Базе података у пословању Database in business

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The guiding idea of the monograph is the fact that it is a relatively young scientific discipline which certainly has plenty of room for future development, primarily in setting the new methodology, increasing the number of models and increasingly larger and better commercial application.

The starting point for the part of model data basis is the truth that useful idea about new aspects relies on real tasks. In other words, the data resulting from the process of monitoring the system functioning become the elements for modelling and models. In addition, we have pointed to the modelling process which includes stages where the model formation for the appropriate task occurs as the final stage. The stages, in the general sense, include: task definition, selection of parameters (constants, variables), data selection, selection of relations, model formalization, model testing and adoption of data base models. It has been explicitly indicated that model formalization follows the requirements and nature of the process, in order to justify its existence in the best way. Thus, the hierarchical model has been set as the representative of tasks where data are in a hierarchical order or groups with levels from lower to higher or vice versa. Database network model is explained and set for the tasks without hierarchy, but only with the appropriate network relations. Data base network model is used for relations with network settings where one track contains several chains of another track. The need for new models that will primarily appreciate relations is defined from the fact that in almost all the tasks there are relations between data or between data structures. However, more often is the case that there are only some relations of interest, so the relational model is defined as "a part of the direct product, namely the one whose pairs exist in the real task". Post-relational models explain models occurred after the relational models and refer to the object-oriented and object-relational database models.

Setting and elaboration of data base structure system optimization represent a significant contribution to the field of data basis. Some of the optimization models with special features can be usefully applied to the part relating to optimization of data base structure system. First, the parts of relational algebra supporting the formation of optimization model are determined. These are:

– operations on relations which are grouped into: conventional sets of operations, special relational operations, additional operations of relational algebra, operations of the base updating and operations in the presence of zero value;
– special relational operations providing projections, selections, mergers and sharing of relations;
– relational algebra supplements containing semi-merging, scalar computations and comparison operations.

A part of relational algebra is used for data base model optimization, which by its formalization and composition correspond to the model stability that improves implementation procedure. The following models are distinguished and processed: combinatorial analysis, information flows, graphs and networks and information flow model. The basis of the of combinatorial analysis model consists of integer programming, information flows and graph theory. In addition to the requirements of integer, the beginning of flows and the end of information as well as the use of graphs, we define the basis for a formal description of the model with a special mention of application importance. The model as a whole is set by necessary definitions, functions and relations to certain categories. More precisely, the parts of some relations, parameters and processes are shown in order to obtain the complete model with possible applications in the end. The definition of the graph G (N, L) has been utilized where N is the set of vertices and L the set of oriented branches. In addition to the network diagram in the case of larger number of knots and links, it is proposed to use the basic correspondence matrix (M) and the basic matrix of weight sizes (C). With the degrees of matrix M, we obtain all possible paths from one knot to another in the number of steps determined by the degree. By reviewing all the models, using matrix phrases and the corresponding graphs, we get simple and understandable solutions, especially as operations with matrices are very easy.

Defining the data basis in business information systems determines continuation to successful high degree of dependency between the data basis and the demands of business information systems. In order to realize these areas we have discussed issues of adaptation to data basis structure and ERP system data base. In addition to the general principles of data basis application on other tasks, we define the application in business information systems at high technological level. To customize the data basis, you need a good knowledge of application servers and data base servers which are among other things the technological support in the domain of adjusting the use of web-oriented data basis. In the preparation of web-oriented data basis in business information systems, it is possible to have a problem when using the data basis, so you need to ensure special conditions, such as: designing more efficient data base, query optimization, using stored procedures and queries, avoiding storing binary data in the data base, creating useful indexes.

The entire structure of data basis have to be set in order to support an interactive web page and thus become functional within its purposes, with good knowledge of application servers structure, as well as the complete technical support that ensures smooth functionality of the web-oriented business. Speaking of web-oriented data basis, we have explained the meaning and the role of these data basis.

We explicitly have addressed the data basis that support ERP systems, primarily in the core task that decisions do not require subsequent time for data monitoring and report generation because the system integrates all departments and functions within an organization into a unified information system. In addition to this, ERP systems provide a procedure for effective process planning in production, storage, purchase, sales as well as offering choices in decision-making based on accurate data.

In almost all areas of business, ERP systems provide efficient assistance. We have treated the specifics of data base management systems support which are used by all ERP solutions including the most popular Microsoft Dynamics, Oracle and SAP, each of which provides

specific requirements of user needs, reaching the final decision more efficient and in less time. Users are both large companies and small and medium-sized enterprises, with tasks that are of vital importance to a company.

Data basis are the basis of any ERP solution in a business system. More precisely, the support for each ERP solutions are data basis management systems in which data they are working with are stored. The most effective data manipulation within data base management systems is performed by the statements written in SQL query language. The use of this language in business information systems enables easier access to data as well as the update of existing and the introduction of new data. In order to use SQL it is primarily necessary to know the entire model of specific data base. Defining the basic syntax of SQL is a necessary step because it requires compliance to syntax as in any programme language and for accurate and precise statement and work with data. Within the syntax the SQL commands are defined as well. Commands or more precise queries are used according to specific needs and are grouped to represent: queries that do not return types from the table (INSERT, UPDATE, and DELETE statements) and SELECT queries that return types from the table. Queries that do not return types from tables are used to create and update tables but also to create and update fields and rows within tables. On the other hand, the SELECT command is used to retrieve data from tables under different conditions.

In the closing part, it can be concluded that the development of the chosen theme which is composed of three disciplines – models with modelling, optimization and data basis in business – has been integrated into a whole with technical and scientific support, using other disciplines whose characteristics are becoming close to treating procedures and represent a support to the implementation of the adopted concept.

У монографији, избором садржине и концепта, обухваћена су и разрађена питања из области модела и моделирања, оптимизације и примене база података у пословању.

Моделирање база података презентирано је на начин који је прилагођен одговарајућим реалним задацима, а ова посебност је садржана у чињеници да се базе података јављају као захтеване композиције уређених података. У монографији је дефинисан систем прилагођавања структура база података помоћу одговарајуће технолошке подршке и подешавања структура. Такође, указано је на посебну улогу базе података који су подршка ERP софтверима. С друге стране, приказане су веб оријентисане базе података, које су подршка интерактивним веb пословим апликацијама. У оперативном делу коришћења база података у пословању описана је функција SQL упитног језика.

Монографијом су обухваћени есенцијални делови база података и пословних информационих система, чиме су обезбеђени одговори на међусобну интеракцију.