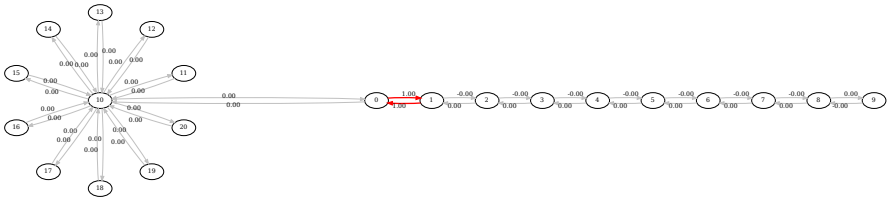
Report of running the connected cut algorithm

This is an automatically generated report which runs the algorithm on given graphs. There is a graph, its integer linear program solution, linear program solution, augmentation of the linear program and approximation result.

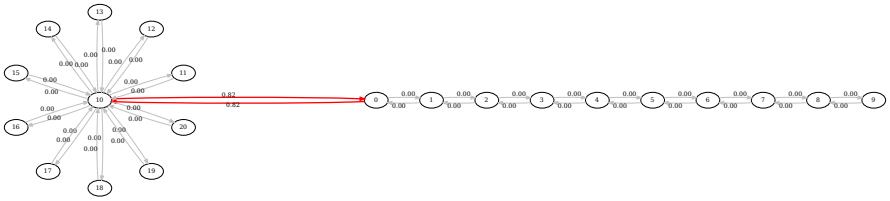
Graph	ILP	LP	Augmentation	Naive apx	Ball apx	Vertices in ball
comet (12/21)	2	1.636	2.000	8	2	10
comet-alt (10/21)	4	4.000	4.000	4	4	10
path (6/21)	4	4.000	4.000	4	4	6
clique (3/8)	30	10.000	10.000	30	14	1
star (4/21)	34	34.000	34.000	34	34	4
tree (15/81)	6	6.000	6.000	6	6	15
Petersen (6/10)	12	2.667	5.714	12	0	10
necklace (10/20)	22	5.600	7.778	24	4	11
necklace-alt (10/20)	22	2.222	9.400	50	4	6

comet

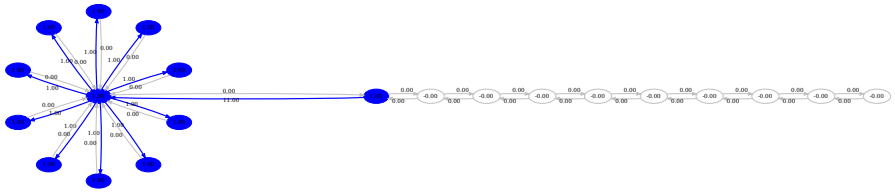
This input graph has a source vertex s = 0 and capacity k = 12. The value of mixed integer program is 2 and its linear relaxation 1.6363636363636362. Running the augmentation results in value 2.



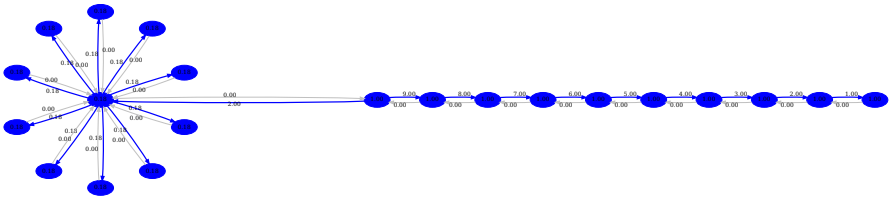
cut-ilp



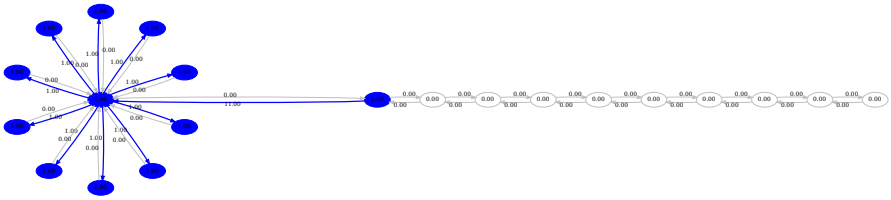
cut-lp



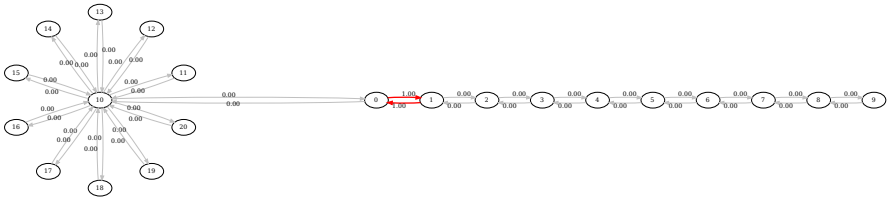
flow-ilp



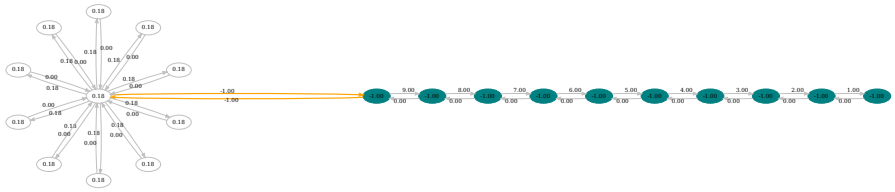
flow-lp



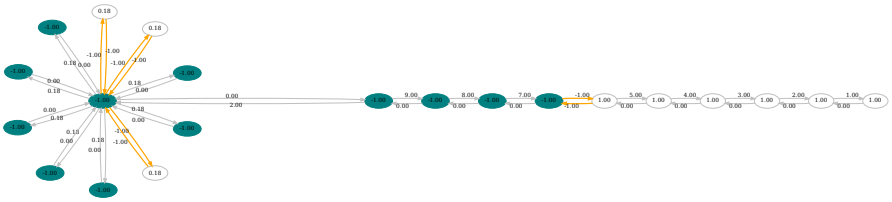
flow-aug



cut-aug



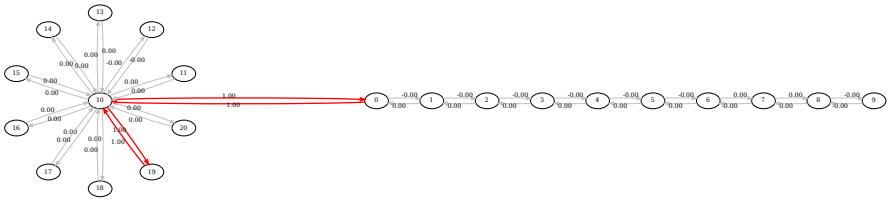
apx-ball



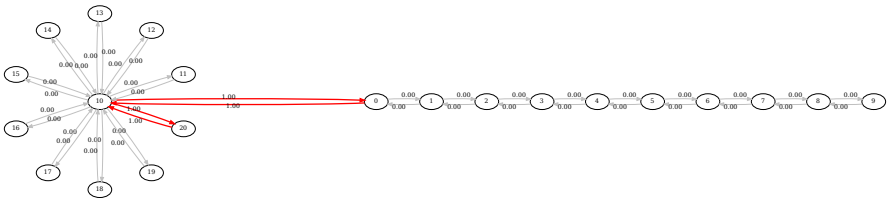
apx-naive

comet-alt

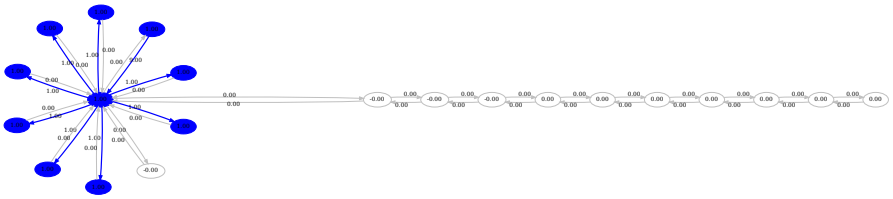
This input graph has a source vertex s = 12 and capacity k = 10. The value of mixed integer program is 4 and its linear relaxation 4. Running the augmentation results in value 4.



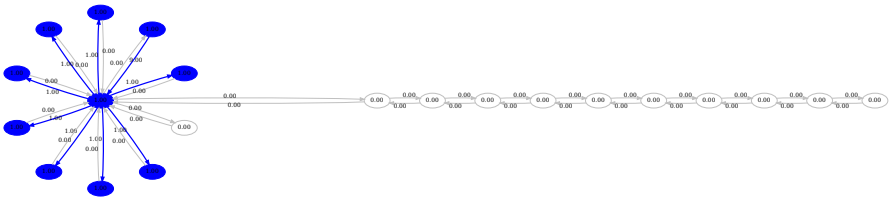
cut-ilp



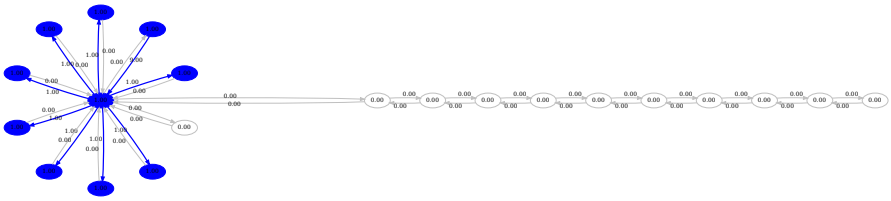
cut-lp



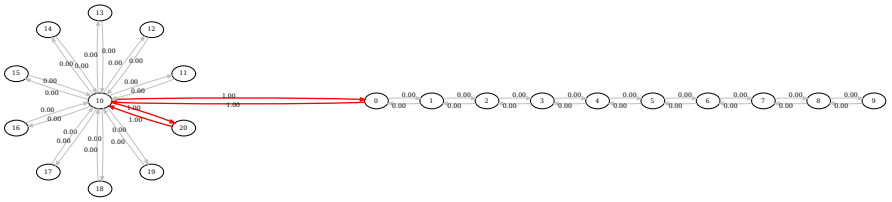
flow-ilp



flow-lp



flow-aug



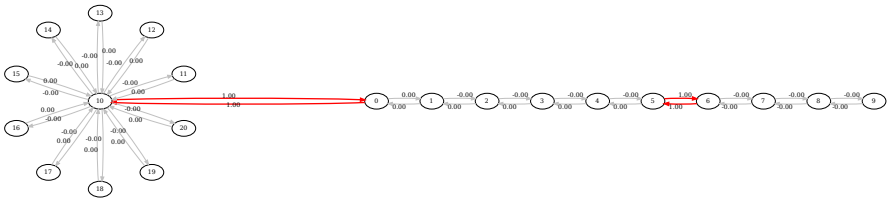
cut-aug

apx-ball

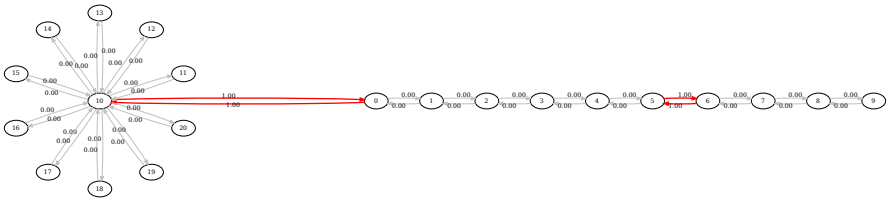
apx-naive

path

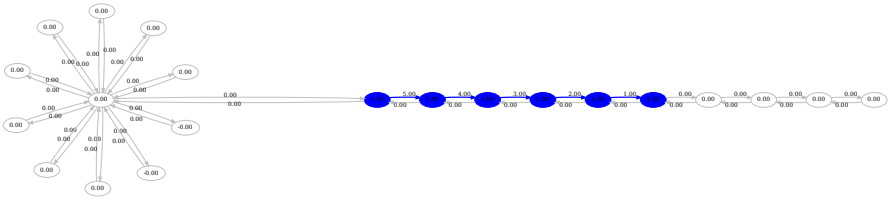
This input graph has a source vertex s = 0 and capacity k = 6. The value of mixed integer program is 4 and its linear relaxation 4. Running the augmentation results in value 4.



