ALGORITHM FOR CHOOSING A COMPLEX OF INFORMATIVE CHARACTERS IN OBJECT CLUSTERING

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ANNOTATION

The article developed a hybrid algorithm for choosing a complex of informative signs in order to carry out the work of classifying melon varieties by God in the initial processing of agricultural crops. Just as the main issue of identifying logos was also considered. In this case, the construction of a decisive rule was carried out in the space of informative characters. The decisive rule is built by voting for the object in control, based on the calculation of the grades. While this simple method solves the main issue of logos at the same time, on the one hand, it also forms a complex of informative characters on the other.

Key words: clustering, informative characters, non-formative characters, algorithms for calculating assessments.

$$X_p = \{\forall x_{pi}, x_{pk} : \nu(x_{pi}, x_{pk}) \geq 55\%, \quad i \neq k, p = \overline{1,r}\} \quad (1)$$

It is formed in this class in such a way that the degree of similarity of the optional two of the objects of this class will not be less than 55%.

To carry out this work, we will include the following designations:

$\lambda_{\text{оптимал}} = (\lambda^1, \lambda^2, \dots, \lambda^N)$ we need to find a vector so that this can be done using a Vktor (1). Here $\lambda_{\text{оптимал}} = (\lambda^1, \lambda^2, \dots, \lambda^N)$ the co-equivalents of vector components are understood to be informative symbols, and the zero values to be non-conformative symbols.

Just as well as, $\mu = (\mu^1, \mu^2, \dots, \mu^N)$ we define the vector. components of this vector are calculated as follows. Suppose we have two $x_i, x_k \in X$ let the objects be given, then $\mu(x_i, x_k)$ the components of the vector are calculated as follows :

$$\mu^j(x_i, x_k) = \begin{cases} 1 \quad if \quad |x_i^j - x_k^j| = 0, j = \overline{1,N}. \\ 0 \text{ otherwise}. \end{cases}$$

In here $\mu^j(x_i, x_k) = 1$ is, if in two the corresponding components of the object$x_i^j = x_k^j$ are equal to each other. So, $\mu(x_i, x_k)$ vector $\mu^j = 1$ is, if twox_i, x_k suitable components of objects $x_i^j = x_k^j, i \neq k$. are equal to each other. Thus, the training is for the optional two objects of the sample $\mu(x_i, x_k)$ the vector can be defined as one-valued.

Suppose $\varkappa = \sum_{j=1}^{N} \mu^j(x_i, x_k)$ through size x_i, x_k let's determine the similarity coefficient of objects. This is the magnitude x_i, x_k denotes the number of components of their objects that are the same. These are the degrees of similarity of both objects $\nu(x_i, x_k)$ let's define through and calculate it in percentage as follows:

$$\nu(x_i, x_k) = \frac{\varkappa * 100\%}{N}.$$

Similarly, given by $\lambda = (\lambda^1, \lambda^2, \dots, \lambda^N)$, $\mu = (\mu^1, \mu^2, \dots, \mu^N)$, using vectors x_i, x_k the magnitude that determines the degree of similarity of objects is $\theta(\lambda, x_i, x_k)$, So, $N - \ell$ in the space of informative characters x_i, x_k the target function determining the degree of similarity of objects is calculated based on the following formula:

