**MLRC\_ILP (cosine1.dot)**

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------------- FILES -------------

1: hal.dot

2: fir1.dot

3: cosine1.dot

4: cosine2.dot

5: Any other .dot file

========================================

Enter the file option: 3

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------------- ALGORITHMS -------------

1: MLRC\_ILP

2: MRLC\_ILP

3: MLRC\_List

4: MRLC\_List

========================================

Enter Option: 1

========================================

MLRC\_ILP: Minimum Latency: 151

Nodes = ['58', '56', '0', '54', '42', '43', '60', '61', '62', '63', '64', '65', '66', '67', '68', '69', '80', '81', '53', '25', '48', '49', '46', '44', '45', '28', '40', '41', '82', '47', '52', '83', '77', '76', '75', '74', '73', '72', '71', '70', '79', '78', '59', '22', '55', '57', '51', '34', '19', '37', '31', '50']

Start\_Time\_List = [103, 73, 1, 64, 12, 42, 112, 21, 21, 21, 21, 32, 32, 32, 32, 41, 73, 82, 64, 1, 53, 82, 62, 42, 62, 1, 1, 12, 91, 53, 73, 152, 123, 114, 123, 71, 71, 62, 62, 41, 82, 132, 103, 1, 73, 112, 73, 1, 1, 1, 1, 82]

Latest\_Start\_Time\_List = [121, 82, 1, 82, 12, 42, 112, 71, 71, 62, 62, 82, 91, 82, 91, 82, 132, 132, 91, 1, 62, 91, 71, 51, 62, 51, 42, 12, 132, 71, 82, 152, 132, 132, 132, 112, 121, 121, 112, 82, 132, 132, 112, 1, 91, 121, 91, 42, 51, 42, 42, 82]

Mobility\_Original = [18, 9, 0, 18, 0, 0, 0, 50, 50, 41, 41, 50, 59, 50, 59, 41, 59, 50, 27, 0, 9, 9, 9, 9, 0, 50, 41, 0, 41, 18, 9, 0, 9, 18, 9, 41, 50, 59, 50, 41, 50, 0, 9, 0, 18, 9, 18, 41, 50, 41, 41, 0]

Mobility\_Modified = [19, 10, 1, 19, 1, 1, 1, 51, 51, 42, 42, 51, 60, 51, 60, 42, 60, 51, 28, 1, 10, 10, 10, 10, 1, 51, 42, 1, 42, 19, 10, 1, 10, 19, 10, 42, 51, 60, 51, 42, 51, 1, 10, 1, 19, 10, 19, 42, 51, 42, 42, 1]

Mobility\_Cumulated = [19, 29, 30, 49, 50, 51, 52, 103, 154, 196, 238, 289, 349, 400, 460, 502, 562, 613, 641, 642, 652, 662, 672, 682, 683, 734, 776, 777, 819, 838, 848, 849, 859, 878, 888, 930, 981, 1041, 1092, 1134, 1185, 1186, 1196, 1197, 1216, 1226, 1245, 1287, 1338, 1380, 1422, 1423]

Nodes associated with Operations = [['56', '54', '42', '65', '66', '67', '68', '69', '53', '49', '41', '52', '70', '55', '51', '50'], ['43', '60', '63', '64', '48', '45', '40', '74', '71', '59', '34', '37', '31'], ['58', '61', '62', '25', '46', '44', '28', '47', '73', '72', '22', '57', '19'], ['80', '81', '82', '77', '76', '75', '79', '78']]

Unique Resource Types = ['mul', 'add', 'sub', 'exp']

================================================================================

Enter the number of instances of Multiplier: 8

Enter the number of instances of Adder: 14

Enter the number of instances of Subtracter: 12

Enter the number of instances of Exponent: 11

OBJECTIVE FUNCTION = [103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 0, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 0, 0, 0, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 32, 33, 34, 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set\_int: Column 0 out of range

Model name: '' - run #1

Objective: Minimize(R0)

SUBMITTED

Model size: 484 constraints, 1423 variables, 28457 non-zeros.

Sets: 0 GUB, 0 SOS.

Using DUAL simplex for phase 1 and PRIMAL simplex for phase 2.

The primal and dual simplex pricing strategy set to 'Devex'.

Relaxed solution 2284 after 52 iter is B&B base.

Feasible solution 2284 after 52 iter, 0 nodes (gap 0.0%)

Optimal solution 2284 after 52 iter, 0 nodes (gap 0.0%).

Excellent numeric accuracy ||\*|| = 1.77636e-014

MEMO: lp\_solve version 5.5.2.0 for 32 bit OS, with 64 bit REAL variables.

In the total iteration count 52, 0 (0.0%) were bound flips.

There were 1 refactorizations, 0 triggered by time and 1 by density.

... on average 52.0 major pivots per refactorization.

The largest [LUSOL v2.2.1.0] fact(B) had 902 NZ entries, 1.0x largest basis.

