

PART 1

Output is given below:

Network Simulator v1.0

Enter trace level (≥ 0): [0] 2

Will the link change (1 = Yes, 0 = No): [0] 0

Enter random seed: [random] 12

```
      via
D0 |  1  2  3
----+-----
1 | 999 999 999
2 | 999 999 999
3 | 999 999 999
```

```
      via
D1 |  0  2
----+-----
0 | 999 999
2 | 999 999
3 | 999 999
```

```
      via
D2 |  0  1  3
----+-----
0 | 999 999 999
1 | 999 999 999
3 | 999 999 999
```

```
      via
D3 |  0  2
----+-----
0 | 999 999
1 | 999 999
2 | 999 999
```

main(): event received. t=1.3606549112193527, node=2

src=1, dest=2, contents=[1, 0, 1, 999]

Distance vector received from node 1 to node 2

Current Distance vector of node 2 is [3, 1, 0, 2]

Node 2 says: my distance vector got updated so sending it to my neighbours

Updated Distance vector of node 2 is [2, 1, 0, 2]

via

```

D2 | 0 1 3
----+-----
0| 999 2 999
1| 999 1 999
3| 999 999 999

```

main(): event received. t=3.4756224896806738, node=2
 src=0, dest=2, contents=[0, 1, 3, 7]
 Distance vector received from node 0 to node 2
 Current Distance vector of node 2 is [2, 1, 0, 2]
 Node 2 says: my distance vector did not update

```

      via
D2 | 0 1 3
----+-----
0| 3 2 999
1| 4 1 999
3| 10 999 999

```

main(): event received. t=3.946389996169358, node=1
 src=2, dest=1, contents=[3, 1, 0, 2]
 Distance vector received from node 2 to node 1
 Current Distance vector of node 1 is [1, 0, 1, 999]
 Node 1 says: my distance vector got updated so sending it to my neighbours
 Updated Distance vector of node 1 is [1, 0, 1, 3]

```

      via
D1 | 0 2
----+-----
0| 999 4
2| 999 1
3| 999 3

```

main(): event received. t=4.6720345388452476, node=0
 src=2, dest=0, contents=[3, 1, 0, 2]
 Distance vector received from node 2 to node 0
 Current Distance vector of node 0 is [0, 1, 3, 7]
 Node 0 says: my distance vector got updated so sending it to my neighbours
 Updated Distance vector of node 0 is [0, 1, 3, 5]

```

      via
D0 | 1 2 3
----+-----
1| 999 4 999

```

```
2| 999 3 999
3| 999 5 999
```

main(): event received. t=5.006150313327873, node=3

src=2, dest=3, contents=[3, 1, 0, 2]

Distance vector received from node 2 to node 3

Current Distance vector of node 3 is [7, 999, 2, 0]

Node 3 says: my distance vector got updated so sending it to my neighbours

Updated Distance vector of node 3 is [5, 3, 2, 0]

via

```
D3 | 0 2
```

```
----+-----
```

```
0| 999 5
```

```
1| 999 3
```

```
2| 999 2
```

main(): event received. t=5.328878422340977, node=3

src=0, dest=3, contents=[0, 1, 3, 7]

Distance vector received from node 0 to node 3

Current Distance vector of node 3 is [5, 3, 2, 0]

Node 3 says: my distance vector did not update

via

```
D3 | 0 2
```

```
----+-----
```

```
0| 7 5
```

```
1| 8 3
```

```
2| 10 2
```

main(): event received. t=6.368051279689492, node=3

src=0, dest=3, contents=[0, 1, 3, 5]

Distance vector received from node 0 to node 3

Current Distance vector of node 3 is [5, 3, 2, 0]

Node 3 says: my distance vector did not update

via

```
D3 | 0 2
```

```
----+-----
```

```
0| 7 5
```

```
1| 8 3
```

```
2| 10 2
```

main(): event received. t=7.257981435918057, node=0

src=3, dest=0, contents=[7, 999, 2, 0]

Distance vector received from node 3 to node 0

Current Distance vector of node 0 is [0, 1, 3, 5]

Node 0 says: my distance vector did not update

```
      via
D0 |  1  2  3
----+-----
1 | 999  4 999
2 | 999  3   9
3 | 999  5   7
```

main(): event received. t=7.5690352549917765, node=1

src=0, dest=1, contents=[0, 1, 3, 7]

Distance vector received from node 0 to node 1

Current Distance vector of node 1 is [1, 0, 1, 3]

Node 1 says: my distance vector did not update

```
      via
D1 |  0  2
----+-----
0 |  1  4
2 |  4  1
3 |  8  3
```

main(): event received. t=8.343599943379651, node=2

src=1, dest=2, contents=[1, 0, 1, 3]

Distance vector received from node 1 to node 2

Current Distance vector of node 2 is [2, 1, 0, 2]

Node 2 says: my distance vector did not update

```
      via
D2 |  0  1  3
----+-----
0 |  3  2 999
1 |  4  1 999
3 | 10  4 999
```

main(): event received. t=8.434977367651507, node=0

src=3, dest=0, contents=[5, 3, 2, 0]

Distance vector received from node 3 to node 0

Current Distance vector of node 0 is [0, 1, 3, 5]

Node 0 says: my distance vector did not update

```
      via
D0 |  1  2  3
----+-----
```

```

1| 999  4 10
2| 999  3  9
3| 999  5  7

```

main(): event received. t=9.021202775593597, node=2
 src=3, dest=2, contents=[7, 999, 2, 0]
 Distance vector received from node 3 to node 2
 Current Distance vector of node 2 is [2, 1, 0, 2]
 Node 2 says: my distance vector did not update

```

      via
D2 |  0  1  3
----+-----
0|  3  2  9
1|  4  1 999
3| 10  4  2

```

main(): event received. t=9.4401773299874, node=0
 src=1, dest=0, contents=[1, 0, 1, 999]
 Distance vector received from node 1 to node 0
 Current Distance vector of node 0 is [0, 1, 3, 5]
 Node 0 says: my distance vector got updated so sending it to my neighbours
 Updated Distance vector of node 0 is [0, 1, 2, 5]

```

      via
D0 |  1  2  3
----+-----
1|  1  4 10
2|  2  3  9
3| 999  5  7

```

main(): event received. t=11.260656363532652, node=2
 src=3, dest=2, contents=[5, 3, 2, 0]
 Distance vector received from node 3 to node 2
 Current Distance vector of node 2 is [2, 1, 0, 2]
 Node 2 says: my distance vector did not update

```

      via
D2 |  0  1  3
----+-----
0|  3  2  7
1|  4  1  5
3| 10  4  2

```

main(): event received. t=11.717520554705878, node=1
src=2, dest=1, contents=[2, 1, 0, 2]
Distance vector received from node 2 to node 1
Current Distance vector of node 1 is [1, 0, 1, 3]
Node 1 says: my distance vector did not update

via
D1 | 0 2
----+-----
0| 1 3
2| 4 1
3| 8 3

main(): event received. t=12.34641951617595, node=0
src=2, dest=0, contents=[2, 1, 0, 2]
Distance vector received from node 2 to node 0
Current Distance vector of node 0 is [0, 1, 2, 5]
Node 0 says: my distance vector did not update

via
D0 | 1 2 3
----+-----
1| 1 4 10
2| 2 3 9
3| 999 5 7

main(): event received. t=12.595869272998868, node=2
src=0, dest=2, contents=[0, 1, 3, 5]
Distance vector received from node 0 to node 2
Current Distance vector of node 2 is [2, 1, 0, 2]
Node 2 says: my distance vector did not update

via
D2 | 0 1 3
----+-----
0| 3 2 7
1| 4 1 5
3| 8 4 2

main(): event received. t=14.250746467421244, node=3
src=2, dest=3, contents=[2, 1, 0, 2]
Distance vector received from node 2 to node 3
Current Distance vector of node 3 is [5, 3, 2, 0]
Node 3 says: my distance vector got updated so sending it to my neighbours

