Программа GAME.EXE

Исследование операций

с применением компьютера

Версия 2.00a (2007)

TWO-PERSON ZERO-SUM GAMES GAME /Z

Reading problem from a file

Number of strategies: Player I (max.20) 5 Player II (max.20) 4

Strategies		Player II			
		1	2	3	4
Player I	1	3.00	5.00	-2.00	1.00
	2	4.00	2.00	1.00	3.00
	3	3.00	4.00	-2.00	-1.00
	4	2.00	-2.00	2.00	4.00
	5	3.00	2.00	1.00	5.00

TWO-PERSON ZERO-SUM GAMES GAME /3

Solving the problem

Searching for dominated strategies

Strategies		Player II			
		1	2	3	4
Player I	1	3.00	5.00	-2.00	1.00
	2	4.00	2.00	1.00	3.00
	3	3.00	4.00	-2.00	-1.00
	4	2.00	-2.00	2.00	4.00
	5	3.00	2.00	1.00	5.00

Is there any dominated strategy for Player I ? Yes No

TWO-PERSON ZERO-SUM GAMES GAME /4

Solving the problem

Searching for dominated strategies

Strategies		Player II			
		1	2	3	4
Player I	1	3.00	5.00	-2.00	1.00
	2	4.00	2.00	1.00	3.00
	3	3.00	4.00	-2.00	-1.00
	4	2.00	-2.00	2.00	4.00
	5	3.00	2.00	1.00	5.00

Select dominated strategy for Player I

TWO-PERSON ZERO-SUM GAMES GAME /5

Solving the problem

Searching for dominated strategies

Strategies		Player II			
		1	2	3	4
Player I	1	3.00	5.00	-2.00	1.00
	2	4.00	2.00	1.00	3.00
	3	3.00	4.00	-2.00	-1.00
	4	2.00	-2.00	2.00	4.00
	5	3.00	2.00	1.00	5.00

Select dominating strategy for Player I

TWO-PERSON ZERO-SUM GAMES GAME /6

Solving the problem

Searching for dominated strategies

Strategies		Player II			
		1	2	3	4
Player I	1	3.00	5.00	-2.00	1.00
	2	4.00	2.00	1.00	3.00
	4	2.00	-2.00	2.00	4.00
	5	3.00	2.00	1.00	5.00

Select dominated strategy for Player II

TWO-PERSON ZERO-SUM GAMES GAME /7

Solving the problem

Searching for dominated strategies

Strategies		Player II			
		1	2	3	4
Player I	1	3.00	5.00	-2.00	1.00
	2	4.00	2.00	1.00	3.00
	4	2.00	-2.00	2.00	4.00
	5	3.00	2.00	1.00	5.00

Select dominating strategy for Player II

TWO-PERSON ZERO-SUM GAMES GAME /8

Solving the problem

Selecting a saddle-point

Strategies		Player II		
		2	3	Min
Player I	1	5.00	-2.00	-2.00
	2	2.00	1.00	1.00
	4	-2.00	2.00	-2.00
	5	2.00	1.00	1.00
	Max	5.00	2	

Enter minimal/maximal values for strategies

TWO-PERSON ZERO-SUM GAMES GAME /9

Solving the problem

Selecting a saddle-point

Strategies		Player II		
		2	3	Min
Player I	1	5.00	-2.00	-2.00
	2	2.00	1.00	1.00
	4	-2.00	2.00	-2.00
	5	2.00	1.00	1.00
	Max	5.00	2.00	

Does a saddle-point exist ? Yes No

TWO-PERSON ZERO-SUM GAMES GAME/10

Solving the problem

Construction of linear programming problems

Player II		2	3
Player I	1	5.00	-2.00
	2	2.00	1.00
	4	-2.00	2.00
	5	2.00	1.00

0.00	0.00	0.00	0.00	1.00		cx->max
x(1)	x(2)	x(3)	x(4)	x(5)		
5.00	2.00	-2.00	2.00	-1.00	≥	0.00
-2.00	1.00	2.00	1.00	-1.00	≥	0.00
1.00	1.00	1.00	1.00	0.00	=	1

Define LP problem for Player I

TWO-PERSON ZERO-SUM GAMES GAME/11

Solving the problem

Construction of linear programming problems

Player II		2	3
Player I	1	5.00	-2.00
	2	2.00	1.00
	4	-2.00	2.00
	5	2.00	1.00

0.00	0.00	1.00		dy->min
y(1)	y(2)	y(3)		
5.00	-2.00	-1.00	≤	0.00
2.00	1.00	-1.00	≤	0.00
-2.00	2.00	-1.00	≤	0.00
2.00	1.00	-1.00	≤	0.00
1.00	1.00	0.00	=	1

Define LP problem for Player II

TWO-PERSON ZERO-SUM GAMES GAME/12

Solving the problem

Optimal solution

Strategies		Player II		
		2	3	P
Player I	1	5.00	-2.00	0.000000
	2	2.00	1.00	0.000000
	4	-2.00	2.00	0.200000
	5	2.00	1.00	0.800000
	P	0.200000	0.800000	
Game value =		1.20		