

# COMP5048 Week 4 Homework

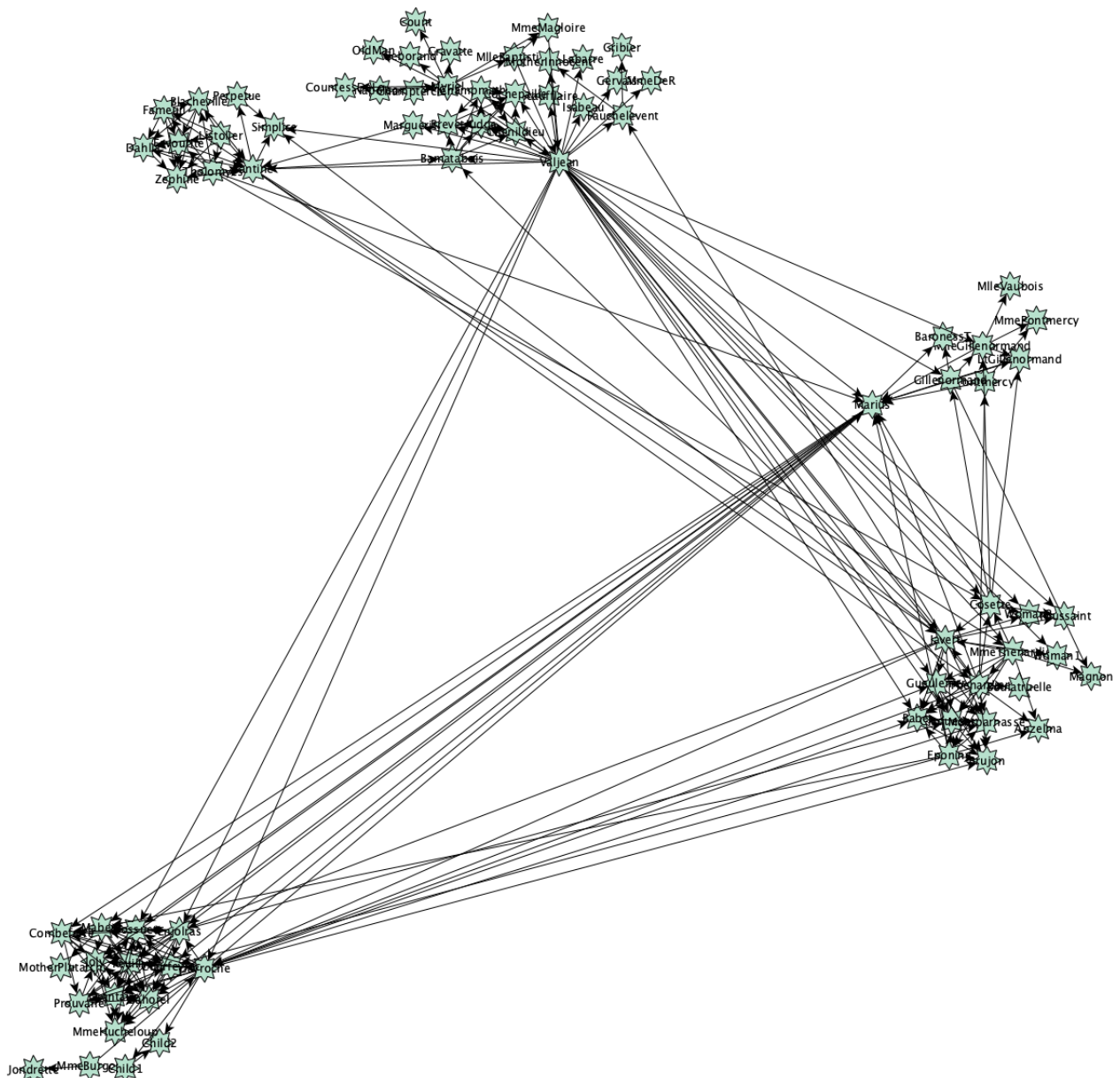
Designed by: Jiarui Xu Date: 2023/3

**\* NOTE: THE PYTHON CODE SECTIONS ARE IN THE APPENDIX.**

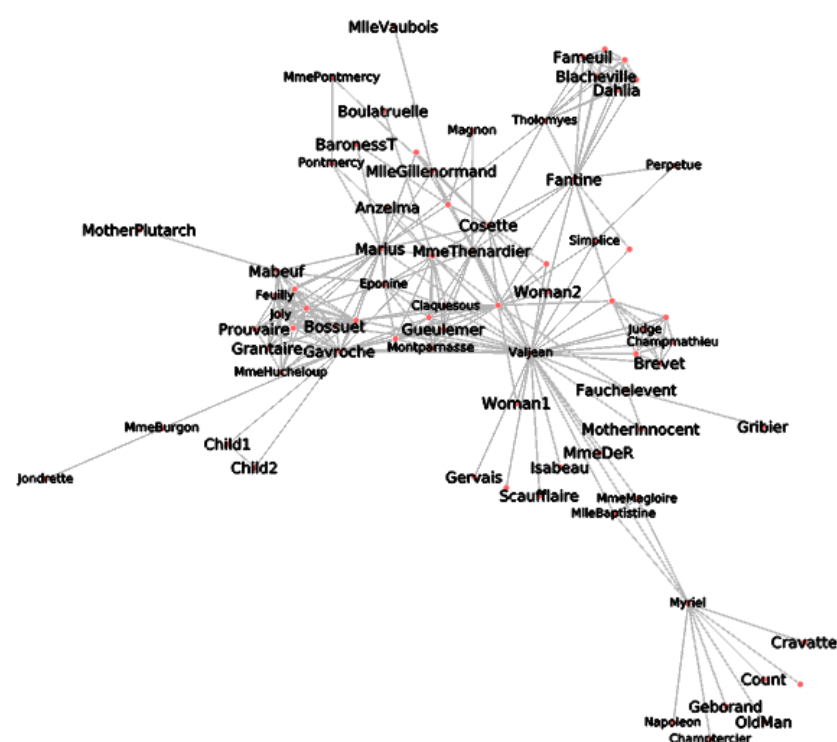
