TECHNICAL UNIVERSITY OF THE NORTH

ENGINEERING IN APPLIED SCIENCES SCHOOL
CAREER IN ENGINEERING IN COMPUTER SYSTEMS

GRADE WORK PRIOR TO OBTAIN THE SYSTEMS ENGINEER TITLE

Scientific Article

Theme:
"DEVELOPMENT AND IMPLEMENTATION OF A WEB SYSTEM RESPONSIVE FOR THE INTERNATIONAL TRAVEL AGENCY ANDEAN ROOTS TO FACILITATE USERS THE ACCESS TO INFORMATION AND PAYMENTS OF ITS SERVICES"

AUTHOR:
DANIEL ROBERTO RUALES HERRERA.

DIRECTOR:
ING. DIEGO TREJO ESPAÑA Msc.

Ibarra - Ecuador

2017

DEVELOPMENT AND IMPLEMENTATION OF A WEB SYSTEM RESPONSIVE FOR THE INTERNATIONAL TRAVEL AGENCY ANDEAN ROOTS TO FACILITATE USERS THE ACCESS TO INFORMATION AND PAYMENTS OF ITS SERVICES

Daniel Ruales

Career in Engineering in Computer Systems, Technical University of the North, 17 Avenue July 5-21, Ibarra, Imbabura, Ecuador.

robertdanilo.3774@gmail.com

Abstract. *This article consists of presenting the results of the development of the web system responsible for the international travel agency Raíces Andinas located in the canton Ibarra province of Imbabura the same one that helps the users to have an easy access to information of tourist packages, the travel agency carried out its activities manually, the agency's clients had to approach the agency personally to obtain information about the services it provides, in addition to this the information of the clients that the agency has carried in documents Of text making it difficult to access this information due to poor organization of files or even loss of files for different causes. In order to have the orderly information of clients and tour packages, the web system was developed to facilitate access to information from the international travel agency Andean Roots. This document describes that to make computer systems it is necessary to follow a methodology that makes the project more efficient, generating the necessary documentation for future changes in the system.*

Keywords

Users Stories, XP Methodology, PostgreSQL, Bootstrap 3.0, Process Lifting

1. Introduction

Travel agencies have as main objective to provide clear information about tourist packages that are so armed according to the client's needs that are directed to different destinations in the world, the international travel agency Raíces Andinas aims to provide information of their Services at the same time facilitate the payment of the same of different ways thinking about the facility for the client.

The purpose of the creation of the system was to show clearer and more orderly information to the end users, while facilitating to the agency's employees the publication of tourist packages, and to keep a list of the clients that access the system allowing them to interact From any place and device that have internet access. The clients of the agency no longer have to be present in the same to have access to the information and reservation of the services provided by the agency. All this is done through the proposed system, thus saving time and money for the clients of the agency and having All information easily and quickly.

The main activity to be developed is the collection of information of the processes that the agency has, among which are the planning of a trip and reservation of a tourist package, it is going to carry out the survey of these processes, the design and analysis Of the user requirements and finally the pertinent tests of each activity following the XP methodology chosen for the project, the information has to be stored in a safe and reliable way so that both clients and personnel that manages the system have confidence that the information is Integrates

2. Materials and Methods

2.1 Lifting process

The collection of information was done through the user stories the same ones that were coming out in the meetings with the agents of the agency, began with the design of the home page that characterizes the system and shows each operation and function of all The methods that allow its correct operation, lifting of the appropriate

processes, as well as its documentation, design and structure.

It was possible to analyze and identify the process of reservation of tourist packages, management of users, planning of trips, management of reports and reservation of passages.

2.2 XP Methodology

XP is an agile methodology focused on enhancing interpersonal relationships as a key to success in software development, promoting teamwork, caring for developers' learning, and fostering a good working climate. XP is based on continuous feedback between the client and the development team, smooth communication between all participants, simplicity in the implemented solutions and courage to face the changes. XP is defined as especially suitable for projects with imprecise and highly changing requirements, and where there is a high technical risk. (Canós, Letelier, & Penadés, 2003).

2.3 Development tools

2.3.1 Database

A database system is a collection of interrelated files and a set of programs that allow users to access and modify these files. One of the main purposes of a database system is to provide users with an abstract view of the data. That is, the system hides certain details of how the data is stored and maintained. (Silberschatz, Korth, & Sudarshan, S. (Indian Institute of Technology, 2002).

