

# Information system for obtaining reports on students of the High Technical School of Vocational Studies from Urosevac in Leposavic

Nenad Marković <sup>1\*</sup>, Dejan Živković <sup>1</sup> and Filip Marković <sup>2</sup>

<sup>1</sup> High Technical School of Vocational Studies from Urosevac temporary settled in Leposavic, Leposavic, Serbia

<sup>2</sup> University of Pristina temporary settled in Kosovska Mitrovica/Faculty of Technical Sciences, Kosovska Mitrovica, Serbia

\* [nen.mark74@yahoo.com](mailto:nen.mark74@yahoo.com)

**Abstract:** *The paper presents the information system of the student service of the High Technical School of Vocational Studies from Urosevac in Leposavic, realized with the MS Office Access software package. Thus, created database provides the ability to obtain the necessary reports to monitor the progress of students in their studies and reports that can be used with statistical analyzed higher education institutions, which can be later used in the self-evaluation report and other various reports.*

**Keywords:** *MS Office Access; information system; the report; database*

## 1. INTRODUCTION

MS Office Access is a database management system (DBMS), which is used to store and load data, display, statistical analysis, and also to automate frequently repeated jobs [1,2]. It represents an excellent combination of productivity of database management software and ease of use of Windows. As a rounded application, MS Office Access provides complete management of the relational database and integrity on the level of the computer itself on the database (which prevents incomplete updating and deletion). It is possible to join tables with rules that check validity and validity and prevent input of incorrect data, and each table field can have its own format and default value which significantly increases productivity. It is possible to import and export data from many applications: dBase, FoxPro, Excel, SQL Server, Oracle, Btrieve, textual ASCII codes (fixed width and boundary fields), data in HTML format, and the use of their applications for working on the Internet. By selecting a particular option, you can switch tables, queries, reports, and views in a tabular format in HTML format [3]. Data Access Pages can use complex forms on the Internet that are linked to data in a particular network. Another advantage of MS Office Access is the ability to share a database in a local (LAN) network allowing multiple users to access and work with data stored in the database [3,4].

## 2. INFORMATION SYSTEM OF THE STUDENT SERVICE

Before beginning the design of the Student Information System (SIS), it is necessary to analyze the requirements of the user. The Student Service has a legal obligation to keep all documentation about the student until the completion of the studies and, upon completion of study, archive the documentation and keep it in its archive.

Students need to complete the exam in a quick and easy way, that the exam application is effective and that the student be sure that they will be in the exam paper. The student requires certain beliefs during studying: a certificate of study, a certificate of passed exams, a diploma certificate, etc.

Teaching staff requires a list of students enrolled in a particular study program and semester, whether in paper or electronic format, depending on the affinity of the teacher itself. The demand for teachers is to follow the student during the pre-crisis period.

The information needed by management is often not precisely defined and reduced to making a solid software base that allows for a further simple and reliable upgrade and to extract as much useful information from existing data as possible. In many cases, the necessary information comes through re-scanning student records, which takes time and there is always the fear that some sort of cautiousness has been done.

Students in the student service have the requirements: to enter the data as quickly and easily as possible, to not enter the data once again and to facilitate the finding of various data related to the student, that they do not have to manually search the documentation, i.e. student dossier. The possibility of a student's certificate of certificate of passed examinations: subject matter, grade, ESPB, average grade and total number of ESPB points is a requirement that makes them much easier to work.

This SIS was introduced in 2014, when the school changed the temporary headquarters from Zvečan in Leposavic. The previous system of manual data entry was replaced by this SIS for more efficient and effective performance of tasks and tasks in the student's school service. Of course, in this SIS there are gaps that the authors eliminate on any useful suggestion of the student's school service that enters the data into the same.

The choice of the database management system, the design of the same, the successful

normalization of the database represent further steps towards the implementation of the application and its application in everyday work. When designing an SIS database, the problem of optimizing performance in a multiuser and network environment has arisen. For this reason, the concept of two bases was adopted.

One database in which the data tables (beck end) are "MaticnaBaza\_be.accdb", Fig. 1, is located on the server and another database with the exclusive use of "MaticnaBaza.accdb" in which the queries, macros, forms and reports are located at each workstation.

This concept allows the customization of data entry forms for each reference. The goal is to increase the level of satisfaction with each user, which increases the chances of a good reception with users and successful implementation of the application in practice. In Fig. 2 shows one of the forms for entering student data.