Updated Distance vector of node 3 is [4, 3, 2, 0]

via
D3 | 0 2
----+-----
0| 7 4
1| 8 3
2| 10 2

main(): event received. t=14.302712035307962, node=1

src=0, dest=1, contents=[0, 1, 3, 5]

Distance vector received from node 0 to node 1

Current Distance vector of node 1 is [1, 0, 1, 3]

Node 1 says: my distance vector did not update

via
D1 | 0 2
----+-----
0| 1 3
2| 4 1
3| 6 3

main(): event received. t=16.32441780905942, node=2

src=0, dest=2, contents=[0, 1, 2, 5]

Distance vector received from node 0 to node 2

Current Distance vector of node 2 is [2, 1, 0, 2]

Node 2 says: my distance vector did not update

via
D2 | 0 1 3
----+-----
0| 3 2 7
1| 4 1 5
3| 8 4 2

main(): event received. t=17.167290086692674, node=0

src=3, dest=0, contents=[4, 3, 2, 0]

Distance vector received from node 3 to node 0

Current Distance vector of node 0 is [0, 1, 2, 5]

Node 0 says: my distance vector did not update

via
D0 | 1 2 3
----+-----
1| 1 4 10

```

2| 2 3 9
3| 999 5 7

```

main(): event received. t=17.839833748321677, node=0

src=1, dest=0, contents=[1, 0, 1, 3]

Distance vector received from node 1 to node 0

Current Distance vector of node 0 is [0, 1, 2, 5]

Node 0 says: my distance vector got updated so sending it to my neighbours

Updated Distance vector of node 0 is [0, 1, 2, 4]

```

      via
D0 | 1 2 3
-----+-----
1| 1 4 10
2| 2 3 9
3| 4 5 7

```

main(): event received. t=18.104997746703347, node=3

src=0, dest=3, contents=[0, 1, 2, 5]

Distance vector received from node 0 to node 3

Current Distance vector of node 3 is [4, 3, 2, 0]

Node 3 says: my distance vector did not update

```

      via
D3 | 0 2
-----+-----
0| 7 4
1| 8 3
2| 9 2

```

main(): event received. t=19.27553871716582, node=1

src=0, dest=1, contents=[0, 1, 2, 5]

Distance vector received from node 0 to node 1

Current Distance vector of node 1 is [1, 0, 1, 3]

Node 1 says: my distance vector did not update

```

      via
D1 | 0 2
-----+-----
0| 1 3
2| 3 1
3| 6 3

```

main(): event received. t=23.688659302202915, node=2

src=3, dest=2, contents=[4, 3, 2, 0]

Distance vector received from node 3 to node 2
Current Distance vector of node 2 is [2, 1, 0, 2]
Node 2 says: my distance vector did not update

via
D2 | 0 1 3
-----+-----
0 | 3 2 6
1 | 4 1 5
3 | 8 4 2

main(): event received. t=24.563846546272835, node=1
src=0, dest=1, contents=[0, 1, 2, 4]
Distance vector received from node 0 to node 1
Current x' Distance vector of node 1 is [1, 0, 1, 3]
Node 1 says: my distance vector did not update

via
D1 | 0 2
-----+-----
0 | 1 3
2 | 3 1
3 | 5 3

main(): event received. t=24.88275149412405, node=3
src=0, dest=3, contents=[0, 1, 2, 4]
Distance vector received from node 0 to node 3
Current Distance vector of node 3 is [4, 3, 2, 0]
Node 3 says: my distance vector did not update

via
D3 | 0 2
-----+-----
0 | 7 4
1 | 8 3
2 | 9 2

main(): event received. t=27.723247901929916, node=2
src=0, dest=2, contents=[0, 1, 2, 4]
Distance vector received from node 0 to node 2
Current Distance vector of node 2 is [2, 1, 0, 2]
Node 2 says: my distance vector did not update

via
D2 | 0 1 3

+-----				
0	3	2	6	
1	4	1	5	
3	7	4	2	

Simulator terminated at t=27.723247901929916, no packets in medium.

PART 2:

Network Simulator v1.0

Enter trace level (≥ 0): [0] 2

Will the link change (1 = Yes, 0 = No): [0] 1

Enter random seed: [random] 12

```
      via
D0 |  1  2  3
----+-----
1 | 999 999 999
2 | 999 999 999
3 | 999 999 999
```

```
      via
D1 |  0  2
----+-----
0 | 999 999
2 | 999 999
3 | 999 999
```

```
      via
D2 |  0  1  3
----+-----
0 | 999 999 999
1 | 999 999 999
3 | 999 999 999
```

```
      via
D3 |  0  2
----+-----
0 | 999 999
1 | 999 999
2 | 999 999
```

main(): event received. t=1.3606549112193527, node=2

src=1, dest=2, contents=[1, 0, 1, 999]

Distance vector received from node 1 to node 2

Current Distance vector of node 2 is [3, 1, 0, 2]

Node 2 says: my distance vector got updated so sending it to my neighbours

Updated Distance vector of node 2 is [2, 1, 0, 2]

```
      via
D2 |  0  1  3
----+-----
```

```
0| 999 2 999
1| 999 1 999
3| 999 999 999
```

main(): event received. t=3.4756224896806738, node=2
src=0, dest=2, contents=[0, 1, 3, 7]
Distance vector received from node 0 to node 2
Current Distance vector of node 2 is [2, 1, 0, 2]
Node 2 says: my distance vector did not update

```
      via
D2 | 0 1 3
----+-----
0| 3 2 999
1| 4 1 999
3| 10 999 999
```

main(): event received. t=3.946389996169358, node=1
src=2, dest=1, contents=[3, 1, 0, 2]
Distance vector received from node 2 to node 1
Current Distance vector of node 1 is [1, 0, 1, 999]
Node 1 says: my distance vector got updated so sending it to my neighbours
Updated Distance vector of node 1 is [1, 0, 1, 3]

```
      via
D1 | 0 2
----+-----
0| 999 4
2| 999 1
3| 999 3
```

main(): event received. t=4.6720345388452476, node=0
src=2, dest=0, contents=[3, 1, 0, 2]
Distance vector received from node 2 to node 0
Current Distance vector of node 0 is [0, 1, 3, 7]
Node 0 says: my distance vector got updated so sending it to my neighbours
Updated Distance vector of node 0 is [0, 1, 3, 5]

```
      via
D0 | 1 2 3
----+-----
1| 999 4 999
2| 999 3 999
3| 999 5 999
```

```

main(): event received. t=5.006150313327873, node=3
  src=2, dest=3, contents=[3, 1, 0, 2]
Distance vector received from node 2 to node 3
Current Distance vector of node 3 is [7, 999, 2, 0]
Node 3 says: my distance vector got updated so sending it to my neighbours
Updated Distance vector of node 3 is [5, 3, 2, 0]
  via
D3 | 0 2
----+-----
0| 999 5
1| 999 3
2| 999 2

```

```

main(): event received. t=5.328878422340977, node=3
  src=0, dest=3, contents=[0, 1, 3, 7]
Distance vector received from node 0 to node 3
Current Distance vector of node 3 is [5, 3, 2, 0]
Node 3 says: my distance vector did not update
  via
D3 | 0 2
----+-----
0| 7 5
1| 8 3
2| 10 2

```

```

main(): event received. t=6.368051279689492, node=3
  src=0, dest=3, contents=[0, 1, 3, 5]
Distance vector received from node 0 to node 3
Current Distance vector of node 3 is [5, 3, 2, 0]
Node 3 says: my distance vector did not update
  via
D3 | 0 2
----+-----
0| 7 5
1| 8 3
2| 10 2

```

```

main(): event received. t=7.257981435918057, node=0
  src=3, dest=0, contents=[7, 999, 2, 0]
Distance vector received from node 3 to node 0
Current Distance vector of node 0 is [0, 1, 3, 5]
Node 0 says: my distance vector did not update

