CSC 450 – 001

Cole Edwards – Distance-Vector

Stuart Redfearn – Link-State

Readme

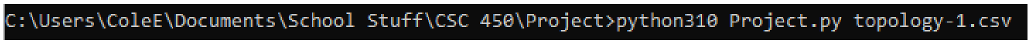
Responsibilities:

Stuart – Implementation of Link-State and Dijkstra's algorithm

Cole – Implement the Distance-Vector for each node and Bellman-Ford algorithm.

How to run the code:

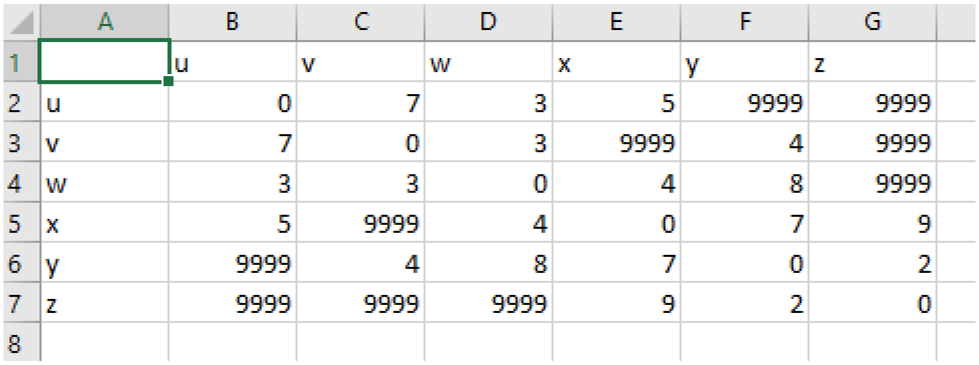
CODE WAS DEVELOPED USING PYTHON 3.10

1. Start by opening Command Line and using 'cd' to move the directory that contains both the program and the csv file.
2. Then use python (version 3.10) to run the code and passing the file name as an argument.
   a. 

      ```
      C:\Users\ColeE\Documents\School Stuff\CSC 450\Project>python310 Project.py topology-1.csv
      ```
   b. <python> routing.py <csv file>.csv
3. Enjoy your output

Possible Error Fixes:

If the csv file is not accepted, make sure the file is formatted like this:



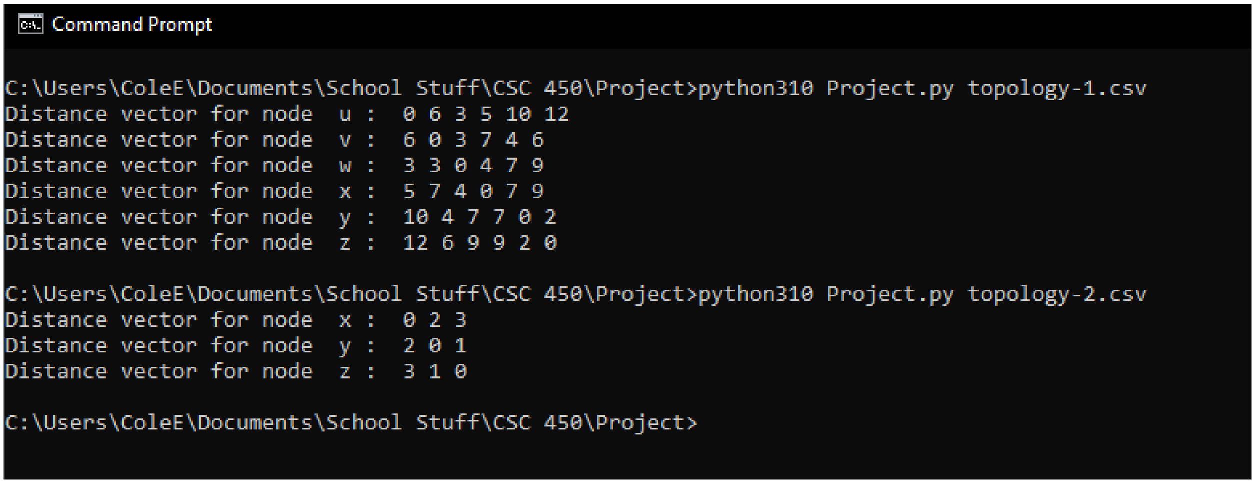
	A	B	C	D	E	F	G
1		u	v	w	x	y	z
2	u	0	7	3	5	9999	9999
3	v	7	0	3	9999	4	9999
4	w	3	3	0	4	8	9999
5	x	5	9999	4	0	7	9
6	y	9999	4	8	7	0	2
7	z	9999	9999	9999	9	2	0
8							