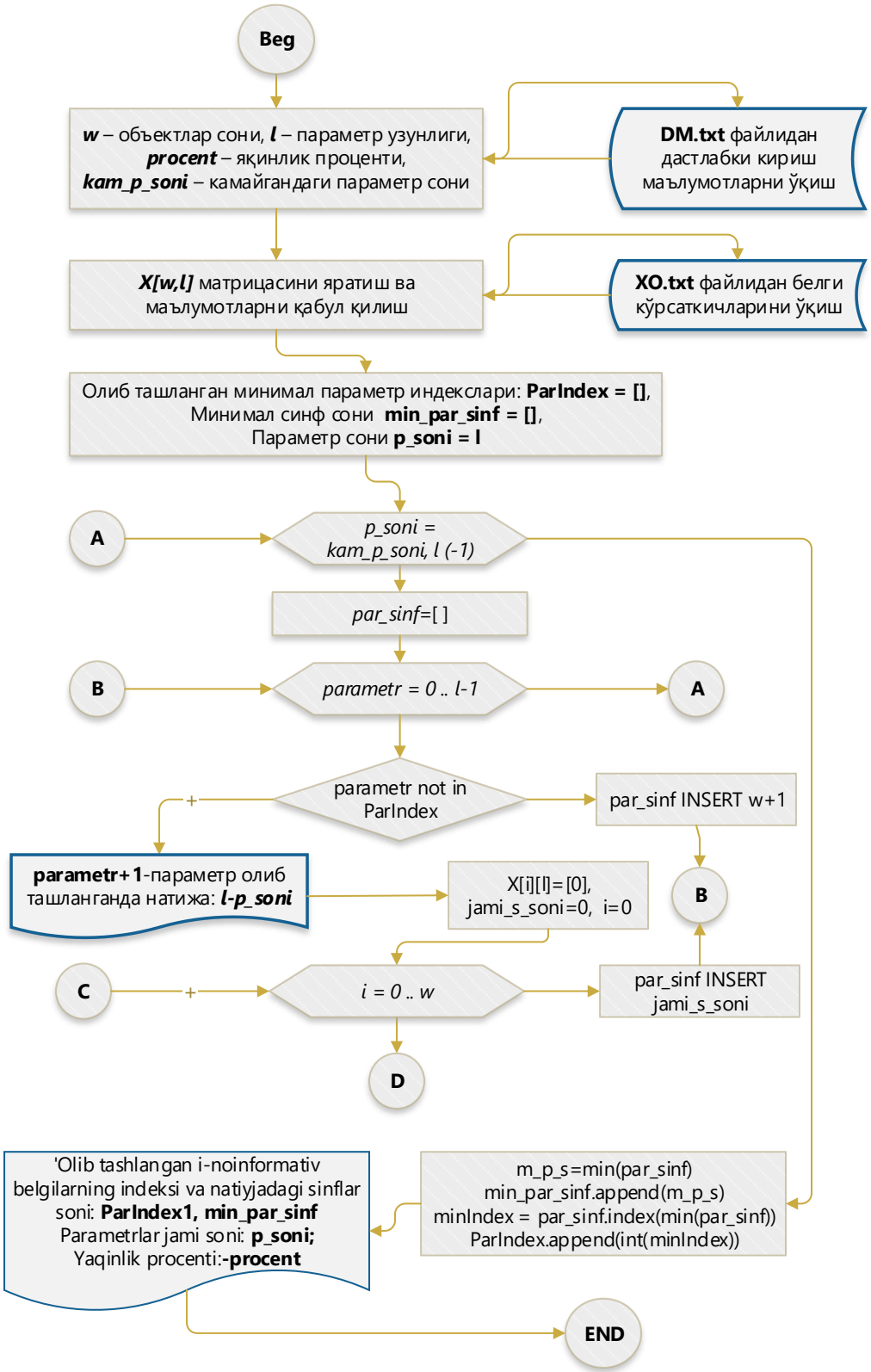
$$\theta(\lambda, x_i, x_k) = (\lambda, \mu(x_i, x_k)),$$