The maximum B&B level was 1, 0.0x MIP order, 1 at the optimal solution.

The constraint matrix inf-norm is 152, with a dynamic range of 152.

Time to load data was 0.557 seconds, presolve used 0.040 seconds,

... 0.040 seconds in simplex solver, in total 0.637 seconds.

====================================================================================================

Objective = 2284.0

Variables = [1.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 1.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 1.0, 1.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 1.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 1.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 1.0, 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Constraints = [1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 0.9999999999999998, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0000000000000002, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 0.9999999999999999, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 0.9999999999999999, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 30.0, 30.0, 61.0, 19.999999999999993, 10.999999999999993, 11.0, 61.0, 19.999999999999986, 11.0, 52.0, 11.0, 38.999999999999986, 29.999999999999986, 20.00000000000003, 11.0, 11.0, 52.00000000000001, 20.000000000000014, 39.0, 30.0, 11.0, 20.0, 20.0, 11.0, 11.0, 20.0, 20.0, 20.000000000000004, 20.0, 20.0, 11.0, 30.0, 30.0, 11.000000000000014, 11.0, 30.0, 30.0, 20.0, 20.0, 20.0, 20.000000000000004, 30.0, 30.0, 20.000000000000014, 29.999999999999986, 29.999999999999986, 11.0, 20.000000000000007, 38.999999999999986, 30.000000000000014, 39.0, 10.999999999999986, 29.0, 38.00000000000003, 29.0, 60.999999999999986, 78.99999999999999, 70.0, 70.0, 2.0, 2.0, 2.0, 2.0, 2.0, 2.0, 2.0, 2.0, 2.0, 2.0, 2.0, 2.0, 2.0, 2.0, 2.0, 2.0, 2.0, 2.0, 2.0, 2.0, 6.0, 6.0, 6.0, 6.0, 6.0, 6.0, 6.0, 6.0, 6.0, 8.0, 6.0, 6.0, 6.0, 6.0, 6.0, 6.0, 6.0, 6.0, 6.0, 6.0, 6.0, 6.0, 6.0, 6.0, 6.0, 6.0, 6.0, 6.0, 6.0, 6.0, 2.0, 2.0, 4.0, 4.0, 4.0, 4.0, 4.0, 4.0, 4.0, 2.0, 2.0, 6.0, 6.0, 6.0, 6.0, 6.0, 6.0, 6.0, 6.0, 6.0, 8.0, 8.0, 8.0, 8.0, 8.0, 8.0, 8.0, 8.0, 8.0, 8.0, 4.0, 4.0, 4.0, 4.0, 4.0, 4.0, 4.0, 4.0, 4.0, 4.0, 4.0, 4.0, 4.0, 4.0, 4.0, 4.0, 4.0, 4.0, 4.0, 4.0, 2.0, 2.0, 2.0, 2.0, 2.0, 2.0, 2.0, 2.0, 2.0, 2.0, 2.0, 2.0, 2.0, 2.0, 2.0, 2.0, 2.0, 2.0, 2.0, 2.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 2.0, 2.0, 2.0, 2.0, 2.0, 2.0, 2.0, 2.0, 2.0, 3.0, 3.0, 3.0, 3.0, 3.0, 3.0, 3.0, 3.0, 3.0, 4.0, 4.0, 3.0, 3.0, 3.0, 3.0, 3.0, 3.0, 3.0, 3.0, 3.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.9999999999999999, 0.9999999999999999, 0.9999999999999999, 0.9999999999999999, 0.9999999999999999, 0.9999999999999999, 0.9999999999999999, 0.9999999999999999, 0.9999999999999999, 1.9999999999999996, 4.0, 4.0, 4.0, 4.0, 4.0, 4.0, 4.0, 4.0, 4.0, 4.0, 4.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 2.0, 2.0, 2.0, 2.0, 2.0, 2.0, 2.0, 2.0, 2.0, 2.0, 2.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 3.0, 3.0, 2.0, 2.0, 2.0, 2.0, 2.0, 2.0, 2.0, 3.0, 3.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 2.0, 2.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0000000000000002, 1.0000000000000002, 1.0000000000000002, 1.0000000000000002, 1.0000000000000002, 1.0000000000000002, 1.0000000000000002, 1.0000000000000002, 1.0000000000000002, 3.0, 3.0, 3.0, 3.0, 3.0, 3.0, 3.0, 3.0, 3.0, 4.0, 4.0, 3.0, 3.0, 3.0, 3.0, 3.0, 3.0, 3.0, 3.0, 3.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 0.0, 0.0, 0.0, 0.9999999999999999, 0.9999999999999999, 0.9999999999999999, 0.9999999999999999, 0.9999999999999999, 0.9999999999999999, 0.9999999999999999, 0.9999999999999999, 0.9999999999999999, 3.0, 3.0, 3.0, 3.0, 3.0, 3.0, 3.0, 3.0, 3.0, 4.0]

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Minimum Latency = 151