Then make sure when being put into the argument, make sure its <CSV File Name>.csv

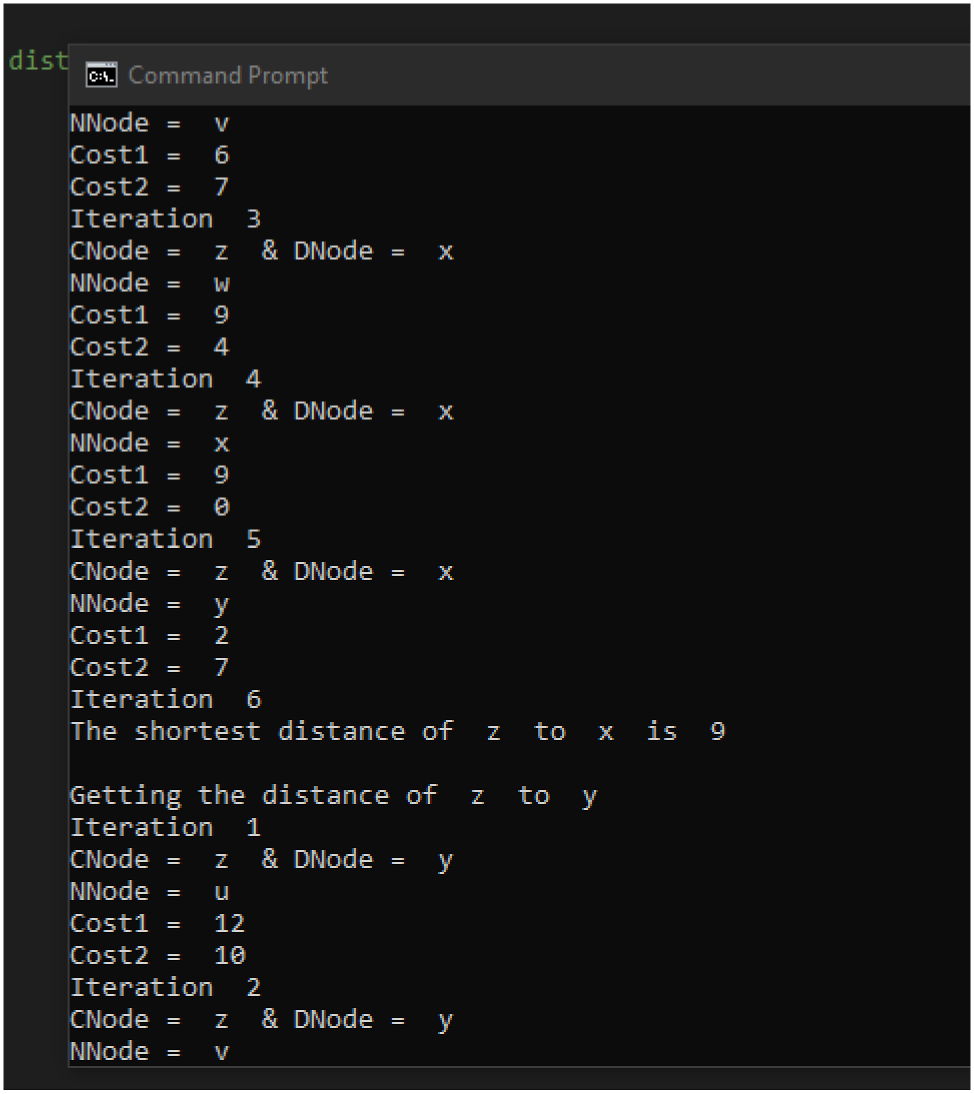
-make sure .csv is attacked to the filename

Screenshots:

