```python
In [1]: import function_clique_finder as cf
        import function_grouping_homomorphics as gh
        import function_adjacency as aj
        import function_drawing as dr
        import function_bron_kerbosch_clique_finder as bc
        import function_matrix_to_edge_connection as mc
        import numpy as np
```

```python
In [2]: #step 1- define vars
        n = 4
        k = 2
        l = 2
        #step 2 - get adj_matrices
        adjm_list = aj.all_adj_matrix(n)
        adjm_list2 = gh.group_matrices_by_ones(adjm_list)
```
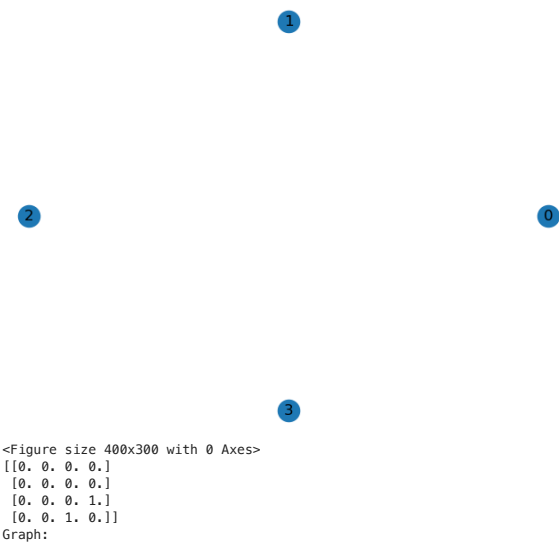
We can expect 11 groups of graphs.

```python
In [3]: #result2 = cf.find_cliques5(k, l, adjm_list)
```

```python
In [4]: b = adjm_list2[0];
```
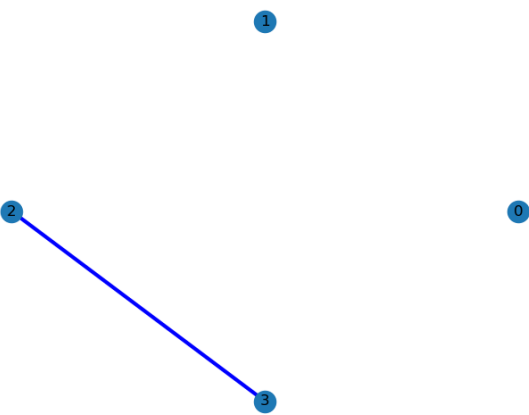
```python
In [5]: for matrix in b:
            print(np.array(matrix))
            dr.draw_graph_1color(matrix)
```

```
[[0. 0. 0. 0.]
 [0. 0. 0. 0.]
 [0. 0. 0. 0.]
 [0. 0. 0. 0.]]
Graph:
```
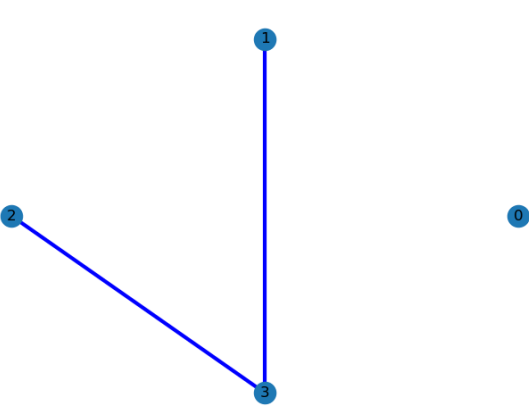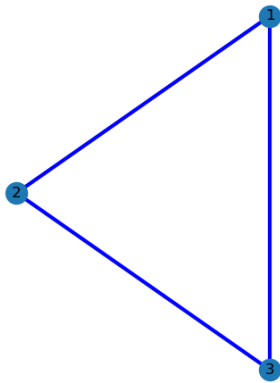

Graph Visualization


```
<Figure size 400x300 with 0 Axes>
[[0. 0. 0. 0.]
 [0. 0. 0. 0.]
 [0. 0. 0. 1.]
 [0. 0. 1. 0.]]
Graph:
```

