JB - Akin.

KC - Sometimes, the pharmacy assistant computes the data in the notebook, and people who tally those are you and the pharmacy assistant? So dalawa lang kayo?

JB - There are 2 pharmacy assistants. So kung sino ang merong available time pwede naman. Sometimes ako, sometimes pharmacy assistant. Pwede ding owner, anyone who is in the staff.

KC - Okay. So you indicated po inside the notebook yung mga information po is the product name, unit price, how many products are dispensed, and the products' amount in milligrams. Is that all?

JB - Yes.

KC - And you said po using this notebook, we will know how many did we sell on that day. We also use it for purchasing order, and you said that taking notes is very important. So in the delivery of medicine. Mr. Bacani po, you said that you take note of the name of the distributor and the manufacturing company, and their old and new products and promos. And you said Mr. Rapisora that it is required by FDA to know if it is an authorized distributor.

NR - Wait lang. Additional question tungkol sa ordering and delivery. How often are new medicine ordered and delivered?

SR - Usually every weekend.

NR - So Saturday, Sunday?

SR - Saturday, Sunday.

NR - Sino yung nag-oorder? Kasi siyempre kung sino ang mag-oorder siya ang may access sa out of stock.

JB - Kahit sino saamin sa establishment pwede mag-order. For example nakita ng owner, ako, or ng pharmacy assistant na yun certain product na ito wala na, mag o-order na siya

KC - Okay, so ang nangyayari is initiative nalang kung sinong personnel ang assigned.

NR: Ayun.

KC: So, moving on, po. So, for the checking of expiry, Mr. Rapisora, you said that, We take note of the product's expiry date. And ichini-check yung dumating po. And if it's 6 months before expiration, you will keep an eye on it so that it can be pulled out by the distributor. That correct po?

JB: We will monitor kung 6 months pa lang, either pwede nang i-pull out to be replaced by the distributor or mag-stay pa siya until na mag-expire na. We will pull out na, na maaabutan na ng expiration date. Kung may time pa, we have to contact the distributor kung mag-change yung item.

KC: This is to prevent selling of expired products. So, Mr. Bacani said that we put near-expiry products with tags po. And with expiry dates, we will know that what products must be sold immediately, and purchased orders do not have expiry dates. So, we have to take note of the expiry dates manually. We rely on daily inventory to keep track of expiry dates. Out of stock is another problem, because products will be sold out all of a sudden.

SR: Pero, additional sa expiration pala. Merong kasing item na, the same name, the same item, pero different expiration dates. So yung, sinabi ni pharmacist na, we will sell first the product na malapit na expire para maiwan yung matagal na expiration. Kasi may item na magkasama sila sa isang lagayan pero yung isa, malapit ma-expire, yung ibang matagal naman.

KC: You mention po yung fast-moving product. Yung fast moving products is yung mga antibiotics and if it is at its critical point, kunwari, if its Amoxicillin, mga 20 units, its already at the critical point. And for slow-moving products, ito yung mga ano, yung mga mabagal, yung lotion, efficascent oil. So ilan po yung critical point ng slow moving products?

JB: Three.

KC: Three?

JB: Three items.

KC: Three.

SR: To define the critical point and the re-order point. Yung critical point, yung higher than re-order point or same na rin, yung na rin na re-order point.

JB: Feeling ko sir, yung critical point will be mas mababa sa re-order point.

SR: Para hindi umabot sa critical point, naka-order na tayo.

KC: Sige isulat ko lang po. So, ito yung last questions. Do you have computer for pharmacy? You have computers for financial purposes only? I only use my laptop. Everything is stored in notebooks, yung sinusulatan po, i-transfer to your laptop. And you said po you plan on buying computers. And you said po that everyone is computer literate. So tama po ba ang recap namin?

SR: Tama.

NR: Additional question lang po sa expiry, yung sa pag tag. Paano po siya tinatag?

JB: For example yung amoxicillin. Tinatag namin siya na may nakalitaw na white bond paper. Ginugupit namin iyon, mga small white papers. Signal siya na ang mga product na ito ay near expiry.

NR: So ganun din po ba sa mga capsule and tablets?

JB: Ganun ginagawa namin. Yung container mismo yung nilalagyan namin. Hinihiwalay namin ang products na malapit na mag expire. So malalaman namin kung saang container kukuha.

NR: Follow-up questions? Okay, so, yung lang actually ang interview namin. Gusto lang namin i-frame yung problem, para makita kung problema ba talaga siya na kailangan ng software solution. Hindi pa natin napag-uusapan yung technical parts. So siguro kung may next time, baka pwede kami mag schedule ng another interview.

SR: Pero regarding that, as owner. Ang gusto naming output ay maalís ang tedious tasks at mapabilis. Kaya nakita namin na kailangan ng software. So ang gusto namin makita at the end of each day, each month, 6 months, and each year, kung ano ang fast moving items, ano yung critical point items at the end of the day para makapag order na kami, ano ang mga items na hindi na namin kailangan i-purchase kasi hindi siya nag boom. Gusto namin malaman anong product ang mas mabenta compared to other products. Kasi meron products na the same pero different companies ang gumagawa. So at the end of the day, ma-print out mga ito at ito lang ang titignan namin. Ito ang kailangan i-order on the weekend. Dito din naka base ang decision making namin.

END OF INTERVIEW

*Subsequent interviews were done informally and were documented only through interview notes.

Appendix C: Sample Forms and Reports

Below are samples of the five records that the current client currently uses as part of its inventory system.

C - 1: Product List

Item Name	Remaining Quantity (in pcs.)	Purchase Price (in pesos)	Selling Price (in pesos)
Advil 200 mg	92	8.00	10.00
Tiki-Tiki Plus drops	10	35.00	40.00

C - 2: Sales book

Quantity	Item Sold	Total Sales
10	Amoxicillin 500 (Generic)	30
20	Advil 200 mg	200

C - 3: Out-of-Stock List

Item Name	Remaining Quantity (in pcs.)	Quantity for Purchase (in pcs.)
Bioflu tablet	100	200
Advil 200 mg	92	120

C - 4: Daily Report

Date: June 13, 2016	
Supplier	Purchase Amount (in pesos)
Chynna	6913.00
Super 8	6035.85
HLS	3415.00
Total Purchases for the day	16363.85
Total Sales for the day	P33,766.90

C - 5: Bad Order

Item Name	Quantity	Expiration Date	Supplier	Status
Cefalin 250 mg/5 ml 60 mL	1	June 1, 2016	HLS	Dispose
Paracetamol 500 mg (Panadol)	50	September 2016	HLS	For Replacement

Appendix D: References and Acknowledgements

We would like to thank the owners of Farmacia Regine, Mr. Sean Rapisora and Mrs. Regine Rapisora, who have agreed to let us become part of the improvement of their establishment. We also would like to give thanks to the pharmacist, Mr. Jerome Bacani, for setting aside time for us after his workday. Lastly, we would like to express our gratitude to our professor, Mr. Briane Paul Samson for his guidance and teaching throughout this course.