Tuesday, October 20, 2020 13:13

LINEAR PROGRAM -- ORIGINAL DATA

Title: Q1

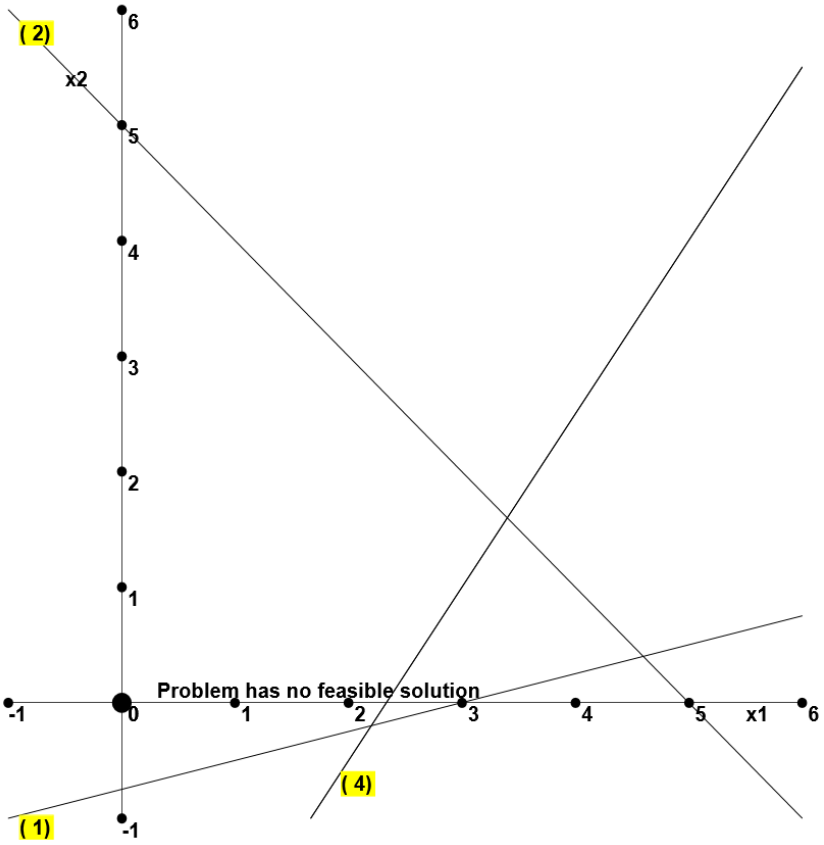
	Y1	Y2		
	x1	x2		
Minimize	10.00	-15.00		
Subject to				
(1)	1.00	-4.00	>=	3.00
(2)	1.00	1.00	>=	5.00
(3)	3.00	-2.00	>=	7.00
(4)	-3.00	2.00	>=	-7.00
Lower Bound	0.00	0.00		
Upper Bound	infinity	infinity		
Unrestr'd (y/n)?	n	n		

