Week 7: Graph Assignment – 2

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Q1. If no filename is provided, then print Argument must be provided. If correct filename is provided, then count of connected component is given.

```
[satyam@Eulerton DSPLab]$ gcc ConnectedComp.c -o L7_Q1
[satyam@Eulerton DSPLab]$ ./L7_Q1
Filename must be provided as argument
[satyam@Eulerton DSPLab]$ ./L7_Q1 sample.txt
The number of connected components is 1
```

If filename is provided without extension, that file cannot be opened or read.

```
satyam@Eulerton DSPLab]$ ./L7_Q1 sample
ile could not be opened
ile extension is required
```

I have created a test case, where the edge is negative, no such graph is provided.
Test case: 1 -1

```
[satyam@Eulerton DSPLab]$ ./L7_Q1 test3.txt
Graph is not possible
```

Another test case,I have created is 4 0, output is 4.

Q2. The sample graph has 9 edges with edgeweight. Matrix at Iteration 1 ie k=1.

```
[satyam@Eulerton DSPLab]$ gcc Floyd-Warshall.c -o Floyd-Warshall
[satyam@Eulerton DSPLab]$ ./Floyd-Warshall
Enter the no of edges
9
1 2 5
1 3 6
2 3 8
2 4 3
2 5 4
3 5 6
4 5 3
4 6 7
5 6 7
Original Distance Matrix
   0    5    6 INF INF INF
   5    0    8    3    4 INF
   6    8    0 INF    6 INF
 INF    3 INF    0    3    7
 INF    4    6    3    0    7
 INF INF INF    7    7    0
Iteration 1
   0    5    6 INF INF INF
   5    0    8    3    4 INF
   6    8    0 INF    6 INF
 INF    3 INF    0    3    7
 INF    4    6    3    0    7
 INF INF INF    7    7    0
```

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Figure shows distance matrix from iteration 2 to iteration 5 ie k=2 to k=5 for all pair of vertices.

```
Iteration 2
   0    5    6    8    9  INF
   5    0    8    3    4  INF
   6    8    0   11    6  INF
   8    3   11    0    3    7
   9    4    6    3    0    7
 INF  INF  INF    7    7    0

Iteration 3
   0    5    6    8    9  INF
   5    0    8    3    4  INF
   6    8    0   11    6  INF
   8    3   11    0    3    7
   9    4    6    3    0    7
 INF  INF  INF    7    7    0

Iteration 4
   0    5    6    8    9   15
   5    0    8    3    4   10
   6    8    0   11    6   18
   8    3   11    0    3    7
   9    4    6    3    0    7
  15   10   18    7    7    0

Iteration 5
   0    5    6    8    9   15
   5    0    8    3    4   10
   6    8    0    9    6   13
   8    3    9    0    3    7
   9    4    6    3    0    7
  15   10   13    7    7    0
```

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Figure shows the iteration 6, which is the final cost matrix.

```
Iteration 6
    0     5     6     8     9    15
    5     0     8     3     4    10
    6     8     0     9     6    13
    8     3     9     0     3     7
    9     4     6     3     0     7
   15    10    13     7     7     0

Final Distance matrix
    0     5     6     8     9    15
    5     0     8     3     4    10
    6     8     0     9     6    13
    8     3     9     0     3     7
    9     4     6     3     0     7
   15    10    13     7     7     0
```