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ENCODING THE INFORMATION IN A LOGISTICAL SYSTEM

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Abstract:*Codification of information and its protection is a priority in the management of logistics systems. The structure of the Codification number reported revenues and expenditures of special purpose products for a certain period of time. The use of this approach in a number of member states of the European Union. Study aims to develop an identification system for logistics standardization document information reporting of special purpose products , and to provide a database for production, storage and consumption quantities stored in logistics bases . Investigates inter-branch relations relevant for decisions about incoming and outgoing material flows . Adoption of standard solutions for coding the database reflects not only on the technical level of production, but also on the consumption and exploitation.*

Key words: *Logistics systems, computer modeling, computer simulation, automated warehousing system.*

The use of special purpose products are characterized by the following parameters: volume , structure and nomenclature. They define accountability of expenditure for a given period of time and are used for stock control in storage . The volume of consumption can not be determined at the micro (individual unit of the structure of the army, police and preventive organs) and macro (individual branches of the armed forces and as a whole for the Bulgarian Army) . The structure defines the relative contribution of different types of ammunition from the total volume of consumption of defense products . Nomenclature is classified and coded appropriately to the information. Using these indicators is established in many countries of the European Union (EU) and the approach of speakers codes. Methods of application used most often thirteen diluted code numbers . In their first three digits indicate the country of origin of the defense product , the next five digits give information about the manufacturer and the last five are the data associated with the product . Number of each product is unique and not repeated . The same principles are built and shtrih codes are widely used in the marking of packaging products. They are intended for the automatic reading and identification of defense products .

The aim of the study is to develop an identification system for logistics standardization document information reporting of special purpose products , and to provide a database for production, storage and consumption quantities stored in logistics bases .

Implementation of the target is necessary to solve the following tasks :

1. To justify and define structurally balanced relationship with natural measurements of standardization information for specific products.

2 . To develop a methodology for classification norms of consumption of specific products by the application of radio frequency identification and coding of the information.

The development of logistics information system reporting defense products is necessary to develop a material balance with the database. This means to study the input-output relevant for decisions about incoming and outgoing material flows . Adoption of standard solutions for coding the database reflects not only on the technical level of production, but also on the consumption and exploitation. In order to provide interconnection and relationship between the development of parametric arrays , they must be built on the same pattern , covering not only geometrical , but all the main characteristics of the products (caliber Party series producer conditions stored , period of technical proficiency , volume and quantity , etc.). . Only a theoretical and practical justified row of numbers can satisfy these requirements. By sticking to this line in all cases where it is necessary to select features , we get spontaneous coordination between the values of the parameters between individual devices and groups related in one way or another. The design and construction of machines, assemblies, parts , tools , accessories and their components must be solved complex of structural , technological , organizational, and economic problems . All these problems need to be addressed in order to provide advanced technical requirements. To do so, remove the influence of the subjective factor - personal taste , talent and originality of the designer and technologist . In the new workings must be widely used standard assemblies, parts or elements of the structure. If there is no standard rule that is not to pass the so-called principle of " freedom of design ." Must be developed code so as to provide the basis for a parallel implementation of the standards or future standardization of the design.

In order to ensure the coding of information in the manufacture of machines, apparatus, equipment , materials and the like . in all sectors of defense production to have a high level feasibility and provide an opportunity to work in their mutual need need their main characteristics are interrelated . Based on these parameters must be carried out research, design , technology and manufacturing. To determine the lines of basic parameters are used rich and comprehensive capabilities of mathematics expressed in a system of preferred numbers. The preferred order of numbers allows to use the dimensional parameters and only those numbers which are subject to strict mathematical pattern. Thus avoiding the use of numbers and sizes of parameters obtained as a result of

the calculation or random idea . The use of preferred numbers creates the conditions for a standardization of dimensions and parameters in all sectors of defense products . And having in mind that the best feature of a standard depends on the accuracy and unambiguous the relevant definitions, it is clear the great importance they have the numbers with accuracy and clarity . [1]