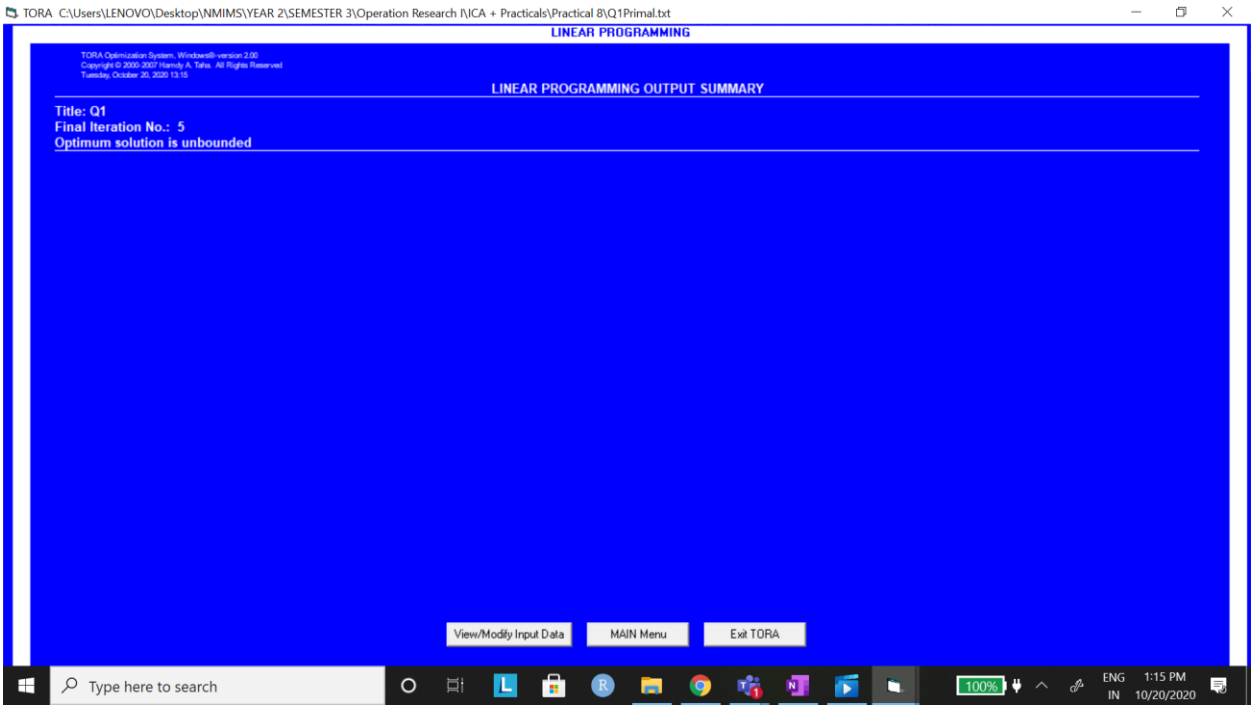
LINEAR PROGRAMMING -- GRAPHICAL SOLUTION

Title: Q1

Summary of Optimal Solution:

Objective Value = -999999.00
x1 = 0.00
x2 = 0.00




TORA C:\Users\LENOVO\Desktop\NMIMS\YEAR 2\SEMESTER 3\Operation Research I\ICA + Practicals\Practical 8\Q1Primal.txt
LINEAR PROGRAMMING
TORA Optimization System, Windows®-version 2.00
Copyright © 2000-2007 Hamdy A. Taha. All Rights Reserved
Tuesday, October 20, 2020 13:15
LINEAR PROGRAMMING OUTPUT SUMMARY
Title: Q1
Final Iteration No.: 5
Optimum solution is unbounded
View/Modify Input Data
MAIN Menu
Exit TORA
Type here to search
100%
ENG
IN
1:15 PM
10/20/2020

Tuesday, October 20, 2020 13:43

LINEAR PROGRAM -- ORIGINAL DATA

Title: Q2

	Y1	Y2	Y3	Y4		
	x1	x2	x3	x4		
Minimize	4.00	12.00	2.00	8.00		
Subject to						
(1)	1.00	2.00	1.00	3.00	>=	0.00
(2)	0.00	4.00	1.00	2.00	>=	10.00
(3)	-1.00	0.00	1.00	-1.00	>=	5.00
Lower Bound	0.00	0.00	0.00	0.00		
Upper Bound	infinity	infinity	infinity	infinity		
Unrestr'd (y/n)?	n	n	n	n		