Graph Visualization


```
<Figure size 400x300 with 0 Axes>
[[0. 0. 0. 0.]
 [0. 0. 0. 1.]
 [0. 0. 0. 1.]
 [0. 1. 1. 0.]]
Graph:
```

Graph Visualization


```
<Figure size 400x300 with 0 Axes>
[[0. 0. 0. 0.]
 [0. 0. 1. 1.]
 [0. 1. 0. 1.]
 [0. 1. 1. 0.]]
Graph:
```

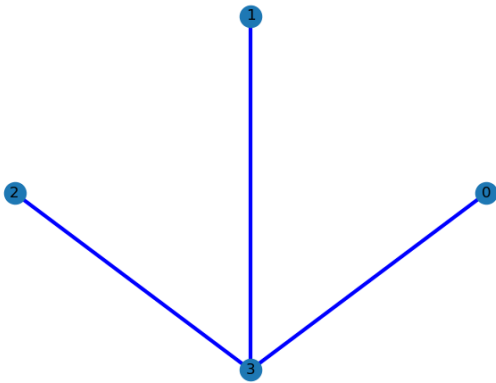## Graph Visualization


```
<Figure size 400x300 with 0 Axes>
[[0. 0. 0. 1.]
 [0. 0. 0. 1.]
 [0. 0. 0. 1.]
 [1. 1. 1. 0.]]
Graph:
```
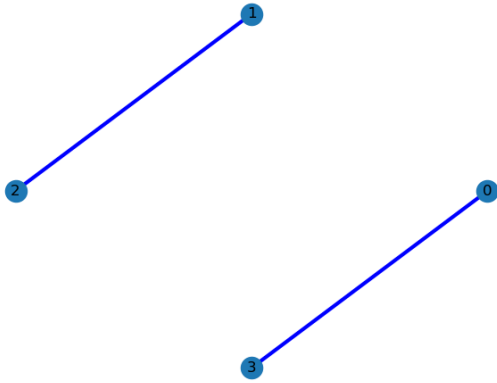
Graph Visualization


```
<Figure size 400x300 with 0 Axes>
[[0. 0. 0. 1.]
 [0. 0. 1. 0.]
 [0. 1. 0. 0.]
 [1. 0. 0. 0.]]
Graph:
```
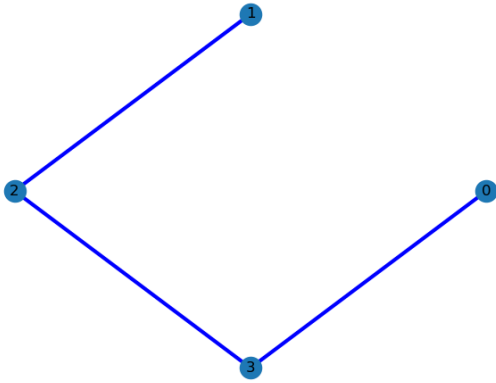
Graph Visualization


```
<Figure size 400x300 with 0 Axes>
[[0. 0. 0. 1.]
 [0. 0. 1. 0.]
 [0. 1. 0. 1.]
 [1. 0. 1. 0.]]
Graph:
```

