CLIENT SERVER VERSUS DISTRIBUTED NETWORK APPLICATIONS IN HUMAN RESOURCE MANAGEMENT

by
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Abstract. The aim of this paper is to design an information system for the personal record in the small/middle firm, but firms that consists of main submits geographical scattered. The application has been made using the triad APACHE-MySQL-PhP offered by Merlin Desktop in the open source vision. The end user needs in use a computer network and an Internet browser. From the analysis system point of view, the application tackles two areas of the human resources management: personnel record and organizational analysis

1. The Design of an information system in the DNA technology

The configuration of a designed application under the DNA standard is presented in figure1.

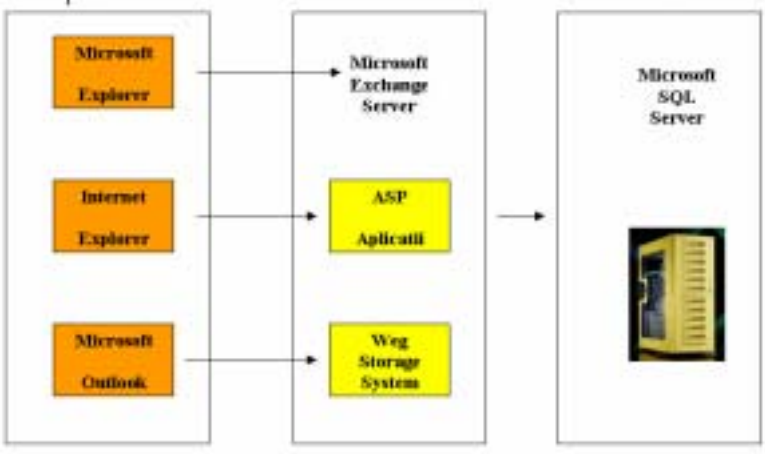

Figure 1-The DNA standard architecture

1-The applications level for the work-station (customer part) (presentation level)

2-The applications level achieved on the applications servers (business logic level)

3-The applications level achieved on the SQL server (data stocking level)

This model assumes that the independent achievement of the data stocking system is giving the access system at the data. Using the client-server model with three levels, has the following advantages:

- High flexibility and adaptive degree on changes
- Possibility of creating and using by the customers

The applications customer achieved on the work-station, using only selection function and displaying the data. The data processing operations and the business logic elements achieving take place on the servers.

Installing the customer soft can often be organized from the server side and can consists only in installing the given operating system, gifted with web-browser. All the needed software component parts are in the "open source" category.

1.1. The Apache Web Server – it is a web server (it's name comes from "a patchy"- a little bit from www soft development), that uses the specification CGI (Common Gateway Interface) that is a communication specification between the server (such as program that generate dynamic documents) and the server itself. This server allow that the CGI program output to be inserted in HTML existent pages, thru directions written direct on the HTML page.

1.2. Data Base MySQL Server in the same time with the development of the Internet Network and its employment in accessing the data-base, the applications in this area use exclusive the architecture customer-server. MySQL is a server application (for data base) able to carry out a great number of SQL commands. It is sharable and can be install on the PC working under different operating systems (Windows, Linux, Unix, etc.). To use the data base, I used WinMySQL Admin on Win9x, that is an instrument for administration MySQL.

1.3. The PhP language – Coding in HTML and the ones used in the C CGI scripts, can offer the required support for every Web site. In the mean time with the Internet extension appeared some specialized languages that can contribute to achieve additional functions on a Web page displaying by a browser or that allows to achieve easier the CGI scripts. Name PhP (meaning Personal Home Page) explains its functionality- writing the Web-pages. Being known even as "Hypertext Preprocessor", it is a scripting language (directly performing), includes the HTML language and rolls up on the server. The language syntax is borrowed from C++, Java and Pearl and allows the writing of the Web pages in real time (fast and dynamic). PhP is a language devoted writing scripts that will be interpreting by the Web server.