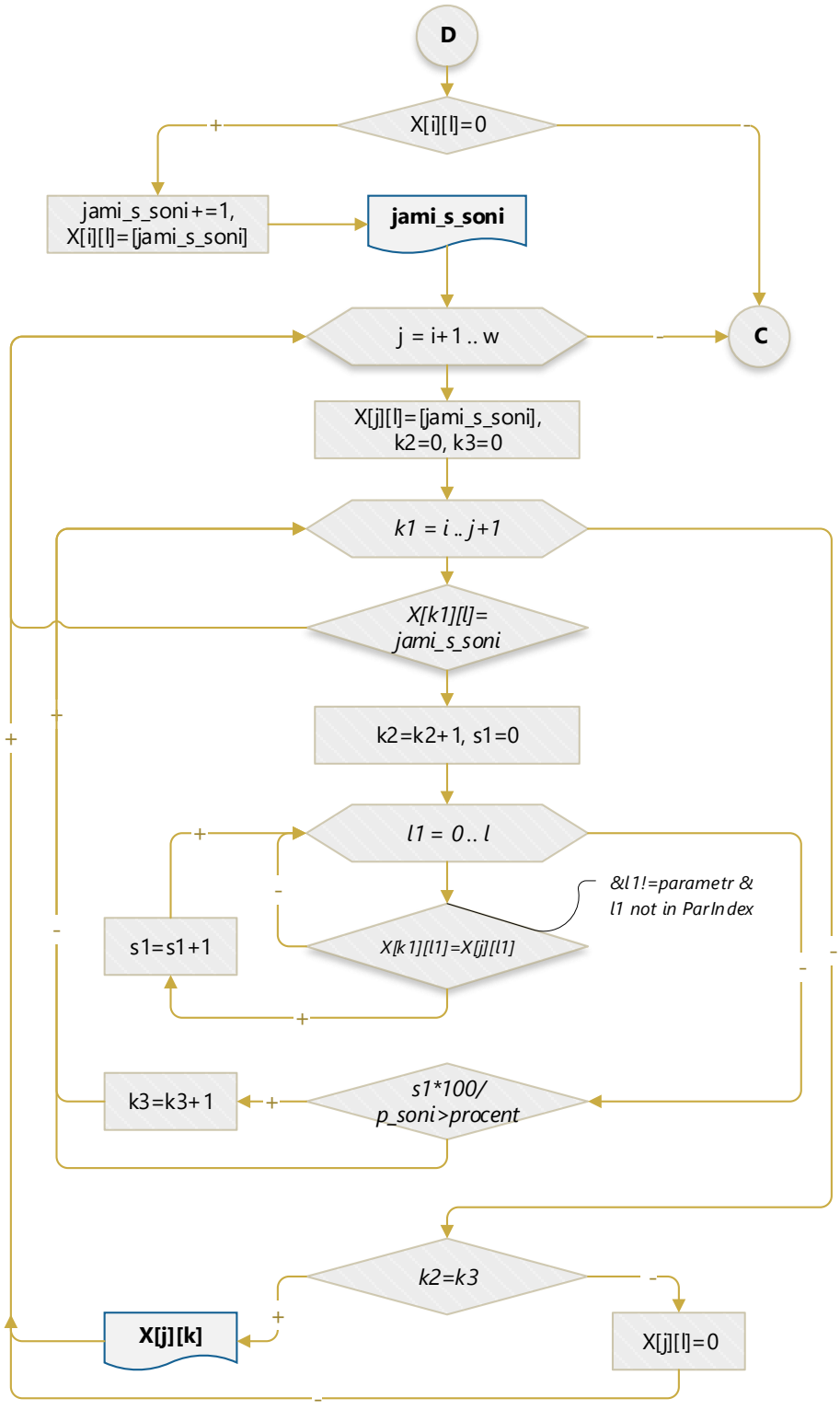
Where (*,*) denotes the scalar product of vectors.

It is required to find a solution to the following optimization issue:

$$\begin{cases} \theta(\lambda, x_{pi}, x_k) = \left(\lambda, \mu(x_{pi}, x_k)\right) \to min \\ \lambda \epsilon \Lambda^{\ell} = \{\lambda : \lambda^j \in \{0; 1\}, \sum_{j=1}^{N} \lambda^j = N - \ell\} \\ X_p = \{\forall x_{pi}, x_{pk} : \nu(x_{pi}, x_{pk}) \geq 55\%, \ i \neq k, p = \overline{1,r}\} \\ x_{pi}, x_k \in X \end{cases} \quad (2)$$

Hence, this optimization issue solution allows you to determine the following results: L-Ta finds non-conformative characters; $X_p = \{\forall x_{pi}, x_{pk} : \nu(x_{pi}, x_{pk}) \geq 55\%, \ i \neq k, p = \overline{1,r}\}$ forms the; R classes are formed. The Article (1) proposes an algorithm blockchain below to solve the optimization issue:


