

ANALYSIS AND DESIGN OF INFORMATION SYSTEMS

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ABSTRACT: Systems analysis and design work in chemistry is the result of a complex application called ChimUniv in the creation and operation of relational databases, the implementation of applications dedicated to Chemistry. The paper is addressed to students and all those who want to build applications using the skills and habits of Chemistry, Microsoft Access solution to offer. Fundamental theoretical notions database are missing from the scientific approach of this paper. In this paper we intend to highlight issues concerning the organization of elements in the periodic table, arranging them in groups and periods depending on their chemical properties.

KEYWORDS: applications, implementation, information system, computer system, database

INTRODUCTION

In our everyday life, computers are commonplace and even essential in some cases. One could say rightly that we live in a computerized society. It should be noted that computer is actually a machine that processes a series of information that we give them. Information is an essential element in this entire chain. In fact, in practice meet, among others, two related concepts, namely the information system and computer system.

The information system includes all elements involved in the collection, transmission, processing, etc.. information, so the role of information system is to transmit information.

The set of all elements involved in the process of processing and transmitting data electronically make up a computer system. In a computer system can get: computer, data transmission systems, other hardware, software, data processing, etc..

It can be said therefore that the information system is included in the computer system, the latter being an essential component of the first.

In the last fifty years, the production and use of computer - hardware and software - has grown beyond imagination. With the emergence of computers, programmers have the ability to design products faster and cheaper software for data maintenance and distribution.

The model used for data storage is a relational database. In database systems, data defining separate application programs, users saw only the external definition of an object, without knowing how it is defined and how it works.

In this way, the definition of the object can be changed without affecting its users if it does not change the external definition. For example, if you are new or changed data of Structural existing ones, where application programs are not affected, if not directly dependent on what is changing.

In databases there is a data query, meaning that more files are seen as a whole, eliminating redundant information as possible. It also allows simultaneous access to the same data, located in the same place or more spatially distributed users, each with personal

work style. Software system that allows the construction of databases, input information into databases called management system database. [4]

A management system database enables a user to access data using a high-level language close to the usual way of expression, to obtain information, making abstraction of user selection algorithms apply the data involved and mode of storage them. DBMS is an interface between operating system users.

Access is a special type of database called Relational Database. A relational database shares information in distinct subsets. Each subset groups the information on a particular topic. In Access, these subsets of data residing in individual tables. Access allows us to create relationships between tables. These relationships are based on a common field in two tables.

When you create a database, we want to make sure that it is designed not only to meet our requirements related to data entry, but corresponds to viewing and reporting requirements of the data stored in various tables that form the database.

APPLICATION SUBMISSION

One of the features is an information explosion in recent years. Huge volume of information can not be used effectively through traditional methods. Automatic processing of information using electronic computing systems has become a necessity for all fields. Thus, the most advanced method of organizing information for a meeting of automatic processing databases.

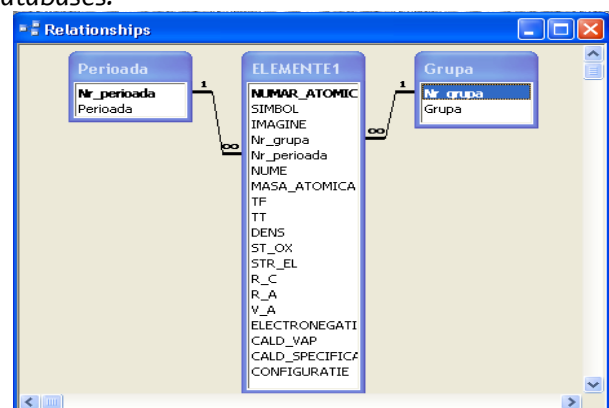


Figure 1. Relationships between tables

Physical data model (MFD) is obtained by the logical representation of data in a data description language closely related to a DBMS, in this case Access. [4]. Basically, he will use the physical data model in order to ensure a consistent processing cycle consists mainly of operations for creating, updating, mining, printing, reorganization, rescue, protection.

