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What's new

1. PERT and CPM Network diagram (improved) on 26.08.19

1. BCD Addition on 22.08.19

2. BCD Subtraction using 9's complement

3. BCD Subtraction using 10's complement

4. Excess 3 Addition

5. Excess 3 Subtraction using 9's complement

6. Excess 3 Subtraction using 10's complement

2. Conversion on 22.08.19

1. Decimal To BCD

2. BCD To Decimal

3. Decimal To Excess 3

4. Excess 3 To Decimal

5. Decimal To Gray code

6. Gray code To Decimal

3. Logarithmic equations 07.08.19

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Test

** check different types of Primal to dual

Algorithm

Method 6. Primal to Dual

Solve the Linear programming problem using Primal to dual conversion calculator

Type your linear programming problem

MIN z = 12x12 + 13x13 + 14x14 + 21x21 + 23x23 + 24x24 + 31x31 + 32x32 + 34x34 + 41x41 + 42x42 + 43x43
subject to
x12 + x13 + x14 + x21 + x31 + x41 = 1
x12 + x21 + x23 + x24 + x32 + x42 = 1
x13 + x23 + x31 + x32 + x34 + x43 = 1

OR

Total Variables : 12 Total Constraints : 16 Generate

Min z = 12 x12 + 13 x13 + 14 x14 + 21 x21 + 23 x23 + 24 x24 + 31 x31 + 32 x32 + 34 x34 + 41 x41 + 42 x42 + 43 x43

Subject to constraints

1	x12 + 1	x13 + 1	x14 + 1	x21 + 0	x23 + 0	x24 + 1	x31 + 0	x32 + 0	x34 + 1	x41 + 0	x42 + 0	x43 + 0
1	x12 + 0	x13 + 0	x14 + 1	x21 + 1	x23 + 1	x24 + 0	x31 + 1	x32 + 0	x34 + 0	x41 + 1	x42 + 0	x43 + 0
0	x12 + 1	x13 + 0	x14 + 0	x21 + 1	x23 + 0	x24 + 1	x31 + 1	x32 + 1	x34 + 0	x41 + 0	x42 + 0	x43 + 0
0	x12 + 0	x13 + 1	x14 + 0	x21 + 0	x23 + 1	x24 + 0	x31 + 0	x32 + 1	x34 + 1	x41 + 1	x42 + 0	x43 + 0
1	x12 + 0	x13 + 0	x14 + 0	x21 + 0	x23 + 0	x24 + 0	x31 + 0	x32 + 0	x34 + 0	x41 + 0	x42 + 0	x43 + 0
0	x12 + 1	x13 + 0	x14 + 0	x21 + 0	x23 + 0	x24 + 0	x31 + 0	x32 + 0	x34 + 0	x41 + 0	x42 + 0	x43 + 0
0	x12 + 0	x13 + 1	x14 + 0	x21 + 0	x23 + 0	x24 + 0	x31 + 0	x32 + 0	x34 + 0	x41 + 0	x42 + 0	x43 + 0
0	x12 + 0	x13 + 0	x14 + 1	x21 + 0	x23 + 0	x24 + 0	x31 + 0	x32 + 0	x34 + 0	x41 + 0	x42 + 0	x43 + 0
0	x12 + 0	x13 + 0	x14 + 0	x21 + 1	x23 + 0	x24 + 0	x31 + 0	x32 + 0	x34 + 0	x41 + 0	x42 + 0	x43 + 0
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0	x12 + 0	x13 + 0	x14 + 0	x21 + 0	x23 + 0	x24 + 0	x31 + 0	x32 + 0	x34 + 0	x41 + 1	x42 + 0	x43 + 0
0	x12 + 0	x13 + 0	x14 + 0	x21 + 0	x23 + 0	x24 + 0	x31 + 0	x32 + 0	x34 + 0	x41 + 0	x42 + 0	x43 + 0

and x12,x13,x14,x21,x23,x24,x31,x32,x34,x41,x42,x43 >= 0 and unrestricted in sign x12, x13, x14, x21, x23, x24, x31, x32, x34, x41, x42, x43

Mode : Auto

Find Random New

Solution Help

Solution

Find dual from primal conversion

MIN z = 12x12 + 13x13 + 14x14 + 21x21 + 23x23 + 24x24 + 31x31 + 32x32 + 34x34 + 41x41 + 42x42 + 43x43

subject to

x12 + x13 + x14 + x21 + x31 + x41 = 1

x12 + x21 + x23 + x24 + x32 + x42 = 1

x13 + x23 + x31 + x32 + x34 + x43 = 1

x14 + x24 + x34 + x41 + x42 + x43 = 1

x12 <= 1

x13 <= 1

x14 <= 1

x21 <= 1

x23 <= 1

x24 <= 1

x31 <= 1

x32 <= 1

x34 <= 1

x41 <= 1

x42 <= 1

x43 <= 1

and x12,x13,x14,x21,x23,x24,x31,x32,x34,x41,x42,x43 >= 0

(Answer Only)

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Dual is (Solution stpes of Dual by BigM method)

$$\text{MAX } z_y = y_1 + y_2 + y_3 + y_4 - y_5 - y_6 - y_7 - y_8 - y_9 - y_{10} - y_{11} - y_{12} - y_{13} - y_{14} - y_{15} - y_{16}$$

subject to

$$\begin{array}{rcl} y_1 + y_2 & & - y_5 \leq 12 \\ y_1 & + y_3 & - y_6 \leq 13 \\ y_1 & & + y_4 - y_7 \leq 14 \\ y_1 + y_2 & & - y_8 \leq 21 \\ y_2 + y_3 & & - y_9 \leq 23 \\ y_2 & + y_4 & - y_{10} \leq 24 \\ y_1 & + y_3 & - y_{11} \leq 31 \\ y_2 + y_3 & & - y_{12} \leq 32 \\ y_3 + y_4 & & - y_{13} \leq 34 \\ y_1 & & + y_4 - y_{14} \leq 41 \\ y_2 & + y_4 & - y_{15} \leq 42 \\ y_3 + y_4 & & - y_{16} \leq 43 \end{array}$$

and $y_5, y_6, y_7, y_8, y_9, y_{10}, y_{11}, y_{12}, y_{13}, y_{14}, y_{15}, y_{16} \geq 0$; y_1, y_2, y_3, y_4 unrestricted in sign

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