The University of Texas at Arlington
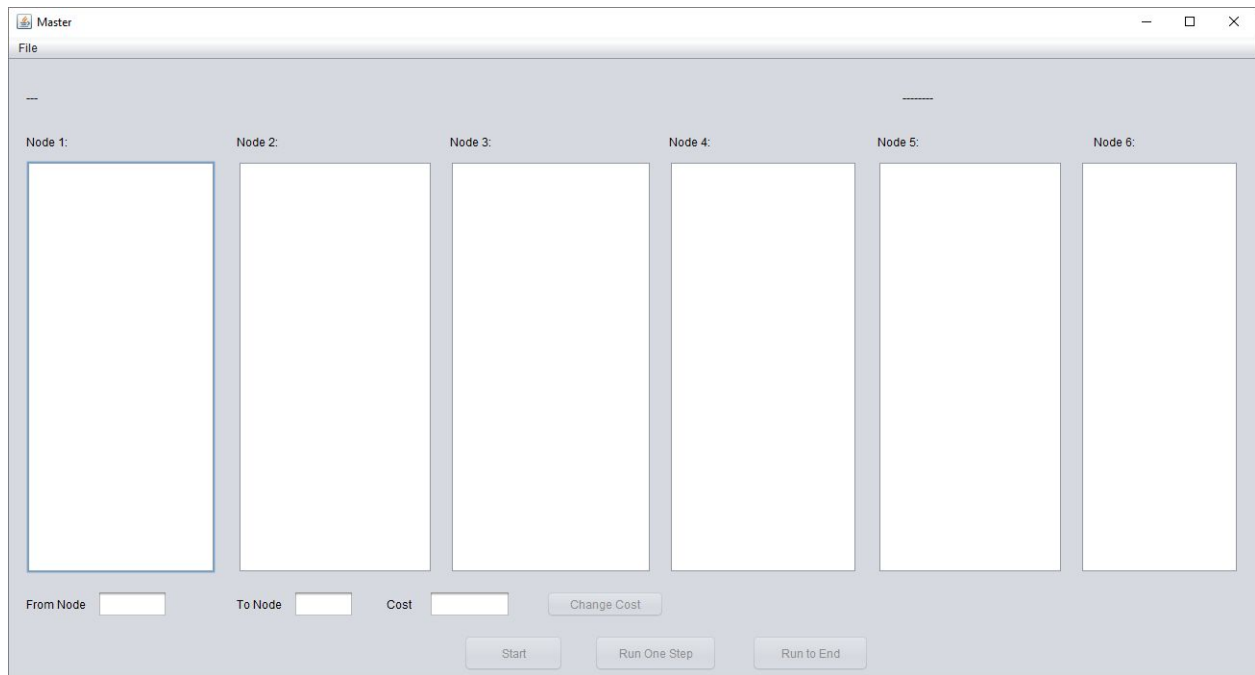
Lab 2: Distance Vector Routing

