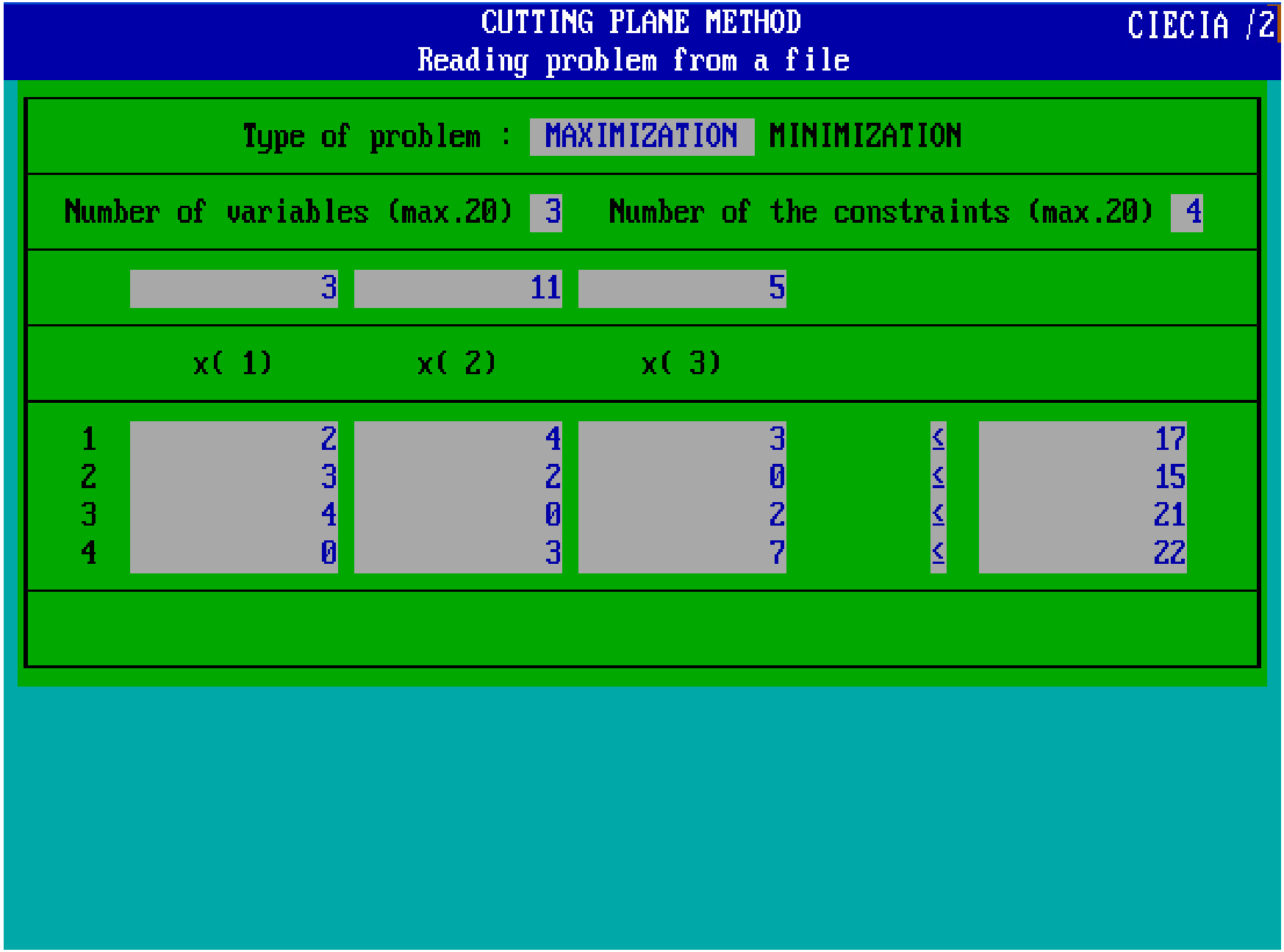
Программа CIECIA.EXE

Исследование операций

с применением компьютера

Версия 2.00a (2007)


CUTTING PLANE METHOD
CIECIA /2
Reading problem from a file
Type of problem : MAXIMIZATION MINIMIZATION
Number of variables (max.20) 3
Number of the constraints (max.20) 4
3
11
5
x(1)
x(2)
x(3)
1 2 4 3 ≤ 17
2 3 2 0 ≤ 15
3 4 0 2 ≤ 21
4 0 3 7 ≤ 22