The creation of the decimal system with a certain repetition of numbers in the decimal range is a new step in the search and a simple , convenient and universal system of numbers that can be used in all areas of the armed forces. Later developments in technology require the establishment of order and harmony in the production of a selection of practical and meets all requirements of the order numbers. In the technique most often thoughts are expressed with numbers and dimensional drawings . In the standardization most important problem is that of choosing the numbers to determine the values and parameters . No standard , which features basic parameters , size and quality parameters of the devices are not shown in numeric values. Immensely wide range of numbers given infinite series . To create order and establishing inter- parameters features and quality parameters of all the numbers that offer endless rows are selected such that a certain regularity and consistency provide an optimal solution . Internationally accepted lines of numbers , called preferred sequences constructed based on mathematician law comply with all requirements of law and should be used with preference in all countries.

Very often, products , components , parts and their elements are interrelated in working together on purpose , etc. This leads to influence and bind the selected values for the one on top the other , associated with them. In the art such a dependency is found anywhere, e.g. in capacity , temperature, pressure, voltage , speed, strength and the like . Contagion at once adopted magnitude requires selection and limit the choice of parameters , dimensions and characteristics of the items offered infinite numerical series and common preference for any of them, and they are precisely the standard (preferred) numbers and rows of numbers. Work to create the most appropriate order of numbers has started long ago. Only 40 years later the work of Renard received high praise and then began organizing the application of standard numbers. Constantly looking to establish a method for selecting gradation in setting parameters and dimensions , held in different places independently of one another , leading to the same solution to the problem . Renard's work was continued and shaped the theory of preferred numbers in Androin France and Germany - from Ryudenberg , Kintsle , Schlesinger , Berg and others. In these two countries have developed the first standards for standard numbers. The difference between the two documents were very small , so that the standards organizations began negotiating their full uniform . Only

in 1932 with the formation of the Technical Committee TC - 32 international federation of national standards bodies (ISA) based on these standards was developed Recommendation for an international standard numbers. It was published in Bulletin 11 of ISA in December 1935 [2]

Deploying BSS BSS 2805-57 and 3572-62 in all branches of science and technology, resulting in significant economic benefits to the national economy. It establishes order, harmony and simplification of the organization especially in material production. Thereby reducing unnecessary type diversity to business required range. This causes a decrease in the nomenclature is not only the materials and semi-finished products , but also necessary for these tools, jigs , gauges , process technology , warehouses , special products for defense and more. Ultimately this leads to concrete economic benefits such as increased seriality , reducing manufacturing costs , shorten design time and learning , facilitating planning and procurement , simplifying the organization , etc.

One of the main properties of standard numbers , requiring their implementation and extends their application is that the standard figure adopted as the main parameter of a device or unit shall receive all other parameters obtained by multiplication and division, which are also standard numbers. For construction of model lines also are the most comfortable and rows of standard chisla.tay as thanks to their harmonious and natural construction , they provide the most practical and economical smooth prehod.zapazvayki able to cover different scopes . When selecting parameters for individual devices must also be selected standard numbers as in later development they almost do not change easily and take neoplasms order. Critical role and importance are standard numbers to determine regularities in the development of the art and prospects of the devices .

The analysis follows that in the development of coding are looking for the simple and convenient forms to express certain proportions , quantities, distance, time , etc. . So I created many different systems of numbers as decimal , binary , etc. heksogsnalnata . The basic requirements for such systems are easy to remember , calculations can be carried out simply to have universal application to form a logical mathematician system and can form practically meaningful and appropriate rows. The most famous and used a system of numbers is decimal . It was adopted on the basis of standard numbers.