LINEAR PROGRAMMING OUTPUT SUMMARY

Title: Q2
Final Iteration No.: 7
Objective Value = 20

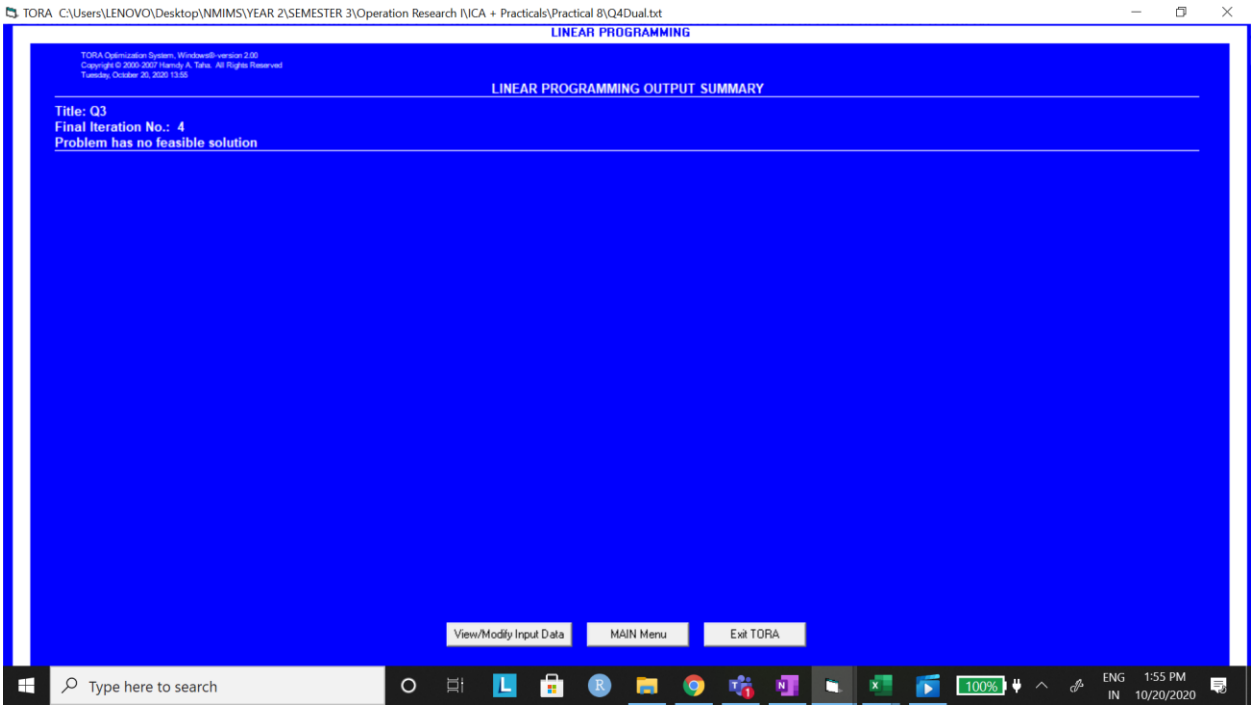
Variable	Value	Obj Coeff	Obj Val Contrib
x1: Y1	0.00	4.00	0.00
x2: Y2	0.00	12.00	0.00
x3: Y3	10.00	2.00	20.00
x4: Y4	0.00	8.00	0.00

Constraint	RHS	Slack-/Surplus+
1 (>)	0.00	10.00+
2 (>)	10.00	0.00
3 (>)	5.00	5.00+

Sensitivity Analysis

Variable	Current Obj Coeff	Min Obj Coeff	Max Obj Coeff	Reduced Cost
x1: Y1	4.00	0.00	infinity	-4.00
x2: Y2	12.00	8.00	infinity	-4.00
x3: Y3	2.00	0.00	3.00	0.00
x4: Y4	8.00	4.00	infinity	-4.00

Constraint	Current RHS	Min RHS	Max RHS	Dual Price
1 (>)	0.00	-infinity	10.00	0.00
2 (>)	10.00	5.00	infinity	2.00
3 (>)	5.00	-infinity	10.00	0.00


TORA C:\Users\LENOVO\Desktop\NMIMS\YEAR 2\SEMESTER 3\Operation Research I\ICA + Practicals\Practical 8\Q4Dual.txt
LINEAR PROGRAMMING
TORA Optimization System, Windows®-version 2.00
Copyright © 2000-2007 Hamdy A. Taha. All Rights Reserved
Tuesday, October 20, 2020 13:55
LINEAR PROGRAMMING OUTPUT SUMMARY
Title: Q3
Final Iteration No.: 4
Problem has no feasible solution
View/Modify Input Data
MAIN Menu
Exit TORA
Type here to search
100%
ENG
IN
1:55 PM
10/20/2020