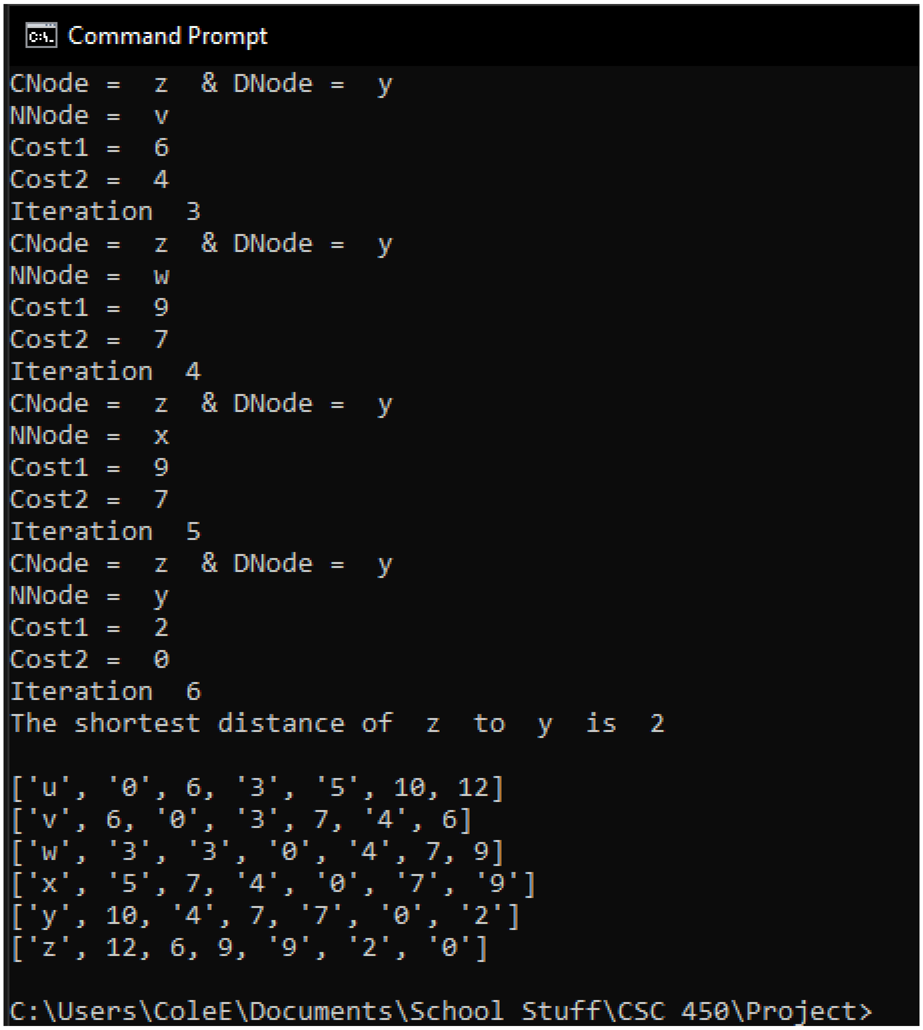
Distance-Vector (Cole):