```

```

      via
D0 |  1  2  3
----+-----
 1| 999  4 999
 2| 999  3  9
 3| 999  5  7

```

```

main(): event received. t=7.5690352549917765, node=1
  src=0, dest=1, contents=[0, 1, 3, 7]
Distance vector received from node 0 to node 1
Current Distance vector of node 1 is [1, 0, 1, 3]
Node 1 says: my distance vector did not update

```

```

      via
D1 |  0  2
----+-----
 0|  1  4
 2|  4  1
 3|  8  3

```

```

main(): event received. t=8.343599943379651, node=2
  src=1, dest=2, contents=[1, 0, 1, 3]
Distance vector received from node 1 to node 2
Current Distance vector of node 2 is [2, 1, 0, 2]
Node 2 says: my distance vector did not update

```

```

      via
D2 |  0  1  3
----+-----
 0|  3  2 999
 1|  4  1 999
 3| 10  4 999

```

```

main(): event received. t=8.434977367651507, node=0
  src=3, dest=0, contents=[5, 3, 2, 0]
Distance vector received from node 3 to node 0
Current Distance vector of node 0 is [0, 1, 3, 5]
Node 0 says: my distance vector did not update

```

```

      via
D0 |  1  2  3
----+-----
 1| 999  4 10
 2| 999  3  9

```

3| 999 5 7

main(): event received. t=9.021202775593597, node=2

src=3, dest=2, contents=[7, 999, 2, 0]

Distance vector received from node 3 to node 2

Current Distance vector of node 2 is [2, 1, 0, 2]

Node 2 says: my distance vector did not update

```
      via
D2 | 0 1 3
----+-----
0| 3 2 9
1| 4 1 999
3| 10 4 2
```

main(): event received. t=9.4401773299874, node=0

src=1, dest=0, contents=[1, 0, 1, 999]

Distance vector received from node 1 to node 0

Current Distance vector of node 0 is [0, 1, 3, 5]

Node 0 says: my distance vector got updated so sending it to my neighbours

Updated Distance vector of node 0 is [0, 1, 2, 5]

```
      via
D0 | 1 2 3
----+-----
1| 1 4 10
2| 2 3 9
3| 999 5 7
```

main(): event received. t=11.260656363532652, node=2

src=3, dest=2, contents=[5, 3, 2, 0]

Distance vector received from node 3 to node 2

Current Distance vector of node 2 is [2, 1, 0, 2]

Node 2 says: my distance vector did not update

```
      via
D2 | 0 1 3
----+-----
0| 3 2 7
1| 4 1 5
3| 10 4 2
```

main(): event received. t=11.717520554705878, node=1

src=2, dest=1, contents=[2, 1, 0, 2]

Distance vector received from node 2 to node 1
Current Distance vector of node 1 is [1, 0, 1, 3]
Node 1 says: my distance vector did not update

via
D1 | 0 2
----+-----
0| 1 3
2| 4 1
3| 8 3

main(): event received. t=12.34641951617595, node=0
src=2, dest=0, contents=[2, 1, 0, 2]
Distance vector received from node 2 to node 0
Current Distance vector of node 0 is [0, 1, 2, 5]
Node 0 says: my distance vector did not update

via
D0 | 1 2 3
----+-----
1| 1 4 10
2| 2 3 9
3| 999 5 7

main(): event received. t=12.595869272998868, node=2
src=0, dest=2, contents=[0, 1, 3, 5]
Distance vector received from node 0 to node 2
Current Distance vector of node 2 is [2, 1, 0, 2]
Node 2 says: my distance vector did not update

via
D2 | 0 1 3
----+-----
0| 3 2 7
1| 4 1 5
3| 8 4 2

main(): event received. t=14.250746467421244, node=3
src=2, dest=3, contents=[2, 1, 0, 2]
Distance vector received from node 2 to node 3
Current Distance vector of node 3 is [5, 3, 2, 0]
Node 3 says: my distance vector got updated so sending it to my neighbours
Updated Distance vector of node 3 is [4, 3, 2, 0]

via


```

D3 | 0 2
----+-----
0| 7 4
1| 8 3
2| 10 2

```

main(): event received. t=14.302712035307962, node=1
 src=0, dest=1, contents=[0, 1, 3, 5]
 Distance vector received from node 0 to node 1
 Current Distance vector of node 1 is [1, 0, 1, 3]
 Node 1 says: my distance vector did not update

```

      via
D1 | 0 2
----+-----
0| 1 3
2| 4 1
3| 6 3

```

main(): event received. t=16.32441780905942, node=2
 src=0, dest=2, contents=[0, 1, 2, 5]
 Distance vector received from node 0 to node 2
 Current Distance vector of node 2 is [2, 1, 0, 2]
 Node 2 says: my distance vector did not update

```

      via
D2 | 0 1 3
----+-----
0| 3 2 7
1| 4 1 5
3| 8 4 2

```

main(): event received. t=17.167290086692674, node=0
 src=3, dest=0, contents=[4, 3, 2, 0]
 Distance vector received from node 3 to node 0
 Current Distance vector of node 0 is [0, 1, 2, 5]
 Node 0 says: my distance vector did not update

```

      via
D0 | 1 2 3
----+-----
1| 1 4 10
2| 2 3 9
3| 999 5 7

```

main(): event received. t=17.839833748321677, node=0

src=1, dest=0, contents=[1, 0, 1, 3]

Distance vector received from node 1 to node 0

Current Distance vector of node 0 is [0, 1, 2, 5]

Node 0 says: my distance vector got updated so sending it to my neighbours

Updated Distance vector of node 0 is [0, 1, 2, 4]

via
D0 | 1 2 3
----+-----
1| 1 4 10
2| 2 3 9
3| 4 5 7

main(): event received. t=18.104997746703347, node=3

src=0, dest=3, contents=[0, 1, 2, 5]

Distance vector received from node 0 to node 3

Current Distance vector of node 3 is [4, 3, 2, 0]

Node 3 says: my distance vector did not update

via
D3 | 0 2
----+-----
0| 7 4
1| 8 3
2| 9 2

main(): event received. t=19.27553871716582, node=1

src=0, dest=1, contents=[0, 1, 2, 5]

Distance vector received from node 0 to node 1

Current Distance vector of node 1 is [1, 0, 1, 3]

Node 1 says: my distance vector did not update

via
D1 | 0 2
----+-----
0| 1 3
2| 3 1
3| 6 3

main(): event received. t=23.688659302202915, node=2

src=3, dest=2, contents=[4, 3, 2, 0]

Distance vector received from node 3 to node 2

Current Distance vector of node 2 is [2, 1, 0, 2]

Node 2 says: my distance vector did not update

```
      via
D2 | 0 1 3
----+-----
0 | 3 2 6
1 | 4 1 5
3 | 8 4 2
```

main(): event received. t=24.563846546272835, node=1

src=0, dest=1, contents=[0, 1, 2, 4]

Distance vector received from node 0 to node 1

Current Distance vector of node 1 is [1, 0, 1, 3]

Node 1 says: my distance vector did not update

```
      via
D1 | 0 2
----+-----
0 | 1 3
2 | 3 1
3 | 5 3
```

main(): event received. t=24.88275149412405, node=3

src=0, dest=3, contents=[0, 1, 2, 4]

Distance vector received from node 0 to node 3

Current Distance vector of node 3 is [4, 3, 2, 0]

Node 3 says: my distance vector did not update

```
      via
D3 | 0 2
----+-----
0 | 7 4
1 | 8 3
2 | 9 2
```

main(): event received. t=27.723247901929916, node=2

src=0, dest=2, contents=[0, 1, 2, 4]

Distance vector received from node 0 to node 2

Current Distance vector of node 2 is [2, 1, 0, 2]

Node 2 says: my distance vector did not update

```
      via
D2 | 0 1 3
----+-----
0 | 3 2 6
```

```
1| 4 1 5
3| 7 4 2
```

main(): event received. t=10000.0, node=0

Link cost change.

