



INVENTORY AND COMPUTERIZATION SYSTEM FOR THE CULTURAL PATRIMONY – MONUMENTS AND CEMETERIES OF THE JEWISH COMMUNITY IN ROMANIA

BY

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Abstract: The object of the article is to introduce a modern database system for the inventory and computerization of the cultural patrimony, monuments and cemeteries of the Jewish Community in Romania, in the European context of multiethnicity and patrimonial diversity. The intention is to capitalize and develop the Jewish patrimony in Romania. Using IT & C means and also considering the environment are the true novelties and the creative side of this method compared to the traditional means used in scientific work and, particularly, in the History of Art and Architecture.

Preserving the cultural heritage is considered a priority worldwide. The international community acknowledges the importance of protecting the cultural heritage and commits to fight against any form of intentional destruction, in order to preserve something for the next generations.

This project's main objectives are the processing, organizing and analyzing the classical archive that comprises text-data and photographs, in order to build a new integrated database and present the results on a website.

The raw information found in the archive is processed and optimized with the help of a computer, keeping in mind the resources used for storage. We aim to set a standard for this information, considering the format in which they are stored, choosing the non-proprietary open standards. The texts are processed and only the relevant information on the subject is kept, thus avoiding redundancy.

The default raw data from the database was extracted and stored as text files, pictures, scanned images. Specific software and algorithms are used for text files processing and integration in a relational database. As a result of this processing, a new relational database for the Jewish monuments and cemeteries in Romania was created, with records sorted by preset criteria and geographically positioned

by zones. Text and image data related to the capitalization of the patrimony and touristic itineraries development was also stored in the database.

A multiuser secured access software application and interface was designed for the database and records management. The web-based solution used for the interface design and implementation will allow the remote access to the database from any computer with internet connection, web browser, username and password.

The database records management, using the indexing keys shown in the relational database model, allows a fast access by indicating the data retrieving criteria. Based on the correct normalization of the database, it guarantees the data consistency and the database's and database management application's scalability, reflected in short access time and accurate data retrieval under intensive usage.

Keywords: Cultural patrimony, relational database, text processing, image processing, web development

1. Text and image data processing, organization and management

The raw information referring to the monuments and synagogues found in the archive is processed and informationally optimized, keeping in mind the resources used for storage. A data format standardization was performed, using the non-proprietary, open source standards. The texts are processed and only the relevant information on the subject is kept, thus avoiding redundancy.

The procedure used in the monuments and cemeteries raw data processing is detailed as follows.

For the Jewish monuments and cemeteries in Romania, the raw data consisted of printed and scanned lists, practically image files. The text processing was performed by an OCR (Optical Character Recognition) software and then the resulted text was manually spell checked. This process produced an Excel spreadsheet for the monuments and another one for the cemeteries.

In the primary archive, the following information was found about cemeteries: the name of the community, town, address, observations and comments, data referring to the present status. The information extracted from the primary archive for the 810 Jewish cemeteries in Romania was used to create the records in the *comunitati* and *cimitire* database.

The raw information for the monuments consisted in Word documents and Excel spreadsheets, with lists of the Jewish monuments in Romania, with different types of details. After the raw material processing, the records in the database contain the following: town, address, county, comments and observations, images, the monument type (synagogue, prayers house, temple), old name, present status, other useful information.

The above mentioned information about the 111 Mosaic rite monuments in Romania was stored in the records of the *monumente* database.

Starting from the information in the primary database and using the above mentioned procedures, the data was optimally structured and recorded in the relational database.

The data in the primary archive was processed and included in the database according to the standards and classifications established for each entity type. The database structure is focused on information standardization, avoidance of redundant data and accuracy according to the primary archive records.

2. Relational database design

Upon the analysis of the existing information and data types from the two initial sets of data, several tables are created to minimize the redundancy and to comply with the normalization criteria. The relational database tables are: counties, towns, communities, cemeteries, monuments.