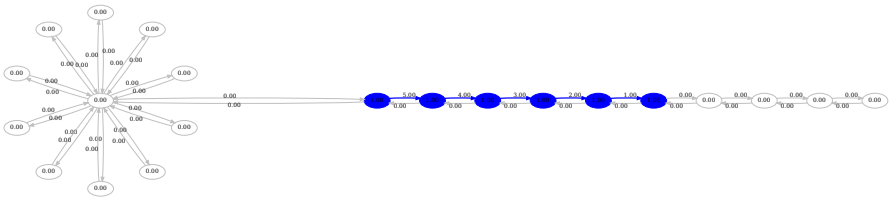
cut-ilp



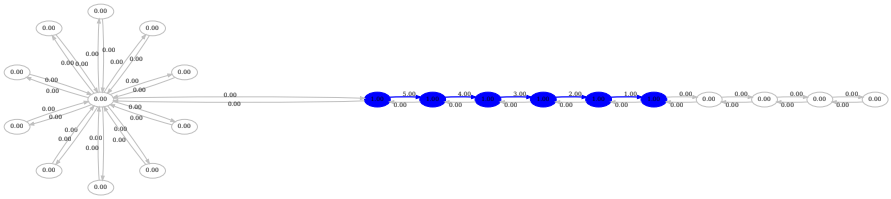
cut-lp



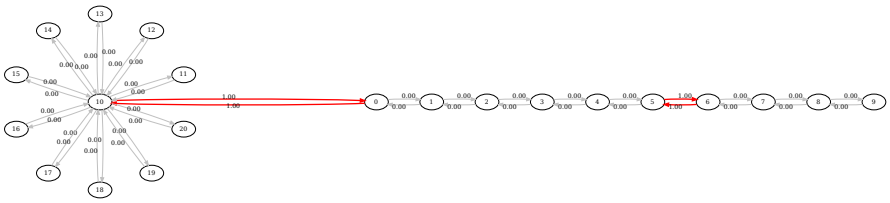
flow-ilp



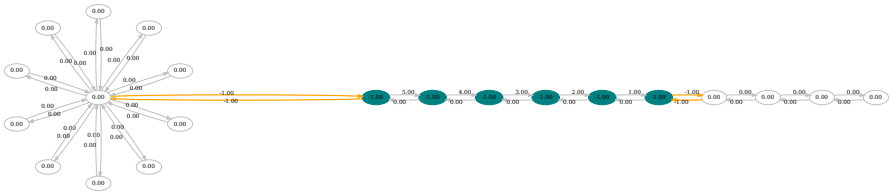
flow-lp



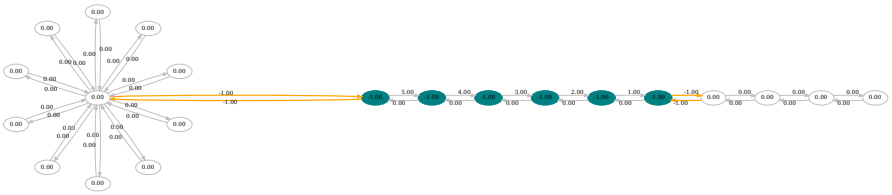
flow-aug



cut-aug



apx-ball

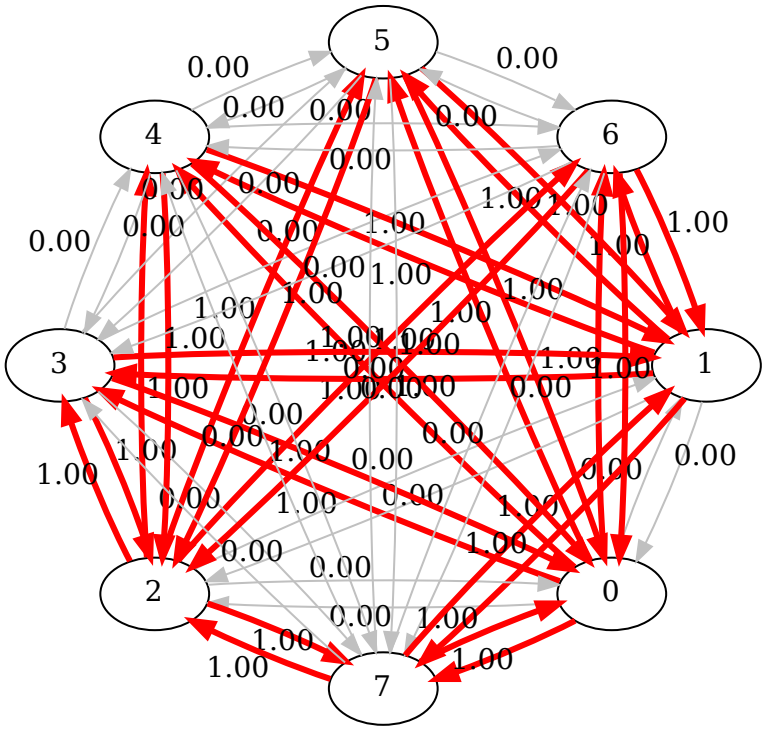


apx-naive

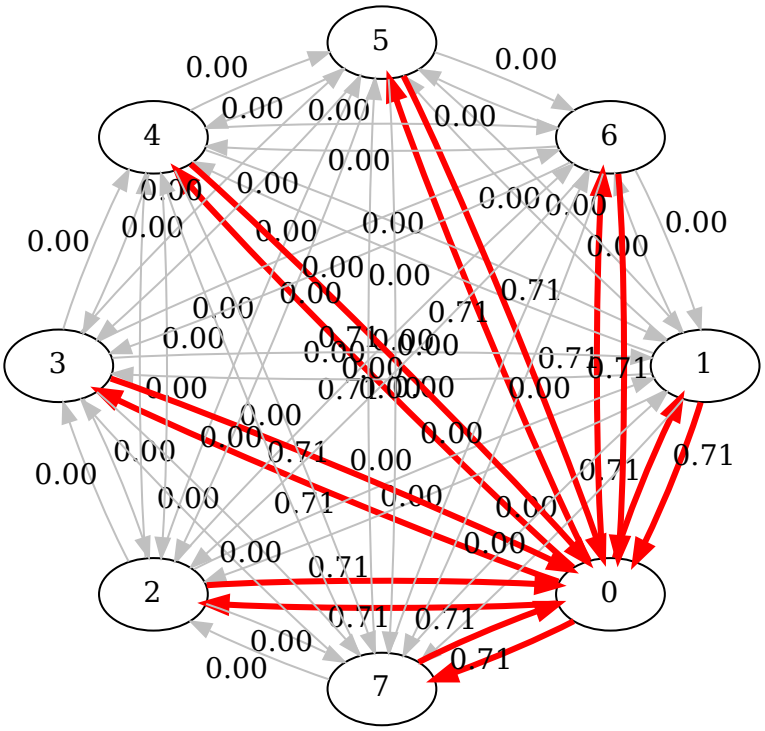
clique

This input graph has a source vertex s = 0 and capacity k = 3. The value of mixed integer program is 30 and its linear relaxation 9.999999999999998.

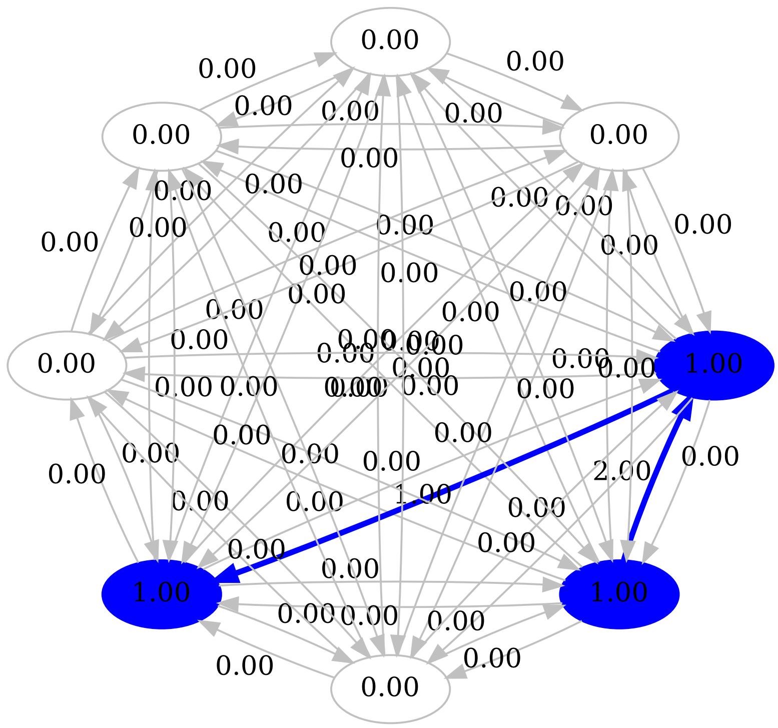
Running the augmentation results in value 9.999999999999998.