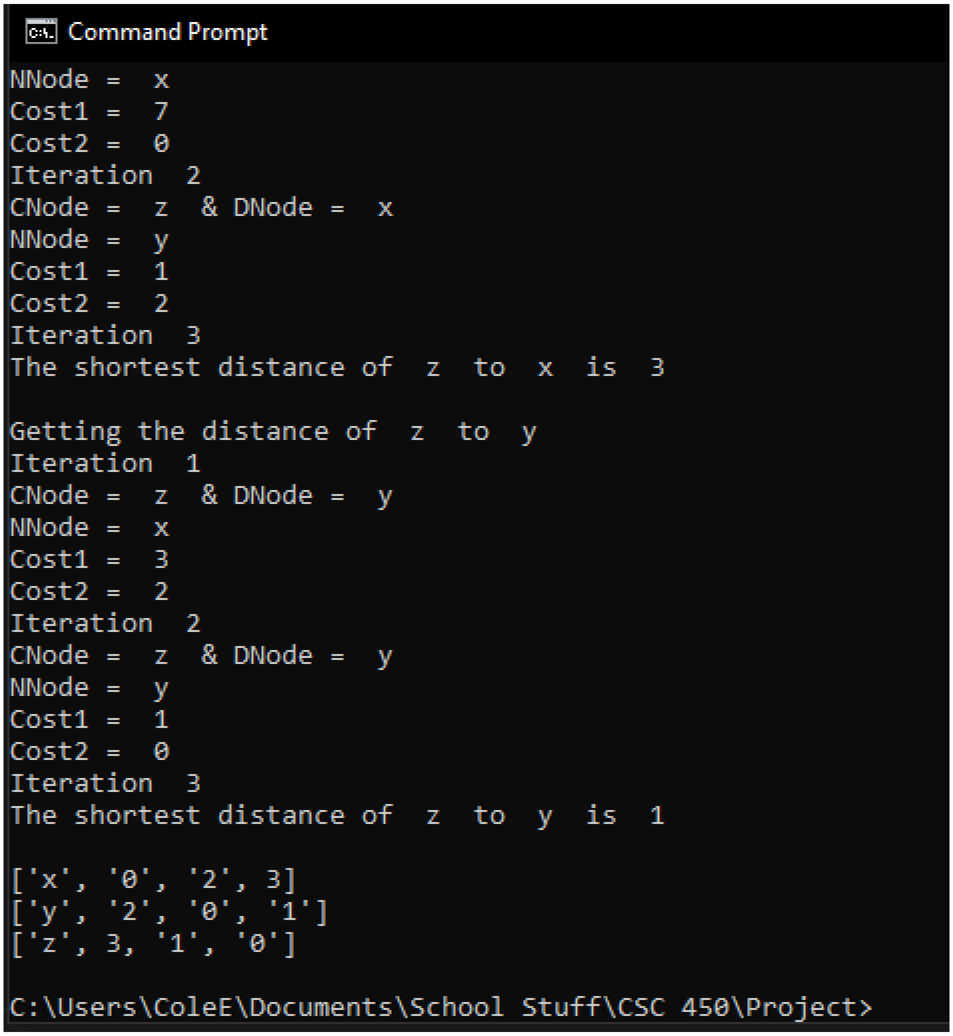
```
C:\Users\ColeE\Documents\School Stuff\CSC 450\Project>python310 Project.py topology-1.csv
Distance vector for node  u :  0 6 3 5 10 12
Distance vector for node  v :  6 0 3 7 4 6
Distance vector for node  w :  3 3 0 4 7 9
Distance vector for node  x :  5 7 4 0 7 9
Distance vector for node  y :  10 4 7 7 0 2
Distance vector for node  z :  12 6 9 9 2 0

C:\Users\ColeE\Documents\School Stuff\CSC 450\Project>python310 Project.py topology-2.csv
Distance vector for node  x :  0 2 3
Distance vector for node  y :  2 0 1
Distance vector for node  z :  3 1 0

C:\Users\ColeE\Documents\School Stuff\CSC 450\Project>
```



```
NNode =  v
Cost1 =  6
Cost2 =  7
Iteration  3
CNode =  z  & DNode =  x
NNode =  w
Cost1 =  9
Cost2 =  4
Iteration  4
CNode =  z  & DNode =  x
NNode =  x
Cost1 =  9
Cost2 =  0
Iteration  5
CNode =  z  & DNode =  x
NNode =  y
Cost1 =  2
Cost2 =  7
Iteration  6
The shortest distance of  z  to  x  is  9

Getting the distance of  z  to  y
Iteration  1
CNode =  z  & DNode =  y
NNode =  u
Cost1 =  12
Cost2 =  10
Iteration  2
CNode =  z  & DNode =  y
NNode =  v
```

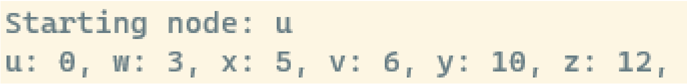


```
CNode =  z  & DNode =  y
NNode =  v
Cost1 =  6
Cost2 =  4
Iteration  3
CNode =  z  & DNode =  y
NNode =  w
Cost1 =  9
Cost2 =  7
Iteration  4
CNode =  z  & DNode =  y
NNode =  x
Cost1 =  9
Cost2 =  7
Iteration  5
CNode =  z  & DNode =  y
NNode =  y
Cost1 =  2
Cost2 =  0
Iteration  6
The shortest distance of  z  to  y  is  2

['u', '0', 6, '3', '5', 10, 12]
['v', 6, '0', '3', 7, '4', 6]
['w', '3', '3', '0', '4', 7, 9]
['x', '5', 7, '4', '0', '7', '9']
['y', 10, '4', 7, '7', '0', '2']
['z', 12, 6, 9, '9', '2', '0']

C:\Users\ColeE\Documents\School Stuff\CSC 450\Project>
```