ChimUniv database application shows the following structure:

The objective is to create operating interface of the database. After creating database, tables and establishing relationships between tables, the database is:

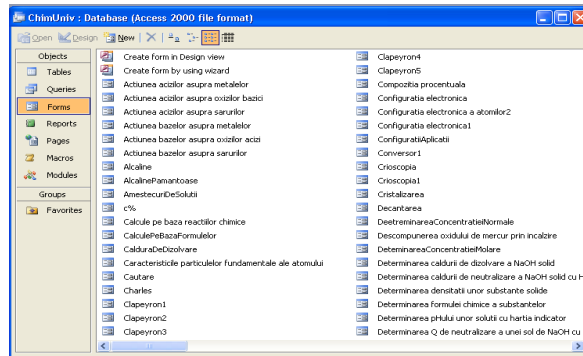


Figure 5. Base structure

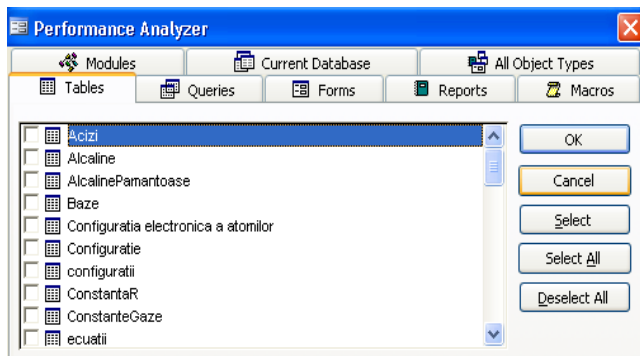


Figure 2. Performance Analyzer

The data elements contained in the table following form:

Z	SIMBOL	IMAGINE	Nr. gr	Nr. pe	NUME	A	Tf	Ti	DENS	ST_OX	STR_EL	RAZA	R_A	V_A	ELECTR	CALD	V
1	H	Editor 3.0 Photo	1	1	Hydrogen	1,00797	-252,7	-259,2	0,0711	1	1s1	0,32	14,1	2,1	0,10E		
2	He	Editor 3.0 Photo	8	1	Heliu	4,0026	-268,9	-269,7	0,1260	1	1s2	0,93	31,8	1	0,0E		
3	Li	Editor 3.0 Photo	1	2	Litiu	6,939	1330	180,5	0,531	1	1s2 2s1	1,23	1,55	13,1	1	32,4E	
4	Be	Editor 3.0 Photo	2	2	Beriliu	9,0122	2770	1277	1,862	1	1s2 2s2	0,9	1,12	5	1,5	73,6E	
5	B	Editor 3.0 Photo	3	2	Bor	10,811		2030	2,343	1	1s2 2s2 2p1	0,82	0,98	4,6	2	12E	
6	C	Editor 3.0 Photo	4	2	Carbon	12,01115	4830	3727	2,2644	2	1s2 2s2 2p2	0,77	0,714	5,3	2,5	171,7E	
7	N	Editor 3.0 Photo	5	2	Azot	14,0067	-195,8	-210	0,8124345	1	1s2 2s2 2p3	0,75	0,92	17,3	3	0,68E	
8	O	Editor 3.0 Photo	6	2	Oxigen	15,9994	-183	-218,8	1,14-2	1	1s2 2s2 2p4	0,73	14	3,5	0,81E		
9	F	Editor 3.0 Photo	7	2	Fluor	18,9984	-188,2	-219,6	1,505-1	1	1s2 2s2 2p5	0,72	17	4	0,75E		
10	Ne	Editor 3.0 Photo	8	2	Neon	20,183	-246	-249,6	1,20	1	1s2 2s2 2p6	0,71	16,8			0,42E	
11	Na	Editor 3.0 Photo	1	3	Natriu	22,9898	892	97,8	0,971	1	[Ne] 3s1	1,54	1,9	23,7	0,9	24,1E	
12	Mg	Editor 3.0 Photo	2	3	Magneziu	24,312	1107	650	1,742	1	[Ne] 3s2	1,3	1,6	14	1,2	32,51E	
13	Al	Editor 3.0 Photo	3	3	Aluminiu	26,9815	2450	860	2,73	1	[Ne] 3s2 3p1	1,18	1,43	10	1,5	67,6E	
14	Si	Editor 3.0 Photo	4	3	Si	28,086	2680	1410	2,334	1	[Ne] 3s2 3p2	1,11	1,32	12,1	1,8	40,6E	
15	P	Editor 3.0 Photo	5	3	Fosfor	30,9738	280	44,2	1,824345	1	[Ne] 3s2 3p3	1,06	1,28	17	2,1	2,9E	
16	S	Editor 3.0 Photo	6	3	Sulf	32,064	444,6	119	2,0742348	1	[Ne] 3s2 3p4	1,02	1,27	15,5	2,5	3,01E	
17	Cl	Editor 3.0 Photo	7	3	Clor	35,453	-34,7	-101	1,56414567	1	[Ne] 3s2 3p5	0,99	18,7	3	2,44		
18	Ar	Editor 3.0 Photo	8	3	Argon	39,948	-185,8	-189,4	1,40	1	[Ne] 3s2 3p6	0,98	24,2			1,5E	