Graph Visualization


```
<Figure size 400x300 with 0 Axes>
[[0. 0. 0. 1.]
 [0. 0. 1. 1.]
 [0. 1. 0. 1.]
 [1. 1. 1. 0.]]
Graph:
```
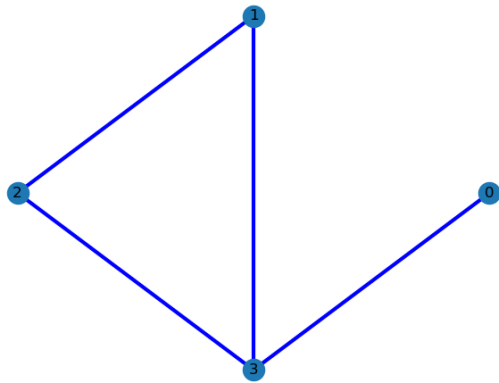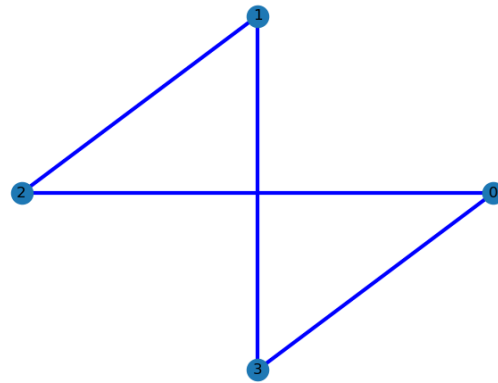
Graph Visualization


```
<Figure size 400x300 with 0 Axes>
[[0. 0. 1. 1.]
 [0. 0. 1. 1.]
 [1. 1. 0. 0.]
 [1. 1. 0. 0.]]
Graph:
```
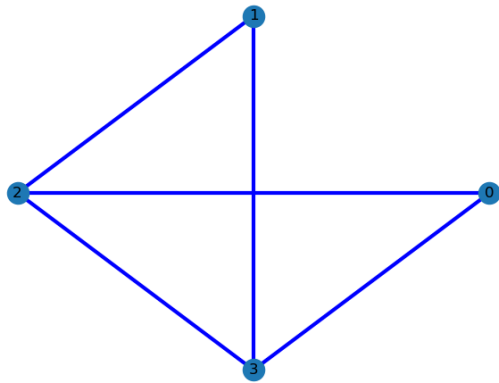
Graph Visualization


```
<Figure size 400x300 with 0 Axes>
[[0. 0. 1. 1.]
 [0. 0. 1. 1.]
 [1. 1. 0. 1.]
 [1. 1. 1. 0.]]
Graph:
```
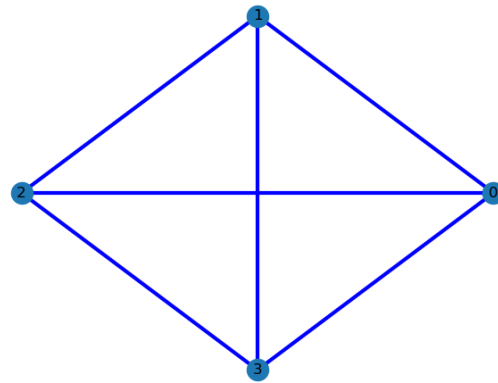
Graph Visualization


```
<Figure size 400x300 with 0 Axes>
[[0. 1. 1. 1.]
 [1. 0. 1. 1.]
 [1. 1. 0. 1.]
 [1. 1. 1. 0.]]
Graph:
```

Graph Visualization


```
<Figure size 400x300 with 0 Axes>
<Figure size 640x480 with 0 Axes>
```

```
In [6]:  for matrix in b:
             print(np.array(matrix))
             dr.draw_graph_1color(matrix)
             print('here are the connections for graph:')
             dd = mc.adj_mat_dict(matrix)
             print(dd)
             print('here are the cliques in the graph:')
             gg = bc.MaximalCliquesFinder(dd)
             gg.find_cliques()
             gg.print_cliques()

             print()
             print('****************************************')
```

```
[[0. 0. 0. 0.]
 [0. 0. 0. 0.]
 [0. 0. 0. 0.]
 [0. 0. 0. 0.]]
Graph:
```

Graph Visualization


```
<Figure size 400x300 with 0 Axes>
here are the connections for graph:
{0: [], 1: [], 2: [], 3: []}
here are the cliques in the graph:
[0]
[1]
[2]
[3]

*****************************************
[[0. 0. 0. 0.]
 [0. 0. 0. 0.]
 [0. 0. 0. 1.]
 [0. 0. 1. 0.]]
Graph:
```

Graph Visualization


```
<Figure size 400x300 with 0 Axes>
here are the connections for graph:
{0: [], 1: [], 2: [3], 3: [2]}
here are the cliques in the graph:
[0]
[1]
[2, 3]

*****************************************
[[0. 0. 0. 0.]
 [0. 0. 0. 1.]
 [0. 0. 0. 1.]
 [0. 1. 1. 0.]]
Graph:
```