CUTTING PLANE METHOD CIECIA /3

Solving the problem

Iteration 1

Variable zmiennej	Value	Optimality coefficient	Decision variable	Basic variable
x(1)	0.0000000000	-2.5000000000	Yes	No
x(2)	4.2500000000	0.0000000000	Yes	Yes
x(3)	0.0000000000	-3.2500000000	Yes	No
x(4)	0.0000000000	-2.7500000000	No	No
x(5)	6.5000000000	0.0000000000	No	Yes
x(6)	21.0000000000	0.0000000000	No	Yes
x(7)	9.2500000000	0.0000000000	No	Yes

Value of the objective function = 46.7500000000

Is this an integer solution ? Yes No

CUTTING PLANE METHOD CIECIA /4

Solving the problem

Iteration 1

Variable zmiennej	Value	Optimality coefficient	Decision variable	Basic variable
x(1)	0.0000000000	-2.5000000000	Yes	No
x(2)	4.2500000000	0.0000000000	Yes	Yes
x(3)	0.0000000000	-3.2500000000	Yes	No
x(4)	0.0000000000	-2.7500000000	No	No
x(5)	6.5000000000	0.0000000000	No	Yes
x(6)	21.0000000000	0.0000000000	No	Yes
x(7)	9.2500000000	0.0000000000	No	Yes

Value of the objective function = 46.7500000000

Select the variable to be used in construction of the cutting plane

CUTTING PLANE METHOD
Solving the problem

CIECIA /5

Iteration 1

cx ——> max		3.00	5.00	0.00	Vector of const.
Basis	c(B)	x(1)	x(3)	x(4)	
x(2)	11.00	0.50	0.75	0.25	4.25
x(5)	0.00	2.00	-1.50	-0.50	6.50
x(6)	0.00	4.00	2.00	0.00	21.00
x(7)	0.00	-1.50	4.75	-0.75	9.25
x(8)	0.00	-0.50	-0.75	-0.25	-0.25
c(i)-z(i)		-2.50	-3.25	-2.75	

Value of the objective function = 46.7500000000

Enter cutting plane coefficients

CUTTING PLANE METHOD
Solving the problem

CIECIA /6

Iteration 1

cx ——> max		3.00	5.00	0.00	Vector of const.
Basis	c(B)	x(1)	x(3)	x(4)	
x(2)	11.00	0.50	0.75	0.25	4.25
x(5)	0.00	2.00	-1.50	-0.50	6.50
x(6)	0.00	4.00	2.00	0.00	21.00
x(7)	0.00	-1.50	4.75	-0.75	9.25
x(8)	0.00	-0.50	-0.75	-0.25	-0.25
c(i)-z(i)		-2.50	-3.25	-2.75	

Optimality coefficient value = -0.25000000000

Select the variable leaving the basis

CUTTING PLANE METHOD
Solving the problem

CIECIA /7

Iteration 1

cx ——> max		3.00	5.00	0.00	Vector of const.
Basis	c(B)	x(1)	x(3)	x(4)	
x(2)	11.00	0.50	0.75	0.25	4.25
x(5)	0.00	2.00	-1.50	-0.50	6.50
x(6)	0.00	4.00	2.00	0.00	21.00
x(7)	0.00	-1.50	4.75	-0.75	9.25
x(8)	0.00	-0.50	-0.75	-0.25	-0.25
c(i)-z(i)		-2.50	-3.25	-2.75	

Does the selected variable indicate problem infeasiblity ? Yes No

CUTTING PLANE METHOD
Solving the problem

CIECIA /8

Iteration 1

Variables	Vector of optimality coefficients	Row of coefficient for row 5	Vector of ratios
x(1)	-2.5000	-0.5000	5.00000000
x(3)	-3.2500	-0.7500	4.33333333
x(4)	-2.7500	-0.2500	11.00000000

Coefficient = 4.3333333333

Select the variable entering the basis

CUTTING PLANE METHOD CIECIA /9

Solving the problem

Optimal solution

Variable zmiennej	Value	Optimality coefficient	Decision variable	Basic variable
x(1)	0.0000000000	0.0000000000	Yes	Yes
x(2)	4.0000000000	0.0000000000	Yes	Yes
x(3)	0.0000000000	-1.0000000000	Yes	No
x(4)	1.0000000000	0.0000000000	No	Yes
x(5)	7.0000000000	0.0000000000	No	Yes
x(6)	21.0000000000	0.0000000000	No	Yes
x(7)	10.0000000000	0.0000000000	No	Yes
x(8)	0.0000000000	-2.0000000000	No	No
x(9)	0.0000000000	0.0000000000	No	Yes
x(10)	0.0000000000	-3.0000000000	No	No

Value of the objective function = 44.0000000000