2.3.2 PostgreSQL

The PostgreSQL database manager is based on a client-server architecture being postgres the server and the clients the different programs that are used for the development of databases an example of this pgaccess that is a graphic client, in addition it is a manager of well-known object-oriented database used in free software environments. Figure 1 shows the operation of PostgreSQL:
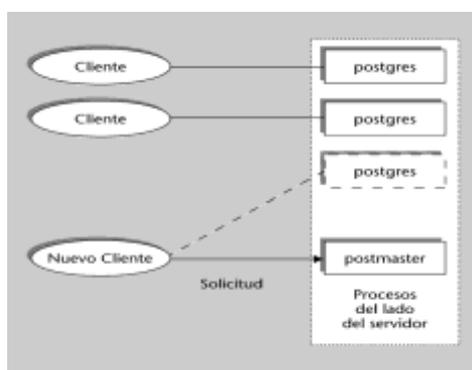

Figure 1: PostgreSQL architecture

Source: (Hans, 2011)

2.3.3 Framework Bootstrap

Bootstrap is an excellent tool to create clean and fully customizable user interfaces for all types of devices and screens, whatever their size. In addition, Bootstrap provides the tools necessary to create any type of website using the styles and elements of its libraries. (Fallis, 2013).

Characteristics of Bootstrap 3

• Quite good support (almost complete) with HTML5 and CSS3, allowing it to be used very flexibly for web development with excellent results.

• Bootstrap 3 sets Media Query for 4 different device sizes varying depending on the size of your screen, these Media Query allow for development for mobile devices and tablets much easier.

• Bootstrap 3 also allows you to insert responsive images, that is, by simply inserting the image with the "img-responsive" class, the images will adapt to the size. (Shaw, 2014).

2.3.4 JSF (Java Server Faces)

Framework to help build and develop interfaces for applications based on Web environments, in addition to implementing the MVC (Model Vista Controller) pattern that is based on server-side components and events. (Loor, 2014).

2.3.5 Servidor de aplicaciones JEE

An application server is the software that is able to translate instructions and also communicate with other servers (such as database servers) to extract company information that is needed to resolve the request. (Asenjo Sánchez, 2012).

The application servers work in conjunction with the web servers the user requests the service and the web server attends the request and requests the application server showing the user in an understandable way in the browser.

There are types of Java application servers

• Paid or free application servers.

• Application Servers JAVA Certificates EE.

2.3.6 Pattern MVC (View controller model)

MVC is a software architecture pattern that serves to make systems more robust by separating business logic and user interface data.
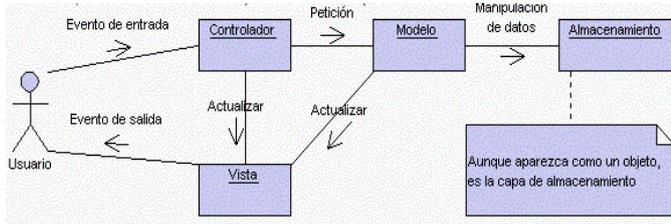
Figure 2: Interrelation between the elements of the pattern MVC

Source: (Romero, 2012)

Basic operation of the MVC pattern

• The user makes a request through the user interface

• The controller captures the event

• The controller makes the call to the corresponding model / models making the relevant modifications on the model

• The controller receives the information and sends it to view

• The view receives data from the model and displays it to the user (Boiza, 2012)

3. Results

Figure 3: Homepage

With the collection of information, the process was carried out in the travel agency and following a methodology was developed the web system generating all the documentation and performing the corresponding tests of the activities created the final result was:
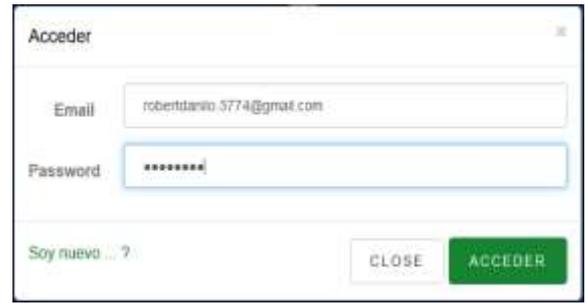

Figure 4: Login window

Window for access and registration to the web system of the international travel agency Raíces Andinas.
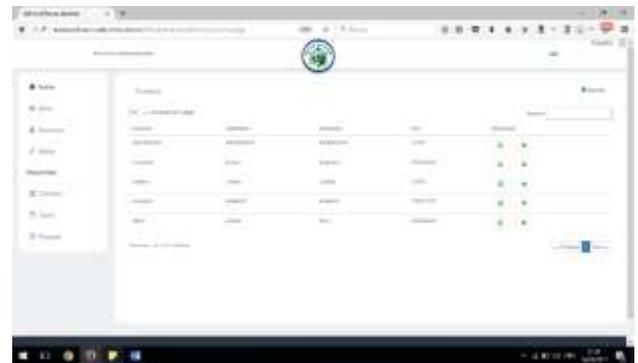
Figure 5: User management window

En esta ventana se realiza el registro de usuarios pertenecientes en la agencia de viajes, los roles principales son los de empleado y administrador los mismos que ya tienes sus tareas asignadas.

