

# A SOFTWARE APPLICATION FOR MANAGING GRADUATES AND THE GRADUATION DIPLOMA IN THE UNIVERSITY

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**Abstract:** *This paper presents the structure mode of organization and storage of data that is contained in a graduation diploma. The graduation diploma is of three types, based on the three important cycles of study (bachelor, master, and doctoral degree). We do an analysis of the information that is included in the graduation diploma and how we can manage this from the quality point of view.*

*We print the graduation diploma once on the form, elaborated by our Ministry of Education, Research and Innovation (MECI), we can make a duplicate in certain cases.*

*We suggest an online application which is based on a software solution using Apache, PHP and MySQL.*

**Key words:** *conceptual model, database, graduation diploma, qualitative.*

## 1. Introduction

Making a software application to improve registration and filling in process of education documents issued by universities insures easier work for persons working within the education documents department and rapid access to information related to education documents.

The analysis of the current diploma filling in process reveals several weak points, such as:

- non-unitary shape of diplomas;
- a lot of work time;
- lack of a computerized data base containing information related to diplomas issued to graduates.
- the sets of diplomas printed by MECI do not keep the same distance of the pre-printed side as compared to the

page edges, thus creating problems to any printing application.

To eliminate these flaws we suggested the execution of an advanced application that should include information related to diplomas as well as the possibility of printing them according to certain standard formats, for all kinds of education diplomas necessary for the said education level (bachelor, master, doctor, post-university studies) and all necessary related records. The information contained in the database is also useful for filling in other related documents for students, thus avoiding manual filling in on a repeated basis.

The advantage of introducing this software application for the issue of education documents is the collection and rapid processing of such a large number of data.

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The suggested application runs on a web-server (weather local or remote) and it was created using dynamic web pages, with the help of PHP language, using the database management MySQL server for data storage and interrogation ([3],[4]). The main reason for choosing the development environment (dynamic web page) was the fact that the system's requirements on which the application will run are minimal, with all operations executed by the server and offered to the user.

The format of the bulletin will be A4. The article, inclusively the tables and the figures, should not exceed 6-8 pages. The paper extent is of minimum 4 pages, and an even number of pages is compulsory. The last page will be filled at least 70%.

A person may participate, within a volume, with a paper as first author and one as co-author. Doctorate coordinators may be co-authors for several papers of their doctoral students, if they contributed

to their development.

The paper will be written in British English, using Times New Roman (TNR, Microsoft Word). We strongly advise to use this template and insert the text of the paper directly within this file.

## 2. Application Description

The application is made up of three main components, functionally interconnected, namely:

- **database** – a relational database which stores in well defined tables the application's structure;
- **administration interface** – this component is accessed by the administrator and stands for the database administration interface. This interface is also called *back-office*;
- **user interface** (*front-office*) – this component is accessed by users.

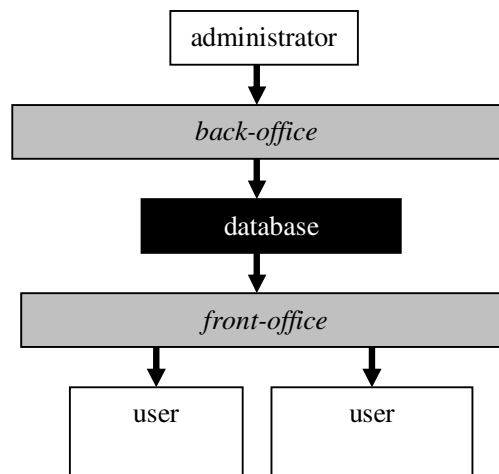


Fig. 1. *Structural pattern of the application*

The application is accessed using one of the following commands:

[1.http://nume\\_server/ProiectDiplome/](http://nume_server/ProiectDiplome/), where *nume\_server* is the server's identification name in the network or its IP.

This command is used when the application is hosted by the Intranet local server.

[2.http://www.nume\\_domeniu/cale](http://www.nume_domeniu/cale), where *nume\_domeniu* is the name of the site hosting the application. This sequence is used if the application is hosted by an Intranet server.

Considering that the application requires the administration of a database it was required to make a conceptual pattern of the database ([2]) according to entity relation methodology, by going through the following stages:

- Identification and documentation of the entity types;
- Specification of the relation types;
- Identification and documentation of attributes associated to the entity types;
- Revising the conceptual pattern with the user's help.

The main types of entity found within the application are: student, university, faculty, field of study, subjects, types of diploma, users.

Description of entities making up the suggested pattern:

**Student** – this table contains personal data of a student (surname, first name, date of birth, personal identification number, etc). The student belongs to an organizational unit (University/Faculty/Specialization);

**University** – this table stores data about universities;

**Faculty** – this table contains data about the faculties within a university;

**Field of study** – this table stores information related to the fields of study

found within a faculty;

**Subjects** – contains information related to subjects required for the bachelor's admittance or graduation examination, etc.

