OOP PROJECT

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Universidad de las Fuerzas Armadas "Espe"

Subject: Object-oriented programming

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Introduction of the Project

Problem:

We need a system that is capable of efficiently tracking the entry and exit of merchandise at an ice cream distributor called "Glacial Branch 3", keeping the inventory updated in real time and generating a detailed record of sales transactions, both wholesale and minor, it is also necessary to generate sales notes to have a detailed report on capital and stock, simplifying the administrative management of the ice cream shop.

Overview:

In the management of inventories linked to sales notes, the output and input records of products generate data that can be used to provide a clear idea of the amount of inventory they have for each of them, this to avoid purchasing unnecessary products or ordering supplies with greater advance notice and planning. Also, they will allow the user to maintain a clear accounting of their monthly income and profits focused on the type of clients they have (be they majority clients or common clients). This process will seek to optimize through the implementation of software focused on said problem.

Background

The main action of the ice cream parlor is the purchase and sale of ice cream already made. To understand better the situation, we need to understand how the ice cream parlor works, the actions carried out and its daily processes. The ice cream parlor works with wholesale and retail buyers, so there are different prices at which the product is sold. In addition, the ice cream parlor has a warehouse and a place where the products are stored. On the other hand, it shows the customer the stock it has in stock. Generally, the factory that supplies ice cream to our ice cream parlor supplies us twice a week, which is on Tuesdays and Thursdays. In our stock we have 31 different ice creams, each of which has its own unit prices and depending on the sector north/south of Quito or the type of customer (they could be wholesale or retail clients), therefore our ice cream parlor distributes its products to stores and schools, etc.

In our ice cream parlor, we work using sales notes, which are made by hand to know the investment of the week, the profits of the week, the clients who work with us, among other processes, which we need to be automated to speed up daily deliveries. Keep in mind that we buy around 50 boxes of ice cream per week, which we distribute it to different stores, while we also store to sell to ordinary people.

For example, a box of Salcedo ice cream contains 45 units, the cost each is 0.32 ctvs, which would be a total of $14.4 (45 * 0.32) of investment, the sales price of the product is 0.45 ctvs each, then the profit margin would be the following, ((PV-Costs)/Pv*100))(0.45-0.32)/0.45 * 100), approximately there is a profit margin of 28.88% for each ice cream sold. Since the investment is a fixed cost, the break-even point can be calculated (Investment/Contribution margin per unit) but first the total contribution margin is calculated = 0.45-0.32 = 0.13 ctvs. Thus, the equilibrium point remains as 14.4/0.13 = approximately 111 units to cover the entire investment.

Price table from "FÁBRICA GLACIAL" to the "SUCURSAL GLACIAL 3" ice cream shop.

Product	Units by box	Unit Price	Box Price
Sabores	45	0.45	14.40
Surtido	45	0.31	13.95
Maxibon PQ	32	0.35	11.20
Maxibon GR	56	0.35	20.30
Cono	38	0,32	12.00
Copa	36	0.36	12.96
Vasito Kid	45	0.27	12.15
Coco	45	0.32	14.40
Mora	45	0.32	14.40
Ron	45	0.31	13.95
Chicle	45	0.31	13.95
Chocolate	45	0.31	13.95

Galletas	45	0.32	14.40
Frutas	45	0.34	15.30
Marmoleado	45	0.32	14.40
Piña	45	0.32	14.40
Guanabana	45	0.32	14.40
Peke	65	0.17	11.05
Peke sabores	65	0.19	12.35
Milky	70	0.14	9.80
Choconew	55	0.20	11.00
Tunga Tunga	65	0.17	11.05
Gemelo L/N	40	0.18	7.20
Gemelo L/CH	40	0.18	7.20
Paleta de agua	70	0.10	7.00
Sanduche	30	0.40	12.00
Batu	32	0.26	8.32
Crio genio	42	0.17	7.14
Pasión	35	0.20	7.00
Maracuyá	35	0.20	7.00
Mango	35	0.20	7.00

Price table for "GLACIAL BRANCH 3" to the "CLIENTES AL MAYOR NORTE" ice cream shop.