Graph Visualization


```
<Figure size 400x300 with 0 Axes>
here are the connections for graph:
{0: [], 1: [3], 2: [3], 3: [1, 2]}
here are the cliques in the graph:
[0]
[1, 3]
[2, 3]

*****************************************
[[0. 0. 0. 0.]
 [0. 0. 1. 1.]
 [0. 1. 0. 1.]
 [0. 1. 1. 0.]]
Graph:
```
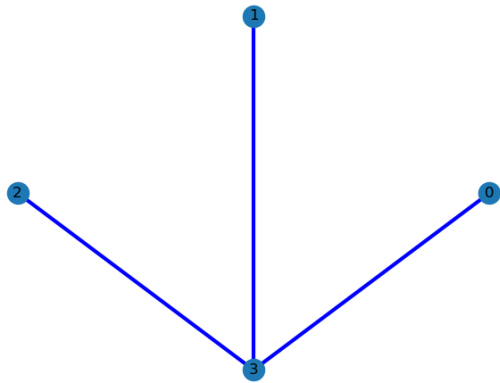
Graph Visualization


```
<Figure size 400x300 with 0 Axes>
here are the connections for graph:
{0: [], 1: [2, 3], 2: [1, 3], 3: [1, 2]}
here are the cliques in the graph:
[0]
[1, 2, 3]

*****************************************
[[0. 0. 0. 1.]
 [0. 0. 0. 1.]
 [0. 0. 0. 1.]
 [1. 1. 1. 0.]]
Graph:
```
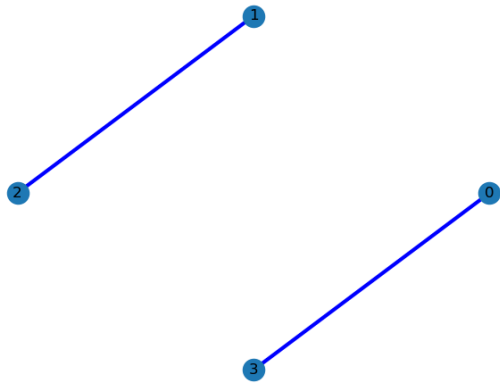
Graph Visualization


```
<Figure size 400x300 with 0 Axes>
here are the connections for graph:
{0: [3], 1: [3], 2: [3], 3: [0, 1, 2]}
here are the cliques in the graph:
[0, 3]
[1, 3]
[2, 3]

*****************************************
[[0. 0. 0. 1.]
 [0. 0. 1. 0.]
 [0. 1. 0. 0.]
 [1. 0. 0. 0.]]
Graph:
```

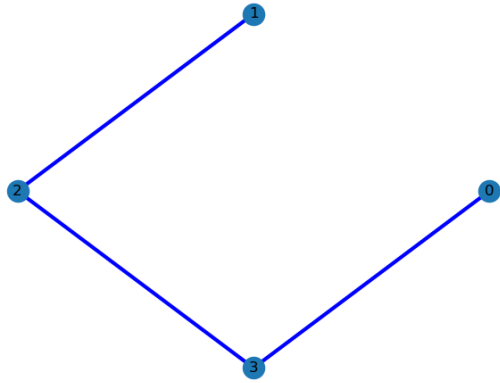## Graph Visualization


```
<Figure size 400x300 with 0 Axes>
here are the connections for graph:
{0: [3], 1: [2], 2: [1], 3: [0]}
here are the cliques in the graph:
[0, 3]
[1, 2]

*****************************************
[[0. 0. 0. 1.]
 [0. 0. 1. 0.]
 [0. 1. 0. 1.]
 [1. 0. 1. 0.]]
Graph:
```
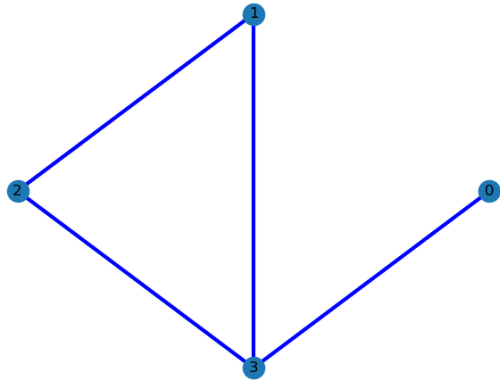
Graph Visualization


```
<Figure size 400x300 with 0 Axes>
here are the connections for graph:
{0: [3], 1: [2], 2: [1, 3], 3: [0, 2]}
here are the cliques in the graph:
[0, 3]
[1, 2]
[2, 3]

*****************************************
[[0. 0. 0. 1.]
 [0. 0. 1. 1.]
 [0. 1. 0. 1.]
 [1. 1. 1. 0.]]
Graph:
```

