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"TECHNICAL REPORT"

FEAR:

"IMPLEMENTATION OF A SYSTEM OF MANAGEMENT ACADEMIC BY QUIMESTRES FOR BASIC EDUCATION SCHOOL "DOS DE MARZO" WITH FREE LICENSING."

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1. INTRODUCTION

1.1 Records

The School of Basic Education "Dos of March" it was founded October 17 1960 by the President of the Republic Camilo Ponce Enríquez, it began with the basic purpose of the education of the childhood anteña, which has gone evolving and improving every year with the new and better experiences of growth and in turn realimentando the educational process which is the base of the growth of the human beings pointing toward a society of well and productive.

It is so in these times of change impelled by the government with the purpose of carrying out a continuous improvement and growth of the quality from the education to all the levels.

This has opened the way to the implementation of the educational periods for quimestres, which looks for to improve and to take advantage of the time from the students to the maximum, by means of activities more participativas in the education, where you not evaluated alone the academic thing, but the participativo of the educandos and the cooperation in group that which returns to the student a complete being in the academic, social and personal.

1.2 Problem

A software Project doesn't exist free GNU for an academic administration system for quimestres in School of basic education "Dos of March" of the canton Antonio Before in the county of Imbabura.

1.3 Objectives

1.3.1 General objective

To implement a project Software free GNU for the storage, administration and analysis of information, and academic evaluation in the School of Basic Education "Dos de Marzo" applying in periods quimestrales.

1.3.2 Specific objectives

- To diagnose that types of software projects for the storage of the information in educational administration are applying in the School of Basic Education "Dos of March."

- To base the tools theoretically for the development free GNU in the educational administration, in the investigation entity.

- To develop a project software free GNU for the storage, administration and analysis of information, and academic evaluation applying in periods quimestrales.

- To qualify to the educational body in the administration and handling of the proposed system.

- To design a friendly and simple interface for the user as much for the Web as for mobile devices-Android

- To design and to implement the project based on the working methodology Programming Carries to an extreme (XP).

1.4 Reach

The reach for this project is defined to the School of Basic Education "Dos of March" in the area of registrations, notes, subjects, entrance of educational, students' attendance and study evaluations.

Existent modules:

- **Periods Lectivos**

This module takes charge of to create and to administer the period lectivo for the year of study. It is assigned to the educational ones and their matters. He/she is also carried out the enrollment of the students in the different study grades.

- **Test**

  It is an appraisal method designed as method of study support so that the student has an interactive method of study and the educational one can administer and to give pursuit to the evaluations.

- **Students.**

  Here was carried out the registration of each one of the students with their basic and complementary information for a good use of their information and pursuit of the same one.

- **Educational.**

  This module allows to register to the educational ones with its information and also to give access to the system for the entrance of each student's note.

- **Users**

  Here it allows to register and to administer to the administrating users of the system.

- **Report**

  Here is the center information where we can revise the reports and statistical of the students.

- **Report Olap**

  It is a generator of reports which allows us in a quick and simple way to carry out reports in a custom way and with the information that requires the user on time.

- **Configuration**

  In this module is the whole configuration of the catalogs of the system.

1.5 Justification of the project

This project is developed based on the necessity of a system of academic administration inside the School of Basic Education "Dos de Marzo."

Implementing the new political administration quimestrales and educational evaluation becomes necessary a system of integral administration that allows to optimize time, resources and facilitate the operative processes for the normal development of the works.

The new politicians prepare the use of code free and low Linux what generates the necessity of a system of open code GNU and on the web.

The development platform that you employment is web 2.0 with its interaction advantages with the users for entrance and it consults of the data and information, to facilitate the family parents the access to the data and the students' qualifications and knowledge that you fear will also be treated, monitoreando the execution according to that programmed.

2. I sustain Theoretical

2.1 Existent formats of information

At the present time at level of all the educational institutions SIGEE is working with the system (Integral System of Ecuadorian Educational Administration), which concentrates the whole information and the students' formats, educational and the grade relationship-registration to which you/they are assigned.

2.2 I study the working regulatory scheme for quimestres

Instructive for the quimestres application in educational institutions

Dated August 17 the 2012, the Ministry of Education emitted an instructive for the quimestres application in the institutions.

The Art. 146 of the Regulation to the Organic law of Education Intercultural (LOEI) he/she manifests the following.