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Computer Networks, CSE 4344
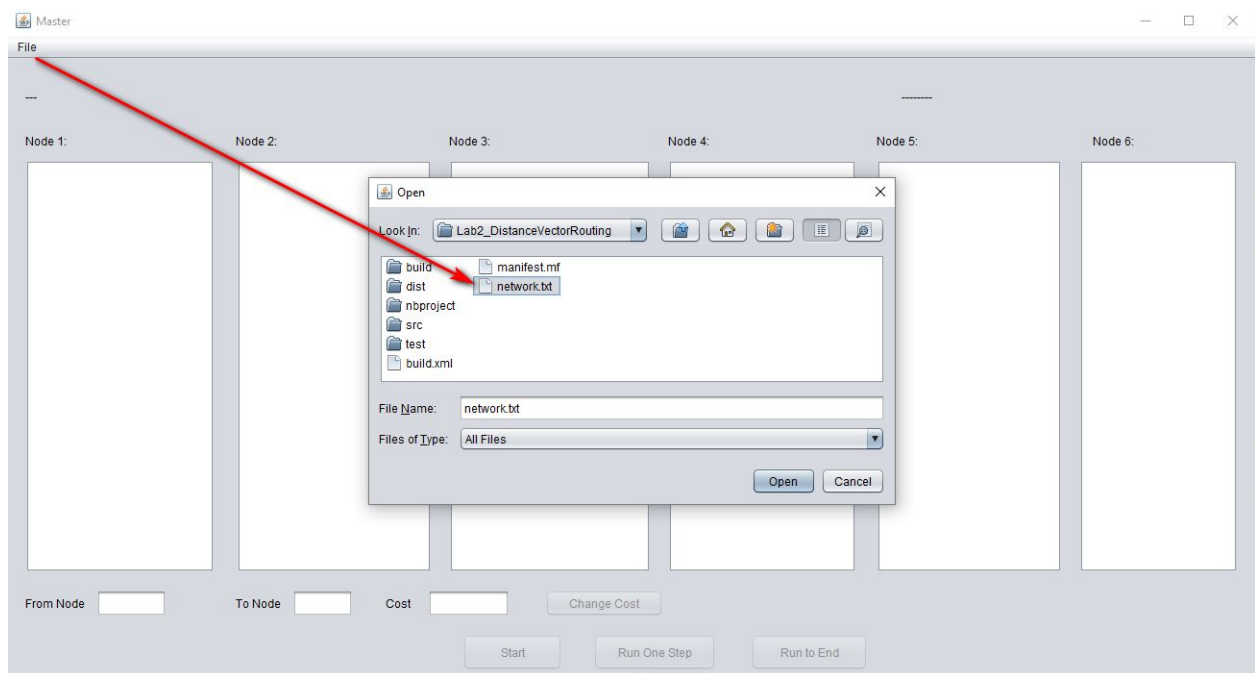
April 16th, 2019

Instructions on how to run:

Open application:

Choose file network.txt

Input file

Master — □ ✕
File
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Node 1:   Node 2:   Node 3:   Node 4:   Node 5:   Node 6:

From Node [ ]   To Node [ ]   Cost [ ]   Change Cost

Start   Run One Step   Run to End

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File
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Node 1:
```
   1   2   3   4   5
1  0   7   Inf Inf 1
2  Inf Inf Inf Inf Inf
3  Inf Inf Inf Inf Inf
4  Inf Inf Inf Inf Inf
5  Inf Inf Inf Inf Inf
```

Node 2:
```
   1   2   3   4   5
1  Inf Inf Inf Inf Inf
2  7   0   1   Inf 8
3  Inf Inf Inf Inf Inf
4  Inf Inf Inf Inf Inf
5  Inf Inf Inf Inf Inf
```

Node 3:
```
   1   2   3   4   5
1  Inf Inf Inf Inf Inf
2  Inf Inf Inf Inf Inf
3  Inf 1   0   2   Inf
4  Inf Inf Inf Inf Inf
5  Inf Inf Inf Inf Inf
```

Node 4:
```
   1   2   3   4   5
1  Inf Inf Inf Inf Inf
2  Inf Inf Inf Inf Inf
3  Inf Inf Inf Inf Inf
4  Inf Inf 2   0   2
5  Inf Inf Inf Inf Inf
```

Node 5:
```
   1   2   3   4   5
1  Inf Inf Inf Inf Inf
2  Inf Inf Inf Inf Inf
3  Inf Inf Inf Inf Inf
4  Inf Inf Inf Inf Inf
5  1   8   Inf 2   0
```

Node 6:

From Node [ ]   To Node [ ]   Cost [ ]   Change Cost

Start   Run One Step   Run to End

Click Run One Step

---   Step: 1

Node 1:

	1	2	3	4	5
1	0	7	8	3	1
2	7	0	1	Inf	8
3	Inf	Inf	0	Inf	Inf
4	Inf	Inf	Inf	0	Inf
5	1	8	Inf	2	0

Node 2:

	1	2	3	4	5
1	0	7	Inf	Inf	1
2	7	0	1	Inf	8
3	Inf	1	0	2	Inf
4	Inf	Inf	Inf	0	Inf
5	1	8	Inf	2	0

Node 3:

	1	2	3	4	5
1	0	Inf	Inf	Inf	Inf
2	7	0	1	Inf	8
3	8	1	0	2	4
4	Inf	Inf	2	0	2
5	Inf	Inf	Inf	Inf	0

Node 4:

	1	2	3	4	5
1	0	Inf	Inf	Inf	Inf
2	Inf	0	Inf	Inf	Inf
3	Inf	1	0	2	Inf
4	3	3	2	0	2
5	1	8	Inf	2	0

Node 5:

	1	2	3	4	5
1	0	7	Inf	Inf	1
2	7	0	1	Inf	8
3	Inf	Inf	0	Inf	Inf
4	Inf	Inf	2	0	2
5	1	8	4	2	0

Node 6:

From Node [____]   To Node [____]   Cost [____]   [Change Cost]

[Start]   [Run One Step]   [Run to End]

---   Step: 2

Node 1:

	1	2	3	4	5
1	0	7	5	3	1
2	7	0	1	3	8
3	Inf	1	0	2	Inf
4	Inf	Inf	2	0	2
5	1	8	4	2	0

Node 2:

	1	2	3	4	5
1	0	7	8	3	1
2	7	0	1	3	5
3	8	1	0	2	4
4	Inf	Inf	2	0	2
5	1	8	4	2	0

Node 3:

	1	2	3	4	5
1	0	7	Inf	Inf	1
2	7	0	1	3	8
3	5	1	0	2	4
4	3	3	2	0	2
5	1	8	Inf	2	0

Node 4:

	1	2	3	4	5
1	0	7	Inf	Inf	1
2	7	0	1	3	8
3	8	1	0	2	4
4	3	3	2	0	2
5	1	8	4	2	0

Node 5:

	1	2	3	4	5
1	0	7	8	3	1
2	7	0	1	3	8
3	Inf	1	0	2	Inf
4	3	3	2	0	2
5	1	5	4	2	0

Node 6:

From Node [____]   To Node [____]   Cost [____]   [Change Cost]

[Start]   [Run One Step]   [Run to End]

Change the distance between node 3 and node 4 and cost

---   Step: 3

Node 1:   Node 2:   Node 3:   Node 4:   Node 5:   Node 6:

Node 1:
```
   1  2  3  4  5
1  0  6  5  3  1
2  7  0  1  3  5
3  8  1  0  2  4
4  3  3  2  0  2
5  1  5  4  2  0
```

Node 2:
```
   1  2  3  4  5
1  0  7  5  3  1
2  6  0  1  3  5
3  5  1  0  2  4
4  3  3  2  0  2
5  1  5  4  2  0
```

Node 3:
```
   1  2  3  4  5
1  0  7  8  3  1
2  7  0  1  3  5
3  5  1  0  2  4
4  3  3  2  0  2
5  1  8  4  2  0
```

Node 4:
```
   1  2  3  4  5
1  0  7  8  3  1
2  7  0  1  3  8
3  5  1  0  2  4
4  3  3  2  0  2
5  1  5  4  2  0
```

Node 5:
```
   1  2  3  4  5
1  0  7  5  3  1
2  7  0  1  3  5
3  8  1  0  2  4
4  3  3  2  0  2
5  1  5  4  2  0
```

From Node 3   To Node 4   Cost 16   Change Cost

Start   Run One Step   Run to End

Close the application. Run application again and click Run to End

The system has been in stable state   Step: 6

Node 1:   Node 2:   Node 3:   Node 4:   Node 5:   Node 6:

Node 1:
```
   1  2  3  4  5
1  0  6  5  3  1
2  6  0  1  3  5
3  5  1  0  2  4
4  3  3  2  0  2
5  1  5  4  2  0
```