Tuesday, October 20, 2020 14:09

LINEAR PROGRAM -- ORIGINAL DATA

Title: Q4

	Y1	Y2	Y3		
	x1	x2	x3		
Maximize	24.00	18.00	12.00		
Subject to					
(1)	6.00	3.00	1.00	<=	1.00
(2)	2.00	2.00	3.00	<=	0.50
Lower Bound	0.00	0.00	0.00		
Upper Bound	infinity	infinity	infinity		
Unrestr'd (y/n)?	n	n	n		

LINEAR PROGRAMMING OUTPUT SUMMARY

Title: Q4
Final Iteration No.: 4
Objective Value = 5

Variable	Value	Obj Coeff	Obj Val Contrib
x1: Y1	0.08	24.00	2.00
x2: Y2	0.17	18.00	3.00
x3: Y3	0.00	12.00	0.00

Constraint	RHS	Slack-/Surplus+
1 (<)	1.00	0.00
2 (<)	0.50	0.00

Sensitivity Analysis

Variable	Current Obj Coeff	Min Obj Coeff	Max Obj Coeff	Reduced Cost
x1: Y1	24.00	18.00	30.86	0.00
x2: Y2	18.00	15.00	24.00	0.00
x3: Y3	12.00	-infinity	20.00	8.00

Constraint	Current RHS	Min RHS	Max RHS	Dual Price
1 (<)	1.00	0.75	1.50	2.00
2 (<)	0.50	0.33	0.67	6.00

Tuesday, October 20, 2020 14:17

LINEAR PROGRAM -- ORIGINAL DATA

Title: Q4

	X1	X2		
	x1	x2		
Minimize	1.00	0.50		
Subject to				
(1)	6.00	2.00	>=	24.00
(2)	3.00	2.00	>=	18.00
(3)	1.00	3.00	>=	12.00
Lower Bound	0.00	0.00		
Upper Bound	infinity	infinity		
Unrestr'd (y/n)?	n	n		

SIMPLEX TABLEAUS -- (Dual Simplex Method)

Title: Q4

Iteration 1	X1	X2				
Basic	x1	x2	Sx3	Sx4	Sx5	Solution
z (min)	-1.00	-0.50	0.00	0.00	0.00	0.00
Sx3	-6.00	-2.00	1.00	0.00	0.00	-24.00
Sx4	-3.00	-2.00	0.00	1.00	0.00	-18.00
Sx5	-1.00	-3.00	0.00	0.00	1.00	-12.00
Lower Bound	0.00	0.00				
Upper Bound	infinity	infinity				
Unrestr'd (y/n)?	n	n				

Iteration 2	X1	X2				
Basic	x1	x2	Sx3	Sx4	Sx5	Solution
z (min)	0.00	-0.17	-0.17	0.00	0.00	4.00
x1	1.00	0.33	-0.17	0.00	0.00	4.00
Sx4	0.00	-1.00	-0.50	1.00	0.00	-6.00
Sx5	0.00	-2.67	-0.17	0.00	1.00	-8.00
Lower Bound	0.00	0.00				
Upper Bound	infinity	infinity				
Unrestr'd (y/n)?	n	n				

Iteration 3	X1	X2				
Basic	x1	x2	Sx3	Sx4	Sx5	Solution
z (min)	0.00	0.00	-0.16	0.00	-0.06	4.50
x1	1.00	0.00	-0.19	0.00	0.13	3.00
Sx4	0.00	0.00	-0.44	1.00	-0.38	-3.00
x2	0.00	1.00	0.06	0.00	-0.38	3.00
Lower Bound	0.00	0.00				
Upper Bound	infinity	infinity				
Unrestr'd (y/n)?	n	n				