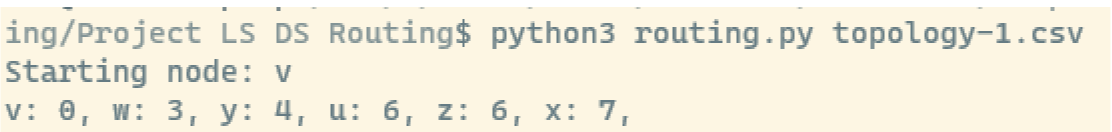


```
NNode =  x
Cost1 =  7
Cost2 =  0
Iteration  2
CNode =  z  & DNode =  x
NNode =  y
Cost1 =  1
Cost2 =  2
Iteration  3
The shortest distance of  z  to  x  is  3

Getting the distance of  z  to  y
Iteration  1
CNode =  z  & DNode =  y
NNode =  x
Cost1 =  3
Cost2 =  2
Iteration  2
CNode =  z  & DNode =  y
NNode =  y
Cost1 =  1
Cost2 =  0
Iteration  3
The shortest distance of  z  to  y  is  1

['x', '0', '2', 3]
['y', '2', '0', '1']
['z', 3, '1', '0']

C:\Users\ColeE\Documents\School Stuff\CSC 450\Project>
```

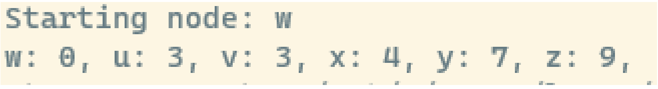
Link-State (Stuart):



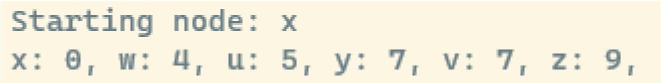
```
Starting node: u
u: 0, w: 3, x: 5, v: 6, y: 10, z: 12,
```



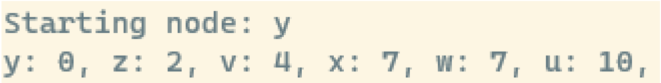
```
ing/Project LS DS Routing$ python3 routing.py topology-1.csv
Starting node: v
v: 0, w: 3, y: 4, u: 6, z: 6, x: 7,
```



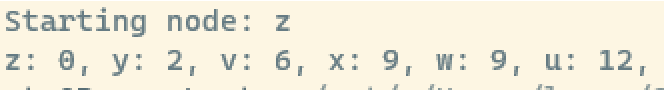
```
Starting node: w
w: 0, u: 3, v: 3, x: 4, y: 7, z: 9,
```



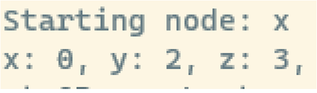
```
Starting node: x
x: 0, w: 4, u: 5, y: 7, v: 7, z: 9,
```



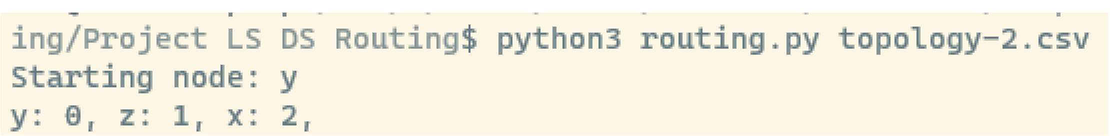
```
Starting node: y
y: 0, z: 2, v: 4, x: 7, w: 7, u: 10,
```



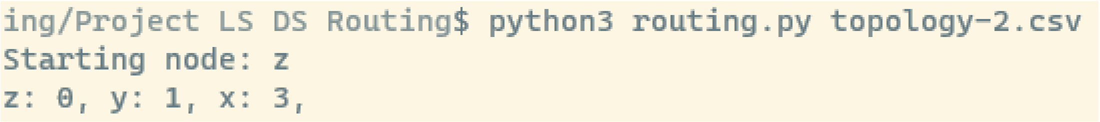
```
Starting node: z
z: 0, y: 2, v: 6, x: 9, w: 9, u: 12,
```



```
Starting node: x
x: 0, y: 2, z: 3,
```



```
ing/Project LS DS Routing$ python3 routing.py topology-2.csv
Starting node: y
y: 0, z: 1, x: 2,
```



```
ing/Project LS DS Routing$ python3 routing.py topology-2.csv
Starting node: z
z: 0, y: 1, x: 3,
```