Decimal system . It is based upon the number ten and contains ten numerical symbols with numbers 1, 2 , 3, 4 , 5, b , 7, 8, 9 and 0 . Each higher row has 10 units of the lower row , for example:

1 thousand = 10 hundreds ;
1 hundred = 10 tens ;
1 tenth = 10 units;
1 unit = 10 tenths ;
1 tenth = 10 hundredths

Characteristic of this system is that each digit in a very digit number unless their nominal value is the value of the location (position) that loan. This means that a single digit can have different values depending on the place it occupies in many digital number. The value of each digit is equal to the digital value itself in the place value. For example, in the number 7273, the number 7 has a nominal value of 7. But once she is standing in the first place, which has a value of thousands place, and a second time in the third place to the place value of ten, so that the value of the digit 7 is:

first 7x1000 = 7000;

thirdly 7x10 = 70

and the integer can be expressed as:

7273 = 7,103 + 2,102 + 7,101 + 3.10

= 7.1000 + 2,100 + 7.10 + 3.1

= 7000 +200 +70 +3.

Hence the widespread name system - Positioning System . Of all the known positional decimal system has established itself as the most practical. It is based on the metric system has been adopted and implemented by all cultural peoples.

Arithmetical order. In the initial stage of standardization parameters and dimensions were selected most often by the arithmetic series. In order arithmetic built rows of diameters of rolling bearings. Order arithmetic is used now in the design of new structures, but reasoned justification , ie when another solution is impractical .

The most common formula to form an arithmetic series is:

a, a + x and x +2 , a + PF Kit and +4 x ... and + (n - 1) x ,

where a is the first term , x - and the difference n - number of members. If the difference X is larger than zero (x > 0) , the order is ascending , and if it is less than zero (x < 0) , the order is descending . In the first article of a = 2 , number of members n = 4 and x = 5 difference arithmetic order will be ascending and its four members will be: 2 , 2 + (1 x 5) 2 + (2 x 5) 2 + (H x 5) (2 , 7, 12 , 17) .

Each member of the series is the arithmetic average of the two adjacent members and is given by the formula [3] :

$$a_n^{\,1} = \frac{1}{2}(a_{n-1} + a_{n+1})$$

where n is the number of members of the sequence.

If the upper row arithmetic we want to determine the third member of the formula we have

$$a_3 = \frac{1}{2}(a_2 + a_4) = \frac{1}{2}[(a_1 + x) + (a_1 + 3x)] =$$

$$= \frac{1}{2}(a_1 + 4x) = a_1 + 2x = 2 + 2 \times 5 = 12$$

To obtain a more dense spacing between any two members are inserted through the interpolation required number of members to achieve the desired density. The new difference between the members of the line is calculated by the formula:

$$x_1 = \frac{x}{n_1 + 1} ,$$

where x1 - is the difference of the new order, x - the difference of

the old order; ni - number of nested members.

If we want the adjacent terms 2 and 17 to insert two more members, ie I = 2, according to the above formula we get:

x = 17-2 = 15;

$$x_1 = \frac{x}{n_1 + 1} = \frac{15}{2 + 1} = 5$$

The new line will be 2, 7, 12, 17.

The most significant disadvantage of arithmetic series is the relative uniformity in the possession of the order . At constant absolute difference between adjacent members relative difference in growth lines sharply reduced. Relative difference between the initial and final members of a row is very large . It is among the members of the simple arithmetic sequence 1, 2 , 3, 4 , 5, 6 , 7, 8 , 9 and 10 is:

between the numbers 1 and 2 - 100%

between the numbers 2 and 3 - 50%

between numbers 3 and 4 - 33.3%

between numbers 4 and 5 - 25% in

between numbers 5 and 6 - 20% of

between numbers 6 and 7 - 16.6%

between numbers 7 and 8 - 14.2%

between numbers 8 and 9 - 12.5%

between numbers 9 and 10 persons - 11.1%

This regular flaw does not allow to use rationally the said order. The use of arithmetic line gradation of basic parameters of products and adversely affect the construction of functional but dependent parameters.

Geometric order. Need lines to reflect the full regularity of development has resulted in the delay of the arithmetic sequence . It has been used by mankind for centuries , but now is unable to meet modern requirements. Regularities in the construction of interrelated characteristics of the articles defining the perspective of development , production particularly important in terms of the defense sector. All these requirements most closely matches the geometric series. They are a permanent part , ie the ratio of any one member of a series to predidushtiya member of the same number is constant .

The general formula for the expression of a geometrical series is:

$$a, ax, ax^2, ax^3, ax^4, ..., ax^{n-1},$$

where: a is the first member; x - private; n - the number of members.