Iteration 4	X1	X2				
Basic	x1	x2	Sx3	Sx4	Sx5	Solution
z (min)	0.00	0.00	-0.08	-0.17	0.00	5.00
x1	1.00	0.00	-0.33	0.33	0.00	2.00
Sx5	0.00	0.00	1.17	-2.67	1.00	8.00
x2	0.00	1.00	0.50	-1.00	0.00	6.00
Lower Bound	0.00	0.00				
Upper Bound	infinity	infinity				
Unrestr'd (y/n)?	n	n				

Tuesday, October 20, 2020 14:22

LINEAR PROGRAM -- ORIGINAL DATA

Title: Q5

	X1	X2	X3	
	x1	x2	x3	
Maximize	3.00	2.00	2.00	
Subject to				
(1)	5.00	7.00	4.00	<=
(2)	-4.00	7.00	5.00	>=
(3)	3.00	4.00	-6.00	>=
Lower Bound	0.00	0.00	0.00	
Upper Bound	infinity	infinity	infinity	
Unrestr'd (y/n)?	n	n	n	

(1)	7.00
(2)	-2.00
(3)	4.14

SIMPLEX TABLEAUS -- (Two-Phase Method)

Title: Q5

Phase 1 (Iter 1	X1	X2	X3	
Basic	x1	x2	x3	Sx4
z (min)	3.00	4.00	-6.00	-1.00
sx5	5.00	7.00	4.00	0.00
sx6	4.00	-7.00	-5.00	0.00
Rx7	3.00	4.00	-6.00	-1.00
Lower Bound	0.00	0.00	0.00	
Upper Bound	infinity	infinity	infinity	
Unrestr'd (y/n)?	n	n	n	

Basic	sx5	sx6	Rx7	Solution
z (min)	0.00	0.00	0.00	4.14
sx5	1.00	0.00	0.00	7.00
sx6	0.00	1.00	0.00	2.00
Rx7	0.00	0.00	1.00	4.14

Phase 1 (Iter 2	X1	X2	X3	
Basic	x1	x2	x3	Sx4
z (min)	0.14	0.00	-8.29	-1.00
x2	0.71	1.00	0.57	0.00
sx6	9.00	0.00	-1.00	0.00
Rx7	0.14	0.00	-8.29	-1.00
Lower Bound	0.00	0.00	0.00	
Upper Bound	infinity	infinity	infinity	
Unrestr'd (y/n)?	n	n	n	

Basic	sx5	sx6	Rx7	Solution
z (min)	-0.57	0.00	0.00	0.14
x2	0.14	0.00	0.00	1.00
sx6	1.00	1.00	0.00	9.00
Rx7	-0.57	0.00	1.00	0.14

Phase 1 (Iter 3	X1	X2	X3	
Basic	x1	x2	x3	Sx4
z (min)	0.00	0.00	0.00	0.00
x2	0.00	1.00	42.00	5.00
sx6	0.00	0.00	521.00	63.00
x1	1.00	0.00	-58.00	-7.00
Lower Bound	0.00	0.00	0.00	
Upper Bound	infinity	infinity	infinity	
Unrestr'd (y/n)?	n	n	n	

Basic	sx5	sx6	Rx7	Solution
z (min)	0.00	0.00	-1.00	0.00
x2	3.00	0.00	-5.00	0.30
sx6	37.00	1.00	-63.00	0.18
x1	-4.00	0.00	7.00	0.98

Phase 2 (Iter 4	X1	X2	X3	
Basic	x1	x2	x3	Sx4
z (max)	0.00	0.00	-92.00	-11.00
x2	0.00	1.00	42.00	5.00
sx6	0.00	0.00	521.00	63.00
x1	1.00	0.00	-58.00	-7.00
Lower Bound	0.00	0.00	0.00	
Upper Bound	infinity	infinity	infinity	
Unrestr'd (y/n)?	n	n	n	

Basic	sx5	sx6	Rx7	Solution
z (max)	-6.00	0.00	blocked	3.54
x2	3.00	0.00	-5.00	0.30
sx6	37.00	1.00	-63.00	0.18
x1	-4.00	0.00	7.00	0.98