"The year lectivo should be developed in a school régime of two (2) quimestres in all the public educational institutions, revenue misionales and matters, and he/she should have a minimum duration of two hundred (200) days of the students' obligatory attendance for

the execution of educational activities, counted from the first day of classes until the finalization of the exams of the second quimestre." (Ministerio-de-Educación-del-Ecuador, 2012)

2.3 Analysis of information to be automated

Once analyzed the existent systems are verified that they have several options in common, and besides this the School of Basic Education "Dos of March" he/she has own requirements that have been verified in a field investigation.

This way the information to be automated and automated re would be in the following way.

It would be divided in the following areas:

Educational unit, Students, Professors, Registrations, Entrance of Notes, Evaluations, Security, Reports

1. EDUCATIONAL UNIT.

a. Configuration of the educational unit according to the assignment of the Ministry of Education.

b. Administration of grades, parallel and shares for grade

2. STUDENTS.

a. I enter, edition, lowers

b. Registration of medical record.

c. Registration of father's information, mother and legal representative

3. PROFESSORS.

a. I enter, edition, lowers

b. Administration of evaluations to students / for assigned matter.

c. Feeding of the base of knowledge for study and students' evaluation.

4. REGISTRATIONS.

a. I enter, edition, lowers.

b. I change of parallel

5. I ENTER OF NOTES

a. I enter of notes for each one of the two quimestres of the year lectivo:

- I enter of notes: four formative and a sumativa.

- To generate three partial notes the same ones that are composed for, 5 notes: 4 formative and a sumativa, this for each partial note

- I enter of exam notes.

- The average of the note quimestral is given 20% of the note of the exam and 80% it is the average of the 3 partial notes.

b. Besides this the area will exist for the entrance of notes of the remedial exams in its 3 opportunities.

6. EVALUATIONS.

a. This module is oriented toward the creation of a base of knowledge of each one of the education areas, in such a way that serves like a study guide-evaluation for the students.

b. This will be a base of questions classified by each one of the matters of study of the educational institution, in such a way that each educational one, he/she will be able to go entering questions of type multiple selection and selection of options, as he/she goes advancing with the teaching program, therewith to the moment to carry out evaluations he/she will be able to put on to the students' disposition an additional material of study that he/she helped to the process of the student's learning.

c. In each one of the educational areas, the educational ones would be the in charge ones of feeding the base of knowledge.

d. Here one will already have the access to the evaluation like such, scheduled pre for each student-matter, the same one that will have access depending on their year of study and name.

e. Also, an application will be created for mobile devices for the platform Android from where one will have access to the evaluation aplicativo and revision of notes

7. SECURITY

a. I modulate in charge of administering the profiles of the users that will have access to the system, depending on their profile and position will have the necessary accesses to the system.

b. Creation, edition and blockade of users

c. Assignment of permits for profile

d. Creation of user profiles, for the assignment of privileges

e. Assignment of permits for user.

8. REPORT

a. The reports will be generated according to the requirements of users, for that which a survey of the requirements of the same ones was created.

b. In an initial way they will have the following reports, which are those that already generate the existent systems.

- Registration certificate.
- Promotion certificate.
- It lists of having registered.
- It lists of educational.
- Notebook of the students' qualifications.
- Squares of qualifications for the publication.
- Leaves of registration doctor.
- You notice partial.
- You notice quimestrales.
- You notice final.
- Square of honor.
- Year passes.
- Inform of summary quimestral for educational and student.
- I square of final notes.

Another Tool of Reporterita to implement will be **The Cubes of Data OLAP** (Martínez, 2007)*,* the same ones that will be generated based on the requirements of the users and the existent database, in such a way that one has available the biggest quantity in available Information for the users.

Current situation.

The School of Basic Education "Dos of March" he/she has implemented two systems, one is of the Ministry of Education and another is one that was hired during the year 2012 which don't give the necessary support for the best development in the educational administrative process and many of the things are still carried out them in a manual way.

2.4 Internet

Internet is a net of nets that allows the decentralized interconnection of computers through a group of protocols denominated TCP/IP that had its origins in 1969, when an agency of the Department of Defense of the United States began to look for alternative in the face of an eventual atomic war that could isolate people. Three years later he/she was carried out the first public demonstration of the devised system thanks to that three universities of California and one of Utah was able to establish a well-known connection as ARPANET (Advanced Research Projects Agency Network).

Internet contrary to what usually thinks, Internet and the World Wide Web are not synonymous. The WWW is a developed system of information in 1989 for Tim Berners Lee and Robert Cailliau. This service allows the access to information that is connected by means of the protocol HTTP (HyperText Transfer Protocol). (Ávila, 2007)

Application web.