Figure 3. Table ELEMENTS

It then creates forms. Forms are an effective way for displaying, entering and editing information in the database. You can create interactive forms of tables. Home ELEMENT query is used as shown below:

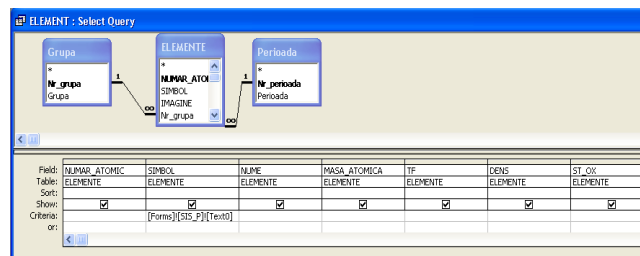


Figure 4. Query ELEMENT

This query is used to implement sufficiently detailed form that describes the main features of a chemical element. Parameter is the item for which we want to make the description. The use of this query do as described below.

Queries allow us to manipulate data in database tables. Queries are questions of fact. We use queries to get the answers we need, from information contained in the database.

THE STRUCTURE ANALYSE

Speaking at the click of a button, it will open forms. For most forms I used background images can add them using the forms properties window. Thus, the ownership Pictures give the file path will be the wallpaper, choose an embedded type (encapsulated), for it was not dependent on whether the image on that computer's hard disk, but to one embedded in our database And the forms are larger than the image stretch instead choose Clip property, because the image to expand across the entire form.

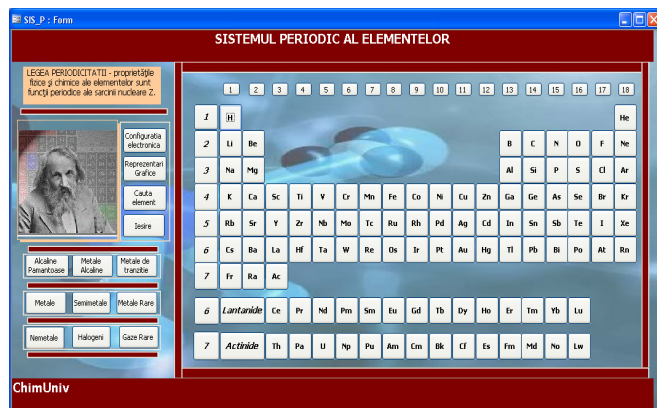


Figure 6. Periodic System Form

Periodic System form is made up of several buttons that we have the name and symbol of each element in the periodic table. The action on each of the buttons will open a form, the same for all buttons, open a form element, they will be displayed all the properties of elements. We notice the existence and Structure of the image, which is an OLE object in our database.

