

Gurpilak ekoizten dituen enpresa batek A, B eta C fabrikak ditu. Fabrikek gurpil hauek 1, 2, 3 eta 4 konponketa-lantegietara saltzen dizkiete. Fabrika bakoitzetik konponketa-lantegi bakoitzera gurpil bat garraiatzean sortzen den garraio-kostua, fabriken eskaintza eta konponketa-lantegien eskaria ondorengo taulan laburbildu daude:

	1	2	3	4	Eskaintza
A	5	6	10	-	28
B	4	9	8	-	30
C	7	3	2	3	55
Eskaria	45	25	40	35	

- a) Ipar mendebaldeko ertzaren metodoa aplikatuz oinarritzko soluzioa bideragarri bat lortu
 b) Garraio-algoritmoaren iterazio bat egin
 c) Lortu duzun soluzioa optimoa al da? Optimoa bada, helburu-funtzioaren balio optimoa eman, eta optimoa ez bada beriz, helburu-funtzioaren goi-borne bat eman.

*)

$$\sum \text{eskaintza} = 113 \quad \left\{ \rightarrow \text{fabrika bat zehar, } 147 - 113 = 32 \text{ kostuduna.} \right.$$

$$\sum \text{eskaria} = 145$$

1172k

	1	2	3	4	esh
A	5	6	10	-	28
B	4	7	8	-	30
C	7	3	2	3	55
D	0	0	0	0	32
esh	45	25	40	35	

$$\min\{28, 41\} = 28$$

$$45 - 28 = 17$$

	1	2	3	4	esh
A	28	X	X	X	X ⁽⁰⁾
B					30
C					55
D					32
esh.	17	25	40	35	

2. ITER.

	1	2	3	4	esth.
A	X	X	X	X	X
B	4	9	8	-	70
C	2	3	2	3	55
D	0	0	0	0	32
esth.	14	25	40	35	

$$\min \{ 30, 11 \} = 11$$

$$70 - 11 = 13$$

AB

	1	2	3	4	esth.
A	28	X	X	X	X
B	13				13
C	X				55
D	X				32
esth.	X	25	40	35	

3. ITER.

	1	2	3	4	esth.
A	X	X	X	X	X
B	X	9	8	-	13
C	X	3	2	3	55
D	X	0	0	0	32
esth.	X	25	40	35	

$$\min \{ 13, 25 \} = 13$$

$$25 - 13 = 12$$

	1	2	3	4	esth.
A	28	X	X	X	X
B	13	13	X	X	X
C	X				55
D	X				32
esth.	X	12	40	35	

4. 1700

AP

	1	2	3	4	esh.
A	X	X	X	X	X
B	X	X	X	X	X
C	X	(3)	2	3	55
D	X	0	0	0	32
esr	X	12	40	35	

Min {55, 12} = 12
 $55 - 12 = 43$

	1	2	3	4	esh.
A	28	X	X	X	X
B	17	13	X	X	X
C	X	12			<u>43</u>
D	X	X			32
esr	X	X	10	35	

5. 1700

	1	2	3	4	esh.
A	X	X	X	X	X
B	X	X	X	X	X
C	X	X	(2)	3	88 43
D	X	X	0	0	32
esr	X	X	40	35	

Min {43, 40} = 40
 $43 - 40 = 3$

	1	2	3	4	esh.
A	28	X	X	X	X
B	17	13	X	X	X
C	X	12	40	<div style="border: 1px solid black; padding: 5px; display: inline-block;">3 32 35</div>	<u>3</u> 32
D	X	X	X		
esr	X	X	X		

Atken table deş, nıneen gıltı deşdeş.

	1	2	3	4	esh
A	28				28
B	17	13			30
C		12	40	3	55
D				32	32
esh	45	25	40	35	

⇐ DUALPROBLEM
BIDENAGABIA

$\ln + u - 1 = 7 \Leftarrow$ ER ENDERATNA

b)

$$\begin{aligned}
 x_{11} &\rightarrow u_1 + v_1 - c_{11} \rightarrow u_1 + v_1 = 5 \rightarrow u_1 = 5 \\
 x_{21} &\rightarrow u_2 + v_1 - c_{21} \rightarrow u_2 + v_1 = 4 \rightarrow u_2 = 4 \\
 x_{22} &\rightarrow u_2 + v_2 - c_{22} \rightarrow u_2 + v_2 = 9 \rightarrow v_2 = 5 \\
 x_{32} &\rightarrow u_3 + v_2 - c_{32} \rightarrow u_3 + v_2 = 3 \rightarrow v_3 = -2 \\
 x_{33} &\rightarrow u_3 + v_3 - c_{33} \rightarrow u_3 + v_3 = 2 \rightarrow v_3 = 4 \\
 x_{34} &\rightarrow u_3 + v_4 - c_{34} \rightarrow u_3 + v_4 = 3 \rightarrow v_4 = -1 \\
 x_{44} &\rightarrow u_4 + v_4 - c_{44} \rightarrow u_4 + v_4 = 0 \rightarrow u_4 = 1
 \end{aligned}$$

let $v_1 = 0$ - - - - -

$z_j = u_i + v_j$	$u_1 = 0$	$v_2 = 5$	$v_3 = 4$	$v_4 = -1$
$u_1 = 5$	5	10	9	4
$u_2 = 4$	4	9	8	3
$u_3 = -2$	-2	3	2	3
$u_4 = 1$	1	6	5	0
$w_j = z_j - c_j$	1	2	3	4
A	0	4	-1	-1
B	0	0	0	-1
C	-9	0	0	0
D	1	6	5	0

6

$x_{4,2}$ START

	1	2	3	4	es _k
A	28				28
B	17	13			30
C		$12 - t_1$	40	$3 + t_1$	55
D		t_1		$32 - t_1$	32
es _k	45	25	40	35	

$$\text{after min } \{17, 22\} = 12$$

$$\underline{t_1 = 12}$$

	1	2	3	4	es _k
A	28				28
B	17	13			30
C		0	40	15	55
D		12		20	32
es _k	45	25	40	35	

← HUPENGO ITERATION
SOLUTION

c)