Beg
w – объектлар сони, l – параметр узунлиги, procent – яқинлик проценти, kam_p_soni – камайгандаги параметр сони
DM.txt файлидан дастлабки кириш маълумотларни ўқиш
X[w,l] матрицасини яратиш ва маълумотларни қабул қилиш
XO.txt файлидан белги кўрсаткичларини ўқиш
Олиб ташланган минимал параметр индекслари: ParIndex = [], Минимал синф сони min_par_sinf = [], Параметр сони p_soni = l
A
p_soni = kam_p_soni, l (-1)
par_sinf=[ ]
B
parametr = 0 .. l-1
A
parametr not in ParIndex
+
par_sinf INSERT w+1
parametr+1-параметр олиб ташланганда натижа: l-p_soni
X[i][l]=[0], jami_s_soni=0, i=0
B
C
+
i = 0 .. w
par_sinf INSERT jami_s_soni
D
'Olib tashlangan i-noinformativ belgilarning indeksi va natiyjadagi sinflar soni: ParIndex1, min_par_sinf
Parametrlar jami soni: p_soni;
Yaqinlik procenti:-procent
m_p_s=min(par_sinf)
min_par_sinf.append(m_p_s)
minIndex = par_sinf.index(min(par_sinf))
ParIndex.append(int(minIndex))
END


D
X[i][l]=0
jami_s_soni+=1,
X[i][l]=[jami_s_soni]
jami_s_soni
j = i+1 .. w
C
X[j][l]=[jami_s_soni],
k2=0, k3=0
k1 = i .. j+1
X[k1][l]=
jami_s_soni
k2=k2+1, s1=0
l1 = 0.. l
&l1!=parametr &
l1 not in ParIndex
X[k1][l1]=X[j][l1]
s1=s1+1
k3=k3+1
s1*100/
p_soni>procent
k2=k3
X[j][k]
X[j][l]=0

A software tool, "RCM - Regional classification of types of melons", was developed based on the proposed algorithms. As a result of the classification of the software tool by God of melon varieties, the following table of results was formed. With the help of a software tool, a complex of informative characters is identified (6 informative character complexes), a complex of non-formative characters (22 non-formative character complexes), interrelationships between the objects of the formed class(65%), as well as classes of melon varieties (8). [6; 7; 8; 9; 10; 11, 12; 13; 14;].

The following requirements were imposed on the software tool: 6 informative, 22 non-formative, class objects are defined as a 65% indicator of cross-linking, the following results were obtained:

A complex of non-conformative signs is the following – $x^8, x^{10}, x^{19}, x^{12}, x^{13}, x^{27}, x^{18}, x^6, x^{21}, x^{11}, x^{26}, x^9, x^{17}, x^{23}, x^{28}, x^3, x^{16}, x^{24}, x^{25}, x^{15}, x^7, x^{14}$ is. In turn, these characters are excluded from the system.

Table №1

Name of melon varieties		**Omitted informative parameters**						**Areas given in the register**
		x^1	x^2	x^4	x^5	x^{20}	x^{22}	
Class 1 (45 objects								
Maxillary yellow Handalac	x_1	1	1	1	1	2	1	1,2,...,13
Samarkand yellow handrail	x_2	1	1	1	1	2	1	8,4,3
Zarghaldoghandalak	x_3	1	1	1	1	2	1	8
Handalak Zamcha	x_4	1	1	1	1	2	1	1,13
Mahalli Handalak	x_5	1	1	1	1	1	2	11,12
Yellow Suede	x_6	1	1	1	1	1	1	1,13
Blue Suede	x_7	1	1	1	1	2	2	1,13
White skull-Pooh	x_8	1	1	1	1	2	1	1,5,8,10
Mahalli Samarkand obinovvoti	x_{10}	1	1	1	1	2	1	8