## Task 1:

Complete your tutorial exercises and submit images of the following;

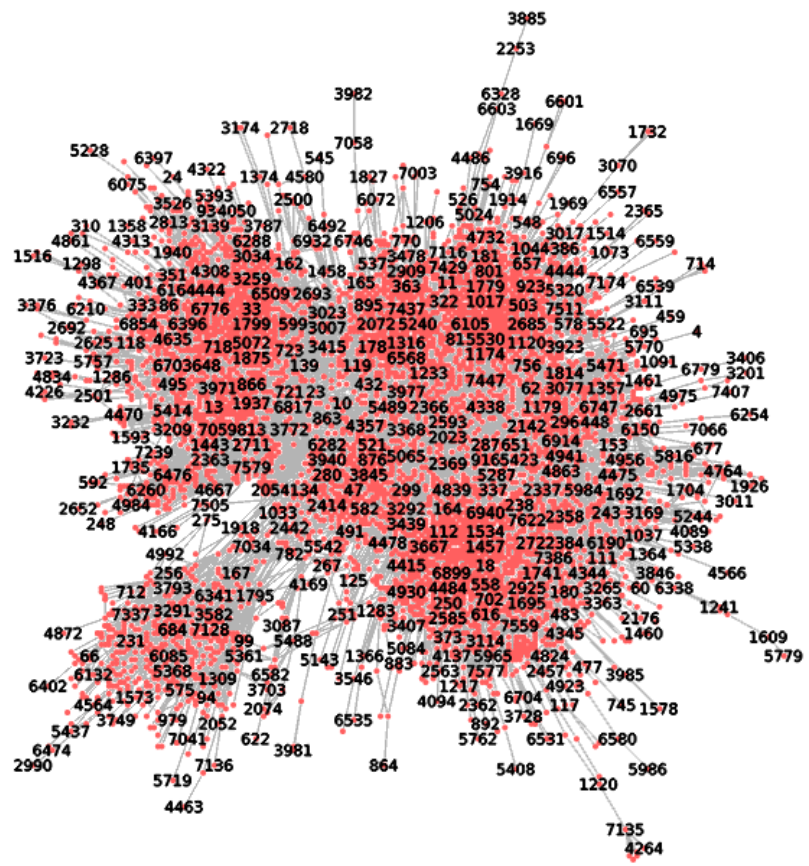
a. les\_miserables.gml using yEd Organic layout