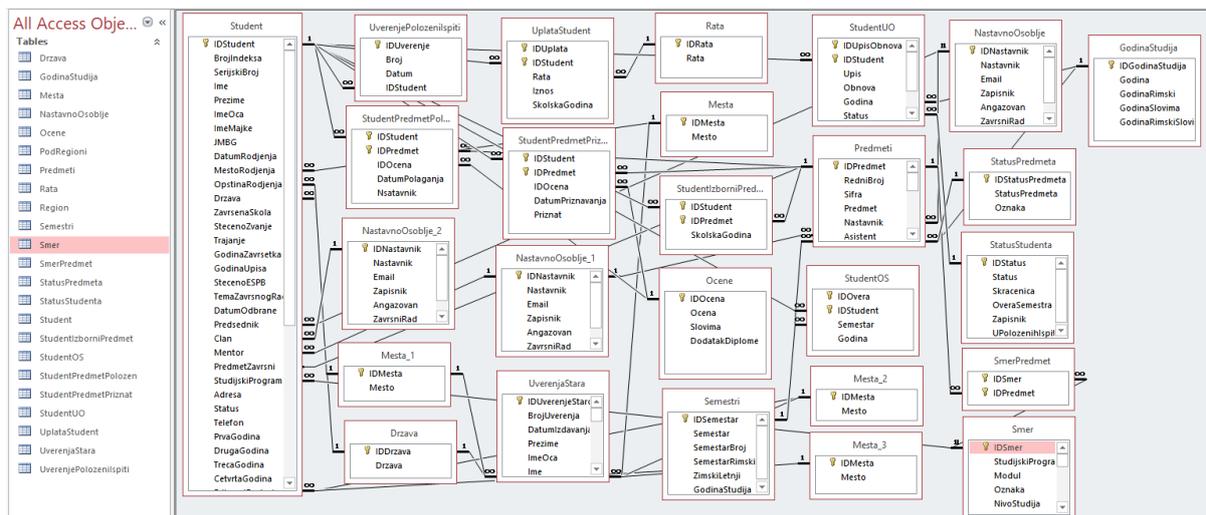


Figure 1. Structure of MaticnaBaza\_be.accdb (Source: authors)

Figure 2. Form for entering student data (Source: authors)

### 3. SELECTION AND FILTRATION OF DATA BY APPLICATION (QUERY)

Queries in MS Office Access can be created using the Wizards, directly in the Design mode, which provides greater flexibility and transparency in query creation or more advanced writing SQL (Structured Query Language) code [5].

Queries are database objects that allow the extraction of data from the database to be used for other purposes: as a data source used for a printed report or obtaining a list of items to be used to control search on the data entry form. An inquiry can be based on one or more linked tables.

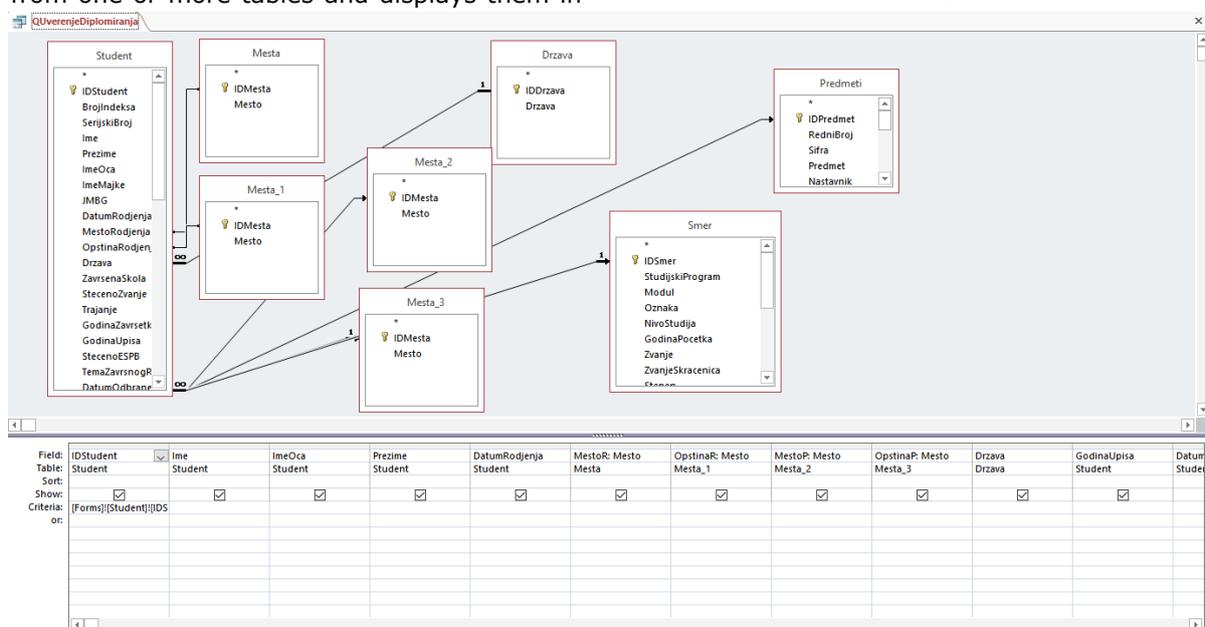
In addition to the field that is drawn directly from the table, the query can also contain the calculation fields that transform the data. MS Office Access supports multiple query types:

1. Select query – The simplest and most commonly used query type. It returns data from one or more tables and displays them in

the Datasheet View where we can change these data as needed.