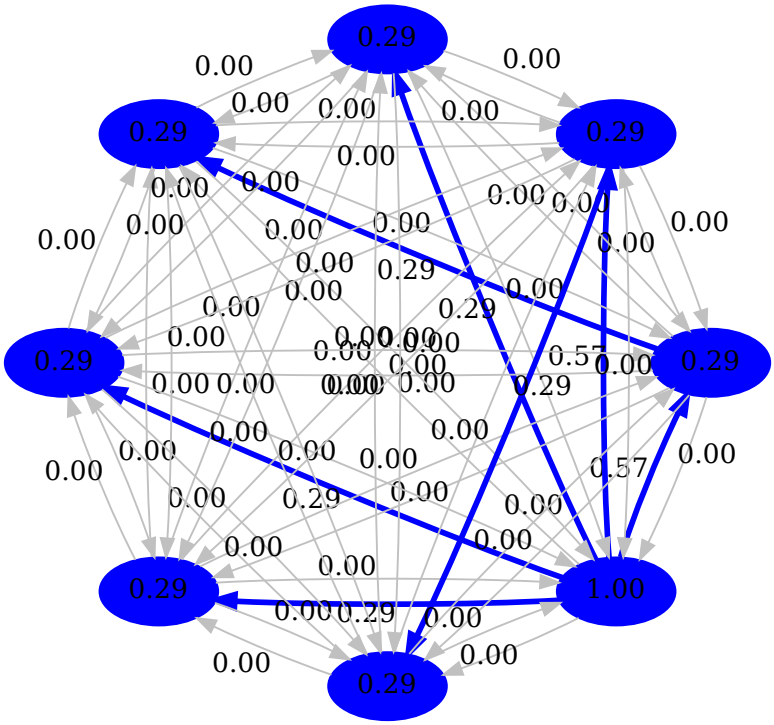
cut-ilp



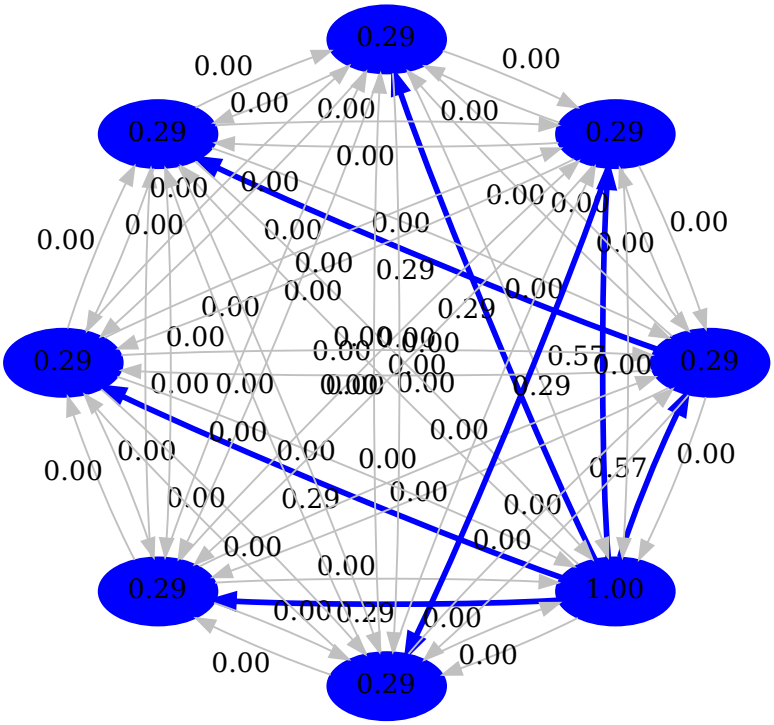
cut-lp



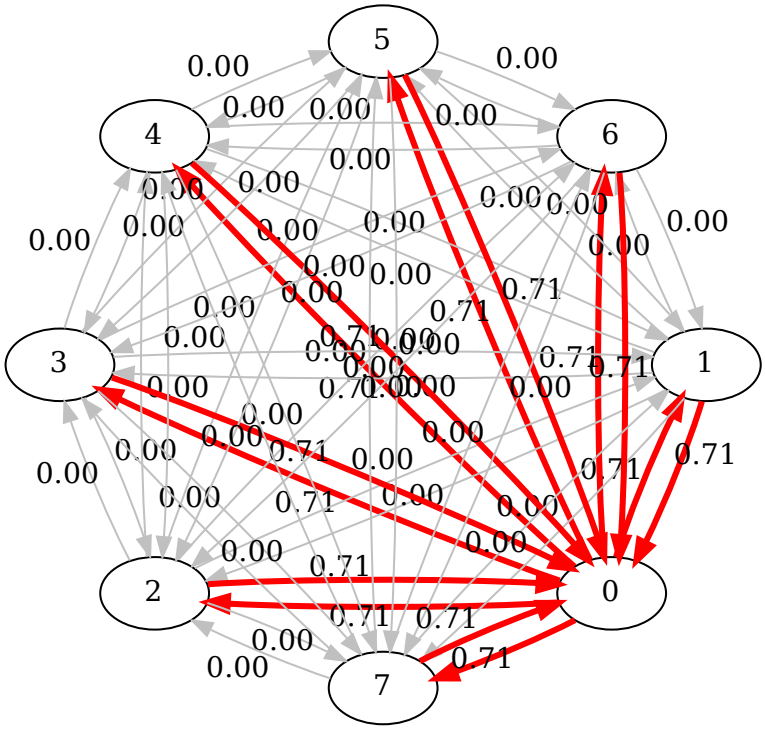
flow-ilp



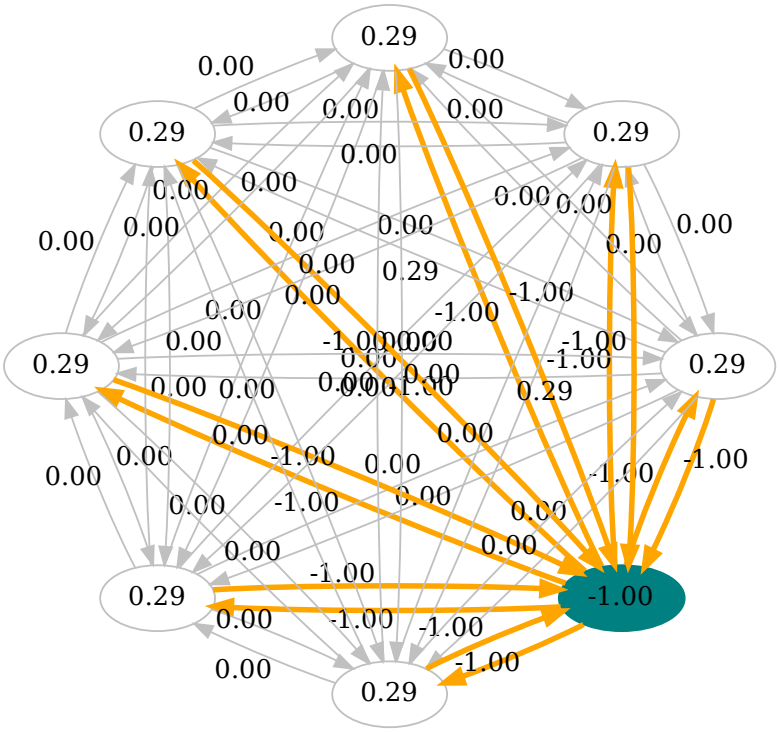
flow-lp



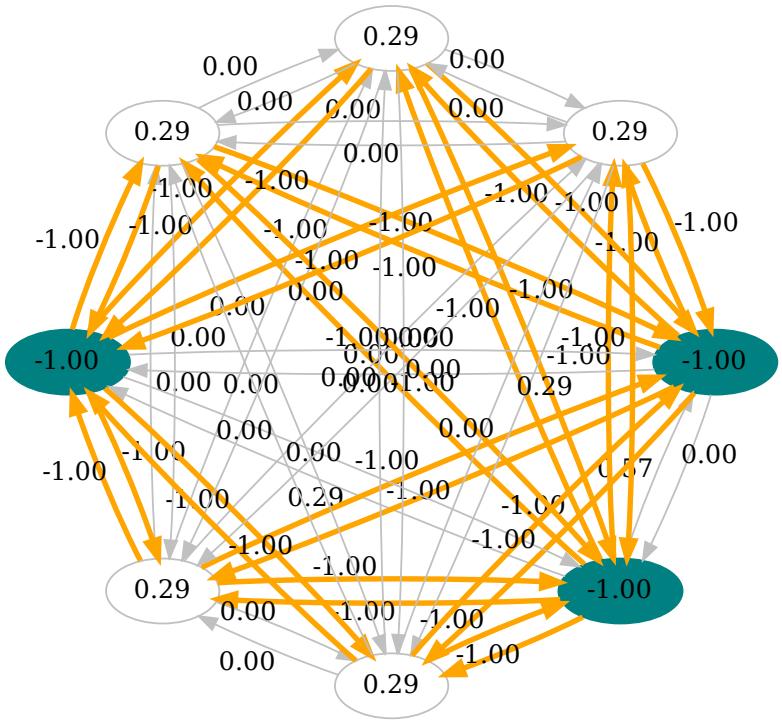
flow-aug



cut-aug



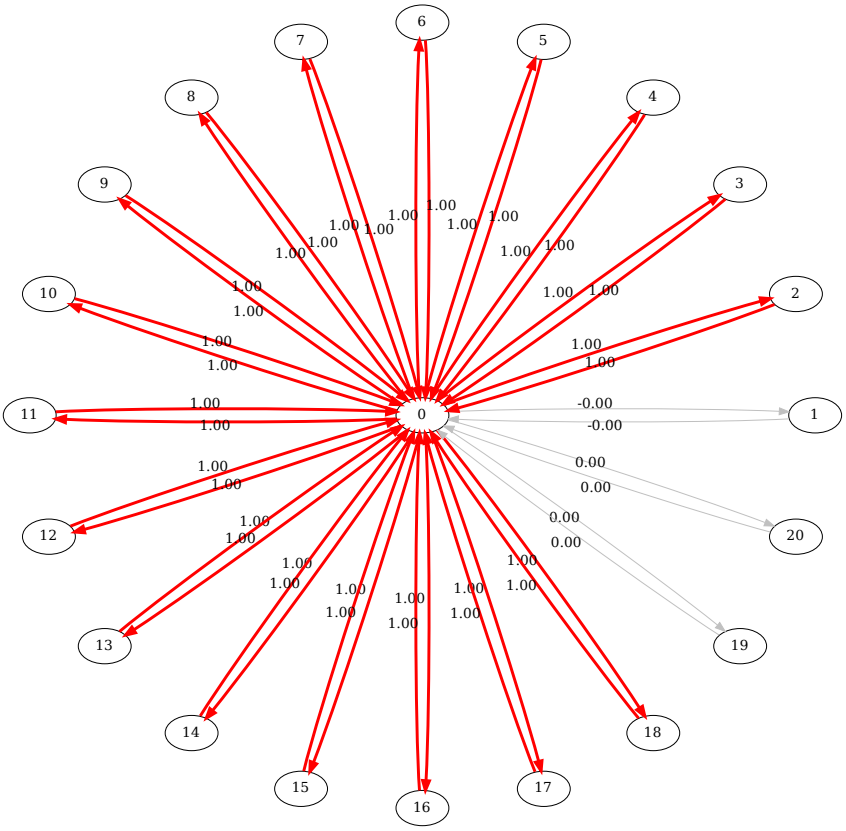
apx-ball



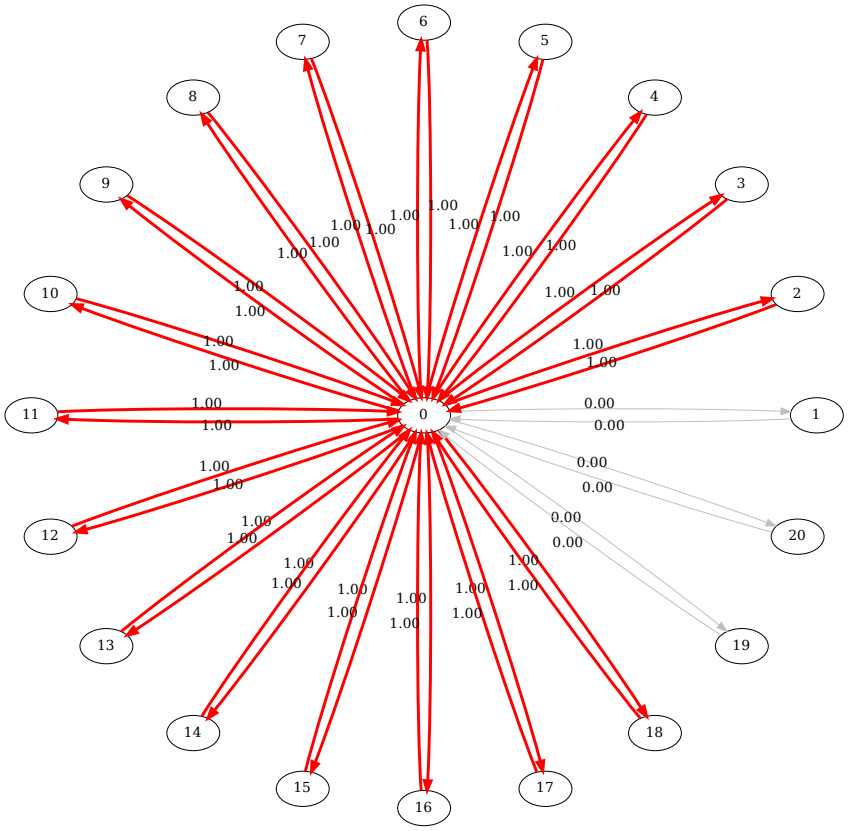
apx-naive

star

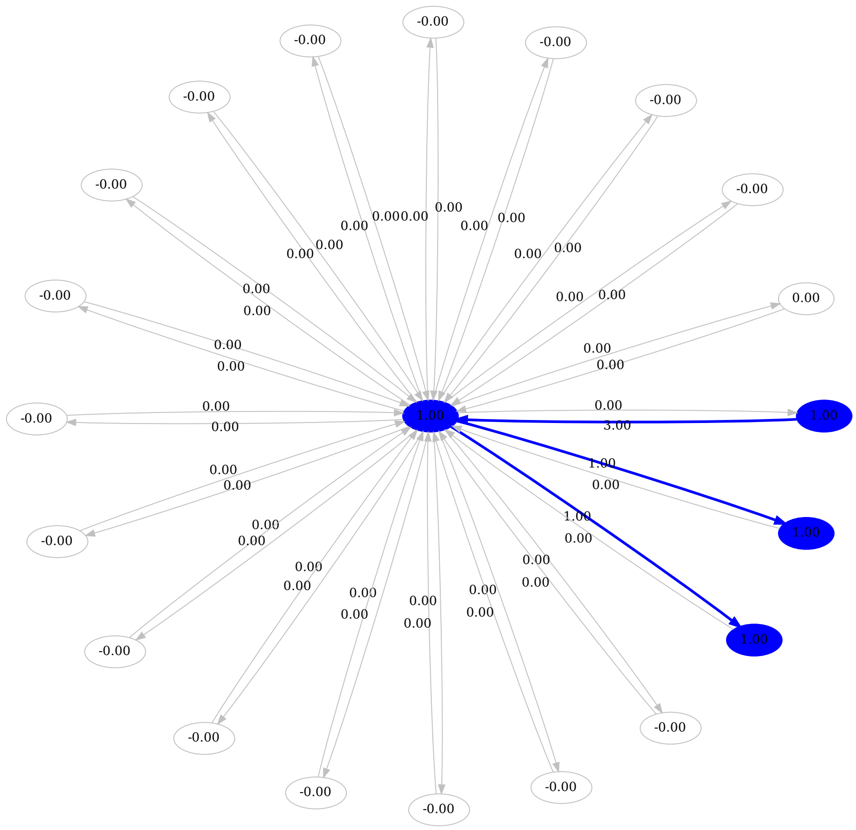
This input graph has a source vertex s = 1 and capacity k = 4. The value of mixed integer program is 34 and its linear relaxation 34. Running the augmentation results in value 34.