Product	Units by box	Unit Cost	Box Price
Sabores	45	0.45	20.25
Surtido	45	0.45	20.25
Maxibon PQ	32	0.50	11.20
Maxibon GR	56	0.50	20.25
Cono	38	0,45	17.10
Copa	36	0.50	18
Vasito Kid	45	0.38	17.10
Coco	45	0.45	20.25
Mora	45	0.45	20.25
Ron	45	0.45	20.25
Chicle	45	0.45	20.25
Chocolate	45	0.45	20.25
Galletas	45	0.45	20.25
Frutas	45	0.45	20.25
Marmoleado	45	0.45	20.25
Piña	45	0.45	20.25

Product	Units by box	Unit Cost	Box Price
Guanabana	45	0.45	20.25
Peke	65	0.25	16.25
Peke sabores	65	0.25	16.25
Milky	70	0.20	14.00
Choconew	55	0.25	13.75
Tunga Tunga	65	0.25	16.25
Gemelo L/N	40	0.30	12.00
Gemelo L/CH	40	0.30	12.00
Paleta de agua	70	0.15	10.50
Sanduche	30	0.50	16.00
Batu	32	0.38	12.16
Crio genio	42	0.25	10.50
Pasión	35	0.30	10,50
Maracuyá	35	0.30	10.50
Mango	35	0.30	10.50

Price table for "GLACIAL BRANCH 3" to the "CLIENTES AL MAYOR SUR" ice cream shop.

Product	Units by box	Unit Cost	Box Price

Sabores	45	0.45	20.25
Surtido	45	0.40	18.00
Maxibon PQ	32	0.50	11.20
Maxibon GR	56	0.50	20.25
Cono	38	0,45	17.10
Copa	36	0.50	18.00
Vasito Kid	45	0.38	17.10
Coco	45	0.45	20.25
Mora	45	0.45	20.25
Ron	45	0.45	20.25
Chicle	45	0.45	20.25
Chocolate	45	0.45	20.25
Galletas	45	0.45	20.25
Frutas	45	0.45	20.25
Marmoleado	45	0.45	20.25
Piña	45	0.45	20.25
Guanabana	45	0.45	20.25
Peke	65	0.25	16.25

Peke sabores	65	0.25	16.25
Milky	70	0.20	14.00
Choconew	55	0.25	13.75
Tunga Tunga	65	0.25	16.25
Gemelo L/N	40	0.30	12.00
Gemelo L/CH	40	0.30	12.00
Paleta de agua	70	0.15	10.50
Sanduche	30	0.50	16.00
Batu	32	0.38	12.16
Crio genio	42	0.25	10.50
Pasión	35	0.30	10,50
Maracuyá	35	0.30	10.50
Mango	35	0.30	10.50

Price table for "GLACIAL BRANCH 3" to the "MINORITY CUSTOMERS" ice cream parlor.

Product	Unit Price
Sabores	0.60
Surtido	0.60
Maxibon PQ	0.75

Maxibon GR	0.75
Cono	0,75
Copa	0.75
Vasito Kid	0.50
Coco	0.60
Mora	0.60
Ron	0.60
Chicle	0.60
Chocolate	0.60
Galletas	0.60
Frutas	0.60
Marmoleado	0.60
Piña	0.60
Guanabana	0.60
Peke	0.30
Peke sabores	0.30
Milky	0.25
Choconew	0.35

Tunga Tunga	0.35
Gemelo L/N	0.50
Gemelo L/CH	0.50
Paleta de agua	0.20
Sanduche	0.80
Batu	0.50
Crio genio	0.40
Pasión	0.50
Maracuyá	0.50
Mango	0.50

Link between the purchase note and the removal or addition of products

In order to implement the central project process, it is planned to create a relationship between the issuance and receipt of sales notes with the stock that is maintained in the warehouse or inventory, the same that will work when products from the ice cream parlor are added or sold.

This process in turn will provide data necessary to maintain adequate accounting that considers parameters such as the gross profit margin (The total value of sales of the product after subtracting its creation or acquisition cost) and the total net profit margin (The gross profit margin less maintenance or distribution costs).
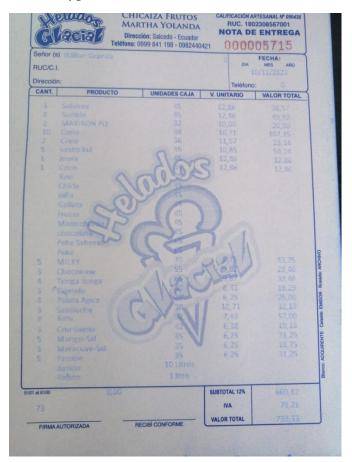
NP: Net Profits   PC: Production Cost
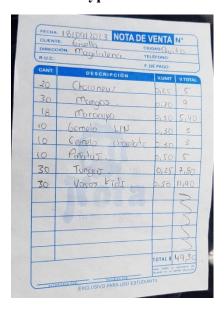
S: Sales   MC: Maintenance costs

Sales	PC	MC	NP
$ 5.000,00	$ 3.000,00	$ 1.000,00	$ 1.000,00

Annexes

Invoice types

Sales note type

Ice cream Types

Link to the google docs where we create the document:

https://docs.google.com/document/d/1PFvjQYQ04OnJbzne3D0_BQJysWovtp0cJNGeMJwnFgw/edit?usp=sharing