The link cost between node 0 and 1 changed to new value 20

Node 0 says: the link cost change affected my distance vector

```
      via
D0 | 1 2 3
----+-----
1| 20 4 10
2| 2 3 9
3| 4 5 7
```

The link cost between node 1 and 0 changed to new value 20

Node 1 says: the link cost change affected my distance vector

```
      via
D1 | 0 2
----+-----
0| 20 3
2| 3 1
3| 5 3
```

main(): event received. t=10003.365846014884, node=2

src=1, dest=2, contents=[3, 0, 1, 3]

Distance vector received from node 1 to node 2

Current Distance vector of node 2 is [2, 1, 0, 2]

Node 2 says: my distance vector got updated so sending it to my neighbours

Updated Distance vector of node 2 is [3, 1, 0, 2]

```
      via
D2 | 0 1 3
----+-----
0| 3 4 6
1| 4 1 5
3| 7 4 2
```

main(): event received. t=10003.435012291427, node=0

src=1, dest=0, contents=[3, 0, 1, 3]

Distance vector received from node 1 to node 0

Current Distance vector of node 0 is [0, 4, 2, 4]

Node 0 says: my distance vector got updated so sending it to my neighbours

Updated Distance vector of node 0 is [0, 4, 3, 5]

```

      via
D0 | 1 2 3
----+-----
1| 20 4 10
2| 21 3 9
3| 23 5 7

```

main(): event received. t=10004.762944623217, node=1

src=2, dest=1, contents=[3, 1, 0, 2]

Distance vector received from node 2 to node 1

Current Distance vector of node 1 is [3, 0, 1, 3]

Node 1 says: my distance vector got updated so sending it to my neighbours

Updated Distance vector of node 1 is [4, 0, 1, 3]

```

      via
D1 | 0 2
----+-----
0| 20 4
2| 3 1
3| 5 3

```

main(): event received. t=10005.066783607988, node=1

src=0, dest=1, contents=[0, 4, 2, 4]

Distance vector received from node 0 to node 1

Current Distance vector of node 1 is [4, 0, 1, 3]

Node 1 says: my distance vector did not update

```

      via
D1 | 0 2
----+-----
0| 20 4
2| 22 1
3| 24 3

```

main(): event received. t=10005.90748618821, node=2

src=0, dest=2, contents=[0, 4, 2, 4]

Distance vector received from node 0 to node 2

Current Distance vector of node 2 is [3, 1, 0, 2]

Node 2 says: my distance vector did not update

```

      via
D2 | 0 1 3
----+-----

```

```

0| 3 4 6
1| 7 1 5
3| 7 4 2

```

main(): event received. t=10007.187675663246, node=0
 src=1, dest=0, contents=[4, 0, 1, 3]
 Distance vector received from node 1 to node 0
 Current Distance vector of node 0 is [0, 4, 3, 5]
 Node 0 says: my distance vector did not update

```

      via
D0 | 1 2 3
----+-----
1| 20 4 10
2| 21 3 9
3| 23 5 7

```

main(): event received. t=10007.444432678247, node=3
 src=0, dest=3, contents=[0, 4, 2, 4]
 Distance vector received from node 0 to node 3
 Current Distance vector of node 3 is [4, 3, 2, 0]
 Node 3 says: my distance vector did not update

```

      via
D3 | 0 2
----+-----
0| 7 4
1| 11 3
2| 9 2

```

main(): event received. t=10007.579706391936, node=0
 src=2, dest=0, contents=[3, 1, 0, 2]
 Distance vector received from node 2 to node 0
 Current Distance vector of node 0 is [0, 4, 3, 5]
 Node 0 says: my distance vector did not update

```

      via
D0 | 1 2 3
----+-----
1| 20 4 10
2| 21 3 9
3| 23 5 7

```

main(): event received. t=10007.919952700831, node=2
 src=0, dest=2, contents=[0, 4, 3, 5]

Distance vector received from node 0 to node 2
Current Distance vector of node 2 is [3, 1, 0, 2]
Node 2 says: my distance vector did not update

via
D2 | 0 1 3
----+-----
0| 3 4 6
1| 7 1 5
3| 8 4 2

main(): event received. t=10008.28465520009, node=3
src=2, dest=3, contents=[3, 1, 0, 2]
Distance vector received from node 2 to node 3
Current Distance vector of node 3 is [4, 3, 2, 0]
Node 3 says: my distance vector got updated so sending it to my neighbours
Updated Distance vector of node 3 is [5, 3, 2, 0]

via
D3 | 0 2
----+-----
0| 7 5
1| 11 3
2| 9 2

main(): event received. t=10008.514494455652, node=3
src=0, dest=3, contents=[0, 4, 3, 5]
Distance vector received from node 0 to node 3
Current Distance vector of node 3 is [5, 3, 2, 0]
Node 3 says: my distance vector did not update

via
D3 | 0 2
----+-----
0| 7 5
1| 11 3
2| 10 2

main(): event received. t=10010.236534816626, node=2
src=1, dest=2, contents=[4, 0, 1, 3]
Distance vector received from node 1 to node 2
Current Distance vector of node 2 is [3, 1, 0, 2]
Node 2 says: my distance vector did not update

via
D2 | 0 1 3

```

-----+-----
0| 3 5 6
1| 7 1 5
3| 8 4 2

```

main(): event received. t=10011.756638355602, node=0
 src=3, dest=0, contents=[5, 3, 2, 0]
 Distance vector received from node 3 to node 0
 Current Distance vector of node 0 is [0, 4, 3, 5]
 Node 0 says: my distance vector did not update

```

      via
D0 | 1 2 3
-----+-----
1| 20 4 10
2| 21 3 9
3| 23 5 7

```

main(): event received. t=10014.16252404254, node=1
 src=0, dest=1, contents=[0, 4, 3, 5]
 Distance vector received from node 0 to node 1
 Current Distance vector of node 1 is [4, 0, 1, 3]
 Node 1 says: my distance vector did not update

```

      via
D1 | 0 2
-----+-----
0| 20 4
2| 23 1
3| 25 3

```

main(): event received. t=10017.749270610262, node=2
 src=3, dest=2, contents=[5, 3, 2, 0]
 Distance vector received from node 3 to node 2
 Current Distance vector of node 2 is [3, 1, 0, 2]
 Node 2 says: my distance vector did not update

```

      via
D2 | 0 1 3
-----+-----
0| 3 5 7
1| 7 1 5
3| 8 4 2

```


main(): event received. t=20000.0, node=0

Link cost change.

