

CS 43118 & CS 53118 ST: Graph and Social Network Analysis

Homework 2 (100 points)

Instructor: Niranjana Rai

Due Date: Please refer to the course website

1. List five types of social networks based on different relationship types (e.g. friendship, follower, colleague) ? Explain each with an example? (20 points)
2. What is a Protein-Protein Interaction (PPI) network? Mention two applications of PPI. (20 points)
3. What is the centrality measure of a network? What are different types of centrality measure? Explain with an example. (20 points)
4. What is Multiplexity, Mutuality, and Assortativity in a network? (20 points)
5. Calculate the local clustering coefficient of node F in Figure 1. (20 points)
6. **Bonus question:** Follow the tutorial found [here](#) and calculate the average degree, average clustering coefficient, Network Diameter, Average Path Length of the Marvel Universe Network Dataset using Gephi. (20 points)

Dataset: <https://www.kaggle.com/csanhueza/the-marvel-universe-social-network>

Tutorial:

<https://towardsdatascience.com/how-to-get-started-with-social-network-analysis-6d527685d374>

***You will receive extra 20 points if you answer the bonus question.**

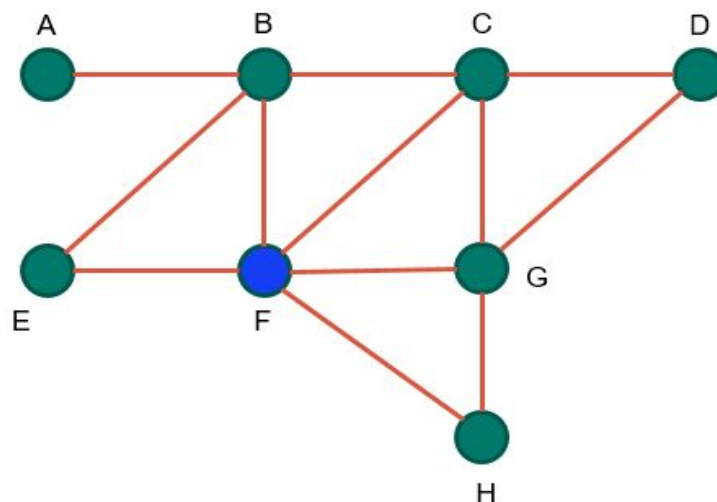


Figure 1