2. Crosstab query – Displays summed values (sums, averages, and counts) and displays them as a spread sheet table.
3. Action query – There are several types of them, and it's common for everyone to make changes to multiple records in just one operation.
  - Update query – For a global change to a row group in one or more tables.
  - Append query – takes a group of records from one or more tables and puts them at the end of one or more tables.
  - Make-table query – Creates a new table from a part or all data from one or more tables.
  - Delete query – Deletes the group of records from one or more tables.
  - Union query – Connects data from two or more tables [4,5].

Fig. 3 shows an example of a query that is used to collect students' data for graduation certificates.



**Figure 3.** Request for gathering data to produce a certificate of graduation (Design View) (Source: authors)

The query used in this database for creating SQL code is UNION QUERY. A section of the code used

to create queries about passed and recognized exams is shown, Fig. 4.

```

QStudentPredmetPolozenPriznat
SELECT
QStudentPredmetPolozen.IDStudent, QStudentPredmetPolozen.IDPredmet,
QStudentPredmetPolozen.Sifra, QStudentPredmetPolozen.Predmet,
QStudentPredmetPolozen.ESPB, QStudentPredmetPolozen.IDOcena,
QStudentPredmetPolozen.Godina, "Polozen" AS PP,
QStudentPredmetPolozen.SemestarBroj, QStudentPredmetPolozen.RedniBroj
FROM QStudentPredmetPolozen
WHERE (((QStudentPredmetPolozen.IDStudent)=[Forms]![Student]![IDStudent]))

UNION SELECT
QStudentPredmetPriznat.IDStudent, QStudentPredmetPriznat.IDPredmet,
QStudentPredmetPriznat.Sifra, QStudentPredmetPriznat.Predmet,
QStudentPredmetPriznat.ESPB, QStudentPredmetPriznat.IDOcena,
QStudentPredmetPriznat.Godina, "Priznat" AS PP,
QStudentPredmetPriznat.SemestarBroj, QStudentPredmetPriznat.RedniBroj
FROM QStudentPredmetPriznat
WHERE (((QStudentPredmetPriznat.IDStudent)=[Forms]![Student]![IDStudent]))
ORDER BY SemestarBroj, RedniBroj;

```

**Figure 4.** SQL code for displaying passed and recognized exams – UNION QUERY (Source: authors)

#### 4. CREATING THE REPORT

In addition to the various certificates that students need, they include records of pre-educational activities of students, forming records with the number of exams, transitional statistics in the examination deadlines, all for the purpose of

Број индекса	ДС-119/11	Датум рођења	07.07.1961.	Година уписа	2010/2011
Име		Држава	Р. Србија	Датум дипломирања	24.02.2016.
Име оца		Општина рођења	Пријеполје		
Презиме		Место рођења	Рагajsка		
Студијски програм	Друмски саобраћај				
Модул					
Тема	Значај и улога шпедиције у комбинованим технологијама				

Р. Бр.	Шифра	Предмет	Оцена	ЕСПБ
1	23111	Високог језика 1	6 (пет)	6
2	23123	Телекомуникације	7 (седам)	8
3	23124	Рачунари и програмирање	6 (пет)	8
4	23211	Високог језика 2	6 (пет)	6
5	23213	Компјутерска графика	6 (пет)	6
6	23224	Статика	6 (пет)	6
7	23221	Кинематика и Динамика	6 (пет)	8
8	23222	Отпорност материјала	6 (пет)	8
9	23233	Теорија и регулације саобраћајних токова	6 (пет)	8
10	23244	Визуелни изаз	6 (пет)	6
11	23431	Безбедност саобраћаја	7 (седам)	8
12	23432	Транспортне мере	7 (седам)	7
13	23433	Стручна пракса	8 (осам)	3
14	23434	Машински цртежи	6 (пет)	6
15	23446	Поштоматска роба у транспорту	7 (седам)	6
16	23521	Аутомобил и аутомобили	6 (пет)	7
17	23522	Шпедиција са логистиком транспорта	6 (пет)	8
18	23523	Телекомуникације друшког саобраћаја	6 (пет)	8
19	23534	Моторна возила	6 (пет)	7
20	23631	Лави градски превоз	6 (пет)	6
21	23632	Мотори СУС	7 (седам)	7
22	23634	Интерградни транспорт	6 (пет)	4
23	23635	Варпаносни превоз на друшким саобраћаја	6 (пет)	4
24	23636	Завршни рад	10 (десет)	9