The link cost between node 0 and 1 changed to new value 1

Node 0 says: the link cost change affected my distance vector

via
D0 | 1 2 3
----+-----
1| 1 4 10
2| 21 3 9
3| 23 5 7

The link cost between node 1 and 0 changed to new value 1

Node 1 says: the link cost change affected my distance vector

via
D1 | 0 2
----+-----
0| 1 4
2| 23 1
3| 25 3

main(): event received. t=20002.930476119982, node=2

src=1, dest=2, contents=[1, 0, 1, 3]

Distance vector received from node 1 to node 2

Current Distance vector of node 2 is [3, 1, 0, 2]

Node 2 says: my distance vector got updated so sending it to my neighbours

Updated Distance vector of node 2 is [2, 1, 0, 2]

via
D2 | 0 1 3
----+-----
0| 3 2 7
1| 7 1 5
3| 8 4 2

main(): event received. t=20003.984940336057, node=0

src=1, dest=0, contents=[1, 0, 1, 3]

Distance vector received from node 1 to node 0

Current Distance vector of node 0 is [0, 1, 3, 5]

Node 0 says: my distance vector got updated so sending it to my neighbours

Updated Distance vector of node 0 is [0, 1, 2, 4]

via
D0 | 1 2 3

```

----+-----
1|  1  4 10
2|  2  3  9
3|  4  5  7

```

main(): event received. t=20005.16452040545, node=3

src=0, dest=3, contents=[0, 1, 3, 5]

Distance vector received from node 0 to node 3

Current Distance vector of node 3 is [5, 3, 2, 0]

Node 3 says: my distance vector did not update

via

```

D3 |  0  2

```

```

----+-----
0|  7  5
1|  8  3
2| 10  2

```

main(): event received. t=20005.419493339577, node=1

src=0, dest=1, contents=[0, 1, 3, 5]

Distance vector received from node 0 to node 1

Current Distance vector of node 1 is [1, 0, 1, 3]

Node 1 says: my distance vector did not update

via

```

D1 |  0  2

```

```

----+-----
0|  1  4
2|  4  1
3|  6  3

```

main(): event received. t=20005.48031896079, node=3

src=2, dest=3, contents=[2, 1, 0, 2]

Distance vector received from node 2 to node 3

Current Distance vector of node 3 is [5, 3, 2, 0]

Node 3 says: my distance vector got updated so sending it to my neighbours

Updated Distance vector of node 3 is [4, 3, 2, 0]

via

```

D3 |  0  2

```

```

----+-----
0|  7  4
1|  8  3
2| 10  2

```

main(): event received. t=20006.877355209588, node=0

src=2, dest=0, contents=[2, 1, 0, 2]
Distance vector received from node 2 to node 0
Current Distance vector of node 0 is [0, 1, 2, 4]
Node 0 says: my distance vector did not update

via
D0 | 1 2 3
----+-----
1| 1 4 10
2| 2 3 9
3| 4 5 7

main(): event received. t=20007.43748846721, node=2
src=0, dest=2, contents=[0, 1, 3, 5]
Distance vector received from node 0 to node 2
Current Distance vector of node 2 is [2, 1, 0, 2]
Node 2 says: my distance vector did not update

via
D2 | 0 1 3
----+-----
0| 3 2 7
1| 4 1 5
3| 8 4 2

main(): event received. t=20007.62206722556, node=3
src=0, dest=3, contents=[0, 1, 2, 4]
Distance vector received from node 0 to node 3
Current Distance vector of node 3 is [4, 3, 2, 0]
Node 3 says: my distance vector did not update

via
D3 | 0 2
----+-----
0| 7 4
1| 8 3
2| 9 2

main(): event received. t=20009.702072199045, node=1
src=2, dest=1, contents=[2, 1, 0, 2]
Distance vector received from node 2 to node 1
Current Distance vector of node 1 is [1, 0, 1, 3]
Node 1 says: my distance vector did not update

via

```

D1 | 0 2
----+-----
0| 1 3
2| 4 1
3| 6 3

```

main(): event received. t=20011.844960200226, node=2
 src=3, dest=2, contents=[4, 3, 2, 0]
 Distance vector received from node 3 to node 2
 Current Distance vector of node 2 is [2, 1, 0, 2]
 Node 2 says: my distance vector did not update

```

      via
D2 | 0 1 3
----+-----
0| 3 2 6
1| 4 1 5
3| 8 4 2

```

main(): event received. t=20012.900809110477, node=0
 src=3, dest=0, contents=[4, 3, 2, 0]
 Distance vector received from node 3 to node 0
 Current Distance vector of node 0 is [0, 1, 2, 4]
 Node 0 says: my distance vector did not update

```

      via
D0 | 1 2 3
----+-----
1| 1 4 10
2| 2 3 9
3| 4 5 7

```

main(): event received. t=20013.879401824066, node=2
 src=0, dest=2, contents=[0, 1, 2, 4]
 Distance vector received from node 0 to node 2
 Current Distance vector of node 2 is [2, 1, 0, 2]
 Node 2 says: my distance vector did not update

```

      via
D2 | 0 1 3
----+-----
0| 3 2 6
1| 4 1 5
3| 7 4 2

```

main(): event received. t=20014.93511377602, node=1

src=0, dest=1, contents=[0, 1, 2, 4]

Distance vector received from node 0 to node 1

Current Distance vector of node 1 is [1, 0, 1, 3]

Node 1 says: my distance vector did not update

via

D1 | 0 2

----+-----

0| 1 3

2| 3 1

3| 5 3

Simulator terminated at t=20014.93511377602, no packets in medium.

PART 3

Network Simulator v1.0

Enter trace level (≥ 0): [0] 2

Will the link change (1 = Yes, 0 = No): [0] 1

Enter random seed: [random] 12

```
      via
D0 |  1  2  3
----+-----
1 | 999 999 999
2 | 999 999 999
3 | 999 999 999
```

```
      via
D1 |  0  2
----+-----
0 | 999 999
2 | 999 999
3 | 999 999
```

```
      via
D2 |  0  1  3
----+-----
0 | 999 999 999
1 | 999 999 999
3 | 999 999 999
```

```
      via
D3 |  0  2
----+-----
0 | 999 999
1 | 999 999
2 | 999 999
```

main(): event received. t=1.3606549112193527, node=2

src=1, dest=2, contents=[1, 0, 1, 999]

Distance vector received from node 1 to node 2

Current Distance vector of node 2 is [3, 1, 0, 2]

Node 2 says: my distance vector got updated so sending it to my neighbours

Updated Distance vector of node 2 is [2, 1, 0, 2]

```
      via
D2 |  0  1  3
```

```

----+-----
0| 999  2 999
1| 999  1 999
3| 999 999 999

```

main(): event received. t=3.4756224896806738, node=2
 src=0, dest=2, contents=[0, 1, 3, 7]
 Distance vector received from node 0 to node 2
 Current Distance vector of node 2 is [2, 1, 0, 2]
 Node 2 says: my distance vector did not update

```

      via
D2 |  0  1  3
----+-----
0|  3  2 999
1|  4  1 999
3| 10 999 999

```

main(): event received. t=3.946389996169358, node=1
 src=2, dest=1, contents=[3, 1, 0, 2]
 Distance vector received from node 2 to node 1
 Current Distance vector of node 1 is [1, 0, 1, 999]
 Node 1 says: my distance vector got updated so sending it to my neighbours
 Updated Distance vector of node 1 is [1, 0, 1, 3]

```

      via
D1 |  0  2
----+-----
0| 999  4
2| 999  1
3| 999  3

```

main(): event received. t=4.6720345388452476, node=0
 src=2, dest=0, contents=[3, 1, 0, 2]
 Distance vector received from node 2 to node 0
 Current Distance vector of node 0 is [0, 1, 3, 7]
 Node 0 says: my distance vector got updated so sending it to my neighbours
 Updated Distance vector of node 0 is [0, 1, 3, 5]

```

      via
D0 |  1  2  3
----+-----
1| 999  4 999
2| 999  3 999

```

3| 999 5 999

main(): event received. t=5.006150313327873, node=3

src=2, dest=3, contents=[3, 1, 0, 2]

Distance vector received from node 2 to node 3

Current Distance vector of node 3 is [7, 999, 2, 0]

Node 3 says: my distance vector got updated so sending it to my neighbours

Updated Distance vector of node 3 is [5, 3, 2, 0]

via

D3 | 0 2

----+-----

0| 999 5

1| 999 3

2| 999 2

main(): event received. t=5.328878422340977, node=3

src=0, dest=3, contents=[0, 1, 3, 7]

Distance vector received from node 0 to node 3

Current Distance vector of node 3 is [5, 3, 2, 0]

Node 3 says: my distance vector did not update

via

D3 | 0 2

----+-----

0| 7 5

1| 8 3

2| 10 2

main(): event received. t=6.368051279689492, node=3

src=0, dest=3, contents=[0, 1, 3, 5]

Distance vector received from node 0 to node 3

Current Distance vector of node 3 is [5, 3, 2, 0]