(Mora, Programación de aplicaciones web: historia, principios básicos y clientes web., 2002) Says an application web it is any application that is consented via web by a net like internet or an intranet. In general, the term is also used to designate those computer programs that are executed in the environment of the navigator (for example, an applet of Java) or coded with some language supported by the navigator (as JavaScript, cocktail with HTML); trusting the navigator web so that he/she interprets the application.
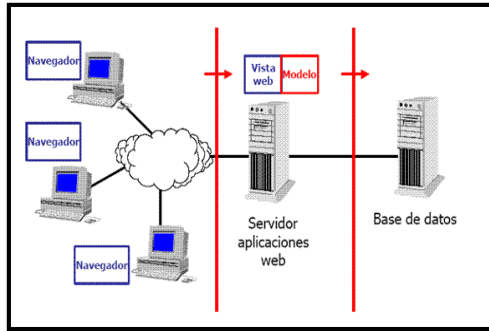
Illustration 1 Environment of Operation of Application web
Source:
https://sites.google.com/site/smr2teresa/definicion

2.5 It structures of the applications web.

Although many possible variations exist, an application web is usually structured as an application of three-layers. In their more common form, the navigator web offers the first layer, and a motor able to use some technology dynamic web, for example: PHP, Java Servlets or ASP, ASP.NET, CGI, ColdFusion, embPerl, Python or Ruby on Rails that constitutes the interlayer. Lastly, a database constitutes the third and last layer. The navigator web sends petitions to the interlayer that he/she offers services being been worth from consultations and upgrades to the database and in turn it provides user's interface.
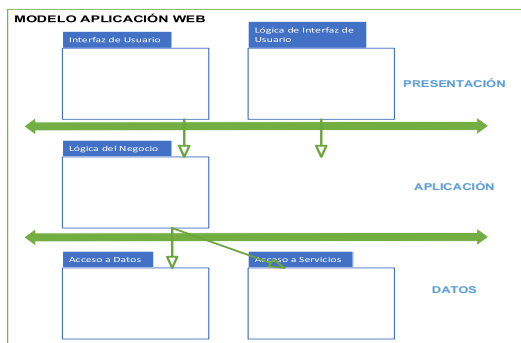

Illustration 2 Model of Application Web
Source: The Author

- **The presentation layer.** It is the in charge one of interacting with the user and he/she belongs together with that that traditionally is known as user interface.

- **In the application layer or it intermediates.**

  It is where the logic of the business, this layer is located he/she receives the user's petition through the presentation layer and he/she takes charge of giving him I study, usually appealing to the repositories of information this layer is where the rules of the business, the validations and calculations are implemented.

- **The access layer to data.** It is the in charge one of consenting to the repositories of information, that is to say to the databases of the application. As it is shown in the figure the relationship among the layers it is unidirectional, that is to say alone the superior layers can use the services that offer the inferior layers, although the subsystems that are in the same layer can interact to each other.

Standard web.

Standard Web	
URL	The badge of uniform resource that is an universal system to index resources in the web, as pages web.
HTTP	The protocol of hypertext transfer that specific how they communicate the navigator and the servant among them.
HTML	The Language of Marked of used Hypertext to define the structure and content of hypertext documents.
XML	The Language of Marked Expandable used to describe the structure of the text documents

Table 1 Estándares Web.
Source: The Author y
http://www.w3c.es/Divulgacion/GuiasBreves/Estandares

2.6 Requirements of a place web.

The DNS: it is an abbreviation for System of domain names (Domain Yam System), a system to assign names to teams and net services that he/she is organized in a hierarchy of domains. The assignment of names DNS is used in the nets TCP/IP, as Internet, to locate teams and services with descriptive names.

6

When an user writes a name DNS in an application, the services DNS will be able to translate the name to another information associated with the same one, like an address IP.
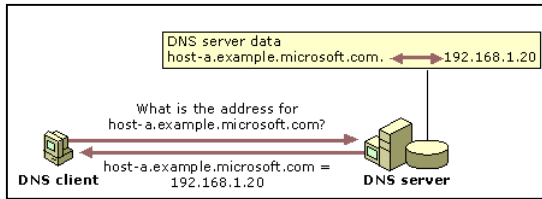
(Technet-Microsoft, 2005)

Illustration 3 Operation of the DNS
Source: http://technet.microsoft.com/es-es/library/cc787920(WS.10). aspx

Hosting: They are companies of lodging web that provide to the individuals and the small companies lodging resources in a team servant where they don't take charge of the maintenance of the same one**.** (Drouin, 2001)

Domain: A domain or domain name is the name that identifies a place web. Each domain has to be only in Internet. For example," www.utn.edu.ec."

