OMIS 670 – Spring 2023  
Assignment 4: Find the Most Important Individual in an Email Network  
Available Date: 3/21/2023  
Due Date: **4/11/2023** at **11:59 PM** on **Blackboard**  
Instructor: Dr. Amin Vahedian

The following data shows a summary of email communications among employees of a company from their marketing and finance departments:

|  |  |
| --- | --- |
| **Author** | **List of Recipients** |
| Artemis | Frank |
| Liam | Artemis |
| Artemis | Cricket |
| Frank | Charlie |
| Charlie | Mac |
| Cricket | Frank |
| Dee | Dennis |
| Frank | Artemis |
| Dee | Mac |
| Charlie | Frank |
| Frank | Mac |
| Liam | Frank |
| Charlie | Dennis |
| Liam | Cricket |
| Mac | Charlie |
| Frank | Cricket |
| Mac | Dennis |
| Mac | Dee |

Consider each person to be a vertex. There is a directed edge from person A to person B, if person A has sent an email to person B. Build this network in NodeXL and show the network in the box below:

|  |
| --- |
| **Screenshot of the Network:**  *<<Place your screenshot here, after deleting this line.>>* |

The company is interested in finding out who has the most “bridging” role between the two departments in the email communications. Answer the following:

* Which vertex centrality measure is most appropriate for this task, and why?
  + Your answer: Betweenness centrality is the most appropriate measure for this task; because it is a measure that characterizes the importance of a given vertex for establishing short pathways to other vertices

Use NodeXL to calculate the measure you specified above. Answer the following:

* Who has the highest value for this measure, and what is the value?
  + Your answer: Frank has highest Betweenness centrality, which is 24.000.
* Explain the importance of this person to communications in this company, using your findings.
  + Your answer: As mentioned in the question, I have identified 2 network clusters in the given network. As the email communication involved 2 departments, ie. the marketing and finance departments. The email exchange between 2 network clusters/ departments is handled by CHARLIE and FRANK, where Charlie and Frank act as bridging entities between two departments.