Part X is a constant factor which, by multiplying any member of the geometric series, we get the next member of the order. When x is greater than one (x> 1), the order is ascending, where between one and zero (0 <x <1), the order is ascending, and for x less than zero (x <0) , the order is changing. In the first article of a = 2, x = 3 Private and number of members n = 6 will get the following geometric series:

2, 2.3, 2.32, 2.33, 2.34, 2.35

2, 6, 18, 54, 162, 486.

Each member of geometric line is equal to the geometric mean of the two immediately adjacent members:

$a_n = \sqrt{a_{n-1}.a_{n+1}}$.

where n is the number of members of reda.Tretiyat member of that geometric line will be:

$a_3 = \sqrt{a_2.a_4^4} = \sqrt{ax.ax^3} = \sqrt{a^2.x^4} = ax^2$;

$a_3 = 2.3^2 = 18$

To obtain a more dense spacing between any two members by interpolation can insert the required number of articles to achieve the desired density.

Of the new order geometrical determined by the formula:

$x_1 = \sqrt[n+1]{x}$

Where: Art Gallery is the quotient after interpolation, x - private before interpolation; ni - number of nested members. For example, if two neighboring Articles 2 and 486 of a geometric sequence is necessary to include four more members, will proceed as follows:

x = 486: 243 = 2

ni = 4

xi =?

$x_1 = \sqrt[4+1]{243} = 3$ ie, the line will form part 3 will be 2, 6, 18, 54, 162, 486.

Geometric order in one decimal space is seen as a special case, which is entitled to all matematichni.zakoni of geometric order, but with some peculiarities. In one decimal space can include any number of members with a constant indicator on two conditions:

1) in order to be included as the number one member;

2) Part of the line is obtained as the root of your n-ten by the formula

$x = \sqrt[n]{10}$

Root index n can be any integer. It shows at the same time the number of members in the decimal range. For example, if the decimal space is necessary to build a geometric series with three members will be privately:

$x = \sqrt{10} = 2{,}1544 = 2{,}15$

1,00 2,15 4,62 a decimal range of 1 to 10 ,

10.0 21.5 46.2 a decimal range of 10 to 100 and

100 215 462 to the decimal range of from 100 to 1000 .

From the foregoing, it is clear that in compliance with the laws of mathematics can create immensely and geometric lines of varying density . To summarize the results of the examination of arithmetic and geometric series , we can see that there are geometric highlighted advantages. Some of these are :

1. Geometric line contains all the targets of 10 degrees (... 0.1 , 1 , 10, 100 ...) .

2 . It has the same number of members in all decimal intervals.

3 . Each interval has a tenfold decimal values before the decimal range.

4 . In multiplication, division and grading standard numbers the result is always the standard number such as

3,15.1,6 = 5.04 = 5 , 10:0,6 = 16.6 = 17 , 253 = 16 000 = 15,625 .

The superiority of the geometric to arithmetic sequence is illustrated vividly in deciding on specific tasks.

For example, if it is necessary to establish a series of diameters or cross sections to 7 the size of a circular section steel in the range of 3.15 to 50 [mm] , we obtain the following results:

Solution with arithmetic order in which members of the order are:

a, a+x, a+2x, a+3x, a+4x, a+5x, a+6x.

Then a = 3,15, n = 7 and a_n = 50 ; a_n = a + 6x = 50, or x = 7,81.

Used 13 digit widespread and consist of 128 binary characters and unless the information they contain other codes provide information on batch number , date of manufacture , date technical and operational suitability , etc. . the use of standard numbers actually allow bar coding system to develop in many directions . They are used in two of the codes used multidimensional and containers. They can be encoded between 15 and 18, characteristics of the product , and to be applied to the identification of up to 20 characters in advance caused by a special programming unit .

We also use standard numbers can be used for consolidated material resources in order to identify the needs of the macro . This is largely would ensure quality control of a product of specialized industries. The applicability of this approach is based on the input-output , both for the subject of labor and means of labor with their natural values.

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