**Types of diploma** - this table stores information related to type of diploma;

**Users** – information related to the application's users.

### 3. Optimization of Document Generation

When making diplomas different solutions were tried to simplify the generation of documents, such as creating a document in Word or another text editor where information from the diplomas should be entered. The problem is that this method requires a lot of time until the text is arranged so as to fit into the diploma box space. There is also no real speed boost because the information must be introduced for each diploma, both for spine and for the document itself. There are also differences from one set of diplomas to another, which require text arrangement. Moreover, some field of study denominations are very long, which makes the text exceed the edge spacing; this requires modification of font size, making a new series of tests until text fitting is reached, which requires time and paper. But the suggested application can deal with all these problems, offering a rapid and easy solution for diploma printing.

The application offers the following facilities:

- the possibility to create personalized profiles for each field of study containing the education type and duration, graduation type, bachelor's graduation examination subjects, etc., number of credits, examination session and title obtained upon graduation for a certain field of study. An important advantage is that this data must be introduced only once for one field of

study, and according to the personal identification code the application reads the graduate's personal data (students' personal data is imported from .xls, .dbf, .csv files in MySQL) stored in the database; and all other data will be automatically filled in by the software. This way, a lot of time is saved and diplomas can be printed;

- the bachelor's admittance or graduation examination grades can be introduced very easily. The examination average score is automatically calculated by the software according to

MECI regulations related to the average score rounding off, which thus allows once more verifying the calculation correctness of average scores recorded in examination records;

- the software allows editing of the examination subjects, fields of study, faculties and universities list, offering the possibility to change the existing options or to add new fields of study, etc. This information too must be tested only once, subsequently selected by running menus;

The screenshot shows a web browser window with the address bar displaying 'http://localhost/ProiectLicenta/modificareDateUniversitate.php'. The page content includes a navigation menu with links: 'Aduagare', 'Modificare', 'Cautare', 'Tiparire', 'Vizualizare', 'Actiuni', and 'Menu principal'. The main content area is titled 'Formular de modificarea a datelor unei institutii de invatamant superior' and contains the following fields:

- Universitate: Universitatea Transilvania Brasov (dropdown)
- Facultatea: Facultatea de Matematica si Informatica (dropdown)
- Specializarea: Informatica (dropdown)
- Rector: [input field]
- Denumire: Facultatea de Matematica si Informatica (input field)
- Denumire: Informatica (input field)
- Titlu didactic: Prof. (input field)
- Decan: Emil Stoica (input field)
- Titlu stiintific: Dr. Ing. (input field)
- Titlu didactic: Prof. (input field)
- Titlu acordat: Informatician (input field)
- Secretar sef: Mihaela Alina Popescu (input field)
- Titlu stiintific: Dr. (input field)
- Domeniu: Informatica (input field)
- Durata studii: 3 ani (input field)
- Secretar sef: Claudia Zugravu (input field)

At the bottom of the form is a button labeled 'Modificati datele'.

Fig.2. *Entering data for a diploma*

- the software automatically redimensions the font so that large texts too could fit into their boxes, keeping text legibility at the same time.
- the suggested application allows introduction of distance to the left top

corner of the pre-printed side on the front page and overleaf, then automatically adjusts the page items to be correctly placed in the diploma. Moreover, the introduced distances continue to be memorized after closing

the software, so that they won't need to be introduced each time the software runs.

- before diploma printing, you can see on the screen the information which is going to be printed for a last check before printing. This way, the possibility of error occurrence is minimized and the number of cancelled diplomas will be almost zero;
- except for printing all types of diplomas and certificates issued by universities, the suggested

application allows the printing of registers for both education documents and graduate repertories issue;

- rapid search of information related to graduates and diplomas received is made using the "Glossary" page;



Fig. 3 View data for diploma

#### 4. Conclusions

The application uses only open-source technologies and does not require any software license. The technology used in making the entire software does not require any additional investment in operation systems or software running on server. *Apache* and *MySQL* servers and *PHP* language offer a solid base and insure

safety of data, without asking anything in exchange. The application thus executed offers multiple possibilities of adjusting to the type of diploma, in an intuitive and friendly way.

Since *PHP* language allows modular programming and interactive graphic on the server, new modules can be added to the application.

The executed application is independent from the operation system (runs both on Windows and MacOS or Linux), provided a network connection is insured and a web navigator (browser) installed, such as for example Internet Explorer, Mozilla Firefox, etc., which are usually installed at the same time with the operation system.

When choosing the development environment the compatibility between PHP language (which can easily imbricate an html code) and MySQL was considered, which allows good communication with the database.

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