The tables *judete*, *localitati* and *comunitati* were created to separate the redundant existing information in the two sets of initial data (the towns, counties and communities) and the remaining information is found in the other two tables: *cimitire* and *monumente*.

The tables *judete* and *localitati* for this project were created by extracting the appropriate data from the SIRUTA database. SIRUTA (Sistemul Informatic al Registrului Unitatilor Teritorial-Administrative – Information System for the Territorial Administration Units Registry) represents a classification used by the National Statistics Institute (INS) to record the Territorial Administrative Units (UAT). Each UAT is uniquely identified by a SIRUTA numerical code.

The advantage in using the SIRUTA database is to have the GPS coordinates (longitude and latitude) for each town and county.

After the necessary information was extracted from the SIRUTA database, the *judete* and *localitati* tables were created. After the *comunitate_id* field was filled in and verified, the *comunitate* field was deleted from the *cemeteries* initial data set. To fill the *localitate_id* field in the *cimitire* table, due to the possibility to have two or more towns with the same name, the following procedure was used:

- *id*, *nume*, *judet_id* were selected in the *localitati* table;
- using an *INNER JOIN* between *cimitire* table and *comunitati* table and applying the equality between *cimitire.comunitate* and *comunitati.id*, the view *cimitire_judete* was created, where we have available the counties' id's in which the cemeteries are found;
- *id*, *localitate*, *judet_id* were selected from the view *cimitire_comunitati*;
- the pair of fields *nume*, *judet_id* from the *localitati* table was compared with the pair of fields *localitate*, *judet_id* from the view *cimitire_judete* and, if equality occurs, the *localitate_id* field from the *cimitire* table was filled with the value of the *id* field in the *localitati* table.

After the *localitate_id* field was filled and verified, the *localitate* field in the *cimitire* initial data set was deleted.

The *latitudine* and *longitudine* fields were filled in two steps. For the cemeteries with no address, the fields were populated with the values of *latitudine* and *longitudine* fields of the towns where these cemeteries are located, by using a PHP script. For the remainder of the cemeteries, the *latitudine* and *longitudine* fields were manually filled with a specially created routine.

The routine interrogates *Google Maps API* by the *latitudine* and *longitudine* coordinates for the given address, centers the *Google Maps* map in the point/points given by *Google Maps API* and saves in the database the coordinates of the point where the user clicked.

The general structure of the database, together with the tables relationships are shown in Fig. 1.