Node 3 says: my distance vector did not update

via

D3 | 0 2

----+-----

0| 7 5

1| 8 3

2| 10 2

main(): event received. t=7.257981435918057, node=0

src=3, dest=0, contents=[7, 999, 2, 0]

Distance vector received from node 3 to node 0

Current Distance vector of node 0 is [0, 1, 3, 5]

Node 0 says: my distance vector did not update


```

      via
D0 | 1 2 3
----+-----
1 | 999 4 999
2 | 999 3 9
3 | 999 5 7

```

main(): event received. t=7.5690352549917765, node=1
 src=0, dest=1, contents=[0, 1, 3, 7]
 Distance vector received from node 0 to node 1
 Current Distance vector of node 1 is [1, 0, 1, 3]
 Node 1 says: my distance vector did not update

```

      via
D1 | 0 2
----+-----
0 | 1 4
2 | 4 1
3 | 8 3

```

main(): event received. t=8.343599943379651, node=2
 src=1, dest=2, contents=[1, 0, 1, 999]
 Distance vector received from node 1 to node 2
 Current Distance vector of node 2 is [2, 1, 0, 2]
 Node 2 says: my distance vector did not update

```

      via
D2 | 0 1 3
----+-----
0 | 3 2 999
1 | 4 1 999
3 | 10 999 999

```

main(): event received. t=8.434977367651507, node=0
 src=3, dest=0, contents=[5, 3, 2, 0]
 Distance vector received from node 3 to node 0
 Current Distance vector of node 0 is [0, 1, 3, 5]
 Node 0 says: my distance vector did not update

```

      via
D0 | 1 2 3
----+-----
1 | 999 4 10

```

```
2| 999 3 9
3| 999 5 7
```

main(): event received. t=9.021202775593597, node=2

src=3, dest=2, contents=[7, 999, 2, 0]

Distance vector received from node 3 to node 2

Current Distance vector of node 2 is [2, 1, 0, 2]

Node 2 says: my distance vector did not update

```
      via
D2 | 0 1 3
----+-----
0| 3 2 9
1| 4 1 999
3| 10 999 2
```

main(): event received. t=9.4401773299874, node=0

src=1, dest=0, contents=[1, 0, 1, 999]

Distance vector received from node 1 to node 0

Current Distance vector of node 0 is [0, 1, 3, 5]

Node 0 says: my distance vector got updated so sending it to my neighbours

Updated Distance vector of node 0 is [0, 1, 2, 5]

```
      via
D0 | 1 2 3
----+-----
1| 1 4 10
2| 2 3 9
3| 999 5 7
```

main(): event received. t=11.260656363532652, node=2

src=3, dest=2, contents=[999, 999, 2, 0]

Distance vector received from node 3 to node 2

Current Distance vector of node 2 is [2, 1, 0, 2]

Node 2 says: my distance vector did not update

```
      via
D2 | 0 1 3
----+-----
0| 3 2 999
1| 4 1 999
3| 10 999 2
```

main(): event received. t=11.717520554705878, node=1

src=2, dest=1, contents=[999, 1, 0, 2]
Distance vector received from node 2 to node 1
Current Distance vector of node 1 is [1, 0, 1, 3]
Node 1 says: my distance vector did not update

via
D1 | 0 2
----+-----
0 | 1 999
2 | 4 1
3 | 8 3

main(): event received. t=12.34641951617595, node=0
src=2, dest=0, contents=[2, 1, 0, 2]
Distance vector received from node 2 to node 0
Current Distance vector of node 0 is [0, 1, 2, 5]
Node 0 says: my distance vector did not update

via
D0 | 1 2 3
----+-----
1 | 1 4 10
2 | 2 3 9
3 | 999 5 7

main(): event received. t=12.595869272998868, node=2
src=0, dest=2, contents=[0, 1, 3, 999]
Distance vector received from node 0 to node 2
Current Distance vector of node 2 is [2, 1, 0, 2]
Node 2 says: my distance vector did not update

via
D2 | 0 1 3
----+-----
0 | 3 2 999
1 | 4 1 999
3 | 999 999 2

main(): event received. t=14.250746467421244, node=3
src=2, dest=3, contents=[2, 1, 0, 2]
Distance vector received from node 2 to node 3
Current Distance vector of node 3 is [5, 3, 2, 0]
Node 3 says: my distance vector got updated so sending it to my neighbours
Updated Distance vector of node 3 is [4, 3, 2, 0]

```

      via
D3 |  0  2
----+-----
0 |  7  4
1 |  8  3
2 | 10  2

```

main(): event received. t=14.302712035307962, node=1
 src=0, dest=1, contents=[0, 1, 3, 5]
 Distance vector received from node 0 to node 1
 Current Distance vector of node 1 is [1, 0, 1, 3]
 Node 1 says: my distance vector did not update

```

      via
D1 |  0  2
----+-----
0 |  1 999
2 |  4  1
3 |  6  3

```

main(): event received. t=16.32441780905942, node=2
 src=0, dest=2, contents=[0, 1, 2, 999]
 Distance vector received from node 0 to node 2
 Current Distance vector of node 2 is [2, 1, 0, 2]
 Node 2 says: my distance vector did not update

```

      via
D2 |  0  1  3
----+-----
0 |  3  2 999
1 |  4  1 999
3 | 999 999  2

```

main(): event received. t=17.167290086692674, node=0
 src=3, dest=0, contents=[4, 3, 2, 0]
 Distance vector received from node 3 to node 0
 Current Distance vector of node 0 is [0, 1, 2, 5]
 Node 0 says: my distance vector did not update

```

      via
D0 |  1  2  3
----+-----
1 |  1  4 10
2 |  2  3  9

```

3| 999 5 7

main(): event received. t=17.839833748321677, node=0

src=1, dest=0, contents=[1, 0, 1, 3]

Distance vector received from node 1 to node 0

Current Distance vector of node 0 is [0, 1, 2, 5]

Node 0 says: my distance vector got updated so sending it to my neighbours

Updated Distance vector of node 0 is [0, 1, 2, 4]

via
D0 | 1 2 3
----+-----
1| 1 4 10
2| 2 3 9
3| 4 5 7

main(): event received. t=18.104997746703347, node=3

src=0, dest=3, contents=[0, 1, 2, 5]

Distance vector received from node 0 to node 3

Current Distance vector of node 3 is [4, 3, 2, 0]

Node 3 says: my distance vector did not update

via
D3 | 0 2
----+-----
0| 7 4
1| 8 3
2| 9 2

main(): event received. t=19.27553871716582, node=1

src=0, dest=1, contents=[0, 1, 999, 5]

Distance vector received from node 0 to node 1

Current Distance vector of node 1 is [1, 0, 1, 3]

Node 1 says: my distance vector did not update

via
D1 | 0 2
----+-----
0| 1 999
2| 999 1
3| 6 3

main(): event received. t=23.688659302202915, node=2

src=3, dest=2, contents=[999, 999, 2, 0]

Distance vector received from node 3 to node 2

Current Distance vector of node 2 is [2, 1, 0, 2]
Node 2 says: my distance vector did not update

```
      via
D2 | 0 1 3
----+-----
0 | 3 2 999
1 | 4 1 999
3 | 999 999 2
```

main(): event received. t=24.563846546272835, node=1
src=0, dest=1, contents=[0, 1, 999, 999]
Distance vector received from node 0 to node 1
Current Distance vector of node 1 is [1, 0, 1, 3]
Node 1 says: my distance vector did not update

```
      via
D1 | 0 2
----+-----
0 | 1 999
2 | 999 1
3 | 999 3
```

main(): event received. t=24.88275149412405, node=3
src=0, dest=3, contents=[0, 1, 2, 4]
Distance vector received from node 0 to node 3
Current Distance vector of node 3 is [4, 3, 2, 0]
Node 3 says: my distance vector did not update

```
      via
D3 | 0 2
----+-----
0 | 7 4
1 | 8 3
2 | 9 2
```

main(): event received. t=27.723247901929916, node=2
src=0, dest=2, contents=[0, 1, 2, 4]
Distance vector received from node 0 to node 2
Current Distance vector of node 2 is [2, 1, 0, 2]
Node 2 says: my distance vector did not update

```
      via
D2 | 0 1 3
----+-----
```

```

0| 3 2 999
1| 4 1 999
3| 7 999 2

```

main(): event received. t=10000.0, node=0

Link cost change.