Ola Wolf-kalla	x_{11}	1	1	1	1	2	1	1,2,...,13
Mahalli dagbedi	x_{12}	1	1	1	1	2	1	5,7,8,9
White bosvoldi	x_{13}	1	1	1	1	2	1	10,11
Maxillary Wolf-Calla	x_{14}	1	1	1	1	2	1	3,6,8,12
Black Tower	x_{15}	1	1	1	1	2	1	5,8,9,12
Mahalli (k-1161	x_{16}	1	1	1	1	2	2	2
Zarmiton	x_{17}	1	1	1	1	2	1	5,8,9
Mahalli (k-1162	x_{18}	1	1	1	1	2	1	2,7
Assati 3806	x_{19}	1	1	1	1	2	1	12
Tashkent Assatis	x_{20}	1	1	1	1	2	1	7,11
Mahalli (k-1163	x_{24}	1	1	1	1	1	1	1,13
Rock 862	x_{30}	1	1	1	1	2	1	1,2,...,13
Delicious	x_{31}	1	1	1	1	2	2	3,10,11
White seed 1157	x_{34}	1	1	1	1	2	1	3,8,10,11
Bargi 816	x_{35}	1	1	1	1	2	2	11,12
Mahalli amiri	x_{36}	1	1	1	1	2	2	1,3,5,8,9,10
Amiri	x_{37}	1	1	1	1	2	1	1,3,8,13
Danieliori	x_{43}	1	1	1	1	1	2	3,8
Mahalli sweet poodle	x_{44}	1	1	1	1	2	1	1,13
Mahalli (k-1166	x_{45}	1	1	1	1	2	1	12,13
Zarkokil	x_{46}	1	1	1	1	2	1	2,7
Red sugar maple 2580	x_{49}	1	1	1	1	2	2	12
Golden Valley	x_{52}	1	1	1	1	2	2	1,2,...,13
Mahalli (k-1167	x_{55}	1	1	1	1	2	1	12

Leaf in Jie	x_{56}	1	1	1	1	2	1	13
Mahalli (k-1168	x_{58}	1	1	1	1	2	1	4,8,10
Baitiqurgan 424	x_{61}	1	1	1	1	2	1	4,10,11
White meat indamas	x_{62}	1	1	1	1	2	1	12
Red seed	x_{63}	1	1	1	1	2	2	4,10,11
Baqiraman	x_{66}	1	1	1	1	2	1	1
Black sugar	x_{76}	1	1	1	1	2	2	1,4,8,9,10,13
Mahalli (k-1174	x_{78}	1	1	1	1	2	2	8
Mahalli (k-1171	x_{80}	1	1	1	1	2	2	3,8,13
Camel frog	x_{84}	1	1	1	1	2	1	13
Silky Wattle	x_{92}	1	1	1	1	1	1	1,13
Mahalli (k-1178	x_{93}	1	1	1	1	2	1	1
Class 2 (6 objects								
Blue skull-Pooh	x_{9}	1	1	2	1	2	2	3,5,6,8,9
Zarchopon F1	x_{22}	1	1	1	2	2	2	1,2,...,13
Roxat	x_{29}	1	1	1	3	2	2	1,2,...,13
Suyunchi 2	x_{33}	1	1	3	2	2	2	1,10,11,13
Golden top	x_{64}	1	1	1	2	2	2	2,4,10,11
Victory	x_{77}	1	1	2	1	2	2	1,13
Class 3 (40 objects								
Mahalli (k-1179	x_{21}	1	2	1	1	2	1	8,11
Dutma	x_{23}	2	2	1	1	2	1	8, 10
Alleke	x_{25}	1	2	1	1	2	1	1,13
White gurwak	x_{26}	1	2	1	1	1	1	1,13

