OMIS 670 – Spring 2023  
Assignment 3: Find Clusters in Networks  
Available Date: 3/7/2023  
Due Date: **3/21/2023** at **11:59 PM** on **Blackboard**  
Instructor: Amin Vahedian

Consider the following data on LinkedIn endorsement activity:

|  |  |  |
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| **Endorsement By** | **The Endorsed** | **Skill** |
| Lisa | Bhupesh | R Programming |
| Xun | Nick | Python Programming |
| Patrick | Ann | R Programming |
| Bhupesh | Nick | Python Programming |
| Nick | Xun | Python Programming |
| Bhupesh | Lisa | R Programming |
| Ann | Xun | Python Programming |
| Lisa | Xun | Python Programming |
| Nick | Patrick | C++ Programming |
| Xun | Patrick | Python Programming |
| Patrick | Xun | Python Programming |

Consider each person to be a vertex in a social network. Do the following tasks:

* Consider the connection definitions in each of the tables below. For each definition, build networks based on the defined connection.
* Label the vertices and use the label as the shape of the vertices.
* Then, group them by cluster, using Girvan-Newman algorithm. Use Graph Options to keep using the vertex label as the shape.
* Use the following colors for the clusters:
  + Red
  + Blue
  + Green
  + Black
  + Purple
  + Orange
* Add the screenshots of your networks to the following tables.

***Note****: If you have less than 6 clusters, only use as many colors as you need. For example, if you have two clusters, use red for the first one and blue for the second one.*

|  |
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| **Connection Definition:**  *There is a directed link from A to B if A endorses B.* |
| **Screenshot of the Network:**  *<<Place your screenshot here, after deleting this line.>>* |

|  |
| --- |
| **Connection Definition:**  *There is a connection between A and B if A and B have endorsed the same person.* |
| **Screenshot of the Network:**  *<<Place your screenshot here, after deleting this line.>>* |

Note: For all the networks, use Fruchterman-Reingold layout with the following parameters:

* Strength of the repulsive force between vertices: **1**
* Iterations per layout: **10**