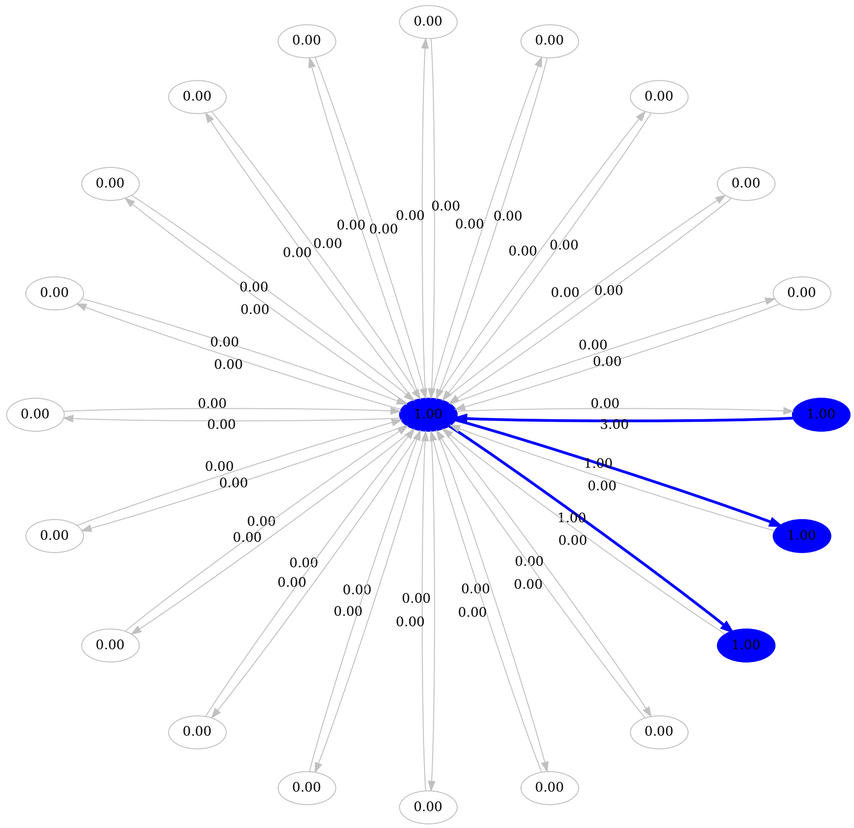
cut-ilp



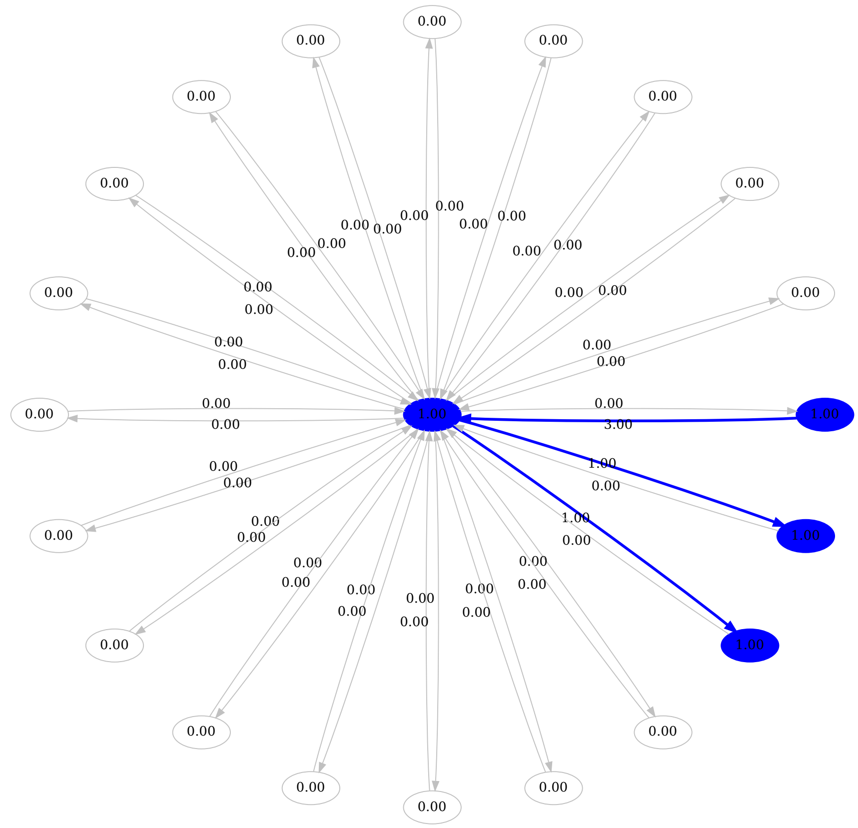
cut-lp



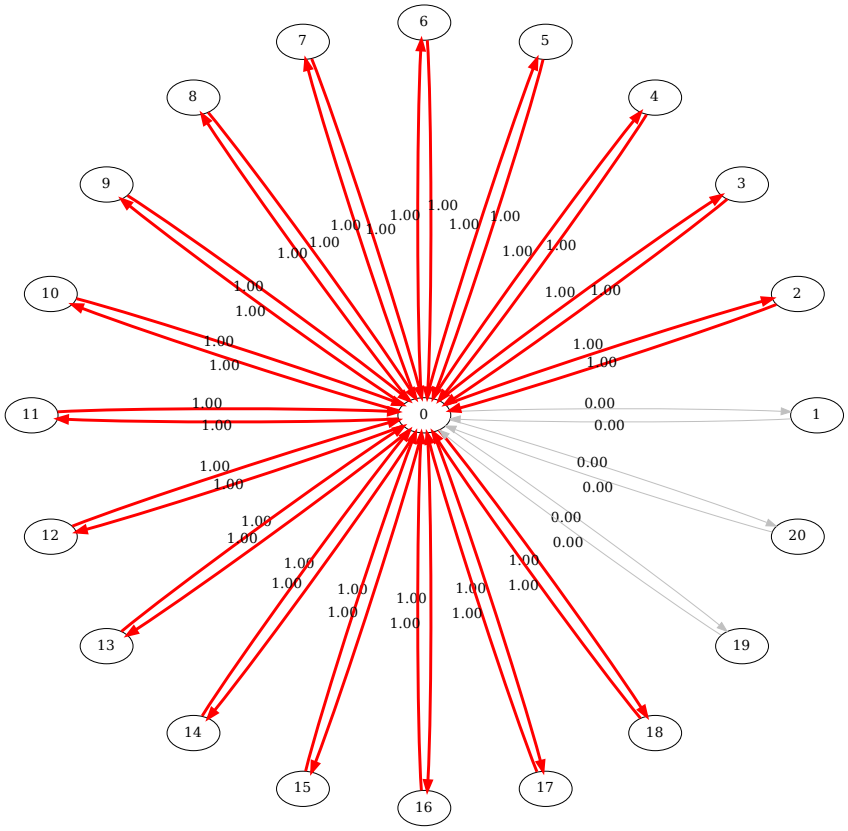
flow-ilp



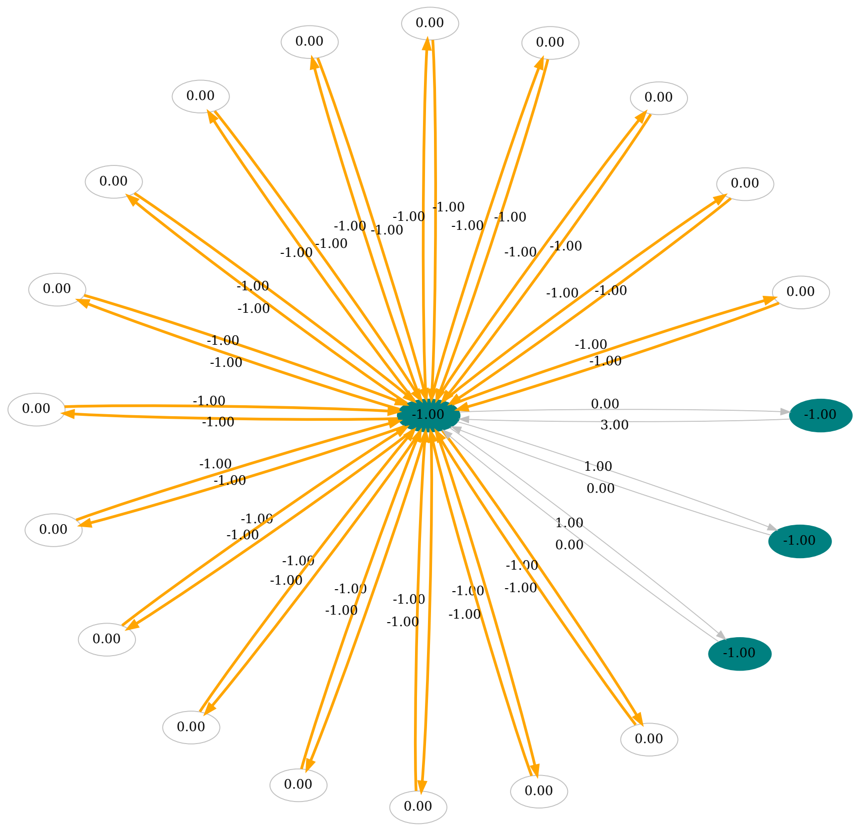
flow-lp



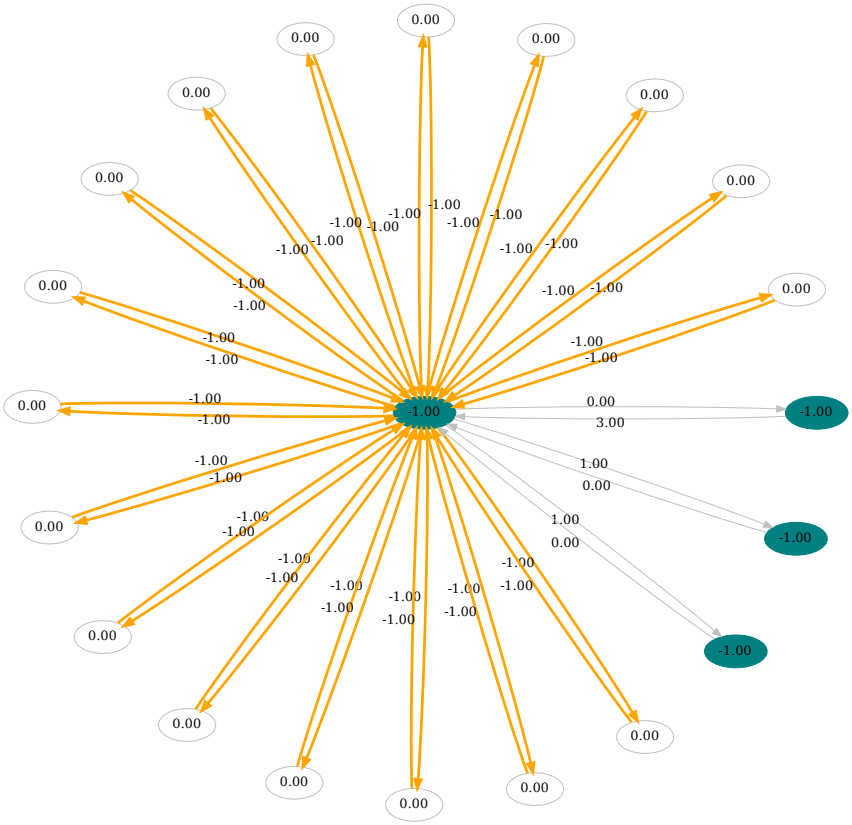
flow-aug



cut-aug



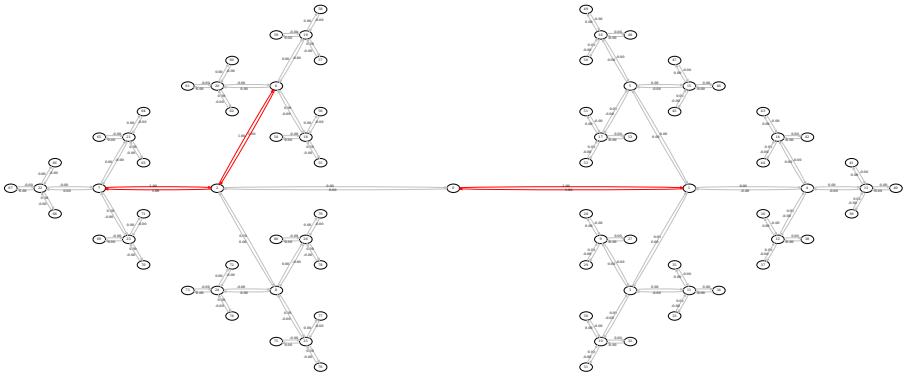
apx-ball



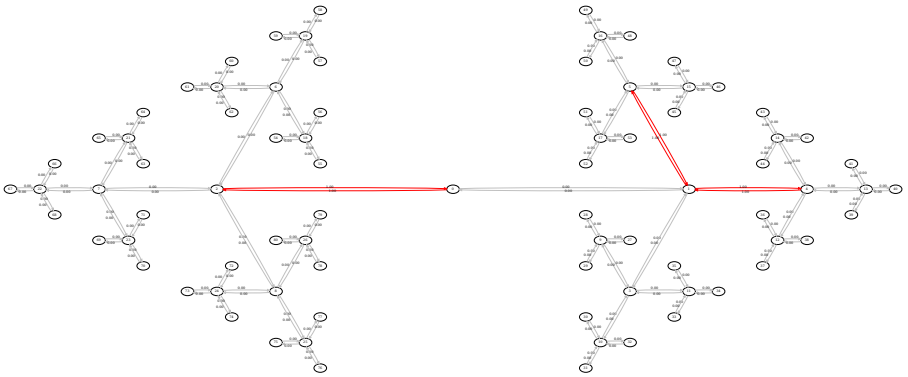
apx-naive

tree

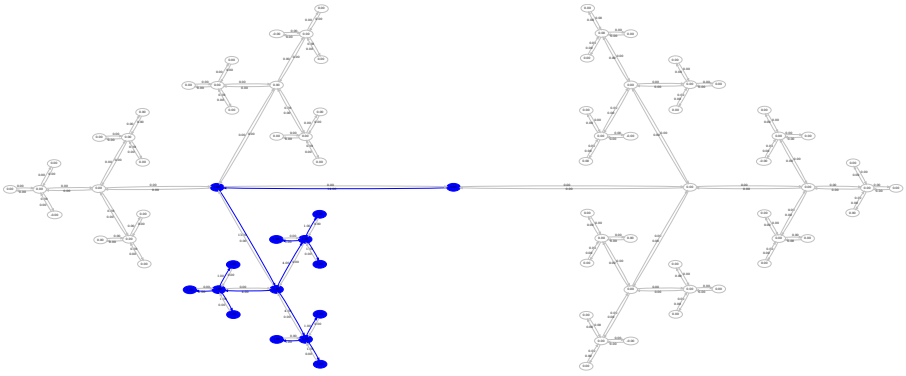
This input graph has a source vertex s = 0 and capacity k = 15. The value of mixed integer program is 6 and its linear relaxation 6. Running the augmentation results in value 6.