Figure 6: Travel planning window

In this sale the customer already registered has the option to make or plan a trip filling the information requested in the fields the same that is verified and validated by the agency.

Figure 7: Booking window of tourist packages

In this window the customer can see in what state the reservation is made through the system, just as you can cancel or continue wagging until payment is complete.

Figure 8: Reserved package window

In this window the client can make the reservation of a tourist package as long as the customer is already registered in the system.

Figure 9: Ticket reservation window

In this window the client makes the reservation of a passage filling the requested information the same that is verified and validated by the travel agency.

4. Conclusions

The technology of web sockets allows us to make a client server communication without the need to be communicating with each other at any time and from anywhere.

Free software technologies have equal or better benefits than paid technologies since you can make quality and well-structured software.

Responsive web systems give us a new browsing experience because they adapt to any device and thus can be accessed anywhere in the world as long as the internet is available.

The use of the methodology XP allows a rapid development of the system and also the participation of the user that helps to verify possible changes that need to be made in the system so that it has a better functioning.

PostgreSQL is a free database manager that allows the storage of data in a simple way, reducing the costs of system development.

Bootstrap is a framework that facilitates the creation of web designs since it combines CSS and JavaScript with which you create designs that can be adapted to all browsers since it is responsive bone design that adapts to any size of screen opening on any device ever And when it's with the internet.

The MVC architecture allows us to make applications orderly as it separates data, business logic and user interfaces, thus separating responsibilities and allowing us to reuse code.

The development of a system in any company is easier if the company has established and well-structured management procedures.

With the automation of the processes in the agency, the activities are carried out faster, users save time and money making their transactions from anywhere as long as they have internet and a device to connect to the network.

Thanks

To the engineer Diego Trejo, for the unconditional help rendered as thesis director, throughout the development process of this project, for the spirit and enthusiasm it provides to continue the arduous task of culminating the degree work.

To the international travel agency Raices Andinas for the support and information provided for the development of the web system for it.

To the Technical University of North, to the race of Engineering in Computer Systems that welcomed me and gave me the knowledge to grow as a professional and as a person.

To my family for giving me the courage and strength to continue my career, and thanks to it I am achieving.

To my colleagues from the University who were and are of great support in the good and bad moments that we spent as students.

Bibliographic References

[1] Acosta, R., Arellano, M., & Barrios, F. (2009). Flow chart. The Cid Editor | Notes

[2] Canós, J., Letelier, P., & Penadés, M. (2013). Agile Methodologies in Software Development. Valencia, Valencia, Spain, 1-8.

[3] Casabona, E., & Ceci, R. (2014). Multiplatform sites with html5 + css3.

[4] Donayre, L. (2009). Concepts and guide for the development of thesis.

[5] Dordoigne, J. (2013). Computer Networks: Fundamentals (Protocols, architectures, wireless networks, virtualization, security, IP v6).

[6] Fallis, A. (2013). Twitter Bootstrap. Journal of Chemical Information and Modeling.

[7] Groussard, T. (2010). Java Enterprise Edition: Web Application Development with JEE 6.

[8] Herrera, J.L. (2011). Real-time programming and databases: A practical approach. Spain: Universitat Politécnica de Catalunya.

[9] James Holmes, C. S. (2006). JavaServer Faces: The Complete Reference.

[10] López, S. (2005). Guide to the Survey, documentation and redesign of processes. Directorate of Administrative Systems, 77.

About the author

Author – Daniel Ruales

Student at University Technical of Norte, Faculty of Applied Sciences, School of Engineering in Computer Systems. I was born on February 15, 1989 in the Province of Pichincha, Canton Quito, San Blas Parish, The primary studies begin at the school Nuestra Señora del Rosario until 3rd grade and then become part of the school Carlos Aguilar the two located in the Province of Pichincha, at the end of the school Don Bosco located in the city of Quito province From Pichincha until the 2nd year, then to become part of the Institute Technologic Superior 17 de Julio located in the city of Ibarra province of Imbabura, where I obtained the title of industrial mechanic. Finally enter the career of Engineering in Computer Systems of the University Technical del Norte to obtain the title of Engineer in Computer Systems.