The PhP language together with the data base server MySQL represent a very good solution for a fast achievement of complex Web applications. The software architecture of such of that application is presented in the 2nd figure

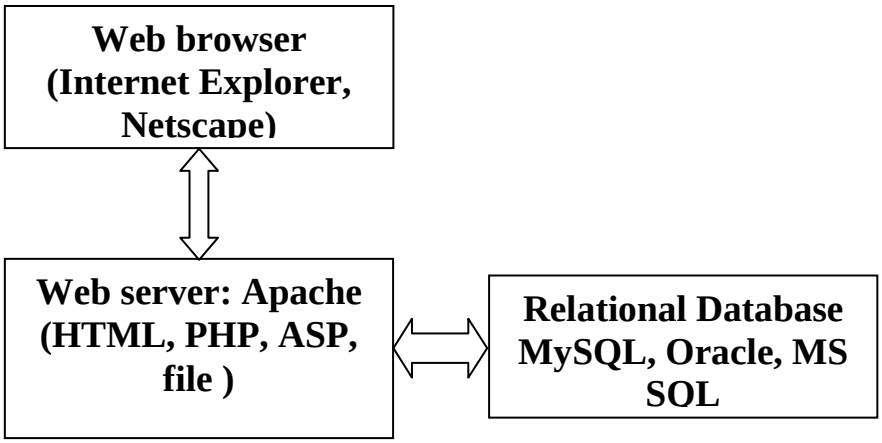

Figure 2- The Architecture of a WWW (DNA) application.

The accessing mode of the received variables from the browser is: the data from a form/blank has been sent, the associated scripts receives a row of characters that consists of pairs of value name=value separated thru the character "&". In a PhP script, the name of the different fields $name become automatic global variables in the script and have the values from the form/blank fields. This is valid no matter on the sending mood (post or get). In any Web site there is a page that in a concise way presents the content of it and contains references thru the pages that details the information. Usually, the file where the page is stocked, it is called "index.html".

A Web server application is a reacting program. This program runs continuously on a PC connected on the INTERNET (server) waiting to receive a supply from a customer application that rolls up on another PC from the network (Netscape, Internet Explorer, etc.). The Web server controls a collection of files disposed on the computer disk on that this one it is installed. If the application customer demands an existent document, the server application will furnish it compiling with the protocol rules established in the customer demand (http). On a server connected at the Internet can run, besides the Web-server, other server applications (using for instance an SQL server for the data base). The transfer of the files will be achieved using the TCP/IP network protocol.

2. The design of the base structure for an application in the DNA technology

This application is structured on two levels. The first one (the data base level) consists of a data base called "personnel". The second one (the applications) consists of PhP programs written around the script index.php.

The "Personal" data base design.

The database Personnel is compound of five tables.

Database Personel

table	Action						Records
compartment	Browse	Select	Insert	Properties	Drop	Empty	0
emp_record	Browse	Select	Insert	Properties	Drop	Empty	0
employee	Browse	Select	Insert	Properties	Drop	Empty	0
structure	Browse	Select	Insert	Properties	Drop	Empty	0
wage_level	Browse	Select	Insert	Properties	Drop	Empty	0

Figure 3 – Personnel database structure in detail

- Employee – contains employees private data.
- Compartments – contains the services, compartments and office list.
- Grid – contains salary grid.
- Structure/Internal structure – contains the firm structure including the vacant jobs.
- Cm – contains information in relation with the employees record.

The five tables work both with the personal record and the organizational analysis. The relation between the employee (wage-earner), job (Structure), working area (Compartments) and the employee wage has been achieved through MySQL facility.

The PhP source-code design.

The PhP program has been made using the development applications platform "Maguma Studio".The source-code has been structured in 21 programs which function interrelated as it follows.