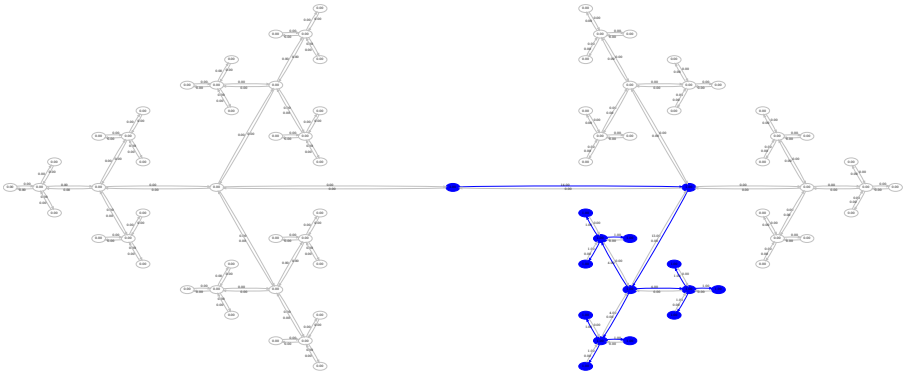
cut-ilp



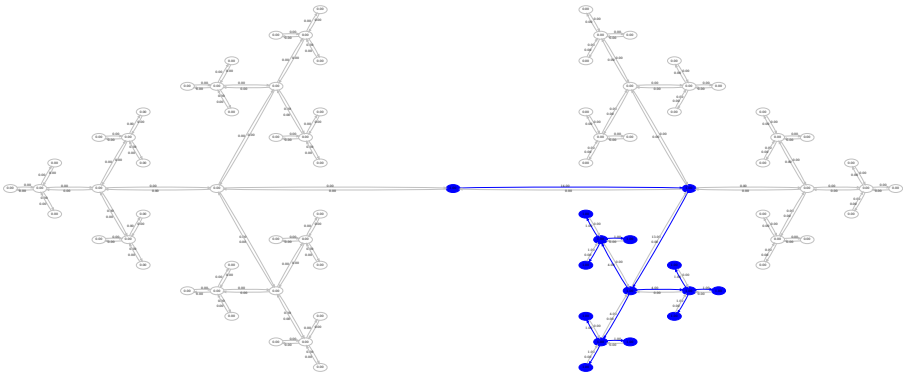
cut-lp



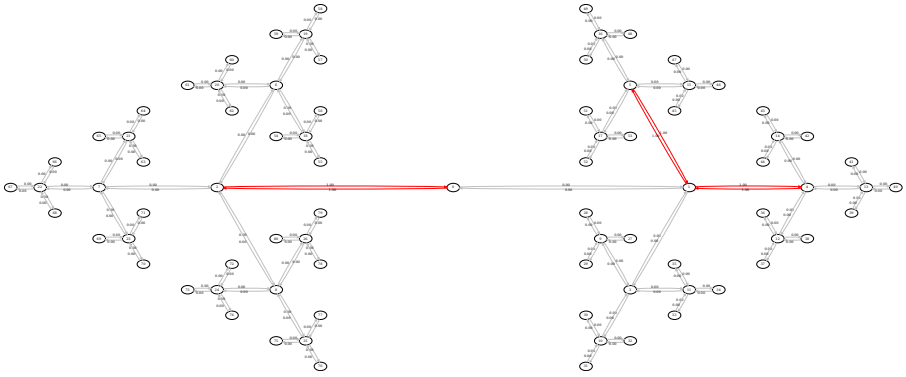
flow-ilp



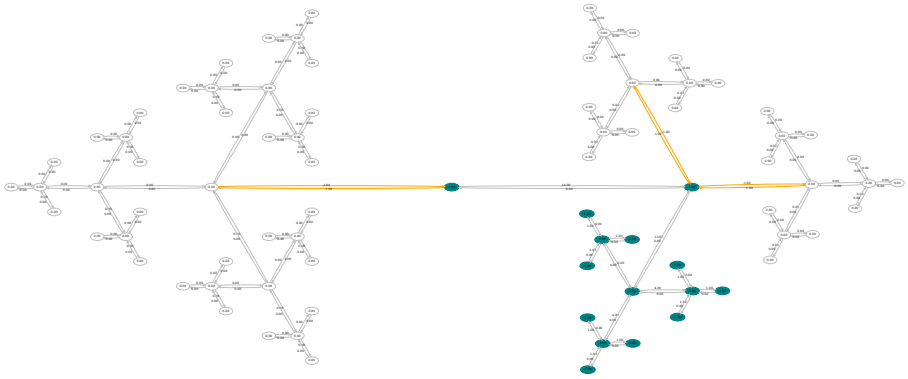
flow-lp



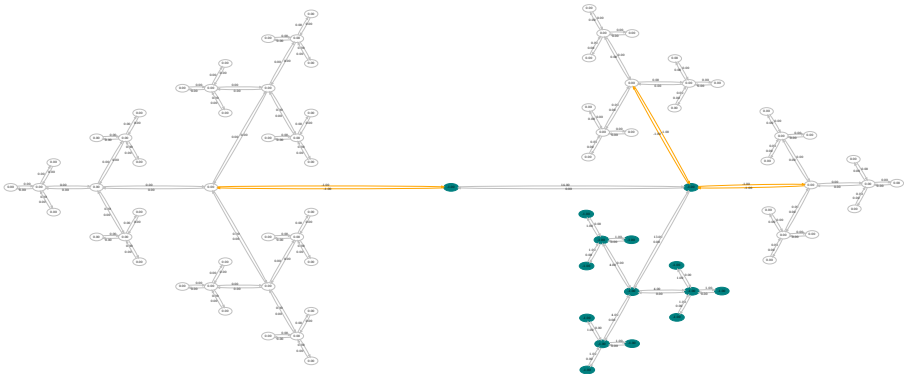
flow-aug



cut-aug



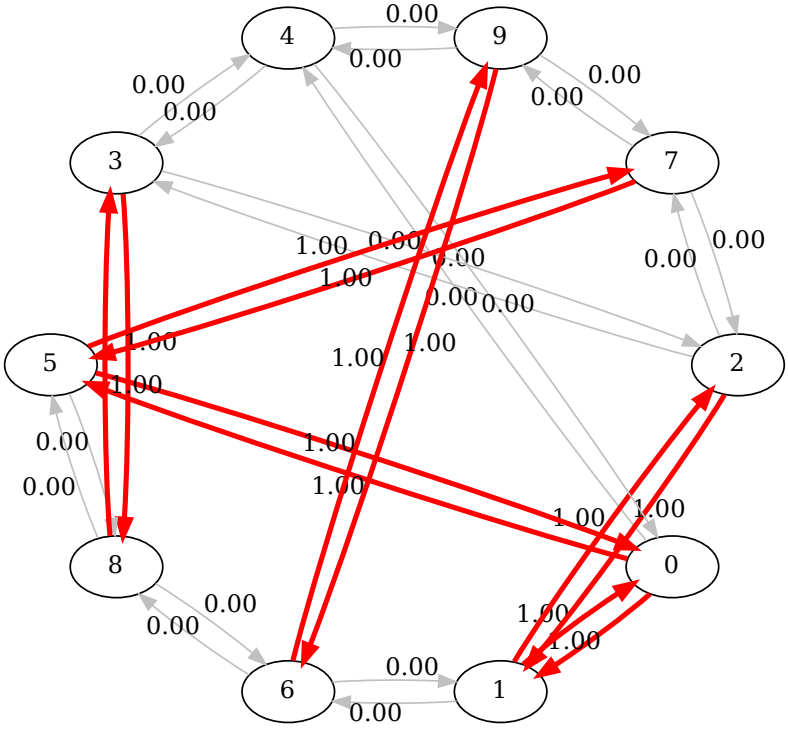
apx-ball



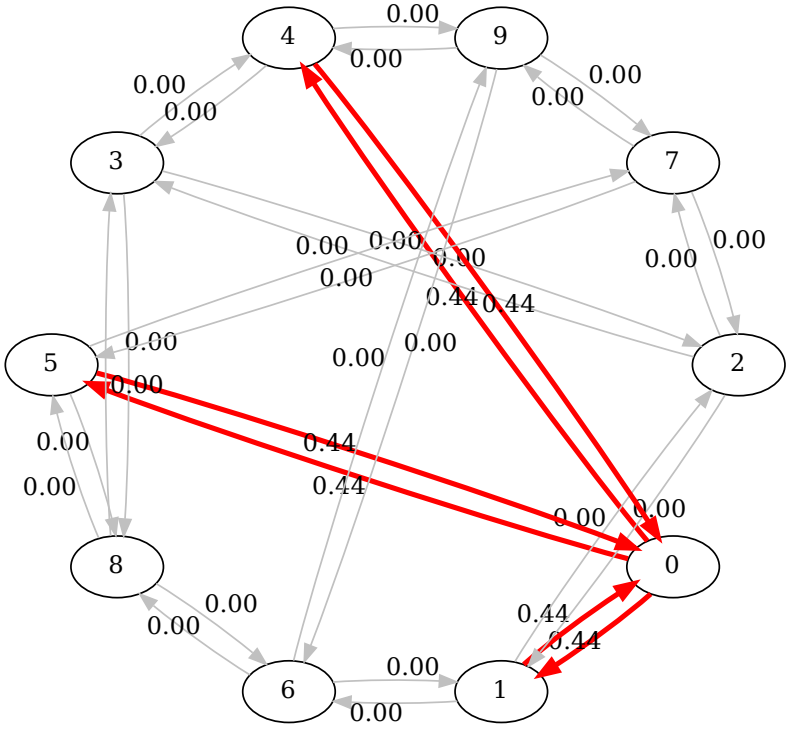
apx-naive

Petersen

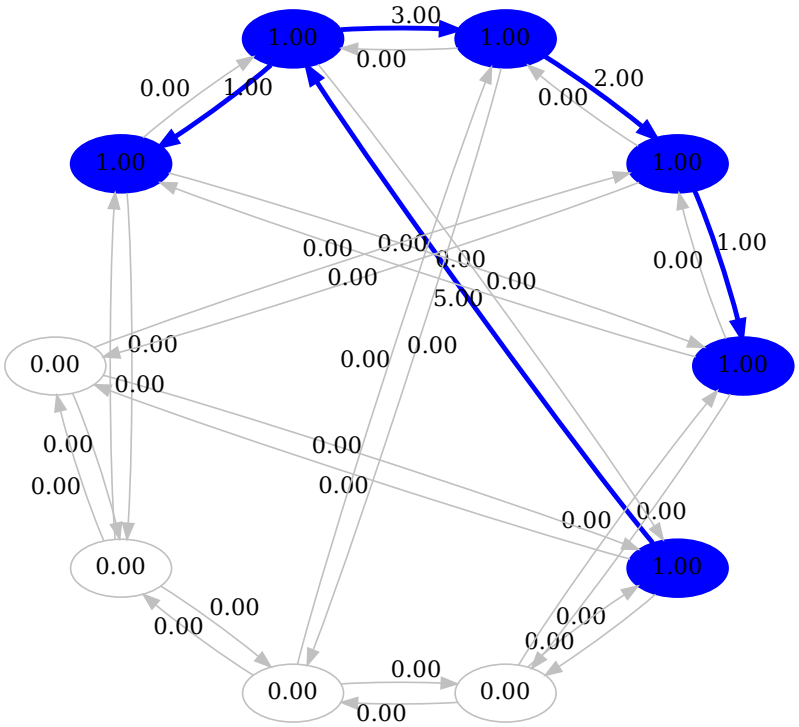
This input graph has a source vertex s = 0 and capacity k = 6. The value of mixed integer program is 12 and its linear relaxation 2.666666666666667. Running the augmentation results in value 5.714285714285713.



cut-ilp



cut-lp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2.00
0.00
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5.00
1.00
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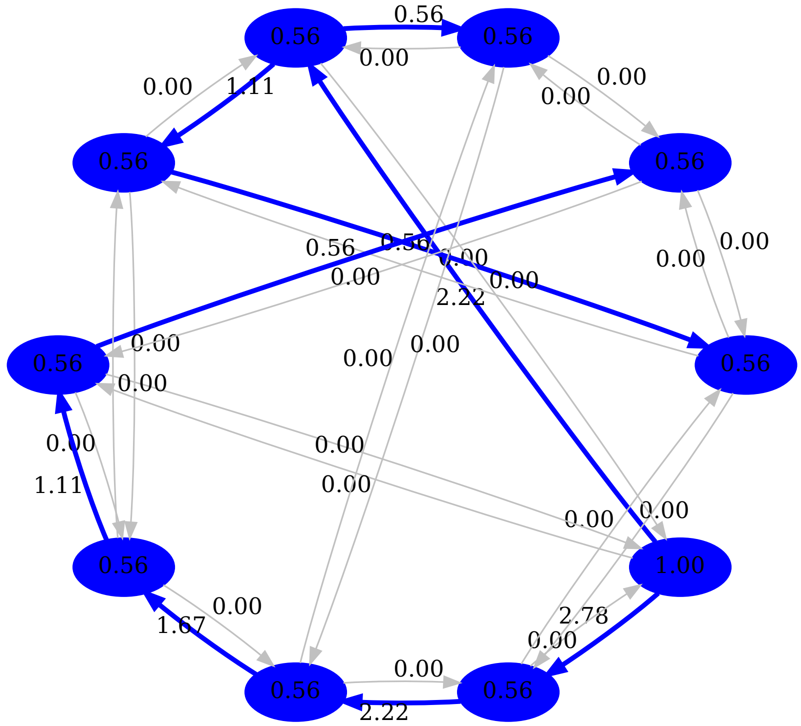
flow-ilp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2.22
0.00
0.00
0.00
0.00
0.00
0.00
1.11
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0.00
0.00
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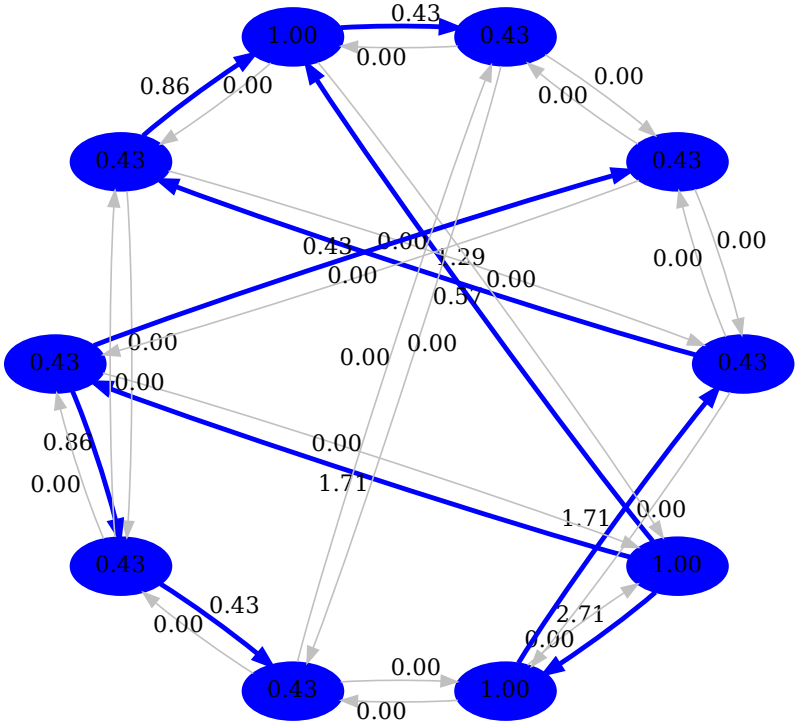
0.00
2.78
0.00
2.22