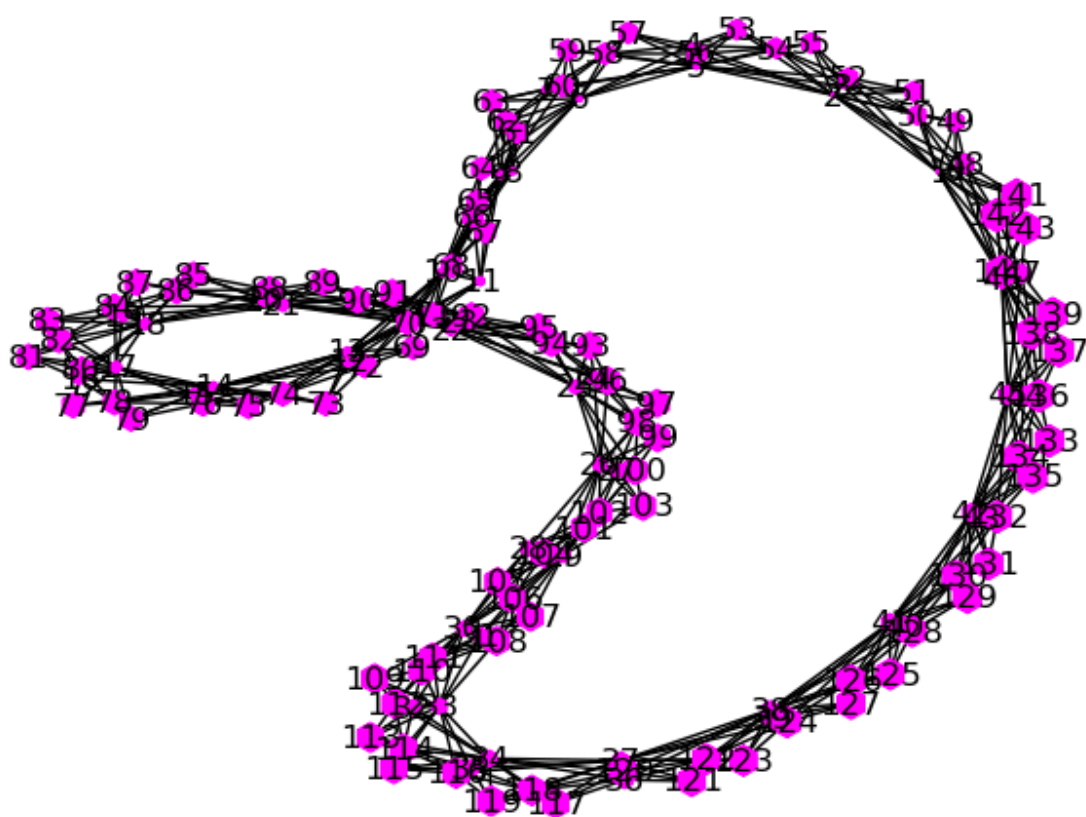
b. les\_miserables.gml using Tulip FR layout