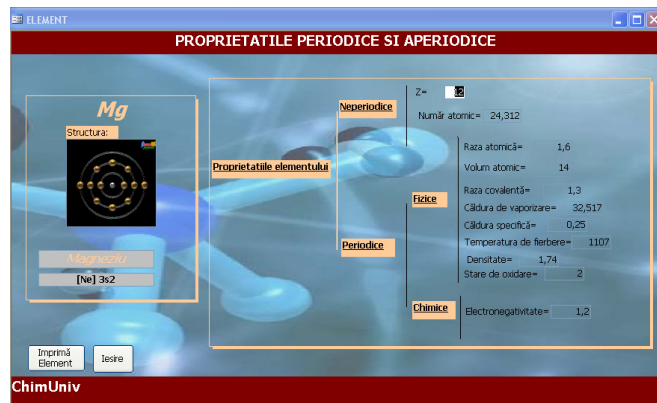


Figure 7. Form Elements

Electronic Configuration button opens a form where it shows the electronic shell structure for each element by simply selecting the desired item from the list.

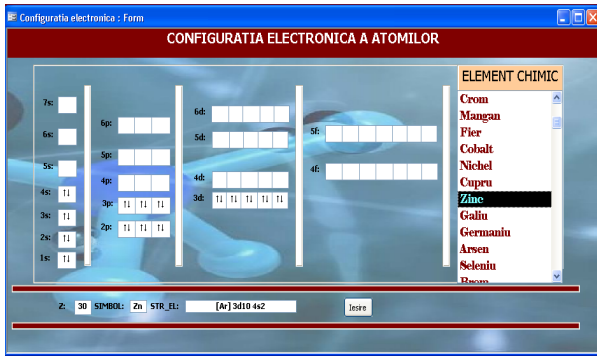


Figure 8. Electronic Configuration Form

The graphics button actuation, opens the graphics are presented and described the chemical properties in volute depending on atomic number of each chemical element. Observe the right of the form features of this property, which has corresponding text field in a table column of type memo Charts.