flow-lp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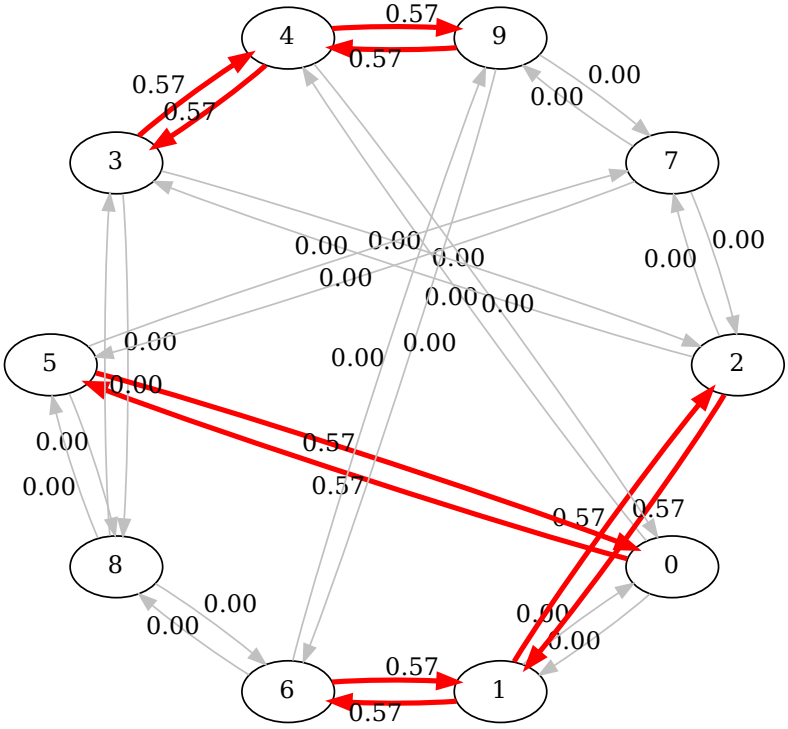
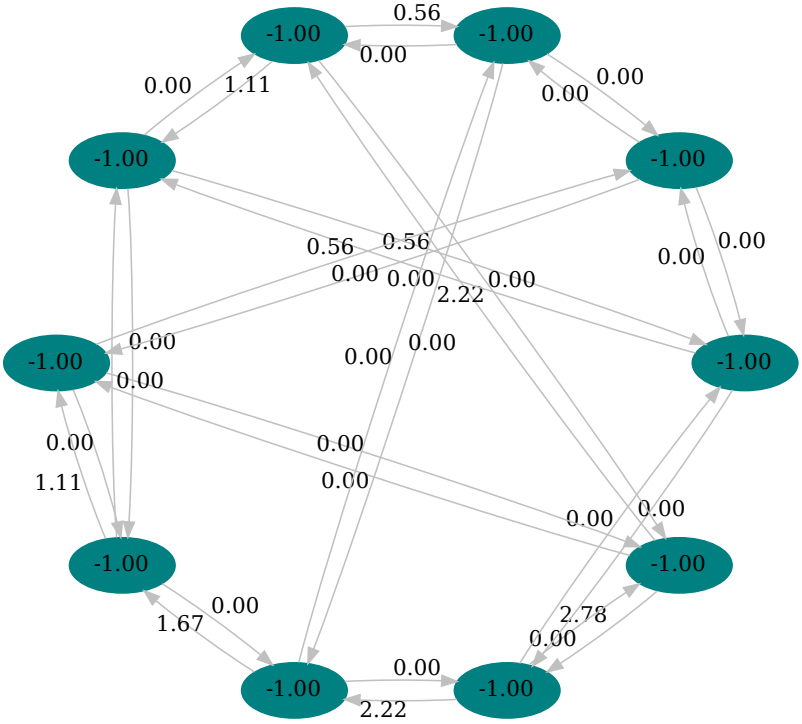
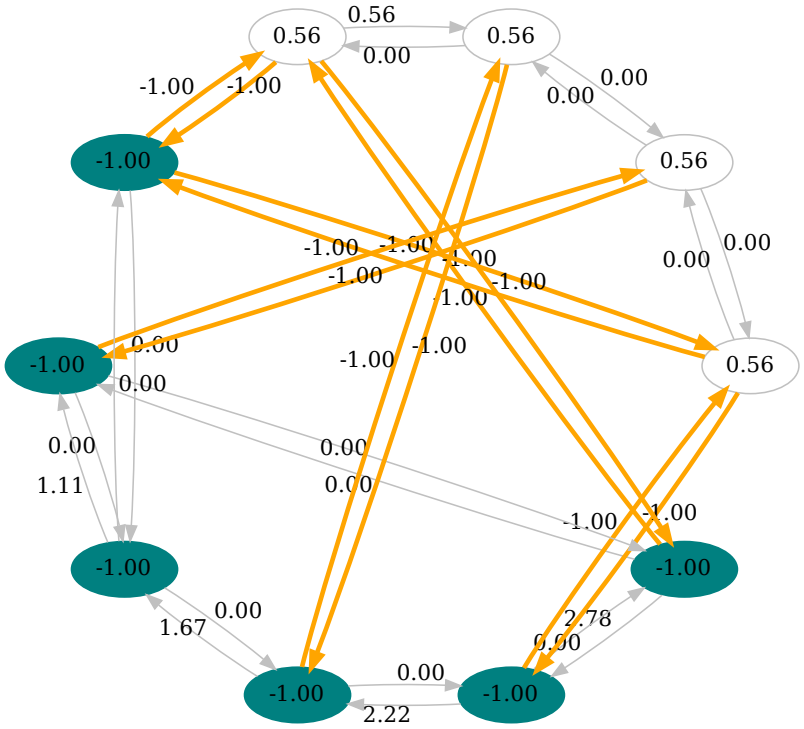
flow-aug



cut-aug


-1.00
-1.00
-1.00
-1.00
-1.00
-1.00
-1.00
-1.00
-1.00
0.56
0.00
0.00
1.11
0.00
0.00
0.56
0.56
0.00
0.00
0.00
2.22
0.00
0.00
0.00
0.00
0.00
0.00
0.00
0.00
1.11
0.00
0.00
0.00
0.00
0.00
0.00
1.67
0.00
2.78
0.00
0.00
2.22

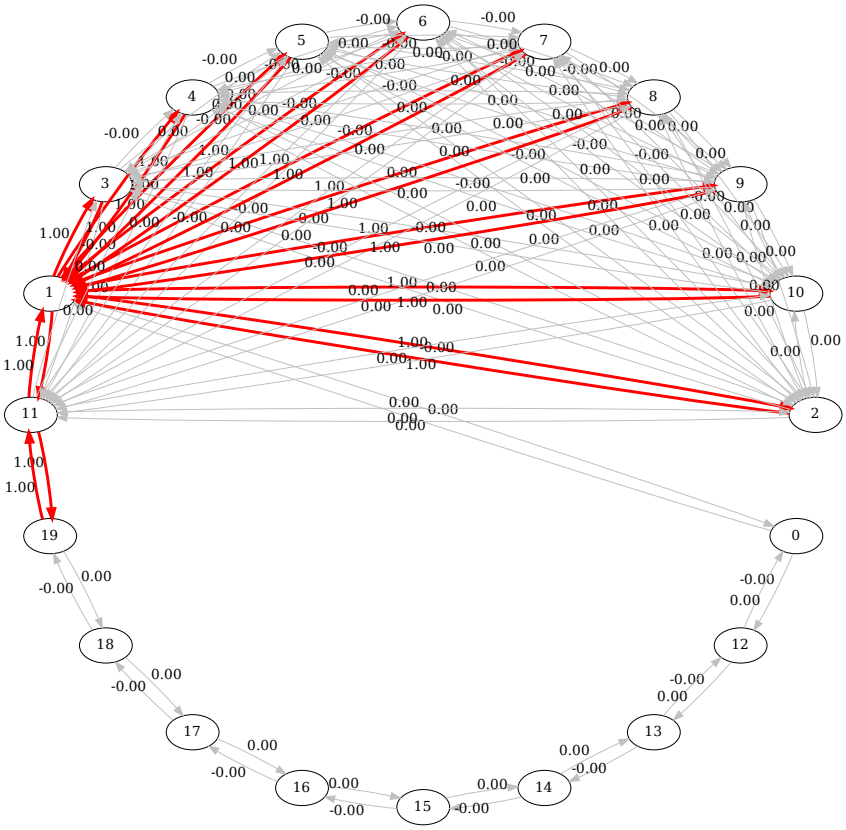
apx-ball



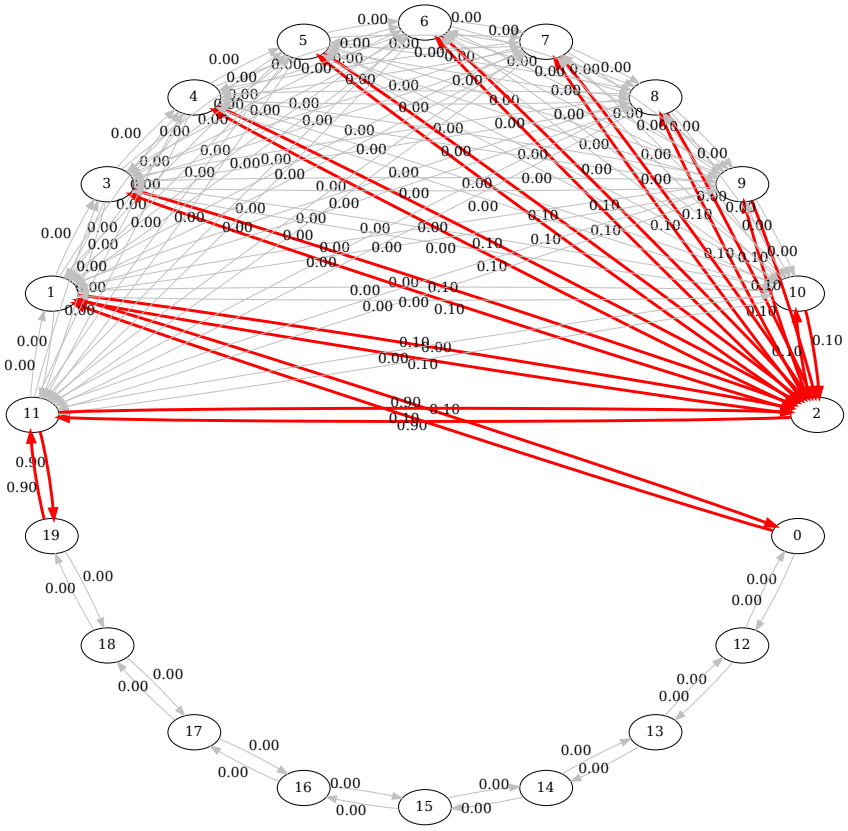
apx-naive

necklace

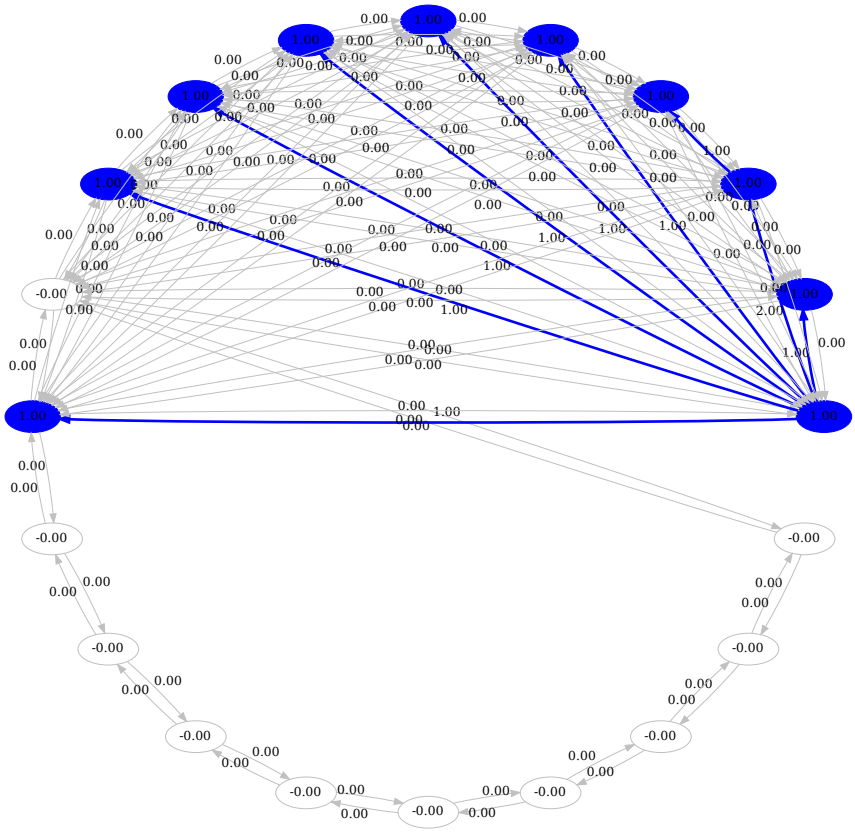
This input graph has a source vertex s = 2 and capacity k = 10. The value of mixed integer program is 22 and its linear relaxation 5.599999999999994. Running the augmentation results in value 7.777777777777764.