Р. Бр.	Шифра	Предмет	Оцена	ЕСПБ
1	23112	Привремена матемика 1	6 (пет)	8
2	23212	Привремена матемика 2	6 (пет)	7
3	23235	Увод у саобраћај и транспорт	6 (пет)	5

Освојено ЕСПБ: 160      Стручна пракса       Просечна оцена: 6,35  
Признато ЕСПБ: 20      Завршни рад   
Укупно ЕСПБ: 180

Figure 5. The appearance of reports passed and recognized exams (Source: Authors)

#### 5. CONCLUSION

Over time, people have tried several techniques for organizing data. Paper cards, cardboard boxes, documentation cabinets, sticky papers, indexes with ten thousand items and large pile of paper sheets stacked at the writing tables were used. After severe suffering, people have discovered that computers are incomparably better for data processing, especially when the amount of data is large, data is complex or often changes.

To make progress in the work of a higher education organization, in one part of it, requires extraordinary work and a lot of energy. The developed SIS enables further undisturbed development in many directions. Application of Internet technologies represents the future of information technologies and further research should be directed towards internet technologies. This certainly includes the development of an integrated SIS High Technical School of Vocational Studies from Urosevac in Leposavic, using LAN and WAN technologies with a web portal and distance learning systems.

improving the educational process and consequently the speed and quality of the work of the high school.

Reports created in this way can be printed or sent directly to the e-mail address from the base itself, Fig. 5 and 6.

	<b>ВИСОКА ТЕХНИЧКА ШКОЛА СТРУКОВНИХ СТУДИЈА ИЗ УРОШЕВЦА</b> са привременим седиштем у Лепосавцу, 24. новембра 66 18218 Лепосавић, Република СРБИЈА, Тел. факс: (381-26) 84-106, Дир. 028 84-103 Мат. бр. 0902/173, Рег. бр. 1403013310, Шифра мат. 81920, ПИБ: 101252896, ж. р. 840-124790-97 www.vtsosnec.com, E_mail: va.uros@vtsosnec.rs
	Број: _____ Датум: 12.10.2015. године

На основу члана 161. Закона о општем управном поступку ("Сл. лист СРЈ бр. 33/97"), члана 99 Закона о високом образовању Р. Србије ("Сл. гл. бр. 76/2005, 44/2010, 93/2012, 89/2013, 99/2014 и 45/2015") и члана 93. Статута Високе техничке школе струковних студија из Урошевца, са привременим седиштем у Лепосавцу и затега:

**Звечан, СО Звечан**

Увидом у службену евиденцију Високе техничке школе струковних студија из Урошевца, издаје:

**У В Е Р Е Ж Е**

(према име једног родитеља и име)

рођен-а 22.07.1985. године, ДМБГ \_\_\_\_\_

**Косовска Митровица, СО Косовска Митровица, Р. Србија**  
(место рођења, општина, држава)

уписан-а школске 2012/2013. године, студент Високе техничке школе струковних студија из Урошевца, положио-ла све испите предвиђене Статутом ВТШСС из Урошевца, на студијском програму: **Машинство, модул: Заштита на раду**

Именован-а је одбранио-ла завршни рад из предмета:  
**Заштита од опасних дејстава електричне струје**

са темом: **Улога и значај електричне струје и електричних апарата у физикалној машини**  
дана: 12.10.2015. године са оценом 10 (десет)  
и општим успехом 7,96 (седамдесетдесетст/100) у току студија.

Именован-а је у току студија остварио-ла 180 ЕСПБ.

На основу тога издаје му-јој се уверење о стеченом високом образовању и стручном називу:  
**Струковни инжењер машинства**

Скраћеница стручног назива је \_\_\_\_\_ **Струк. инж. маш.**

Ослобођено од таксе на основу ЗОАТ-а Службеног гласника Републике Србије, бр. 49/92.

Висока техничка школа  
струковних студија из Урошевца  
Директор \_\_\_\_\_

Figure 6. The appearance of the graduation certificate report (Source: Authors)

One of the disadvantages of SIS can be that the database capacity is systematically limited to 2GB along with all objects. However, this is practically negligible because the database itself is divided into two parts by Backend and Frontend, so each of these two parts is specifically limited to 2GB.

Some of the advantages of SIS are reflected in reducing the input of duplicated or incomplete data, which contributes to more efficient performance of the student service of this higher education institution.

SIS could also be accessed from another MS Access database if a need arises, for example, from the information system of the library of the High Technical School of Vocational Studies from Urosevac in Leposavic, which can represent some of the next stage of the development of this designed information system.

The SIS presented in the paper can, if necessary, be adapted to suit the needs of students and other services of other higher education institutions.

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