c. lastfm\_sub.gml using Tulip FM3 layout



d. can\_144.gml using NetworkX spring layout

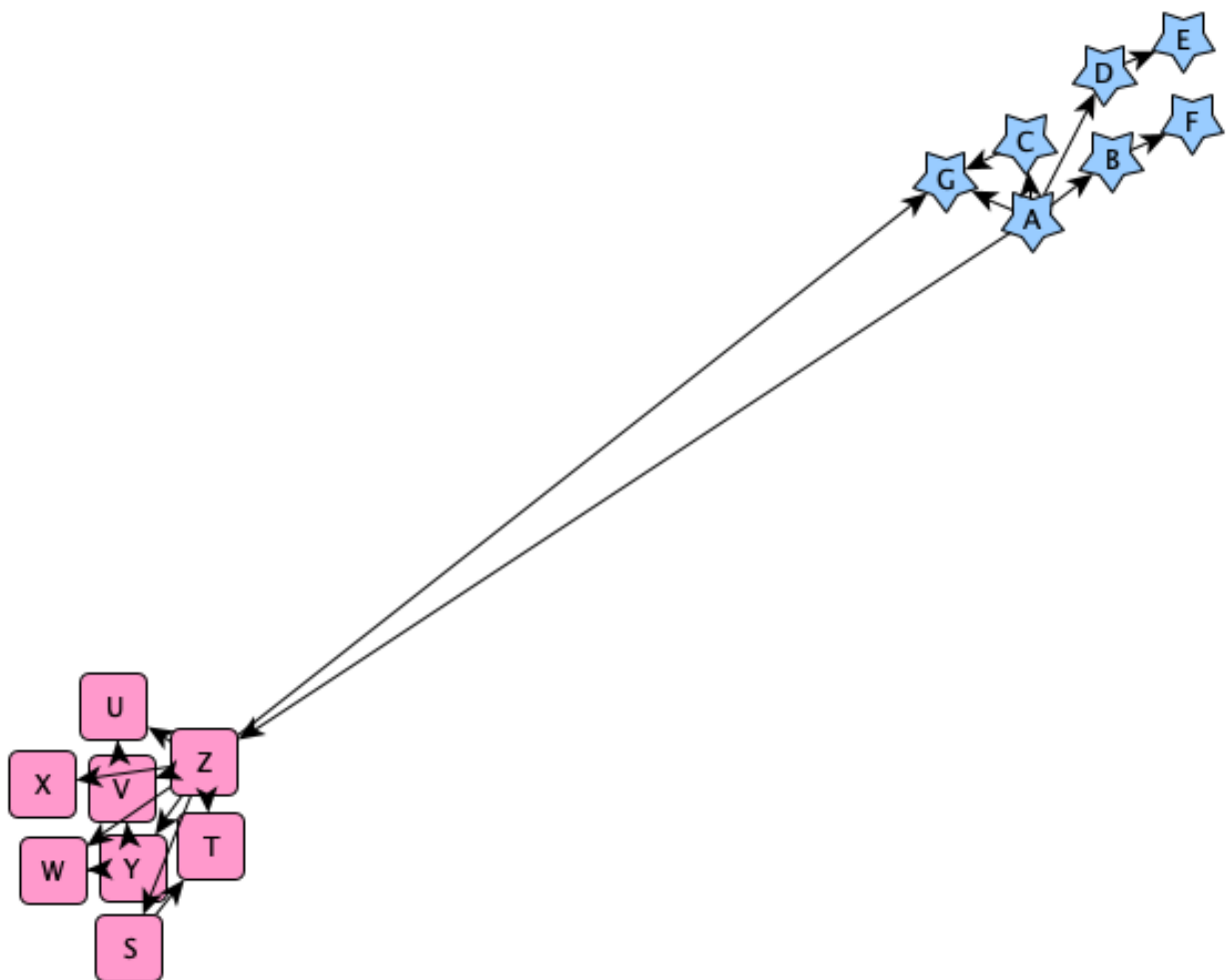


## Task 2:

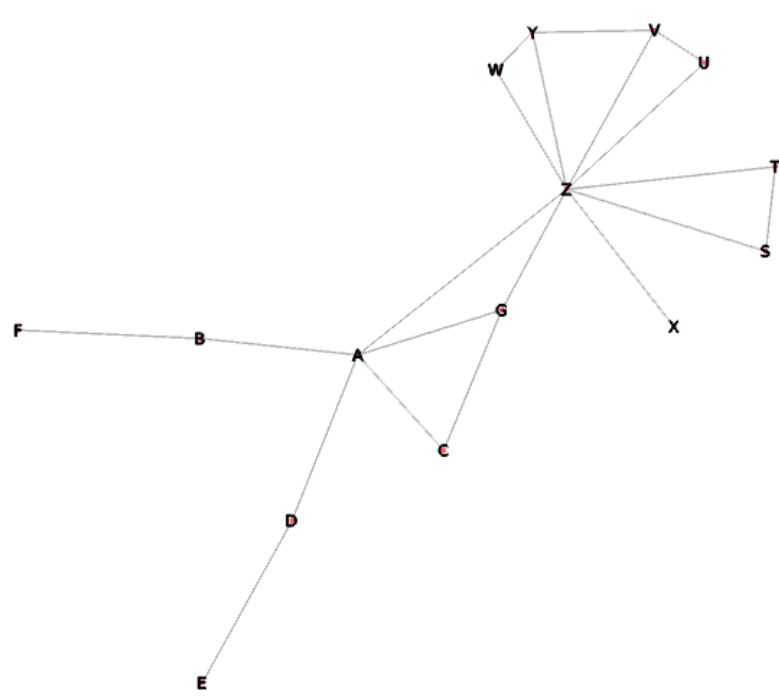
Create a small graph (10–15 vertices) based on your friends network at uni/on your social network of choice, where every person is a vertex and two people are connected with an edge if they know each other (names can be obscured/omitted, e.g. just use A, B, C etc. for the vertex names). Use at least two different force-directed layouts to visualise the graph.

\* Note: The code for creating this original social network graph is shown in the appendix.

