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THE COUNTRIES OF CENTRAL ASIA IN THE APPLICATION OF MATHEMATICAL MODELS AND OPTIMIZATION APPROACHES OF ISSUE KOMMIVOYAJYOR

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Annotatsiya: In this article the theoretical basis of the issues of the central asian countries and its cities of kommivoyajor tatbiqi lit. Various optimization approaches, including traditional, and an intuitive graphical methods are considered. Also, how can these issues in charging through mathematical modeling of logistics system analysis. Is characterized by practical examples, and / orassessed the effectiveness of rning.

Keywords: kommivoyajor the issue of optimization, logistics, central asia, the mathematical model and the algorithm.

To enter. Of the central asian countries and issues of mutual economic optimization of transport and communication kommivoyajor effective approach in the planning and development plays an important role. These issues, among various cities and states to find the shortest or cheapest route when directed, reduce logistics costs, save time, and allows optimal distribution of resources. The practice of using mathematical modeling and algorithm can be successful in the modern charging this issue. This article kommivoyajor solution of the issue of the taking of the city, the state in central asia is an analysis of the approach.
Methods of charging: Bruteforce (Full review),dina programming (Held-Karp algorithm),ochko'z algorithm (Greedy Algorithm),genetik algorithm, simulyatsiyalangan tavlanish (simulated annealing), chiziqli be programming and chess (Branch and bound)

Objective: the purpose of this article — kommivoyajor issues of theoretical and practical aspects of a study, analysis and optimization of central asia without cover the city with the help of the mathematical model of the approach is to develop effective solutions. Also, the indications of this issue in the field of logistics and route planning to reduce costs of transport through the show we learn that opportunities for improvement.
The standard option. Will put bring the concept of the table. To do this, the table is coming from the line of earlier, that is, each row of the table of elements of the same row is removed the small isolated respectively. After that we also do other than follow the column of the table were the same, and come to the table columns. All are listed on the table are referred to as rows and columns are listed. The smallest the sum of h elements were defined by the table of rows and columns, bring it charts the coefficient is called. As an example, below and across central asia train travel, let's see the schedule:

Enter the world belgilashlarz.

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1.Tashkent-Astana – 1210 km
Tashkent-Bishkek– 480 km
Tashkent-Ashgabat – 1700 km
TashkentDushanbe – 320 km
Tashkent-Nukus – 1050 km
2.Astana -Tashkent – 1210 km
Astana - Bishkek – 950 km
Astana - Ashgabat – 1900 km
Astana - finance department – 1400 km
Astana - Nukus – 1600 km
3. Bishkek -Tashkent – 480 km
None –Astana – 950 km
None - Ashgabat – 2000 miles
Bishkek - Dushanbe – 790 km
None - Nukus – 1200 km
4. Ashgabat -tashkent – 1700 km
Ashgabat - Astana – 1900 km
Ashgabat - None – 2000 miles
Ashgabat - finance department – 1150 km
Ashgabat - Nukus – 800 miles
5. Dushanbe -Tashkent – 320 km
Dushanbe - Astana – 1400 km
Dushanbe - None – 790 km
Dushanbe - Ashgabat – 1150 km
Dushanbe - Nukus – 1100 km
6. Nukus -Tashkent – 1050 km
Nukus, republic of - Astana – 1600 km
Nukus - None – 1200 km
Nukus - Ashgabat – 800 miles

Nukus - Dushanbe – 1100 km

High represented the approximate distance between the capital cities of the central asian countries.

B/S	T	O	B	A	D	N	Satrbo'yichamin
T		1210	480	1700	320	1050	320
O	1210		950	1900	1400	1600	950
B	480	950		2000	790	1200	480
A	1700	1900	2000		1150	800	800
D	320	1400	790	1150		1100	320
N	1050	1600	1200	800	1100		800

1 table.

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1-row table to bring his will write out the smallest element to the right side of the corresponding row and the row of the element following it isolated from 2-you will be able to schedule.

B/S	T	O	B	A	D	N
T		890	160	1380	0	730
O	260		0	950	450	650
B	0	470		1520	310	720
A	900	1100	1200		350	0
D	0	1080	470	Per 830		780
N	250	800	400	0	300	
min on column	0	470	0	0	0	0

2-table

The yield on the 2-of the table the column themselves bring order to the table under the column to en fit'vewritten a small element of g and eliminate the columnare isolated from mentlar, as a result, the following 3-table is formed.