The link cost between node 0 and 1 changed to new value 20

Node 0 says: the link cost change affected my distance vector

```

      via
D0 | 1 2 3
----+-----
1| 20 4 10
2| 2 3 9
3| 4 5 7

```

The link cost between node 1 and 0 changed to new value 20

Node 1 says: the link cost change affected my distance vector

```

      via
D1 | 0 2
----+-----
0| 20 999
2| 999 1
3| 999 3

```

main(): event received. t=10003.365846014884, node=2

src=1, dest=2, contents=[20, 0, 1, 999]

Distance vector received from node 1 to node 2

Current Distance vector of node 2 is [2, 1, 0, 2]

Node 2 says: my distance vector got updated so sending it to my neighbours

Updated Distance vector of node 2 is [3, 1, 0, 2]

```

      via
D2 | 0 1 3
----+-----
0| 3 21 999
1| 4 1 999
3| 7 999 2

```

main(): event received. t=10003.435012291427, node=0

src=1, dest=0, contents=[999, 0, 1, 3]

Distance vector received from node 1 to node 0

Current Distance vector of node 0 is [0, 4, 2, 4]

Node 0 says: my distance vector got updated so sending it to my neighbours

Updated Distance vector of node 0 is [0, 4, 3, 5]

```
      via
D0 |  1  2  3
----+-----
1| 20  4 10
2| 21  3  9
3| 23  5  7
```

main(): event received. t=10004.762944623217, node=1

src=2, dest=1, contents=[3, 1, 0, 2]

Distance vector received from node 2 to node 1

Current Distance vector of node 1 is [20, 0, 1, 3]

Node 1 says: my distance vector got updated so sending it to my neighbours

Updated Distance vector of node 1 is [4, 0, 1, 3]

```
      via
D1 |  0  2
----+-----
0| 20  4
2| 999  1
3| 999  3
```

main(): event received. t=10005.066783607988, node=1

src=0, dest=1, contents=[0, 4, 999, 999]

Distance vector received from node 0 to node 1

Current Distance vector of node 1 is [4, 0, 1, 3]

Node 1 says: my distance vector did not update

```
      via
D1 |  0  2
----+-----
0| 20  4
2| 999  1
3| 999  3
```

main(): event received. t=10005.90748618821, node=2

src=0, dest=2, contents=[0, 999, 2, 4]

Distance vector received from node 0 to node 2

Current Distance vector of node 2 is [3, 1, 0, 2]

Node 2 says: my distance vector did not update

```
      via
D2 |  0  1  3
```



```

----+-----
0|  3 21 999
1| 999  1 999
3|  7 999  2

```

main(): event received. t=10007.187675663246, node=0
 src=1, dest=0, contents=[4, 0, 1, 3]
 Distance vector received from node 1 to node 0
 Current Distance vector of node 0 is [0, 4, 3, 5]
 Node 0 says: my distance vector did not update

```

      via
D0 |  1  2  3
----+-----
1|  20  4 10
2|  21  3  9
3|  23  5  7

```

main(): event received. t=10007.444432678247, node=3
 src=0, dest=3, contents=[0, 4, 2, 4]
 Distance vector received from node 0 to node 3
 Current Distance vector of node 3 is [4, 3, 2, 0]
 Node 3 says: my distance vector did not update

```

      via
D3 |  0  2
----+-----
0|  7  4
1| 11  3
2|  9  2

```

main(): event received. t=10007.579706391936, node=0
 src=2, dest=0, contents=[3, 1, 0, 2]
 Distance vector received from node 2 to node 0
 Current Distance vector of node 0 is [0, 4, 3, 5]
 Node 0 says: my distance vector did not update

```

      via
D0 |  1  2  3
----+-----
1|  20  4 10
2|  21  3  9
3|  23  5  7

```

main(): event received. t=10007.919952700831, node=2

src=0, dest=2, contents=[0, 999, 3, 999]
Distance vector received from node 0 to node 2
Current Distance vector of node 2 is [3, 1, 0, 2]
Node 2 says: my distance vector did not update

via
D2 | 0 1 3
----+-----
0| 3 21 999
1| 999 1 999
3| 999 999 2

main(): event received. t=10008.28465520009, node=3
src=2, dest=3, contents=[3, 1, 0, 2]
Distance vector received from node 2 to node 3
Current Distance vector of node 3 is [4, 3, 2, 0]
Node 3 says: my distance vector got updated so sending it to my neighbours
Updated Distance vector of node 3 is [5, 3, 2, 0]

via
D3 | 0 2
----+-----
0| 7 5
1| 11 3
2| 9 2

main(): event received. t=10008.514494455652, node=3
src=0, dest=3, contents=[0, 4, 3, 5]
Distance vector received from node 0 to node 3
Current Distance vector of node 3 is [5, 3, 2, 0]
Node 3 says: my distance vector did not update

via
D3 | 0 2
----+-----
0| 7 5
1| 11 3
2| 10 2

main(): event received. t=10010.236534816626, node=2
src=1, dest=2, contents=[999, 0, 1, 999]
Distance vector received from node 1 to node 2
Current Distance vector of node 2 is [3, 1, 0, 2]
Node 2 says: my distance vector did not update

via

```

D2 | 0 1 3
-----+-----
0| 3 999 999
1| 999 1 999
3| 999 999 2

```

main(): event received. t=10011.756638355602, node=0
 src=3, dest=0, contents=[5, 3, 2, 0]
 Distance vector received from node 3 to node 0
 Current Distance vector of node 0 is [0, 4, 3, 5]
 Node 0 says: my distance vector did not update

```

      via
D0 | 1 2 3
-----+-----
1| 20 4 10
2| 21 3 9
3| 23 5 7

```

main(): event received. t=10014.16252404254, node=1
 src=0, dest=1, contents=[0, 4, 3, 5]
 Distance vector received from node 0 to node 1
 Current Distance vector of node 1 is [4, 0, 1, 3]
 Node 1 says: my distance vector did not update

```

      via
D1 | 0 2
-----+-----
0| 20 4
2| 23 1
3| 25 3

```

main(): event received. t=10017.749270610262, node=2
 src=3, dest=2, contents=[999, 999, 2, 0]
 Distance vector received from node 3 to node 2
 Current Distance vector of node 2 is [3, 1, 0, 2]
 Node 2 says: my distance vector did not update

```

      via
D2 | 0 1 3
-----+-----
0| 3 999 999
1| 999 1 999
3| 999 999 2

```

main(): event received. t=20000.0, node=0

Link cost change.