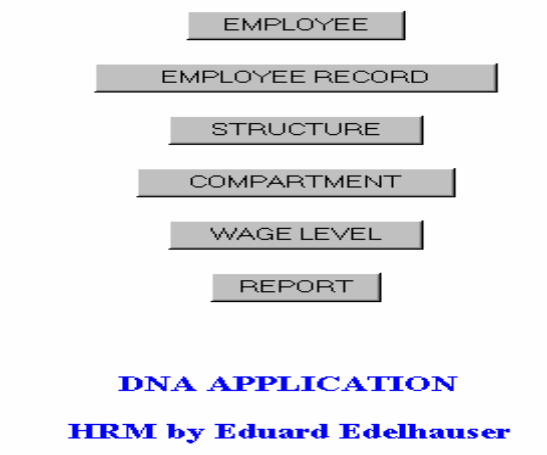

Figure 5- HRM Main menu application

The designing of the main interface requires HTML (Hypertext Marking Language). Visual options PhP has been also used. Five procedures have been use according with the first five control buttons, corresponding also to the five personnel database tables.

- Index_sal – connecting program with the employee table.
- Index_comp – connecting program with the compartments.
- Index_grid – connecting program with the grid table.
- Index_org – connecting program with the structure table.
- Index_cm – connecting program with the cm table.
-

The tables direct interface with the written application in PhP has been made thru the following nine subprograms:

- Pers_new, Pers_edit – a program for updating the employee table.
- Comp_new, Comp_edit – is updating the compartment table.
- Grila_new, Grila_edit – is updating the grid table.
- Org_new, Org_edit – is updating the structure.
- Cm_edit – is updating the cm table.

There have been designed the following reports:

- Sectors employees list (fulfilled jobs)
- The whole jobs per sectors list
- Employee records listing

The next figure, 6th, shows the way we did the compartment table loading with differentiation codes of the compartments, the compartment name and the compartment dependence on the upper level.

NEW COMPARTMENT CLOSE

Code	Compartment	Parent level compartment
1	General Manager	0
15	Human Resource Manager	1
13	Marketing Manager	1
14	Budget Manager	1
141	Accountancy Division	14
151	Wage Division	15
152	Personel Division	15
131	Sell Divison	13
11	Production Manager	1
111	Production Division	11
114	Electric Divison	11
112	Mecanic Divison	11

Figure 6 – The loading of table compartment

Based on the compartment and employee tables, we can get the personnel list according to the structure where someone easy can see the vacant jobs. In order to load the structure there have been used data from the organizational analysis of the underground coal mining industry.

3. Conclusions

The designed and achieved application can be introduced even in the firms. Analysis on application of the informational systems from the human resources management required:

- The achievement of a personnel analysis system for one's firm human resources function rely on relational interconnected database.
- The data dictionaries designed for different criteria personnel record.
- Information achievement of this system analysis has been made with DNA technology is based on the following components:
- Using the highest technical design for applications rely on the overlapping customer-server applications.
- In this way has been made a client-server application at distance.
- Using the MySQL engine has two advantages : it is free licence, and it is also very strong and robust
- The PhP language is nowadays the most used and best program language on the web which is in fact the future programming.

For running this designed application, the MySQL database servers will be installed on the PC servers and the Apache server applications also, and on the customer PC will be installed the Internet Explorer browser. For an accurate installation, even if the server is the same with the customer workstation, will be installed the Merlin Desktop which contains the Apache-MySQL-Php triad.

For instance, to illustrate the PhP language using for the compartment table connection, I reproduced a part of Index_comp program.

The whole fields extraction from the compartments tables is achieved like this:$strquerry="SELECT*FROM compartment".$order;

The table field displaying which allows a triple arrangement (code, compartment and upper compartment) has been achieved as:

```
echo "<tr> ";
        echo '<th><A HREF="index_comp.php?order=order+by+cod">Cod</a></th>';
        echo '<th><A HREF="index_comp.php?order=order+by+denumire">Compartiment</a></th>';
        echo '<th><A HREF="index_comp.php?order=order+by+cod_conducere">Cod compartiment superior</a></th>';
        echo "</tr> ";
```

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