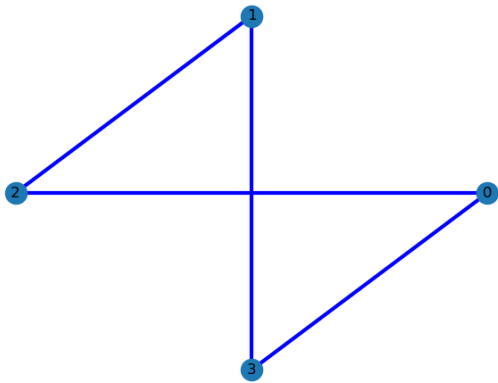## Graph Visualization


```
<Figure size 400x300 with 0 Axes>
here are the connections for graph:
{0: [3], 1: [2, 3], 2: [1, 3], 3: [0, 1, 2]}
here are the cliques in the graph:
[0, 3]
[1, 2, 3]

*****************************************
[[0. 0. 1. 1.]
 [0. 0. 1. 1.]
 [1. 1. 0. 0.]
 [1. 1. 0. 0.]]
Graph:
```
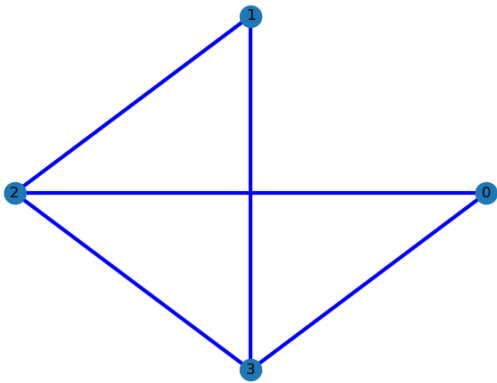
Graph Visualization


```
<Figure size 400x300 with 0 Axes>
here are the connections for graph:
{0: [2, 3], 1: [2, 3], 2: [0, 1], 3: [0, 1]}
here are the cliques in the graph:
[0, 2]
[0, 3]
[1, 2]
[1, 3]

******************************************
[[0. 0. 1. 1.]
 [0. 0. 1. 1.]
 [1. 1. 0. 1.]
 [1. 1. 1. 0.]]
Graph:
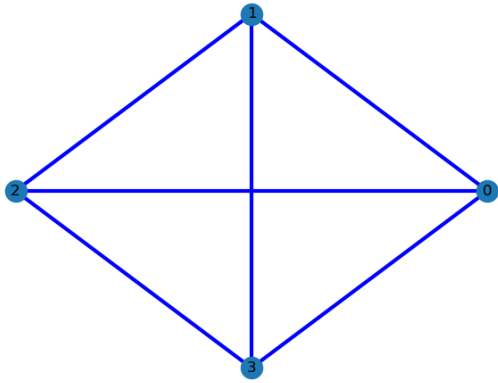```

## Graph Visualization



```
<Figure size 400x300 with 0 Axes>
here are the connections for graph:
{0: [2, 3], 1: [2, 3], 2: [0, 1, 3], 3: [0, 1, 2]}
here are the cliques in the graph:
[0, 2, 3]
[1, 2, 3]

******************************************
[[0. 1. 1. 1.]
 [1. 0. 1. 1.]
 [1. 1. 0. 1.]
 [1. 1. 1. 0.]]
Graph:
```

Graph Visualization


```
<Figure size 400x300 with 0 Axes>
here are the connections for graph:
{0: [1, 2, 3], 1: [0, 2, 3], 2: [0, 1, 3], 3: [0, 1, 2]}
here are the cliques in the graph:
[0, 1, 2, 3]

******************************************
<Figure size 640x480 with 0 Axes>
```

In [7]: dd

Out[7]: {0: [1, 2, 3], 1: [0, 2, 3], 2: [0, 1, 3], 3: [0, 1, 2]}

In [ ]: