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THEME:

“MARKETING SYSTEM HEAVY MACHINERY PARTS AND LUBRICANTS CAT, WITH CONNECTION TO MOBILE DEVICES USING MOBILE FRAMEWORK PHONEGAP AND JQUERY MOBILE AND METHODOLOGY DEVELOPMENT AUP”

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MARKETING SYSTEM HEAVY MACHINERY PARTS AND LUBRICANTS CAT, WITH CONNECTION TO MOBILE DEVICES USING MOBILE FRAMEWORK PHONEGAP AND JQUERY MOBILE AND METHODOLOGY DEVELOPMENT AUP.

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Abstract. *This project has been undertaken to meet the needs of the beneficiary "DIMFRA" by implementing a computer system marketing and lubricants spare parts of heavy machinery CAT, with connection to mobile devices to control activities effectively and efficient such as: sales, purchasing, inventory, obtaining information in real time, orders can be made through the web application or using a mobile device, in a more interactive way to visualize all customers, debts you have acquired with the company, products that are available online for marketing.*

Keywords

Agile Methodology, Mobile Device. Merchandising.

1. Introduction

The mobile device represents one of the most important technological innovations in recent times which has become a topic of interest in the company, are the need to make choices that enable them to adopt new ways of processing information by means more modern.

All this has led to the emergence of new forms of business based on mobile services, which have enormous economic potential for competitiveness, innovation and growth.

The problem

Its holds in the company have not been adequately controlled with an order from its existence, the recording of information inventory and order management is done manually generating erroneous data and loss of data which would cause disruption and delays in fulfilling its functions, preventing the growth and positioning of the company in the market.

The company not having implemented any management system. There is a need to implement a system for the correct and professional handling of information related to the control and monitoring of the company business through technology.

General objective

Develop an inventory system for marketing of parts and accessories for heavy and lubricating machinery Caterpillar for the company "DIMFRA-DM Distributions" in order to automate the generation of orders in real time, managed under web environment and communication to mobile devices in a multiplatform architecture.

Justification

The company chooses to optimize their resources through the implementation of a system to automate their business management processes, since such a system would bring great benefits to the company.

With the use of mobile technology, the system has the advantage of upgrading and consultation of information in real time to the database system directly, which streamlines the activities of inventory control and sales.

The development of the web application will in PHP with CodeIgniter framework with MVC architecture and IDE Eclipse and its integration with the database manager MySQL.

The mobile application will be developed with the PhoneGap framework, JQuery Mobile these platforms allows the creation of applications as if they were native operating system, can be compiled for different mobile platforms.

We have chosen these tools because it is not invested in the purchase of licenses, since software licenses are free to use. [1]

2. Materials and methods

2.1 Lifting procedures

In the initial analysis was compiled information to the company I are asked about the business model, quality standards and policies that are managed met. Finally there is a tour to see the facilities, staff and the areas that affect the business model of the company.

A study of requirements was made. Through meetings and talks scheduled with the manager and staff of the

company, achieving the specification of functional requirements and nonfunctional.

It began with the lifting of the appropriate processes and documentation, design and structure.

2.2 Methodology AUP

The procedures properly raised help the development of software following a certain development methodology, which allows us to proper documentation.

The chosen methodology is based on AUP (Agile Process unified), which further help the development of iterative and incremental software, constant testing is needed during all phases of the project with the aim of improving productivity and verify system functionality.

AUP development versions usually delivered at the end of each iteration, a focus on deployment tasks helps avoid problems, and allows learning from experience throughout the development.

Life cycle stages.

Agile UP is characterized as serial in the large, which can be seen through these four phases which can be moved in a serial form

Start: Identify the initial scope of the project, a potential architecture and obtained initial funding of the project and acceptance of those involved.

Elaboration: Test the system architecture, to prototype architecture that eliminates technical risks to prove that the project is feasible.

Construction: Deploy software on an incremental basis which must be related to the objectives of those involved.

Transition: The system takes the preproduction environments where it is subjected to acceptance testing and validation and finally deployed in production systems. (Ambler, 2005) [2]

2.3 Development Tools

Below is a brief description of the technology used in the development of this project.

Eclipse IDE for PHP

Integrated Development Environment, a tool to write, compile, debug and run programs, and supporting languages and technologies as: PHP, CSS, HTML and Java script. [3]

PHP programming language

It is a multiplatform language, it allows building dynamic web applications that works with Apache server applications. (adelante, s.f.)[4]

Database MySQL

It is a management system relational database, it integrates seamlessly with the popular language PHP and can be used under an open source license. (GPL)[5]

CodeIgniter

Development framework for applications written in PHP programming language, works in conjunction with the MVC design improves the development of web applications fast and very light, has a rich set of libraries. (Ellis, 2006) [6]

Model MVC

This software design pattern is used because it allows the programmer to separate application data, user interface, and control logic are three distinct components, Model View Controller.

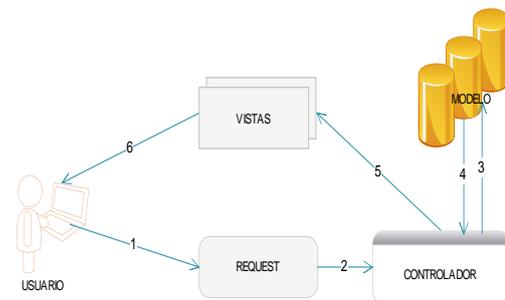
Apache Web server

Apache is an open source web server, cross-platform and works seamlessly with PHP.

PhoneGap

It is a framework that allows the development of mobile applications for multiple platforms (API) is what allows access to multiple native functionality, while in charge of translating JavaScript commands for communication with the native operating system. (Hispano, 2012)[8]

System Architecture

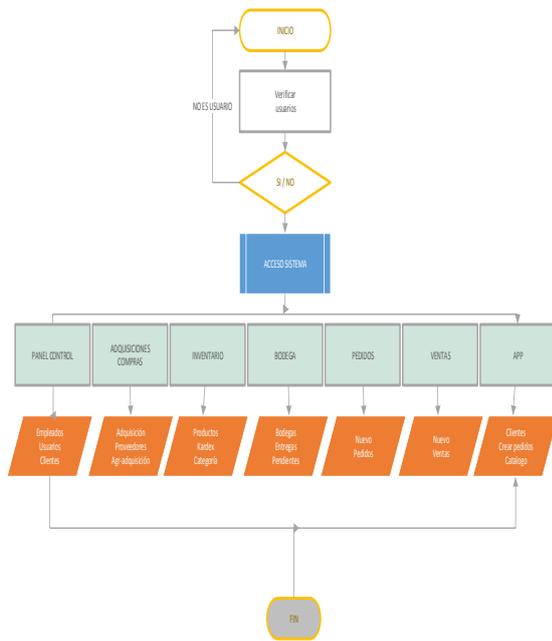


Graphic 1. Three-tier architecture

Being a web application that handles client-server architecture three layers regarding architecture programming is oriented under the Model View Controller (MVC)

3. Results

The system helps to have more control over business processes effectively and efficiently to market spare easily, quickly and securely through Internet-connected mobile devices which performs product orders online with their respective invoice.



Graphic 2. Process automation

At this stage the characteristics of the system, who will access the system and all functions must have the application is identified, the collection of information is carried out, the functional and non-functional requirements, scope and modeling of the system is determined.

Description of computer system.

It allows a clear visual information of how they have been inventory movements of each sale, you can clearly visualize how much you have in stock product, create users, assign privileges to modules and sections thereof, ease of registering customers, finding customers more easily and quickly.

Other functions provided by the system alert messages are missing their products in stock that is nearing its minimum, this will help the user to be aware of not running out of products and thus provide a good service to its customers.

The seller creates new order selected client seeks a product to sell the amount requested by the customer and confirmed availability of stock inventory and sales is generated (online) through the mobile device.

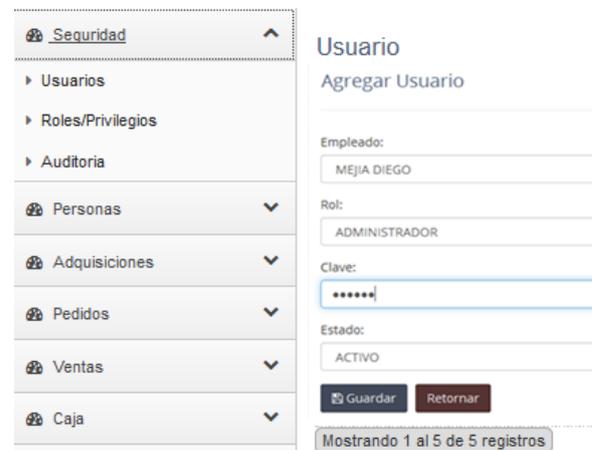
The system will allow the maker to create a new winery, view the status of the delivery of goods customer returns of products shabby product transfers to other wineries.

To have reports statistical tables in which allows us to see the growth or decline in sales to customers, consultations on specific dates or range of dates, PDF export some reports.



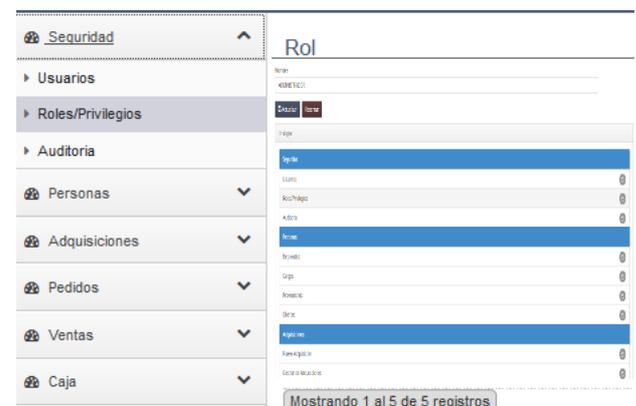
Graphic 3.- Login computer system

System access by username and password shown in Figure 3.



Graphic 4.- User registration access to the computer system

It allows the registration of users to the system and depending on the role assigned by the administrator, is shown in Figure 4.



Graphic 5.- Assigning roles to a user.

In the form in Figure 5 shows how assigning roles to a particular user, the same that will have permissions to specific functions depending on the role.

Graphic 6.- Employee Registration.

In the form of Figure 6 can collect employee information, charges, and provider customers in this module.

Producto	Codigo	Categoria
1 ACEITE HIDRAULICO HYDO ADVANCED (TQ)	3195923	LUBRICANTES
2 ACEITE HIDRAULICO HYDO ADVANCED (CN)	3195921	LUBRICANTES

Graphic 7.- Product registration module inventories.

In Figure 7 the system allows entering the inventory module, which allows users to manage, record, modify, delete or search for a product, such products should be grouped to a category and its unit of measurement used to display what the current stock, control and maintain product stocks, price lists management displays a dialog with the movements that has had its data bank.

PRODUCTO	CANTIDAD	PRECIO	TOTAL
ACEITE PARA MOTORES DIESEL CI 4 SL DEO 15W40 T	1	1067.42	1067.42
Subtotal			1067.42
IVA(12%)			128.09040000000002
Total			1195.5104000000001

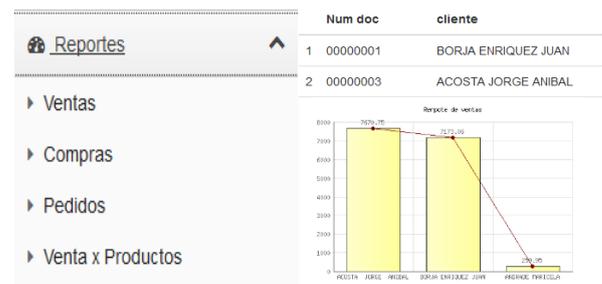
Graphic 8.- Create an order on the phone.

In the form of Figure 8 shows the form that allows you create a new order selected client is seeking to sell the product quantity and confirms its availability in your inventory and keep order and this generated.

Bodega	Empleado
1 BODEGA PRINCIPAL	1 MEJIA FRAGA DIEGO LEOPOLDO
2 BODEGA DE BAJA	2 MEJIA FRAGA DIEGO LEOPOLDO
3 BODEGA SECUNDARIO	

Graphic 9.- It allows management and control wineries

Figure 9 shows the system allows entry into the warehouse module allows us to see the status of the delivery of goods to the customer, product returns messed product transfers to other wineries



Graphic 10.- Statistics quantity of product sales

Chart 10 allows us to see statistics system reports have graphs that represent different information to be customers, suppliers, employees, products, purchases and sales on different dates or years.

4. Conclusions

Processes orders and inventories are connected online with mobile devices from vendors, this allows products to offer and book in real time.

The realization of this project has been a very interesting task, especially for the part of the mobile deployment, where we had to use tools and languages as JQuery Mobile, PhoneGap, this tool is undoubtedly the key to this project. Thanks to her we have seen how a web application can be integrated into a mobile device and use its hardware features, this tool will help us to an application to be multiplatform, ie, that our integrated with PhoneGap and distributed to the

type of code each platform file itself, you can run on any mobile device.

The set of Apache-PHP-MySQL applications was a good choice, as these three free applications allowed total system development, system benefits the company developed significantly allowing control of their inventory processes in its marketing the products.

It is always essential as a first step to analyze and validate the functional and non-functional requirements of the system once the requirements are validated by anger identifying development methodology

The methodology applies agile techniques Aup try to reduce the time between the analysis phase and the requirement in the development phase to build parts of the system in less time, following an iterative and incremental development process iterations are small and its deliverables simplified, allowing to have a proper distribution of work activities.

5. Recommendations

PhoneGap is recommended because it is a free tool and can develop an application platform for various mobile operating systems.

Besides training the staff who will be involved with the use of the web system it is recommended.

To develop a system we recommend using the MVC design pattern because this allows separating the business logic, plus the user interface and data allowing the code be more organized, this separation allows added flexibility.

Among possible future work we find two possible paths: to deepen the work with the PhoneGap platform or try to develop mobile applications to other platform environments and compare the quality of the resulting applications. In this way, we would have a more global view of the functionality of the different Frameworks.

6. Acknowledgements

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