3. Development

3.1 I design and Development Web

The design web is a multidisciplinary and recent activity, as much as it is it the internet. He/she feeds of sources of design graph and the visual arts, the programming of computer applications, the design of interfaces, the writing of contents, the traditional animation, publicity, the marketing and several things more.

To design is a creative process that combines art and technology to communicate ideas. (Campos, 2005)

In the development web tools exist for the design, others for the maquetación, others for the programming, and for the purification. All the tools that are used are very important, from the Operative System until the most insignificant command, and in and of itself the most appropriate should be chosen to the requirements, necessities and capacities.

3.1.1 Development phases Web.

- **Planning:** It is probably the most important phase in any project and it supposes the clear identification of what it is sought to obtain with the website. In this phase they are defined technologies.

- **Design:** The design consists on creating sketches of the final web by means of a graphic tool.

- **Maquetación**: It consists on converting the sketches created in the previous phase in insoles HTML, leaf of styles and the images to use.

- **Programming Client:** Basically in JavaScript and Php, a web cannot have necessity to make programming client like it can be a small corporate web with little static information or he/she can that it requires enormous efforts in this phase, like it happens with the projects Web 2.0.

- **Programming servant:** This phase is developed since with the previous one the application web it is believed in a language of Servant, this it can be Php, Asp, CGI, among other, the same ones that can use different development IDE, are preference of the developer.

- **It loads of contents and Tests:** With the practically ended web site it is the moment to load all the contents.

- **Surrenders of the project:** When the web site is ended, lodges in a servant and puts on to all the internet users' disposition.

3.2 Web Server.

(Mora, Programación en Internet, Clientes web, 2001) Says that the servant web is a program that he is waiting the connection applications permanently by means of the protocol HTTP on the part of the client's web.

3.3 Languages of code web.

3.3.1 Programming language PHP.

PHP (recursive acrónimo of PHP: Hypertext Preprocessor) it is a language of specially appropriate very popular open code for the

development web and that it can be incrusted in HTML.

3.3.2   Language JavaScript

JavaScript (abbreviated commonly" JS") it is an interpreted programming language, dialect of the standard ECMAScript. He/she is defined as oriented to objects, based on prototypes, imperative, weakly tipado and dynamic.

3.4 Database MySql.

MySQL is a system agent of databases (DBMS, DBMS for its initials in English) very well-known and broadly used for its simplicity and remarkable yield.

3.5 Framework Codeigniter.

CodeIgniter is a framework for applications web of open code to create places dynamic web with PHP. Their objective is to allow that the developers can carry out much quicker projects that creating the whole structure from zero, offering a group of libraries for tasks comunes, as well as a simple interface and a logical structure to consent those libraries. Es un producto de código libre, libre de uso para cualquier aplicación. (Desarrolloweb.com, 2010)

3.5.1   General   characteristics   of CodeIgniter

- Versatility
- Compatibility
- Up-to-date
- Installation easiness
- Flexibility
- Nimbleness
- Documentation on-line tutorial.

3.5.2   I Model - Seen - Controller in CodeIgniter

The Model, View, Controller is typically utilized for the creation of applications web and CodeIgniter not only implements it, but also another series of frameworks of development web, in PHP or other languages. It is interesting because it separates in several groups the complexities of the different parts that compose a page web, as the view and the logic, as well as the access to the database.

3.6 Cubes   of   Data   OLAP   for   Dynamic Reports.

3.6.1   Definition.

Understands each other for OLAP (Online Analytical Processing) or on-line analytic prosecution, to the agile and flexible method to organize data, especially metadatos, on an objective or hierarchy of objects like in a system or multidimensional organization, and whose objective is to recover and to manipulate data and combinations of the same ones through consultations or even reports. (Josep Curdo Dias, 2010)

3.6.2   Tool of reading of cubes OLAP PHP has   more   than   enough (phpMyOLAP)

A low designed free tool exists PHP for the recovery of cubes of databases (Datawerhouse) through a xml generated by Pentaho through its tool Gratuitousness psw-ce-3.6.1 SCHEMA WORKBENCH, which generates a structure of the logical cube of information in xml, this logical cube will be used to generate and to present a cube of data on screen, configurable for reports with the required crossing of information.