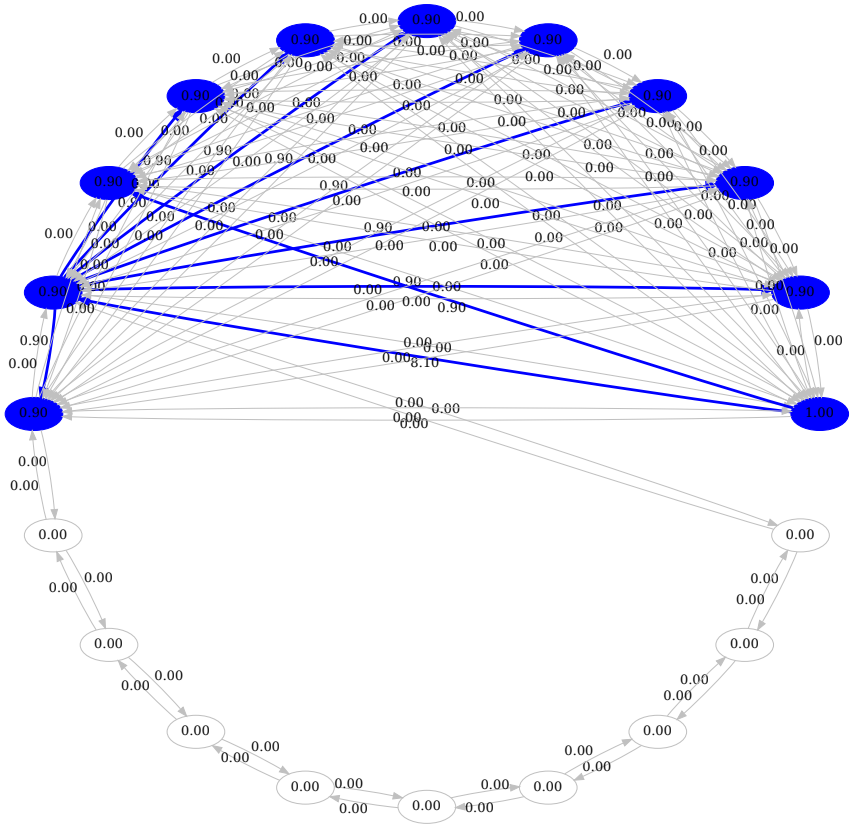
cut-ilp



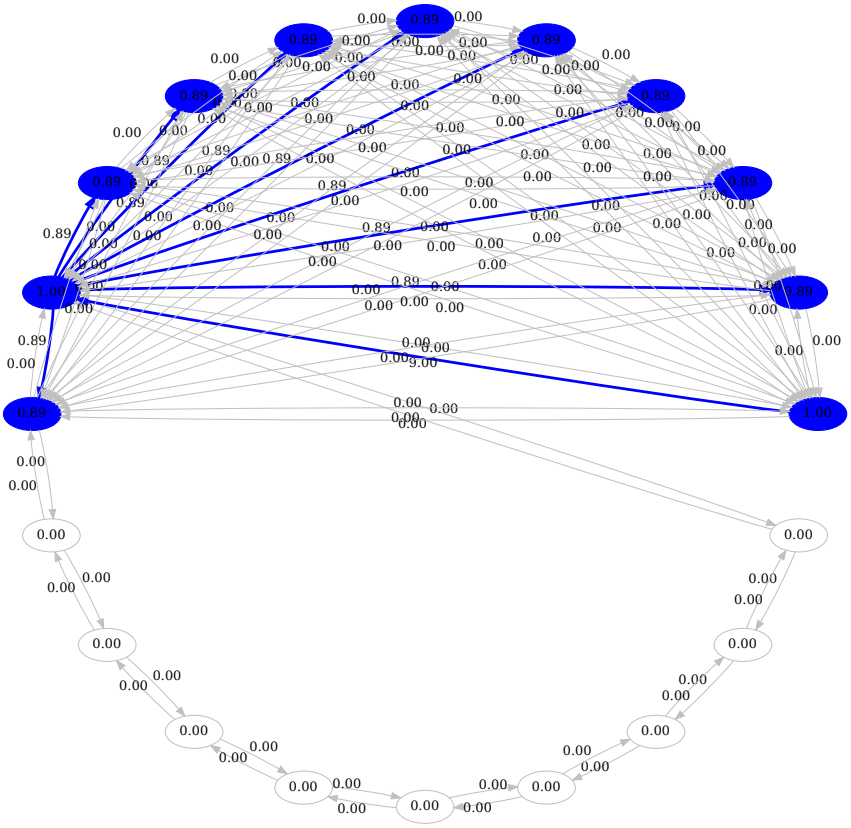
cut-lp



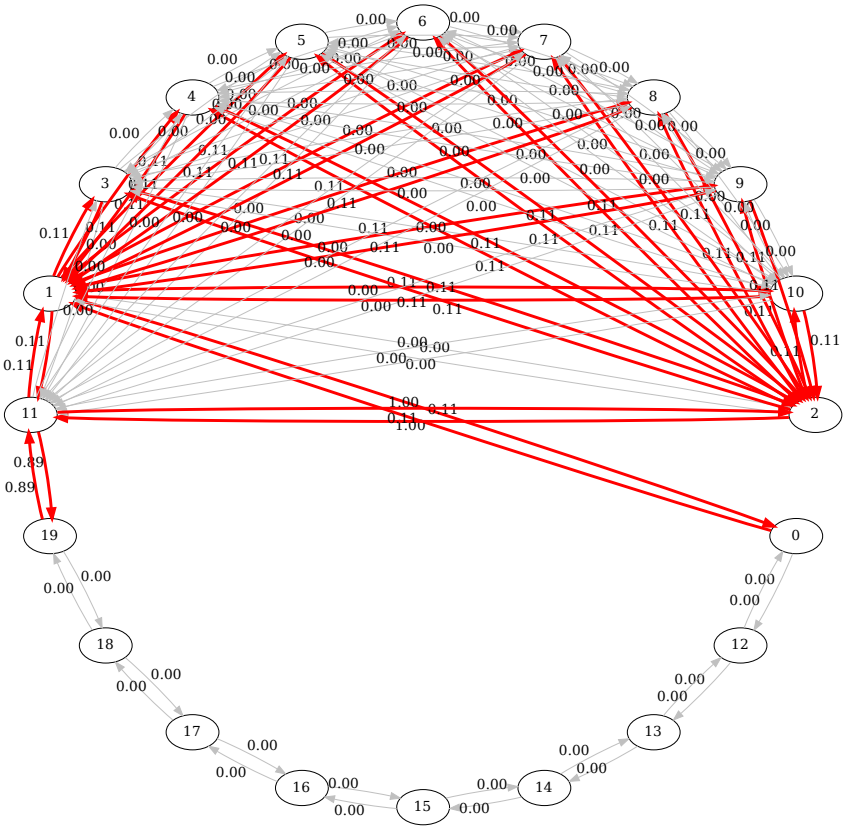
flow-ilp



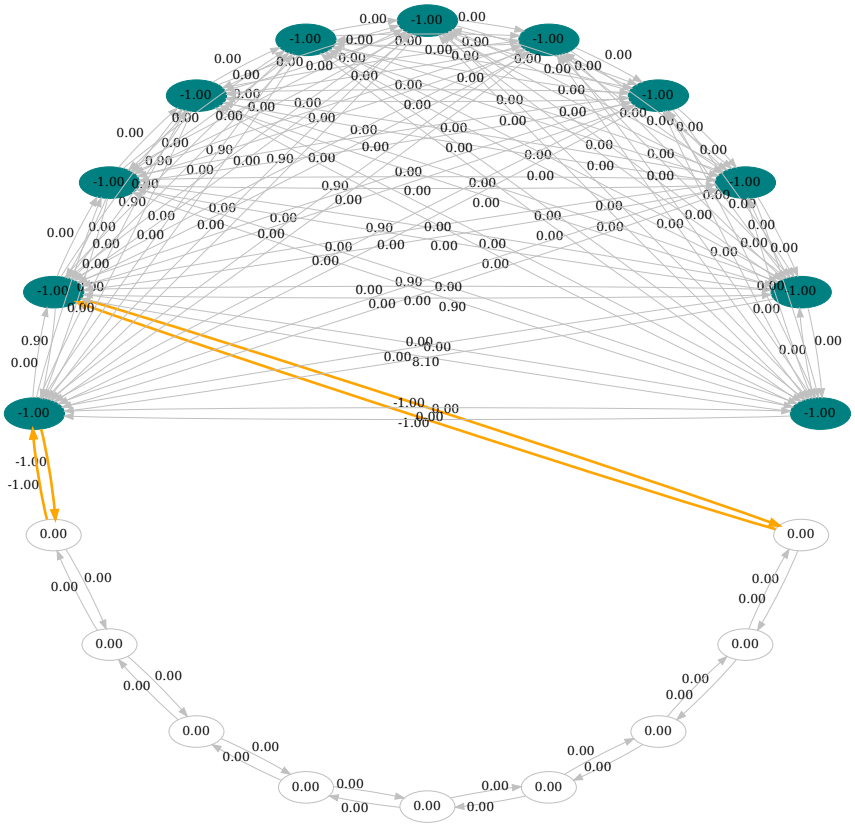
flow-lp



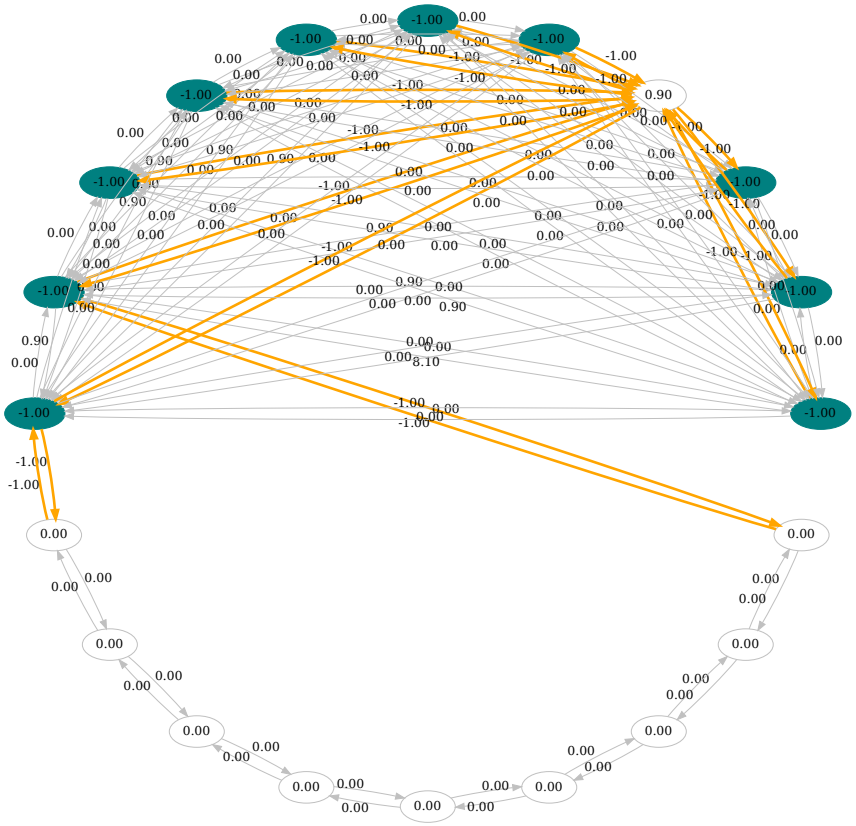
flow-aug



cut-aug



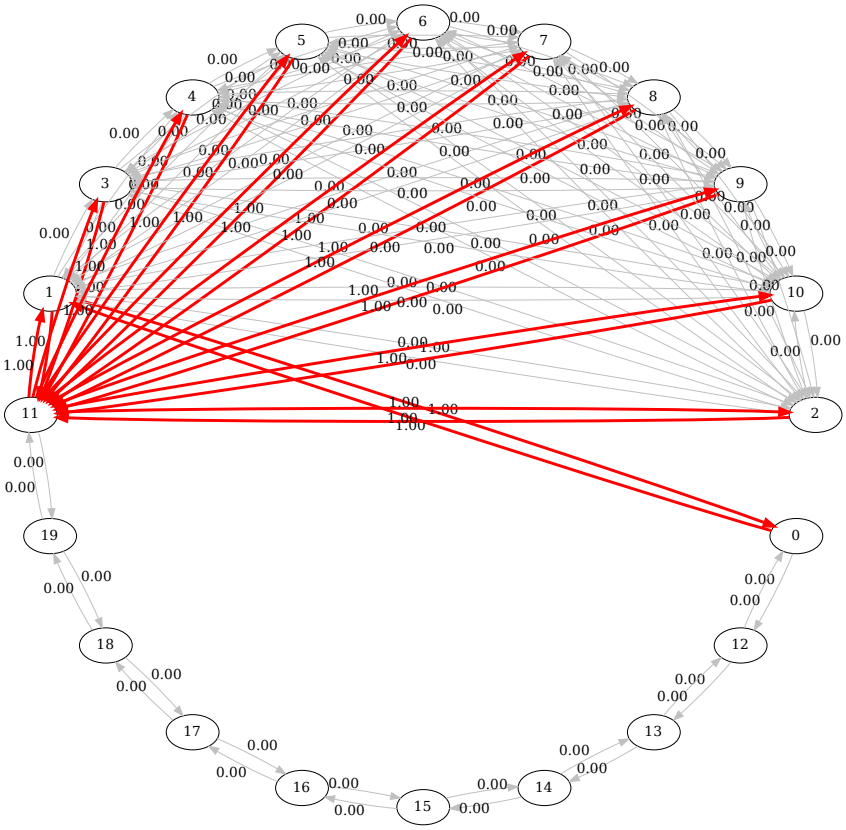
apx-ball



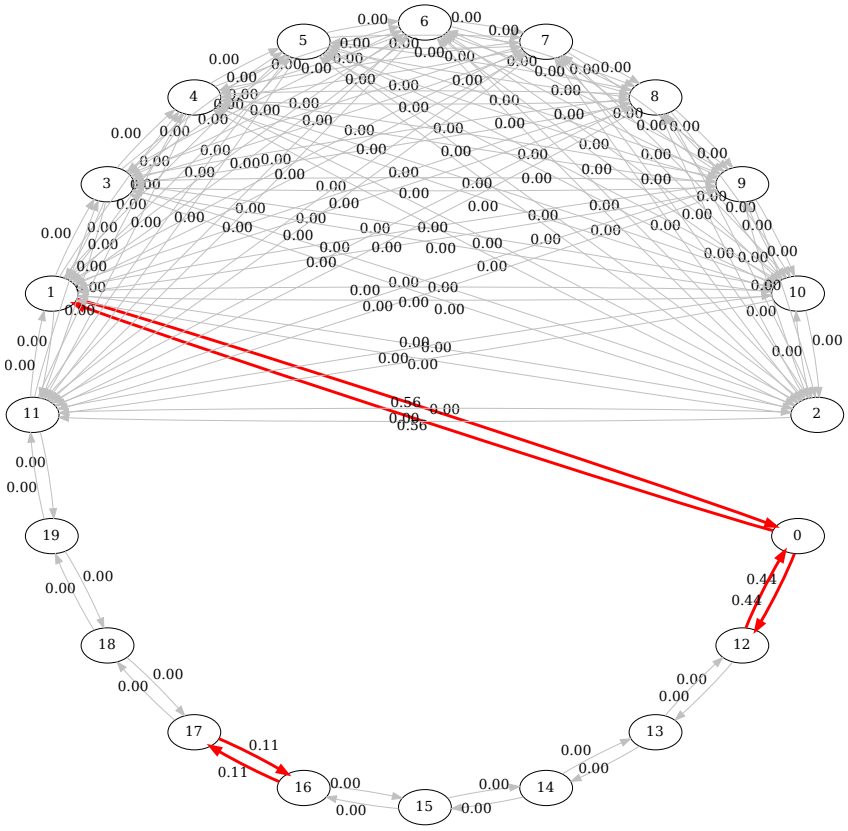
apx-naive

necklace-alt

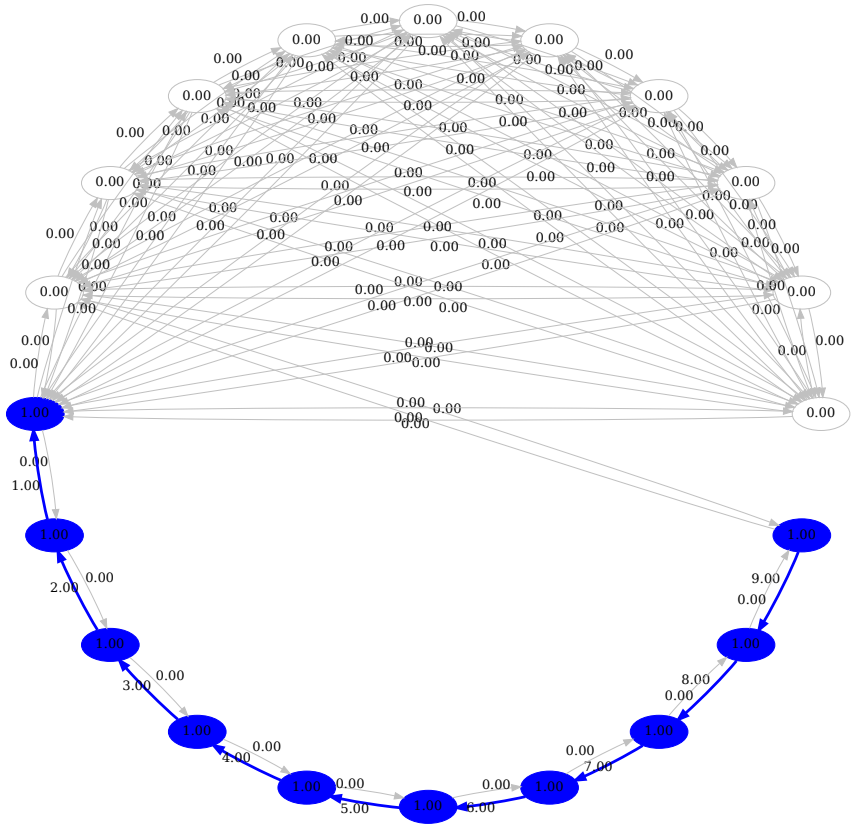