Node 2:
```
   1  2  3  4  5
1  0  6  5  3  1
2  6  0  1  3  5
3  5  1  0  2  4
4  3  3  2  0  2
5  1  5  4  2  0
```

Node 3:
```
   1  2  3  4  5
1  0  6  5  3  1
2  6  0  1  3  5
3  5  1  0  2  4
4  3  3  2  0  2
5  1  5  4  2  0
```

Node 4:
```
   1  2  3  4  5
1  0  6  5  3  1
2  6  0  1  3  5
3  5  1  0  2  4
4  3  3  2  0  2
5  1  5  4  2  0
```

Node 5:
```
   1  2  3  4  5
1  0  6  5  3  1
2  6  0  1  3  5
3  5  1  0  2  4
4  3  3  2  0  2
5  1  5  4  2  0
```

From Node 3   To Node 4   Cost 16   Change Cost

Start   Run One Step   Run to End

Master — □ ×

File

The system has been in stable state

Step: 6
Elapsed time (ms): 125

Node 1:

```
     1   2   3   4   5
1    0   6   5   3   1
2    6   0   1   3   5
3    5   1   0   2   4
4    3   3   2   0   2
5    1   5   4   2   0
```

Node 2:

```
     1   2   3   4   5
1    0   6   5   3   1
2    6   0   1   3   5
3    5   1   0   2   4
4    3   3   2   0   2
5    1   5   4   2   0
```

Node 3:

```
     1   2   3   4   5
1    0   6   5   3   1
2    6   0   1   3   5
3    5   1   0   2   4
4    3   3   2   0   2
5    1   5   4   2   0
```

Node 4:

```
     1   2   3   4   5
1    0   6   5   3   1
2    6   0   1   3   5
3    5   1   0   2   4
4    3   3   2   0   2
5    1   5   4   2   0
```

Node 5:

```
     1   2   3   4   5
1    0   6   5   3   1
2    6   0   1   3   5
3    5   1   0   2   4
4    3   3   2   0   2
5    1   5   4   2   0
```

Node 6:

From Node [   ]   To Node [   ]   Cost [   ]   [Change Cost]

[Start]   [Run One Step]   [Run to End]

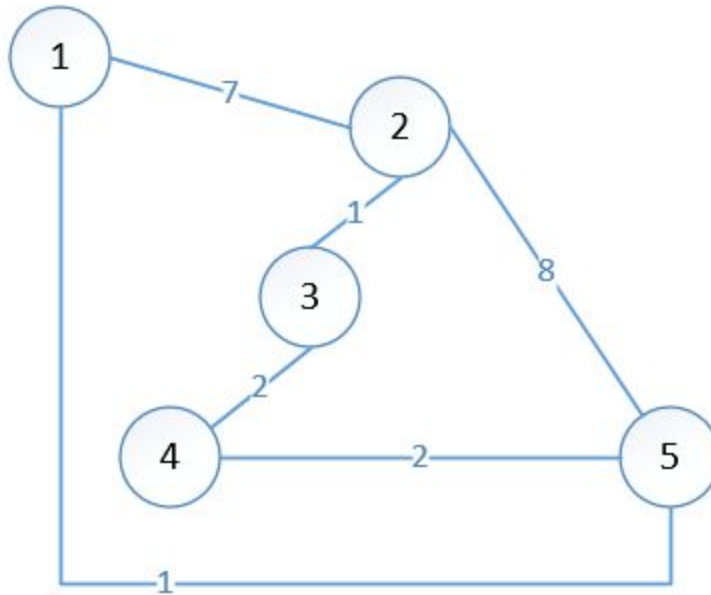Sample file to test:

Input file

1 2 7

2 3 1

1 5 1

4 5 2

2 5 8

4 3 2

Network

Observations:

When the program runs and performs distance vector, the algorithm runs and takes about 125ms to complete and reach stable state, with the input file provided. The process takes a longer time as a router is connected to another router, as the algorithms fixes issues.