METHOD OF COMPRESSING THE DATA ON THE BASIS OF FIBONACCI P-NUMBERS

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The idea of large integers is the basis of the method of compression in question in the report, In this case the file of data, which must be pressed is considered as one or several large numbers.

The idea of such numbers consists of the following. Integer z is one of the elements of the sequence of integers $\{w_{p,l}\}$, which catches by the recursion relation:

$$w_{p,l} = w_{p,l-1} + w_{p,l-p-1}; \quad p \geq 0; \quad l \geq 0$$

with determined the values initial the elements of $w_{p.0}, w_{p.l}, \ldots, w_{p.p}$.

The direct calculation of the element of sequence is achieved according to the formula:

$$w_{p,l+2p} = w_{p,p}\varphi_p(l+p) + \sum_{i=0}^{p-1} w_{p,i}\varphi_p(l+p-i-1),$$

where $\varphi_p(k)$ - k-e Fibonacci p-number.

Based on this, the task of the idea of integer z consists in the determination of the integer values, the initial elements of sequence $\{w_{p,l}\}$ and number of the element, which is equal to z, I.e. any integer is represented in the form:

$$z = \sum_{i=1}^{p+1} q_i \varphi_p(j+i-1), \qquad (1)$$

where q_i the integers; $j = 0, 1, 2, ...$

Collection $\{q_1, q_2, \cdots, q_{p+1}, j\}$ is called the q-representation of the number z.

There are many representations of the form (1), but for the task of compressing the data it is expedient to use an idea, which has the following property $\{\min|q_i|; i = 1,2,\cdots,p+1\}$. This q-representations of integer is called minimum representations . It can have the following structures.

The structure with the fixed boundaries, in which the code length of its component parts does not change, takes the form:

q_1	q_2	...	q_{p+1}	j

However, this form does not always ensure the effective use of bits of the code. For example, for the record of code 00..0010 sufficiently only two bits, and elder zero can be rejected. This leads to the need for the indication of the boundaries between the separate codes.

Structure with the numerical indicators of the floating boundaries between its parts takes the form:

q_1	q_2	...	q_{p+1}	j	n_1	n_2	…	n_p	n_{p+1}

Indicators from the first on p show the boundaries between all q_l, and indicator p+1 - boundary for j

Structure with the code indicator of the floating boundaries between its parts takes the form:

q_1	q_2	...	q_{p+1}	j

For image q_l and j is used the reduced form (C-form) of the p-code. This form is obtained from M-form by the rejection of all zero high-order digits.