This input graph has a source vertex s = 0 and capacity k = 10. The value of mixed integer program is 22 and its linear relaxation 2.2222222222222214. Running the augmentation results in value 9.399999999999999.



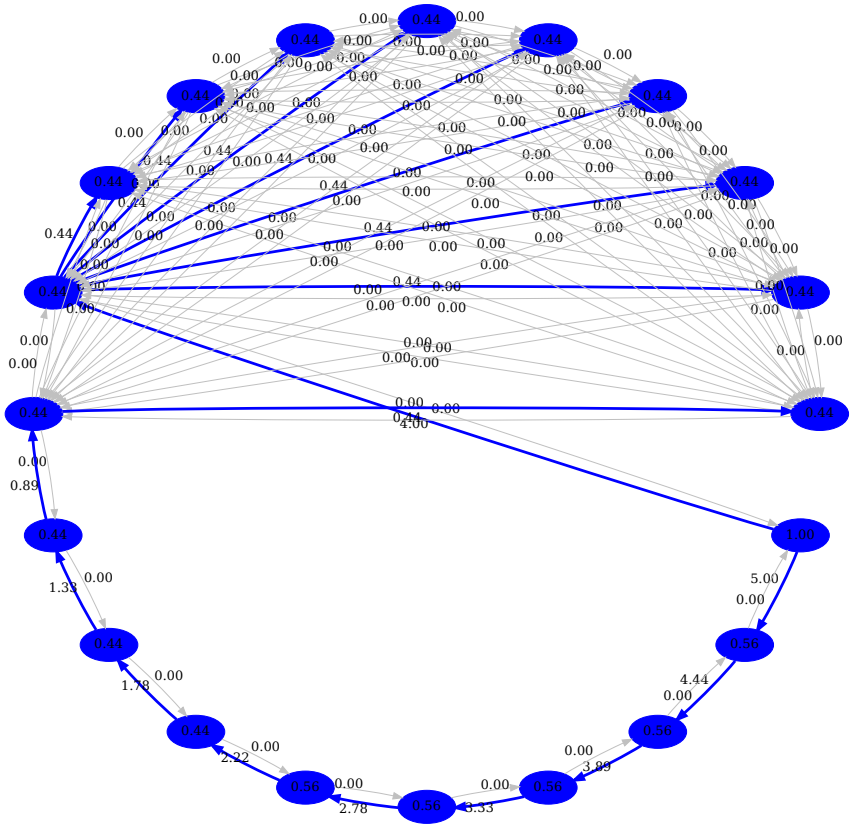
cut-ilp



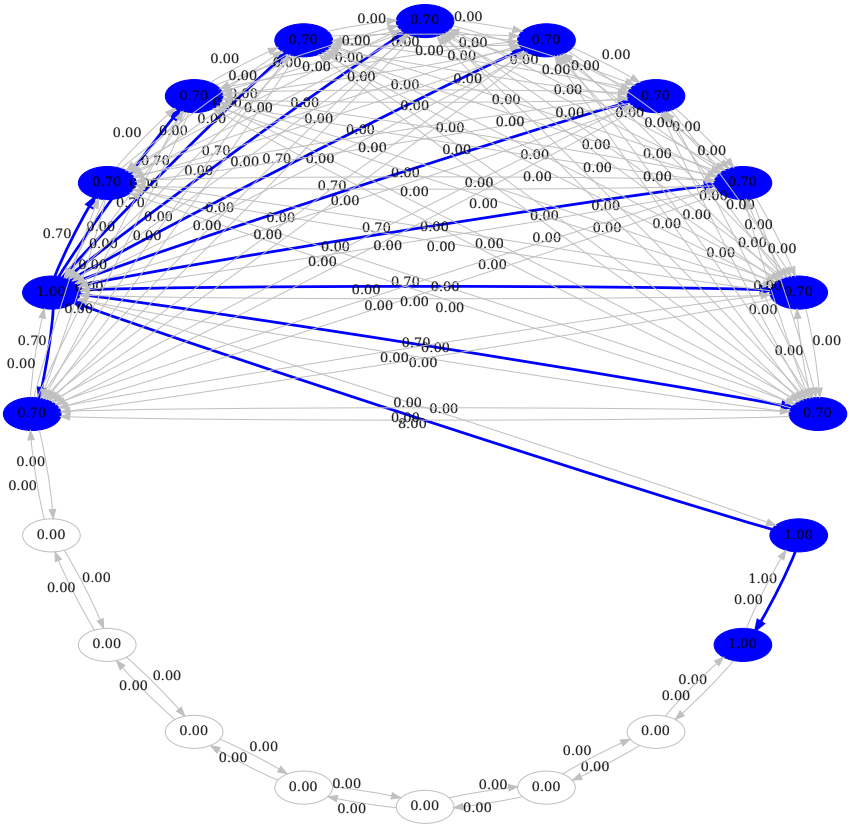
cut-lp



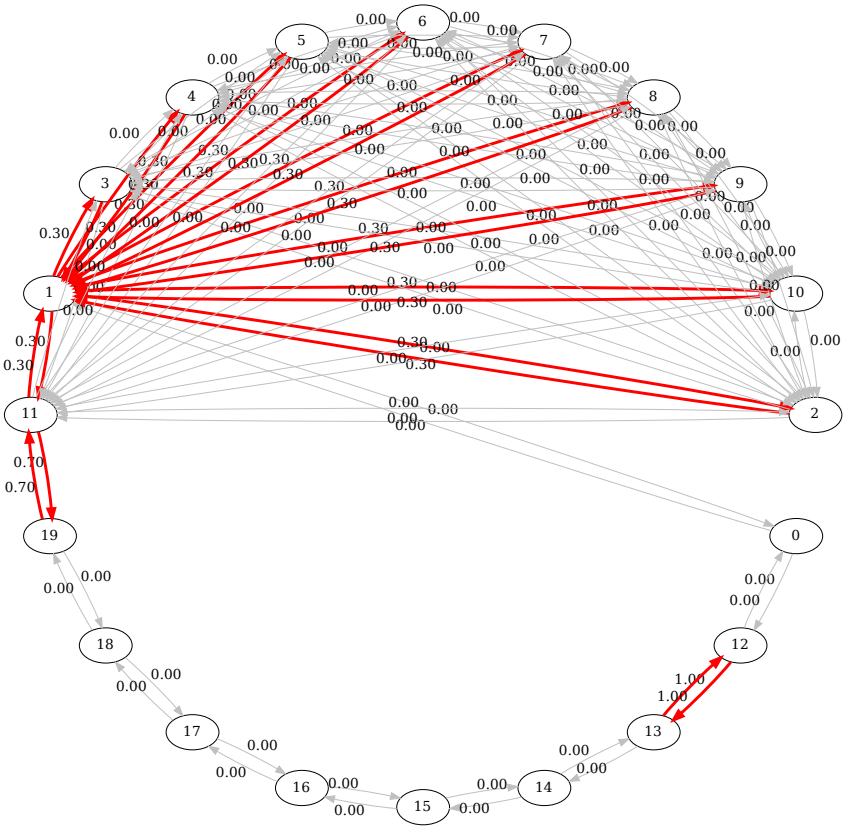
flow-ilp



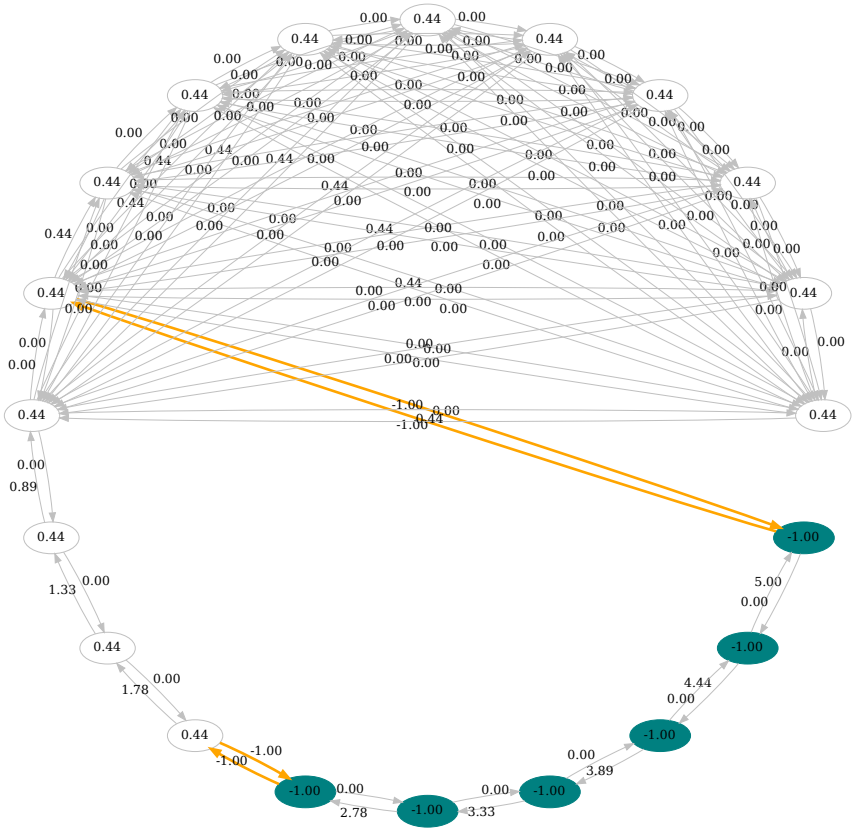
flow-lp



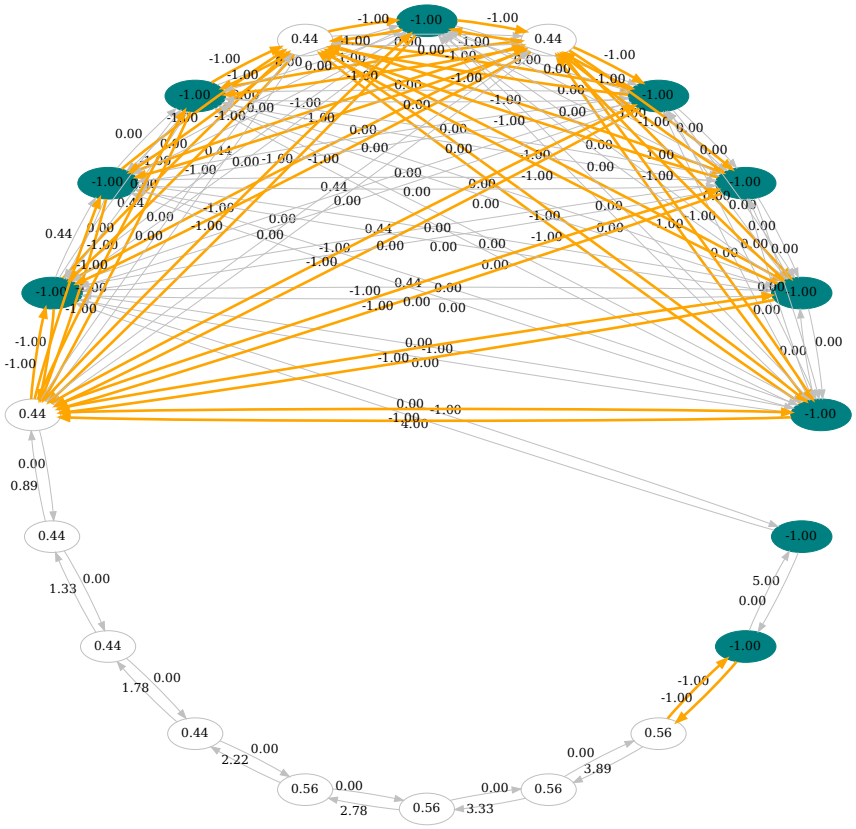
flow-aug



cut-aug



apx-ball



apx-naive