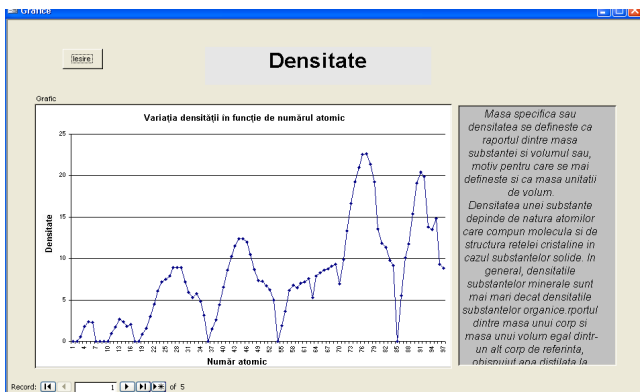


Figure 9. Shape variation depending on the atomic number density

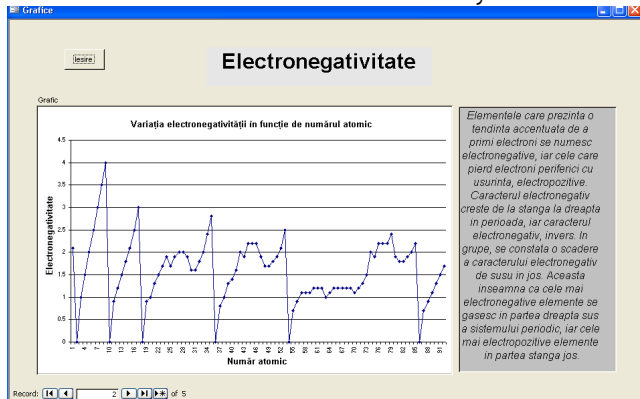


Figure 10. Shape variation depending on the number of atomic electronegativity

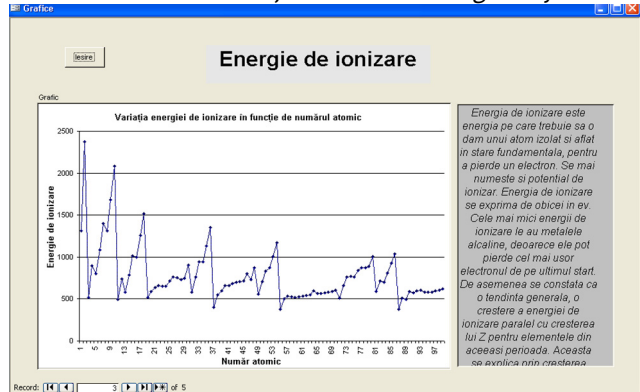


Figure 11. Shape variation of ionization energy according to atomic number

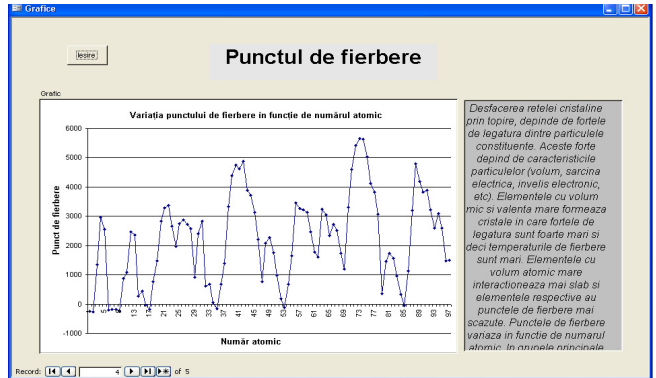


Figure 12. Shape variation of boiling point depending on the atomic number

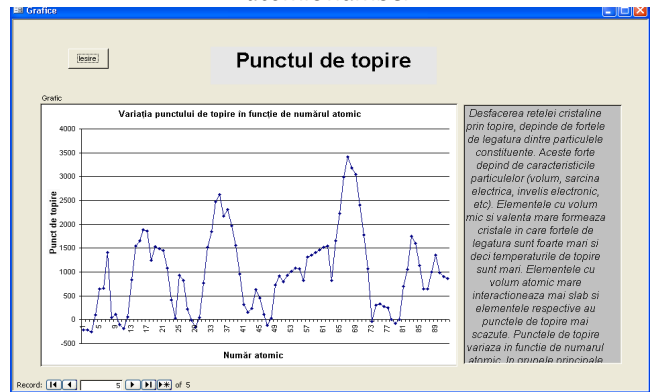


Figure 13. Shape variation of the melting temperature according to atomic number

As can be seen and buttons representing metals, alkaline earth metals, transition metals, rare gases, which are forms representing the OLE object type.

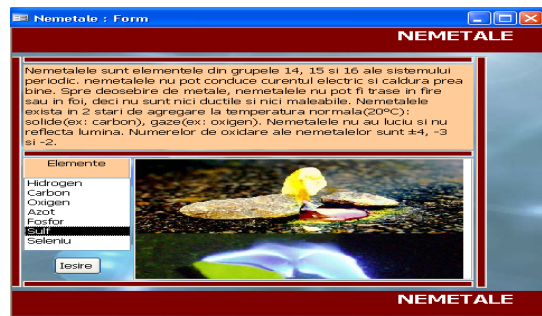
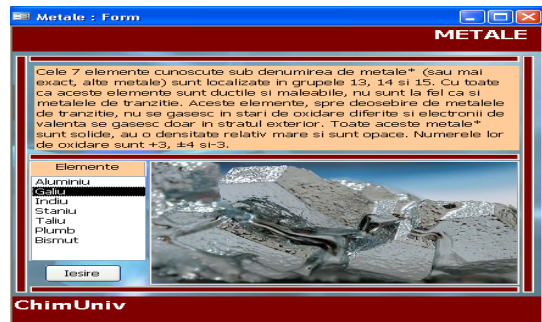


Figure 14. Forms for submission of metals and nonmetals

After achieving the necessary components of our database, integrate applications in a project using the Application Wizard. It can automatically generate an application project via File / New / Project / Wizard, executing the following steps:

1. has created a new directory;
2. or copied files on the project ChimUniv;
3. wizard to launch the Application Wizard, executing the following steps;
4. or defined project attributes.

The new project which now includes all forms generated, so that will be generated and tested the application executable. [1]

CONCLUSIONS

The study computer applications to achieve this, we can say that the use of databases in education can be a tool more attractive to users, this computer in teaching-learning process causing us to find solutions and modern interactive approach to class. Made using as an example I tried to demonstrate effective implementation of computers in teaching certain subjects. Using databases leads to increased competence and creativity, to growth and higher average educational attainment, the increased use of information technologies in different fields. [3]

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