To discharge the tool:
http://sourceforge.net/projects/phpmyolap /

(phpMyOLAP, 2007)

3.7 UML (Unified Language of Modeling), Cases of Use.

3.7.1   Definition

(Larman, 2003) Says, the Unified language of Modeling (UML) it is a language to specify, to visualize, to build and to document the devices of the systems software, as well as for the casting of the business and other systems non software.

3.7.2   Description of cases of uses

P01. Installation and Configuration of System
P02. Authentification of Users and Administration of the Security
P03. Creation of Cycle Lectivo
P04. I enter, Search and Modification of Data of the Students.

P05. I enter, Search and Modification of Educational.
P06. I enter, Search and Modification of Doctor.
P07. Registration of having Registered
P08. Generation of Payroll of Grade-Parallel-Weekly Student.
P09. Registration of Notes.
P10. Generation of Reports, CUBES OLAP
P11. Emission of Certificates
P12. Revision of on-line Notes
P13. Registration, Consults and Modification of the questionnaire for studies of the students' support.
P14. Application of Questionnaire for subject to the Students like Support for their learning.
P15. Administration of Users
P16. Administration of Subjects
P17. Aplicativo Motive.

3.8 Implementation of mobile applications through Android

3.8.1   Records

As antecedent you can begin saying that due to the evolution of the technology in all the environments and changes of the processes of the education, the current market is having a turnaround as for the mobile devices, it is so you leave to users of short age managing with a lot of simplicity this type of devices.

3.8.2   I half-close of development

The mobile devices are changing the current society in such a significant way as he/she has made it the internet. This revolution has not made more than to begin, the new terminals offer some similar capacities to a personal computer, what you/they allow that they can be used to read our mail or to navigate for internet.

3.8.3   Applications Web Motives Vs Applications Native Android

Nº	Option	Web App	Native App
1	Multi-platform	yes	No
2	Market Places	Don't need,instalación	Yes, for few SO
3	Experience of the users	Slow, it depends from the connection to internet	Quick to be native
4	Validation process and upgrades	On-line	It depends on developers and it delays until their upgrade
5	Access to native functionalities	No	Yes, main function and strong point

Table 2 Comparativa App Web and App Nativa
Source: http://www.startcapps.com/blog/web-app-vs-app-nativa

Conclusión Personal.

For the case of the implementation of the application of the present project, it is necessary to take into account that in the means multiple types of teams exist, but in their majority for cost and handling easiness have opted for tablets or smartphones with operating system Android.

Also for this project the modules of evaluation of questionnaires and revision of the students' qualifications have been developed with Html5, Css3 and Jquery mobile, this so that the aforementioned applications are multi-platform when being implemented on the web, in such a way that he/she looks at himself to future toward any evolution or changes in the market of the mobile operating systems.

This takes to the conclusion that the aplicativos Web App is better so much for development cost in time and money, like for the detection and correction of errors since alone it will be corrected once.

3.9 Development methodology

3.9.1 Extreme Programming (XP)

Agile methodology based on four principles: simplicity, communication, feedback and value. Also, guided by tests and refactorización, it is designed and they implement the tests before programming the functionality, the programmer believes his own unit test.

This method i typically attributed Kent Beck, Rum Jeffries and Ward Cinningham. The objective of XP is small and medium groups of software construction where the requirements are still very ambiguous, they change quickly or they are of high risk. XP looks for the satisfaction of the client trying to maintain during the whole time its trust in the product. Also, he/she suggests that the working place is a wide room, if it is possible without divisions (in the center the programmers, in the periphery the individual teams). An advantage of the open space is the increment in the communication and providing a dynamic calendar in the environment of each project. (Villegas, 2009) (Beck, 2004).

4. Installation of the system

The installation of the academic system is designed with the purpose that the administrating user with experience and basic knowledge in calculation and internet, they can manage the academic system of an easy menara, for ende to manipulate the academic information of the school "Dos de Marzo" city of Atuntaqui.