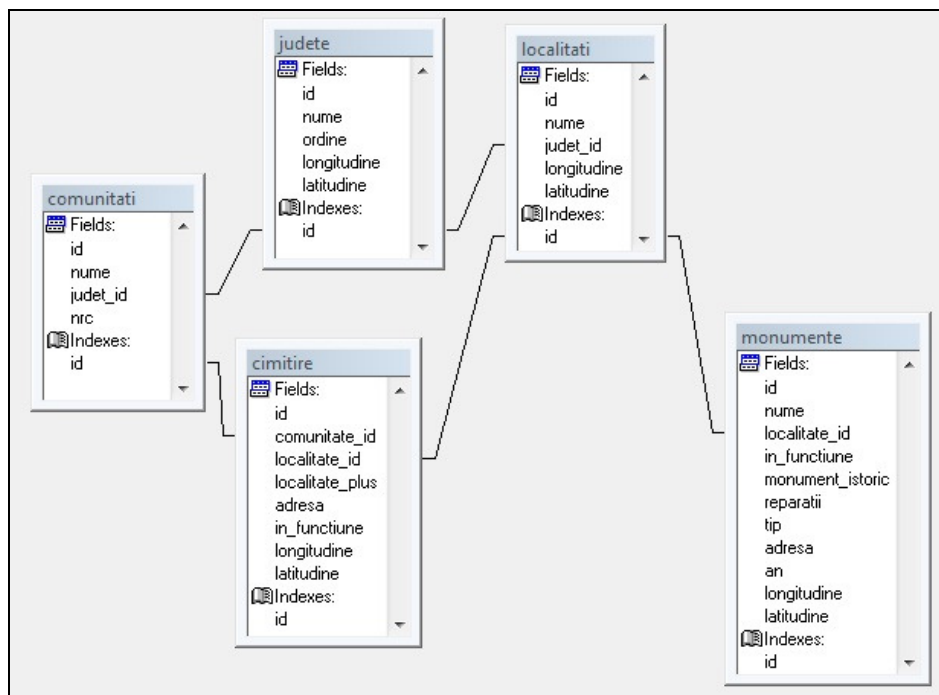


Fig. 1: General database structure and tables relationships

The database content indexing, using the indexing keys shown in the relational model of the database, allows a quick access by indicating the data retrieving criteria.

Based on the correct normalization of the database, it guarantees the data consistency and the database's and website's scalability, reflected in short access time and accurate data retrieval under stressful and intensive usage.

3. Website implementation

After all the tables with the final data were completed, the next step was the website development, by adding the sections: *Monumente* – dynamic section showing Mosaic rite monuments in Romania (synagogues, temples, prayers houses) and *Cimitire* – dynamic section showing the Jewish cemeteries in Romania.

Each of these sections is powered by a PHP script which extracts the information from the database, formats them in order to be included in the webpage, and then inserts them in the general template used by all the website pages.

The script displays the communities in Romania on Google Maps. If the user selects a community, the PHP script displays the cemeteries belonging to the selected community.

In each case, the relevant information is extracted from the database and sent to the JavaScript routine to be displayed on Google Maps by the means of the Google Maps API: latitude, longitude, name, address, town, details, county, type.

Both monuments and cemeteries can be selected and displayed on the website, according to the established classification and geographical areas.

4. The application's technical infrastructure

The application's technical infrastructure is based on the Apache Web Server ver. 2.2.9, running on a LINUX server. The Apache server runs the PHP module ver. 5.2.8, PHP being used as server-side scripting language. MySQL Server ver.5.0.51 is used for the database server, with UTF-8 language encoding.

Webpage standards: XHTML 1.0, CSS 2.1, JavaScript;

Developing instruments for the website and management interface building: HTMLKit 2.92 – HTML and CSS code editing; Quanta 3.3.2 – HTML and PHP code editing; NVU – CSS and JavaScript editing; GIMP 2.6 – graphical editor.

The website versatility is constantly monitored by previewing it on the main existing browsers: IE ver. 6, 7 and 8, Firefox 2 and 3, Opera 8 and 9, Google Chrome, Safari, Konqueror.

5. Conclusions

- The Jewish Community in Romania cultural patrimony inventory will be based on a modern, digital archive ;

- The multimedia technology used for the patrimony international promotion will allow a better and easier media access for the Jewish Community in Romania patrimonial values;
- The website was search-engines-optimized for a better visibility in the webspace, giving Romania a better integration in the European network of cultural patrimonies;
- The website will allow an extended, multimedia access to this patrimony, establishing an asset in the informational space.

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SISTEM DE INVENTARIERE ȘI INFORMATIZARE A PATRIMONIULUI
CULTURAL AL COMUNITĂȚII EVREIEȘTI DIN ROMÂNIA –
MONUMENTE ȘI CIMITIRE

(Rezumat)

Articolul are ca obiectiv prezentarea unui sistem modern de baze de date pentru inventariere și informatizare a patrimoniului cultural, monumente și cimitire al Comunității Evreiești din România, în contextul european al multietnicității și diversității patrimoniale. Se are în vedere valorificarea și dezvoltarea patrimoniului cultural evreiesc din România. Aportul de noutate și creativitate față de metoda tradițională în munca științifică și în particular în istoria artei și arhitecturii este recurgerea la mijloace oferite de tehnologiile informației și comunicațiilor precum și racordarea la problematica mediului care pot efectiv revoluționa sau cel puțin sistematiza și face mult mai accesibil domeniul.