Phase 2 (Iter 5	X1	X2	X3	
Basic	x1	x2	x3	Sx4
z (max)	0.00	0.00	0.00	0.12
x2	0.00	1.00	0.00	-0.08
x3	0.00	0.00	1.00	0.12
x1	1.00	0.00	0.00	0.01
Lower Bound	0.00	0.00	0.00	
Upper Bound	infinity	infinity	infinity	
Unrestr'd (y/n)?	n	n	n	

Basic	sx5	sx6	Rx7	Solution
z (max)	0.53	0.18	blocked	3.57
x2	0.02	-0.08	0.08	0.29
x3	0.07	0.00	-0.12	0.00
x1	0.12	0.11	-0.01	1.00

Tuesday, October 20, 2020 14:23

LINEAR PROGRAM -- ORIGINAL DATA

Title: Q6

	X1	X2		
	x1	x2		
Minimize	40.00	24.00		
Subject to				
(1)	20.00	50.00	>=	4800.00
(2)	80.00	50.00	>=	7200.00
Lower Bound	0.00	0.00		
Upper Bound	infinity	infinity		
Unrestr'd (y/n)?	n	n		

SIMPLEX TABLEAUS -- (Two-Phase Method)

Title: Q6

Phase 1 (Iter 1	X1	X2		
Basic	x1	x2	Sx3	Sx4
z (min)	100.00	100.00	-1.00	-1.00
Rx5	20.00	50.00	-1.00	0.00
Rx6	80.00	50.00	0.00	-1.00
Lower Bound	0.00	0.00		
Upper Bound	infinity	infinity		
Unrestr'd (y/n)?	n	n		

Basic	Rx5	Rx6	Solution
z (min)	0.00	0.00	12000.00
Rx5	1.00	0.00	4800.00
Rx6	0.00	1.00	7200.00

Phase 1 (Iter 2	X1	X2		
Basic	x1	x2	Sx3	Sx4
z (min)	0.00	37.50	-1.00	0.25
Rx5	0.00	37.50	-1.00	0.25
x1	1.00	0.63	0.00	-0.01
Lower Bound	0.00	0.00		
Upper Bound	infinity	infinity		
Unrestr'd (y/n)?	n	n		

Basic	Rx5	Rx6	Solution
z (min)	0.00	-1.25	3000.00
Rx5	1.00	-0.25	3000.00
x1	0.00	0.01	90.00

Phase 1 (Iter 3	X1	X2		
Basic	x1	x2	Sx3	Sx4
z (min)	0.00	0.00	0.00	0.00
x2	0.00	1.00	-0.03	0.01
x1	1.00	0.00	0.02	-0.02
Lower Bound	0.00	0.00		
Upper Bound	infinity	infinity		
Unrestr'd (y/n)?	n	n		

Basic	Rx5	Rx6	Solution
z (min)	-1.00	-1.00	0.00
x2	0.03	-0.01	80.00
x1	-0.02	0.02	40.00

Phase 2 (Iter 4	X1	X2		
Basic	x1	x2	Sx3	Sx4
z (min)	0.00	0.00	0.03	-0.51
x2	0.00	1.00	-0.03	0.01

x1	1.00	0.00	0.02	-0.02
Lower Bound	0.00	0.00		
Upper Bound	infinity	infinity		
Unrestr'd (y/n)?	n	n		

Basic	Rx5	Rx6	Solution
z (min)	blocked	blocked	3520.00
x2	0.03	-0.01	80.00
x1	-0.02	0.02	40.00

Phase 2 (Iter 5	X1	X2		
Basic	x1	x2	Sx3	Sx4
z (min)	-1.60	0.00	0.00	-0.48
x2	1.60	1.00	0.00	-0.02
Sx3	60.00	0.00	1.00	-1.00
Lower Bound	0.00	0.00		
Upper Bound	infinity	infinity		
Unrestr'd (y/n)?	n	n		

Basic	Rx5	Rx6	Solution
z (min)	blocked	blocked	3456.00
x2	0.00	0.02	144.00
Sx3	-1.00	1.00	2400.00