4.1 Requerimientos.

Processor	Processor Pentium IV of 1.4 Ghz, Celeron, or AMD Athlon. (Recommended Superior Processor Pentium IV of 2.0 Ghz)
Memorial	512 Mb (Recommended 1 Gb from now on)
HD	50 Mb de espacio disponible en adelante
Periféricos (E/S)	Keyboard, mouse, monitor resolution 1024 x
	678 Mega píxeles or adult for a better clarity)
Conexión a internet	256 kbps, o superior
Explorador web	Internet Explorer 6 o superior , Mozilla Firefox
BDD	Base de datos de MySQL
Lenguaje de programación	PHP
Servidor	Servidor web Apache
Framework	Codeigniter
Sistema operativo	Windows XP, Windows Vista o Windows 7

Table 3 Requerimientos de Hardware y Software.
Source: The Author

4.2 Deploy of the application

The application has an architecture client servant three layers the files, database, and other components of the application you trasfirieron by means of service of communication FTP

4.3 Access interface

The access to the application is carried out by means of the following URL. www.2demarzo.com, a través de cualquier explorador web preferentemente mediante Mozilla, accesible mediante internet.

5. Summations.

According to the obtained results along the realized study and of the experience acquired in the development of the application, you has arrived to the following summations keeping in mind the objectives and reach of the investigation

- He/she was carried out a study to the software implemented in the School of Basic Education "Dos of March" with what you concludes that one of them is already antiquated and it doesn't possess the necessary requirements and the other one that it provides them the education ministry he/she doesn't have the necessary information and it is very slow the access.

- The access time to the system is better and more efficient for the new architecture than

it was implemented and dedicated domain to the institution and this has been an improvement to the attention of the users.

- The information of the students of the institution now has a lot of utility since it is very accessible and alcanzable for people that require it of the institution.

- The utilized tools for the development and implementation of the application are totally free for what doesn't have any use restriction and their distribution is gratuitous for the public in general.

- The use of the framework Codeigniter, is convenient for its reliability and easiness to the moment to work, this thanks to that possesses a very simple and potent structure, what is a great advantage to the moment to create aplicativos on the web.

- The users have learned on the system and as improving their time and academic efficiency in the personal and institutional, this since has involved them to him totally in the design process and development of the aplicativo, this has made their necessities and working requirements they are reflected.

- The design of interfaces comunes is friendly as much for systems web as for motives, with which the user learns with more easiness and he has the necessary tools by hand with what the system is a help in its daily work.

- When carrying out the comparative one among the Native App Vs App Web, it is demonstrated that at the present time it is necessary to develop for App Web, this is given by the easiness of maintaining and low cost, if he/she is carried out a change in the system this one replies in an immediate way, while the "App Native Android" he/she has their time of development added to be a second application and he/she has to be upgraded in the mobile teams.

- The methodology XP Programing Carries to an extreme in the implementation of software applications it looks for the flexibility for the user as for the developer since allows to develop in a quicker way with the combination of knowledge of the user and the tools of the developer with what the automated processes are better and friendlier for the user

- The cubes of data OLAP facilitates the consultation of data to personalize reports according to the necessities of the client that it allows him to interact with the information in a simple way, it is simply necessary to select the required fields and to generate the required report.

6. Recommendations

With the results obtained in the investigation and of the experience acquired in the development of the project you has arrived to the following recommendations keeping in mind the objectives and reach of the same one.

- To make the appropriate use of the application since giving pursuit to user's manual to avoid errors and damages in the data as much for the educational ones as for the students the system that offered them help in the learning process and order of the existent information.

- It is suggested to the educational institution so much the use of free software in their academic system as in the teams of the educational center, so that the students have the experience and the knowledge of this software type and they can reply him in their homes and study means.

- It is recommended likewise so that the place web, aplicativo has the maximum profit to use Mozilla Firefox like predetermined navigator.

- To strengthen the knowledge and to help the students of the engineering career in computational systems and developers the use of the framework Codeigniter the same one it is suggested that he/she has many facilities and it promotes model's development seen controller, which is a technique that he/she helps a lot with the order of the code and appointment of functions to each development area.

- Se recomienda integrar a todo el cuerpo educativo de la Escuela de Educación

Básica "Dos de Marzo", para el uso del aplicativo y sean los docentes quienes transmitan a los estudiantes sobre como consultar sus notas y realizar los test de evaluación.

- It is very advisable that the educational interactúen with the system so that when they already begin their works to 100% in the system they are totally you consent of all their potential.

- When developing software projects it is recommended the use of the working methodology a lot "Programing Carries to an extreme XP" for its versatility and easiness to the change and necessities of the client.

- The implementation of cubes OLAP is suggested in the different systems that are developed, like an alternative to the reports and access easiness to the information.

- To use in the students the evaluation test like tool of complementary study, since it is an interactive way that they study and let us know by means of a feedback where you/they are failing and they can reinforce the study topics.

- It is recommended to designate an in charge of the system, so that it enters and administer the information, since the nucleus of the systems is the information and the administration of the same one.

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