Protejarea moștenirii culturale a fost stabilită ca o prioritate mondială. Comunitatea internațională recunoaște importanța cunoașterii și protejării patrimoniului cultural și reafirmă angajamentul în lupta împotriva distrugerii intenționate sub orice formă, astfel încât moștenirea culturală să poată fi transmisă generațiilor viitoare.

Principalele obiective urmărite au fost procesarea, structurarea și prelucrarea materialelor cuprinse într-o arhivă clasică de date – texte și imagini, în vederea constituirii unei baze de date relaționale și prezentarea rezultatelor pe un site web.

Informațiile brute stocate în arhiva de date sunt supuse unui proces complex de prelucrare în vederea optimizării atât din punct de vedere informațional cât și din punct de vedere al resurselor consumate în procesul de stocare. Se urmărește standardizarea informațiilor din punct de vedere al formatului, optându-se în principal pentru folosirea standardelor deschise, neproprietare. Informațiile de tip text sunt prelucrate în vederea eliminării informațiilor redundante prin păstrarea exclusiv a informațiilor relevante pentru tema dată.

Informațiile inițiale brute din arhiva de date au fost preluate și stocate sub formă de fișier text, imagini, fișiere de tip imagine (scanate). Pentru prelucrarea textului din cadrul acestora și preluarea într-o bază de date relațională s-a recurs la folosirea unor programe și algoritmi specifici. În urma acestor prelucrări s-a constituit baza de date relațională pentru monumente și cimitire evreiești din România, clasificate după criterii prestabilite și poziționate geografic pe zone. Au fost prelucrate și stocate în baza de date informații de tip text și imagini, informații referitoare la valorificarea patrimoniului și stabilirea unor trasee turistice.

Pentru gestionarea bazei de date și a informațiilor din cadrul acesteia s-a proiectat o interfață de administrare sub forma unei aplicații software, aplicație securizată și accesibilă de către mai mulți utilizatori pe bază de username și parola. Soluția web-based, folosită pentru proiectarea și implementarea interfeței, va permite accesarea bazei de date din orice locație, singurele cerințe pentru accesul la aplicație fiind o legătură la internet, un browser web, username și parolă.

Structurarea și indexarea materialelor în baza de date folosind cheile de indexare prezentate în modelul relațional al bazei de date permite o accesare rapidă prin indicarea criteriilor de regăsire a informațiilor. Bazându-se pe corecta normalizare a bazei de date, ea garantează consistența informațiilor și scalabilitatea bazei de date și a aplicației de gestionare a bazei de date, care se traduce prin timpi buni de răspuns și returnarea de informații corecte în condiții de folosire intensivă.

O parte din informații a fost preluată din baza de date SIRUTA (Sistemul Informatic al Registrului Unităților Teritorial-Administrative) și anume coordonatele GPS ale localităților și județelor. Acestea au fost folosite pentru geopoziționarea pe o hartă digitală a obiectivelor stocate în baza de date.

Harta digitală folosită a fost dezvoltată pe baza API-ului Google Maps folosind tehnologie JavaScript și Ajax prin intermediul unei biblioteci de rutine open-source și anume JQuery.

Întregul sistem informatic dezvoltat în cadrul acestui proiect poate fi cu ușurință adaptat specificului oricărei comunități etnice atât de pe teritoriul României, cât și din alte țări. În cazul celorlalte țări, pentru modulul de geopoziționare trebuie să se dispună de un registru al unităților teritorial-administrative al acelei țări similar cu SIRUTA.

Sistemul informatic e dezvoltat cu ajutorul tehnologiilor open-source PHP/MySQL ceea ce permite găzduirea acestuia pe orice server indiferent de sistemul de operare (Windows, Linux, OS/2 etc.). Interfața sa e dezvoltată cu ajutorul tehnologiilor XHTML, CSS, JavaScript ceea ce permite accesarea și gestionarea acestuia de oriunde, singura cerință fiind accesul la internet și un browser.