The link cost between node 0 and 1 changed to new value 1

Node 0 says: the link cost change affected my distance vector

```
      via
D0 |  1  2  3
----+-----
 1|  1  4 10
 2| 21  3  9
 3| 23  5  7
```

The link cost between node 1 and 0 changed to new value 1

Node 1 says: the link cost change affected my distance vector

```
      via
D1 |  0  2
----+-----
 0|  1  4
 2| 23  1
 3| 25  3
```

main(): event received. t=20002.930476119982, node=2

src=1, dest=2, contents=[1, 0, 1, 999]

Distance vector received from node 1 to node 2

Current Distance vector of node 2 is [3, 1, 0, 2]

Node 2 says: my distance vector got updated so sending it to my neighbours

Updated Distance vector of node 2 is [2, 1, 0, 2]

```
      via
D2 |  0  1  3
----+-----
 0|  3  2 999
 1| 999  1 999
 3| 999 999  2
```

main(): event received. t=20003.984940336057, node=0

src=1, dest=0, contents=[999, 0, 1, 3]

Distance vector received from node 1 to node 0

Current Distance vector of node 0 is [0, 1, 3, 5]

Node 0 says: my distance vector got updated so sending it to my neighbours

Updated Distance vector of node 0 is [0, 1, 2, 4]

```
      via
```

```

D0 | 1 2 3
----+-----
1| 1 4 10
2| 2 3 9
3| 4 5 7

```

main(): event received. t=20005.16452040545, node=3
 src=0, dest=3, contents=[0, 1, 3, 5]

Distance vector received from node 0 to node 3

Current Distance vector of node 3 is [5, 3, 2, 0]

Node 3 says: my distance vector did not update
 via

```

D3 | 0 2
----+-----
0| 7 5
1| 8 3
2| 10 2

```

main(): event received. t=20005.419493339577, node=1
 src=0, dest=1, contents=[0, 1, 3, 5]

Distance vector received from node 0 to node 1

Current Distance vector of node 1 is [1, 0, 1, 3]

Node 1 says: my distance vector did not update

via

```

D1 | 0 2
----+-----
0| 1 4
2| 4 1
3| 6 3

```

main(): event received. t=20005.48031896079, node=3
 src=2, dest=3, contents=[2, 1, 0, 2]

Distance vector received from node 2 to node 3

Current Distance vector of node 3 is [5, 3, 2, 0]

Node 3 says: my distance vector got updated so sending it to my neighbours

Updated Distance vector of node 3 is [4, 3, 2, 0]

via

```

D3 | 0 2
----+-----
0| 7 4
1| 8 3
2| 10 2

```

main(): event received. t=20006.877355209588, node=0
src=2, dest=0, contents=[2, 1, 0, 2]
Distance vector received from node 2 to node 0
Current Distance vector of node 0 is [0, 1, 2, 4]
Node 0 says: my distance vector did not update

via
D0 | 1 2 3
----+-----
1| 1 4 10
2| 2 3 9
3| 4 5 7

main(): event received. t=20007.43748846721, node=2
src=0, dest=2, contents=[0, 1, 3, 999]
Distance vector received from node 0 to node 2
Current Distance vector of node 2 is [2, 1, 0, 2]
Node 2 says: my distance vector did not update

via
D2 | 0 1 3
----+-----
0| 3 2 999
1| 4 1 999
3| 999 999 2

main(): event received. t=20007.62206722556, node=3
src=0, dest=3, contents=[0, 1, 2, 4]
Distance vector received from node 0 to node 3
Current Distance vector of node 3 is [4, 3, 2, 0]
Node 3 says: my distance vector did not update

via
D3 | 0 2
----+-----
0| 7 4
1| 8 3
2| 9 2

main(): event received. t=20009.702072199045, node=1
src=2, dest=1, contents=[999, 1, 0, 2]
Distance vector received from node 2 to node 1
Current Distance vector of node 1 is [1, 0, 1, 3]
Node 1 says: my distance vector did not update

via
D1 | 0 2
-----+-----
0 | 1 999
2 | 4 1
3 | 6 3

main(): event received. t=20011.844960200226, node=2
src=3, dest=2, contents=[999, 999, 2, 0]
Distance vector received from node 3 to node 2
Current Distance vector of node 2 is [2, 1, 0, 2]
Node 2 says: my distance vector did not update

via
D2 | 0 1 3
-----+-----
0 | 3 2 999
1 | 4 1 999
3 | 999 999 2

main(): event received. t=20012.900809110477, node=0
src=3, dest=0, contents=[4, 3, 2, 0]
Distance vector received from node 3 to node 0
Current Distance vector of node 0 is [0, 1, 2, 4]
Node 0 says: my distance vector did not update

via
D0 | 1 2 3
-----+-----
1 | 1 4 10
2 | 2 3 9
3 | 4 5 7

main(): event received. t=20013.879401824066, node=2
src=0, dest=2, contents=[0, 1, 2, 4]
Distance vector received from node 0 to node 2
Current Distance vector of node 2 is [2, 1, 0, 2]
Node 2 says: my distance vector did not update

via
D2 | 0 1 3
-----+-----
0 | 3 2 999
1 | 4 1 999

3 | 7 999 2

main(): event received. t=20014.93511377602, node=1

src=0, dest=1, contents=[0, 1, 999, 999]

Distance vector received from node 0 to node 1

Current Distance vector of node 1 is [1, 0, 1, 3]

Node 1 says: my distance vector did not update

via

D1 | 0 2

-----+-----

0 | 1 999

2 | 999 1

3 | 999 3

Simulator terminated at t=20014.93511377602, no packets in medium.

WRITE UP:

Now, the main observation is the distance vector sent by 1 to 2 after the link cost change without and with poison reverse. I have highlighted this distance vector in green. As we can observe that without poison reverse, the node 1 sends 2, the distance vector `src=1, dest=2, contents=[3, 0, 1, 3]` which as observed is incorrect as here the cost which 1 sends for its distance to node 0 is via 2.

But, this is incorrect since node 2 got this value via 1 which becomes invalid once the link cost between 0 and 1 changes to 20 from 1. Now, this can lead to **count to infinity problem**. In our particular example, we see that the cost between 0 and 2 is 3 but still without poison reverse the total number of messages exchanged is 17 and with poison reverse is 17. The main observation is that node 2 realizes that it can reach 0 via its direct link in cost 3 which is less than the second message exchange from 1 to 2 i.e. 4. which I have also highlighted in green. Now, if let's suppose that the direct link cost between 0 and 2 would have been 15 then node 2 would have taken much more number of exchanges between 1 to realize that it has to ultimately use its direct link to 0 to reach node 0. This is the count to infinity problem.

We directly avoid this count to infinity problem when we use poison reverse i.e. when link cost between node 0 and node 1 changes to 20, in poison reverse version, node 1 sends 2, the distance vector `src=1, dest=2, contents=[20, 0, 1, 999]`. Now, observe that here instead of 3 in the previous version, node 1 sends 20 as cost to node 0 since in its distance table, the distance to 0 via 2 is infinity i.e. 999. This is because 2 was going to 0 via 1 so it poisons the path for 1 to 0 via 2. This helps us solve the count to infinity problem when using poison reverse. Now, node 1 will directly realize that it can go to 0 in cost 20 via node 1 and it will prefer the direct link of cost 3 to node 0.

Comparison of Pros and Cons of With and Without Poison Reverse:

Implementation Simplicity:

We observe that when using poison reverse, a node needs to keep a track of the next hop node for the cost it calculates in its distance vector. This is because, when sending distance vector to its neighbors, it uses that tracked node list to send infinity to the neighbor using which it got minimum cost in distance vector. In our case for example, node 2 uses node 1 to reach node 0. Now, when node 2 sends its distance vector to node 1, it sends infinity as the cost for node 0. This is to avoid the count to infinity problem.

This makes the implementation of poison reverse more complex compared to normal distance vector algorithm.

Count to Infinity Problem (Time for convergence):

Here, we observe that poison reverse method avoids the count to infinity problem and converges much faster compared to normal distance vector algorithm.

Without poison reverse, there is a possibility of a lot of oscillations between nodes for example in our case node 1 and node 2 before node 2 may realize that it ultimately has to use its direct link to node 0. This problem is directly avoided by using poison reverse.

Memory Requirement:

Poison reverse method requires additional memory to store the next hop node for the cost in distance vector for each node. The normal method without poison reverse does not need to keep a track of next hop node in distance vector. But, this additional memory can save us from count-to-infinity problem since the main disadvantage for normal method being that a change in any link cost can lead to a lot of oscillations. Thus, normal method can be very slow to converge compared to Poison Reverse method.