B/S	T	O	B	A	D	N
A T		420	160	1380	$0^{(460)}$	730
O	260		$0^{(420)}$	950	450	650
B	$0^{(0)}$	$0^{(470)}$		1520	310	720
A	900	630	1200		350	$0^{(1000)}$
D	$0^{(470)}$	610	470	PER 830		780
N	250	330	400	$0^{(1080)}$	300	

$C_{NA} = 0^{(1080)}$ $C_{AN} =$

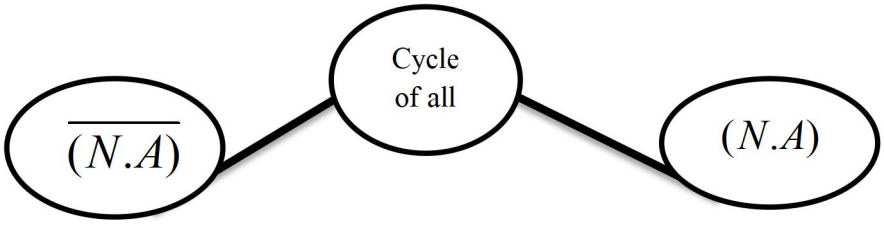
3-the table

3-the table is listed, there is at least one element in every row and column zero. The following charts coefficient h equal to the number of people you bring

$$h = 320 + 950 + 480 + 800 + 320 + 800 + 0 + 470 + 0 + 0 + 0 + 0 = 4140$$

$$h_1 = 320 + 950 + 480 + 800 + 320 + 800 + 0 + 470 + 0 + 0 + 0 + 0 = 4140$$

$$h_1^{`} = h_1 + 1080 = 5220$$



1-picture.

In general, the network consists of two important stages of the method of limits and is from:

1) tarmoqlash;

2) determine the lower limit.

Both stages is conducted in parallel for solving the issue. For the implementation of this stage, the following sequence must complete the work. A) primary come to the table; B) to

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determine h koeffitsenti to come; C) to determine the level of zero elements in the table given; D) on the basis of this level tarmoqlash implementation; E) determine the lower limits of tarmoqlanish the results of the cycle components; f) reduce the size of the table to one; and g) the full cycle of harvest remain to keep from; H) this process (2x2) continue until the table is formed; I) determine the final results corresponding to a cycle network; (J) all limits (ho ba) to compare; K) is a necessity the results can restore the table to the minimum boundary tarmoqlash fit to continue.

During the application of this method, all the calculations are conducted using the table given, and its results will go far in showing graf configured separately. Perfect at the end of this process(lowest cost) cycle is determined.

If doiracha graf consists of combined mutual, each one of them will determine a certain xossali collection cycle. This doiracha written by the border-while the number of the same circle indicates that belongs to a cycle corresponding to the lower limit of the costs. Part 1 of the primary graf-picture is in view. Thus, the first cycle of primary package which includes all doiracha define the number of cycle costs go on a voluntary means that h is small. Seen in the example above, h=4140 was, therefore, costs 4140 it's not a cycle that is small.

Which is great bc most of the level is situated zerotry i and superior j being found are (i, j) on there. Mabodo, if nollar is a multiple senior level, one of them optional is selected. Thus, the right side in the city doiracha ij city to pass to the insideof the body of the entire cycle ofthe package and it means ng, (i, j) defined byis justified, in the left side doiracha esa, on the contrary, I from j city chinaevery transition to its own into unable route of the collection meansdi and it (i, j) with be determined.

Most of the level katta 1080 with zero element $c_{54} = 0^{(1080)}$ is, therefore, tarmoqlanish grafi1-picture view is. Left doiracha bring costs to a minimum coefficient $h = 4140$ to zero, the greatest level of 1080 , which is formed by adding 5220 number is recorded. $(h_1^{'})$ In the right side to determine the lower limit of costs doiracha compatible 3-table 5-row and 4-remove the column(off) will be sent(therefore, the size of the table is reduced to one). Thus,it should be noted that this particular, of course, the city preserved the order of the numbers(and written) remain ,otherwise the case of the confusion stems from. After that,all he prohibited the harvest of the full cycle,the issue $i \to j \to i (i \to j$ mark i-from the city to the j-means to the city) is the loss of to do this, c_{ji} the elements to change the sign will be recorded two $c_{45} =$).

Again he made the statements we can continue our work.

B/S	T	O	B	D	N	
A T		420	160	0	730	0
O	260		0	450	650	0
B	0	0		310	720	0
A	900	630	1200	350		350
D	0	610	470		780	0

4-the table

B/S	T	O	B	D	N
A T		420	160	0	730
O	260		0	450	650

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B	0	0		310	720
A	550	80	850	0	
D	0	610	470		780
	0	0	0	0	650

5 table

B/S	T	O	B	D	N
A T		420	160	$0^{(80)}$	80
O	260		$0^{(160)}$	450	$0^{(70)}$
B	$0^{(0)}$	$0^{(80)}$		310	70
A	550	80	850	$0^{(80)}$	
D	$0^{(130)}$	610	470		130