Blue gurwak	x_{27}	1	2	1	1	2	1	1,13
Ola gurvak	x_{28}	1	2	1	1	2	1	1,13
Countercircle	x_{38}	1	2	1	1	2	1	5,8
Emir of khitoi	x_{39}	1	2	1	1	2	1	1,8,10,12,13
Blue tinny 1087	x_{40}	1	2	4	1	2	1	1,2,...,13
White milk	x_{41}	1	2	1	1	2	2	13
Mahalli (k-1164	x_{42}	1	2	1	1	2	2	3, 10
Yellow poodle	x_{47}	1	2	1	1	2	1	11
Mahalli (k-1165	x_{48}	1	2	1	1	2	2	7
Kuli khushtarin	x_{53}	1	2	1	1	2	1	1,3,6,13
Bread meat	x_{54}	1	2	1	1	1	1	1,13
Mahalli (k-1181	x_{59}	1	2	1	1	2	2	11,12
Large fruit drink red 1233	x_{60}	1	2	1	1	2	2	3,4,10,11
Mahalli (k-1169	x_{65}	2	2	1	1	2	1	2,7
Whitebark 557	x_{67}	1	2	1	1	2	1	1,2,...,13
Mahalli (k-1170	x_{69}	1	2	1	1	3	1	13
Mahalli (k-1184	x_{70}	1	2	1	1	2	1	2,7,13
Sweet cradle	x_{72}	2	2	1	1	2	1	1,13
White brow	x_{73}	1	2	1	1	2	1	1
Mahalli (k-1172	x_{75}	1	2	1	1	2	1	8, 10
Mahalli (k-1180	x_{79}	1	2	1	1	2	1	11,12
Black scratch	x_{82}	2	2	1	1	2	1	8,10,13
Red gulobi	x_{83}	1	2	1	1	1	1	3,4,5,8,9,10,13
Mahalli (k-1175	x_{85}	1	2	1	1	2	2	8

Mahalli olahamma	x_{86}	2	2	1	1	2	1	1,13
Umirvoqi 3748	x_{87}	2	2	1	1	2	1	1,2,...,13
Bijir	x_{89}	2	2	1	1	2	1	1,8,10
Mahalli karakand	x_{90}	1	2	1	1	5	1	1,3,8,9,13
Tornovvot beshak	x_{91}	2	2	1	1	2	1	1
Gurlan	x_{94}	1	2	1	1	2	1	1,3,13
Black Scarecrow	x_{95}	2	2	1	1	2	1	1
Khojeyli beşak	x_{97}	2	2	1	1	2	1	1,13
Black cradle	x_{98}	2	2	1	1	2	1	1
Blackcurrant	x_{99}	2	2	1	1	2	1	1
All cradle	x_{101}	2	2	1	1	2	1	1,13
Cultural times	x_{108}	2	2	1	1	2	1	1,13
Class 4 (6 objects								
Kamal kal	x_{32}	1	2	1	1	1	2	10,12
Olacha	x_{50}	1	2	1	1	1	2	1,3,8,13
Mahalli (k-1182	x_{71}	1	2	1	1	1	2	1,3,6,10,13
Zar gulobi	x_{74}	1	2	1	2	1	2	1,3,13
Amudario	x_{102}	1	2	1	2	2	2	1,13
Aries 476	x_{105}	1	2	1	1	3	2	1,2,...,13
Class 5 (7 objects)								
White par	x_{51}	2	2	1	1	3	1	4,10,11
Mahalli Besak	x_{81}	2	2	1	1	1	1	1,13
Arcani	x_{96}	2	2	1	1	3	1	3,8,9,10
Black poodle 3744	x_{100}	2	2	1	1	2	2	2,7,10,11,12

Gulobi Khwarazmi	x_{104}	2	2	1	1	2	2	3,13
Blue Rose 670	x_{106}	2	1	1	1	2	1	1,5,9
Old girl	x_{107}	2	2	1	1	1	1	1,3,8,13
Class 6 (1 objects))								
Shirali	x_{57}	1	3	5	2	2	2	11,12
Class 7 (2 objects)								
Aravakash 1219	x_{68}	2	1	1	1	4	2	4,5,8,11,12
Black Gulabi	x_{103}	2	1	1	1	2	2	1,8,12,13
Class 8 (1 objects)								
Tuyona	x_{88}	1	4	2	2	3	1	1,2,...,13

In Table No. 1 Above, according to the result, the training sample is in the cross section of classes, in the first column of this table the varieties of melons that are delivered in Uzbekistan, in the second column the varieties of melons are marked, in columns 3-8 the nominal designations of melon varieties, and in Column 9 in which region this melon variety

To perform mathematical operations on these elements, perform mathematical operations on its elements $\mu(x_i, x_k)$ function elements are formed.

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