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Database in Land Resource Management.

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Abstract: This article discusses the current importance of databases and land databases in land resource management.

Keywords: Location, information, object, model, technique, program, database.

The basis of any geographic information system is a database. A database is a named set of data that reflects the state of an object, its properties and interactions with other objects, as well as a set of hardware and software tools needed to maintain this database. In a general sense, a database is a collection of specially organized records and files. The GAT database can store, for example, the name of the object, the region or city where it is located, a location map about it, the economic geography and other indicators of the object.

Hierarchical, branch, and relational database models differ. In a hierarchical database model, information is written on a strictly dependent basis. The storage of data with such content can be better understood using the model shown in the figure below (Figure 1).

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Figure 1. Database hierarchical model diagram

A networked database is used when the content of information is more complex than simple. The network and hierarchical databases of data consist of a very clearly defined set of relationships, so it is necessary to first select the content of the data (Figure 2).

Making changes to the database structure means rebuilding the database. In order to get an answer to a necessary question, you have to write a special program. It sometimes takes weeks or months to answer users' questions, resulting in data losing its relevance.

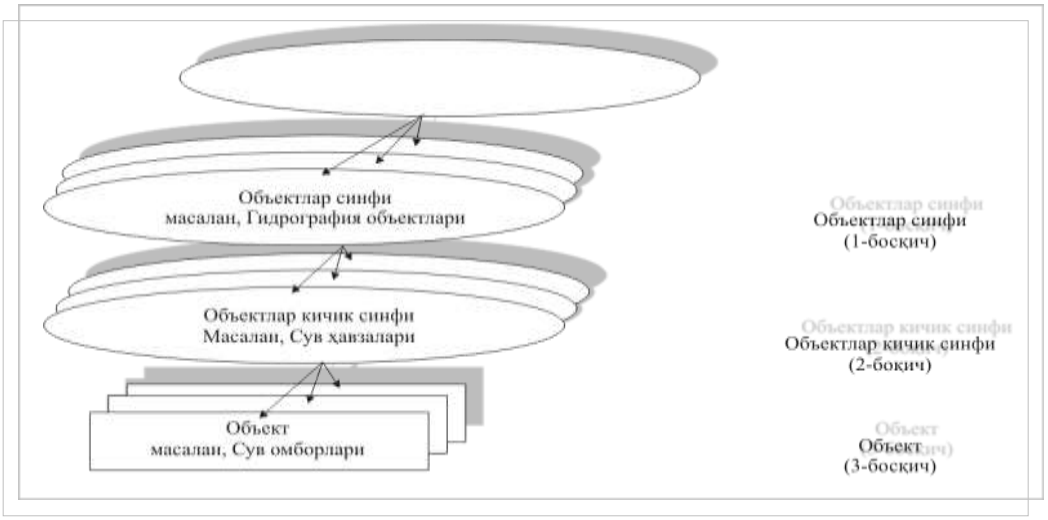

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Figure 2. Image in a database hierarchical model

The shortcomings of the hierarchical and branch models led to the emergence of a new - relational model of data. The relational model aims to simplify the structure of the database. In it, all the data is displayed in the form of simple tables consisting of rows and columns. Each table in the database is given a unique name. Each horizontal row has a separate physical essence, for example, an administrative territory. On a map, it can be a separate special graphic object. All N-rows of the table represent as many M-regions of the region, ie each row of the table contains information about this region.

All the numbers in each column of the table are data of the same type. For example, if there are only words in the district center column, decimal numbers in the field column, and whole numbers in the ID column indicate the code of the objects set by the users. Inter-table communication is done in frames.

Figure 3.

Conceptual data model

Each table has its own set of pre-named columns. Table borders usually correspond to the attributes of objects, the number of rows in the table is not limited, each record contains information about an object.

Nowadays, the relational database is a popular model for storing information, as it provides a visual representation of the image, a certain simplification of working with them. (Fig. 3. Conceptual data model)

When using GAT in cartography, the relational model of the database stores two categories of data - graphical and attribute (meaningful). In a graphical database, the graphical or dimensional basis of the card is stored in numeric form. The meaningful database contains additional information about the content of the map and spatial data that cannot be entered directly into the map. These include the text of the region that represents the quality description of the object, and a table that contains the attributes of the object is called an attribute table.

Cartographic attribute information is information in digital or text-graphical form about the quantitative and qualitative description of an object or event. For example, the attributes that represent agricultural crops can be given as follows.

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Similarly, data on the population of cities, theaters, concert halls, lengths of roads and communications in the table, and its total area by region, the number of land users, the names of employees, gender, age, length of service, salary, etc. .k. attribute tables are used to store information about.

In addition to storing data in the GAT, there are also special system programs that manage the database to describe and describe them. When using a database management system, it is possible to search, select, merge, and debug information. This module also allows you to create new attribute tables, fill them in, and link them to the card.

It should be noted that graphical objects do not operate on their own, attributes operate on their own, but integration is such that the graphic object is physically a column of the attribute table, and many other columns are not actually visible in the database table, but automatically indicators (length, perimeter, surface, etc.).

Attribute databases not only represent different objects differently, but also help to more accurately distinguish an attribute object when fulfilling spatial requirements - in the simplest case, if we mark an object on a map, we get complete information about it (sequence number, name, or name, size, etc.) possible. It is possible to organize the acquisition of the necessary information about the objects on the map through attribute tables, because it is already known that the differentiation of objects is related to the separation of their attribute records.

Conclusion The relationship between graphical and attribute databases in the GAT It should be noted that the coordinate of the end point of the contour must be the same as the coordinate of its first point, otherwise the contour will not be closed. But even if the graphical and attribute data of an arbitrary object in the database are similar, it is far from the map view of the real entity. Several numerical data about spatial objects form a numerical model of a place, providing a classification of the object's location (coordinates), set of properties, and attributes.

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