$C_{OB} = 0^{(160)}$ $C_{BO} =$ 6table

$h_2 = 4140+350+650=5140$ $h_2^{'} = h_2 +=160=5300$

B/S	T	O	D	N	
T		420	0	80	0
B	0		310	70	0
A	550	80	0		0
D	0	610		130	0
	0	80	0	70	

$h_3 = h_2 + 80 + 70 = 5290$ $h_3^{`} = h_3 + 340 = 5630$ Table 7

B/S	T	O	D	N
T		340	$0^{(10)}$	10
B	$0^{(0)}$		310	$0^{(10)}$
A	550	$0^{(340)}$	$0^{(0)}$	
D	$0^{(60)}$	530		60

$C_{AO} = 0^{(340)}$ $C_{OA} =$ Table 8

B/S	T	D	N
T		0	10
B	0	310	0
D	0		60

In this table row in column b and change the schedule because of the lack of unlimited n stir

B/S	T	D	N	
T		0	10	0
B	0	310		0
D	0		60	0

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	0	0	10	

$h_4 = h_3 + 10 = 5290 + 10 = 5390$ $h_4^{`} = h_4 + 320 = 5710$ Table 9

B/S	T	D	N
T		$0^{(310)}$	$0^{(50)}$
B	$0^{(310)}$	310	
D	$0^{(50)}$		50

$C_{BT} = 0^{(310)}$ $C_{TB} =$ Table 10

B/S	B	N	
T	0		0
D		50	50

Table 11

B/S	B	N
T	0	
D		0
	0	0

Table 12

B/S	B	N
T	0	
D		0

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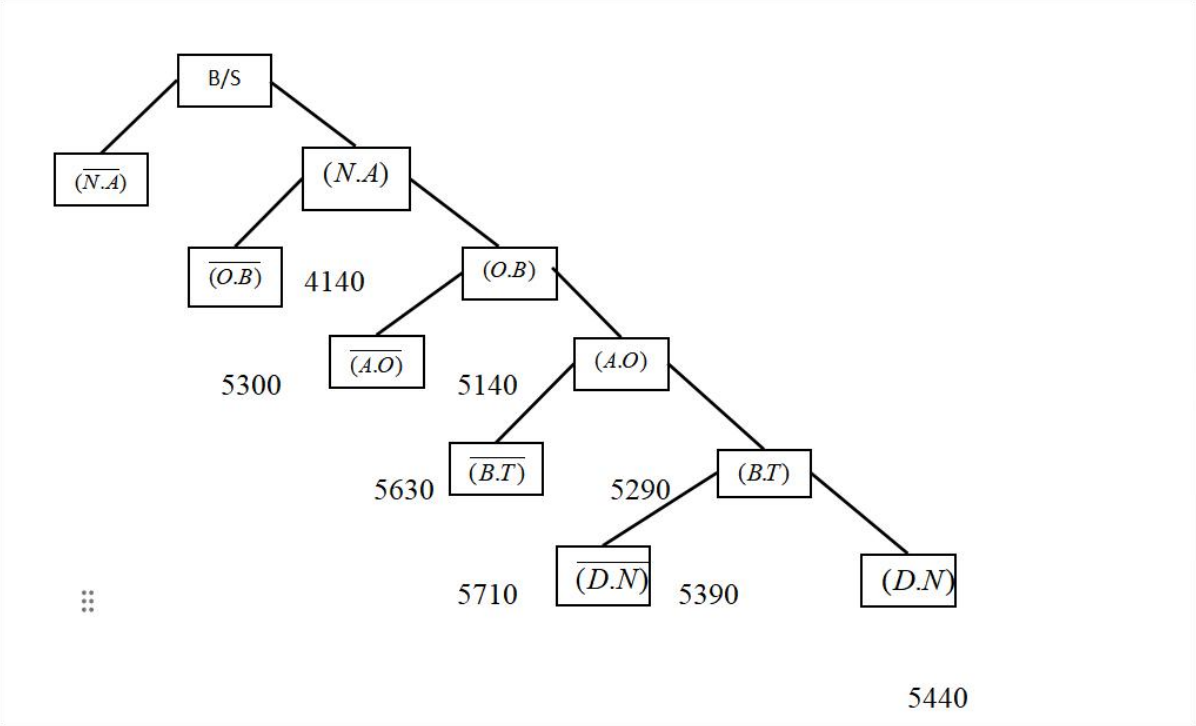

the shortest path (optimal route):

$T \to D \to N \to A \to O \to B \to T$

Minimum distance: km-5230

Conclusion. Kommivoyajyor issues of mathematical modeling of many real-life problems and used for the optimization of a classic issue. Due to the complexity of much of the calculation of the optimal solution found, in many cases the approximate algorithm or approach heuristik apply.

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