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 First name and second name

IF NEEDED, YOU HAVE TO USE TYPICAL GAMS SENTENCES (FOR EXAMPLE, DYNAMIC SETS, ASIGNAMENTS OF VALUES OR BOUNDS INSTEAD OF CONSTRAINTS, \$ CONDITIONS, ORD AND CARD, ETC.). THIS WILL BE HIGHLY VALUED IN THE EXAM GRADE.

THIS PROBLEM CAN BE PERFECTLY SOLVED WITH THE DEMO LICENSE.

I Statement

PROBLEM: WEB SERVERS LOCATION

Following the policy of global expansion, a very well known company of ecommerce has decided to establish into two European cities and one Japanese city. For taking the decision it has been collecting and analizing data of visits to its web shop, currently located in Mountain View, CA, USA, given in average number of buying visits by day. Those values are represented in the following table

	0 Mountain View
1 London	100
2 Paris	120
3 Madrid	40
4 Stockholm	80
5 Hamburg	160
6 Osaka	160
7 Tokyo	230
8 Nagoya	100

Besides, the company has estimated the average access time in seconds to the home page of its web shop from the different cities for each one of the possible location and the results are presented next. The access times are supossed to be symmetric.

	0	1	2	3	4	5	6	7	8
0									

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1	2.4								
2	2.5	0.3							
3	2.6	0.6	0.1						
4	2.4	0.2	0.5	0.3					
5	2.3	0.2	0.3	0.3	0.1				
6	1.2	2.0	2.0	2.4	2.5	1.9			
7	1.3	2.1	2.2	2.4	2.4	2.3	0.1		
8	1.1	2.2	2.1	2.4	2.6	2.0	0.1	0.1	

Determine in which two European cities and one Japanese city must be located the new servers to minimize the total estimated access time for the clients.

PROBLEM: WEB PAGES ASSIGNMENT

A search engine has stored all the information about web pages in 10 data bases (A to J) that it is kept in 3 disks available. Each disk has a capacity of 885 GB. In the following table it is shown the size of each data base in GB (in the last column) and a relation index of any two data bases. This symmetric index measures the number of times that apear content of both data bases in any search. Two data bases with a high relation index should be assigned to different disks to minimize the access time. We want to determine the optimal assignment of data bases to disks so as to minimize the total relation index among them.

	А	В	С	D	Е	F	G	Η	Ι	J	Size
А											110
В	43										238
С	120	10									425
D	57	111	188								338
Е	96	78	46	88							55
F	83	58	421	60	63						391
\mathbf{G}	77	198	207	109	73	74					267
Η	31	50	43	47	51	21	88				105
Ι	38	69	55	21	36	391	47	96			256
J	212	91	84	53	71	40	37	35	221		64



II Notation

II.1 Sets

Fill the table with the sets used in the problem formulation

Sets	Meaning
	D D D D D D D D D D D D D D D D D D D
II.2 Par	ameters

II.2 Parameters

Fill the table with the parameters (data) used in the problem formulation

Parameter		Meaning	g	
M	Δ	R		
1 * 1	7 %	IX.		

II.3 Variables

Fill the table with the variables used in the problem formulation

Variable	Meaning	Туре



III Formulation

Write the mathematical problem formulation (objective function, constraints and variable bounds)



IV Numerical results

Write in this page the value of the problem variables.