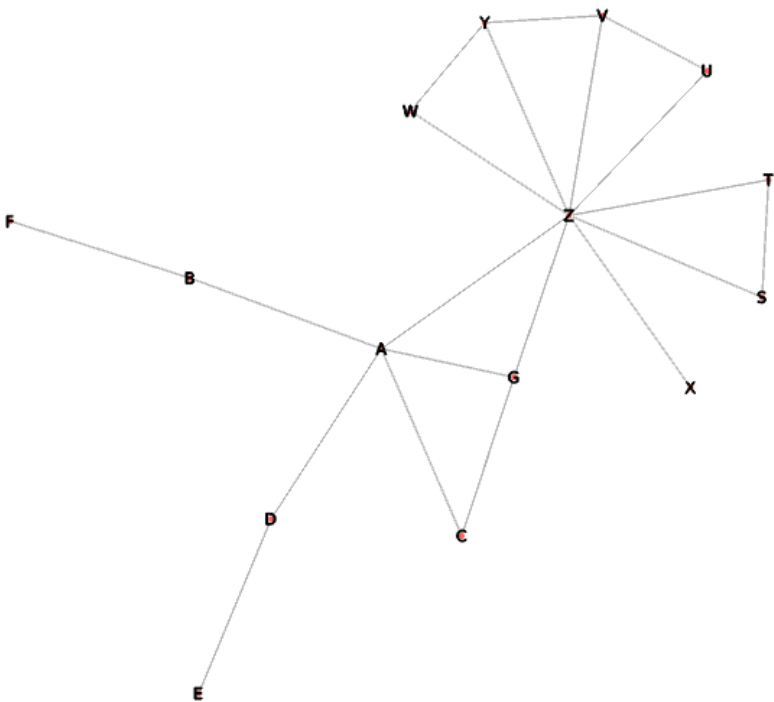
1. Using yEd Organic layout



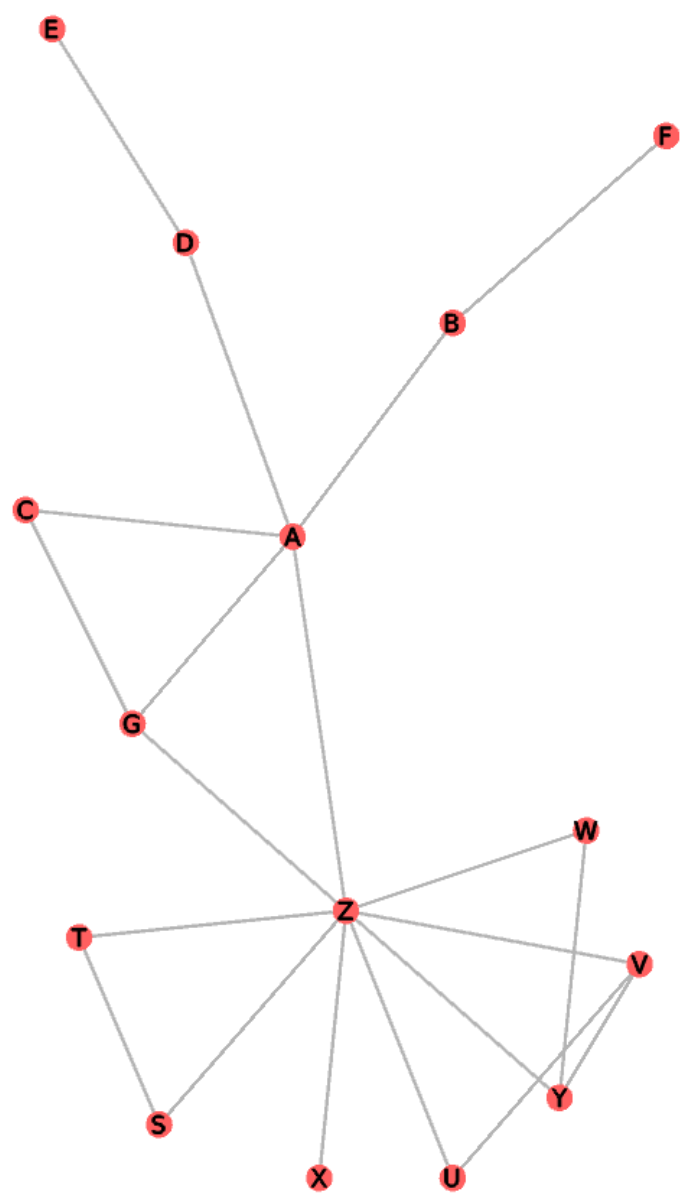
2. Using Tulip FR layout



3. Using Tulip KK layout

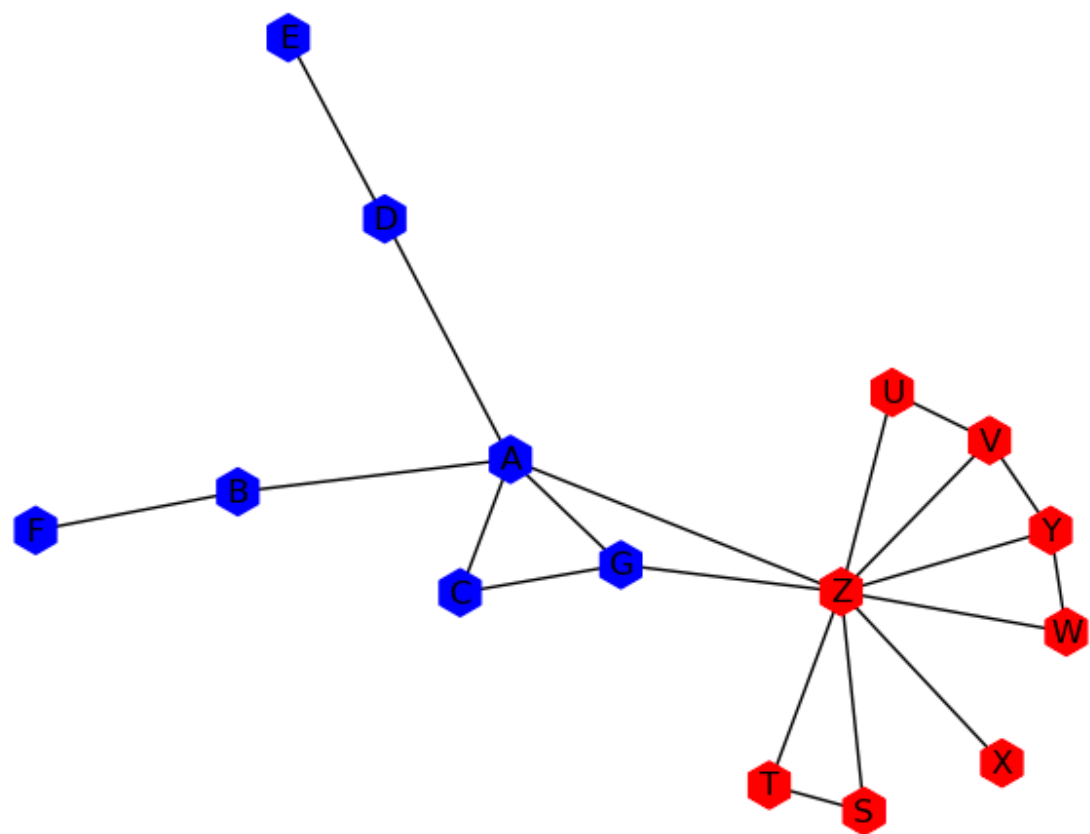


4. Using Tulip FM3 layout





5. Using NetworkX spring layout



## Appendix(Code):

# Task 1.d

```
import networkx as nx
```

```
G = nx.read_gml("comp5048_wk4-1/can_144.gml")
```

```
labels={}
```

```
for n in list(G.nodes):
```

```
    labels[n] = n
```

```
nx.draw_spring(G, node_size=[int(n) for n in G.nodes], node_shape='h', node_color='fuchsia',  
labels=labels)
```

# Task 2 Create a small graph

```
import networkx as nx
```

```
G = nx.Graph()
```

```
edges = [("A","Z"),("A","B"),("B","F"),("A","C"),("A","G"),("C","G"),("A","D"),("D","E"),("Z","Y"),  
("Z","X"),
```

```
        ("Z","W"),("Y","W"),("Z","G"),("Z","V"),("V","Y"),("V","U"),("Z","U"),("Z","S"),("Z","T"),  
("S","T")]
```

```
G.add_edges_from(edges)
```

```
nx.write_gml(G, "kuangbiao.gml")
```

# Task 2 Visualise the graph

```
import networkx as nx
```

```
import matplotlib.pyplot as plt
```

```
G = nx.read_gml("kuangbiao.gml")
```

```
col_list = ["#ff0000" if n >="L" else "#0000ff" for n in list(G.nodes)]
```

```
labels = {}
```

```
for n in list(G.nodes):
```

```
    labels[n] = n
```

```
nx.draw_spring(G, node_color=col_list, node_shape='h', labels=labels)
```