Student Name: _____   J#: _____

CSC 641 Network Science
Spring 2017
### Instructor: Dr. Natarajan Meghanathan
Exam 3 (Take Home)

Due: April 18, 2017 (4 PM, in class). Submit a printed hardcopy in class (with this quiz sheet as a cover page and your name and J# on the top of the sheet).
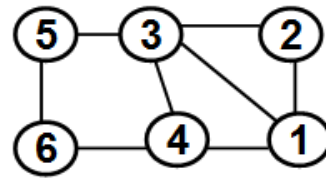----------

1) (35 pts) Run the BFS algorithm to determine the **betweenness of the edges** in the graphs assigned to you. Show in detail all the work [Note: You should NOT use the software to compute the edge betweenness]
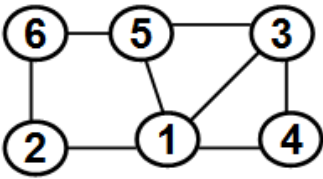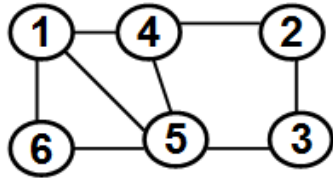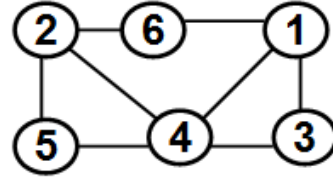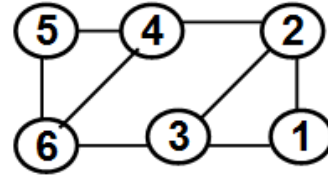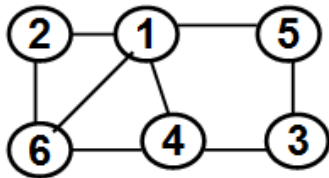
Ashley Abraham
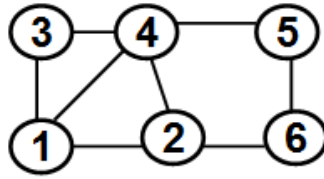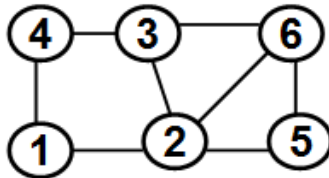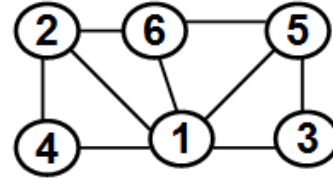
Jonathan Adams

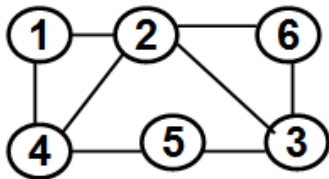Uzochukwu Akabueze

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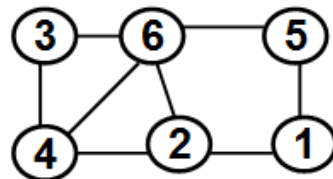
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Bejnamin Garlington
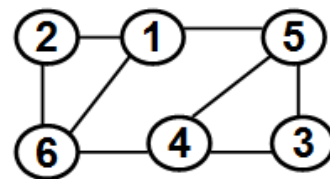
Md Mohiuddin Hasan

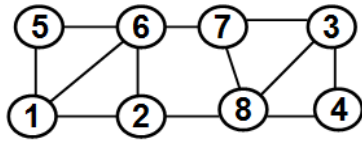Anthony Lam

Peter Lowe

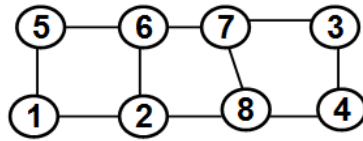Md A. Rahman

Maruful A. Sumon

Ying Zhang

2) (35 pts) Run the Girvan Newman community detection algorithm based on (a) Edge betweenness and (b) Neighborhood Overlap: NOVER scores to determine a partitioning of the graph into communities.
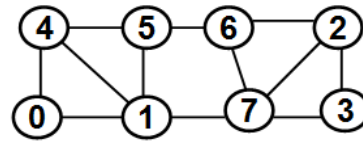
For each of (a) and (b):
Determine the modularity score for each of the communities and the total modularity score. Also, draw the partitioning hierarchy and indicate the modularity score of the partitions/communities.
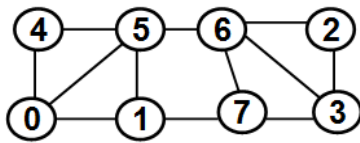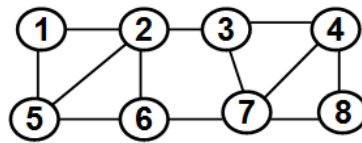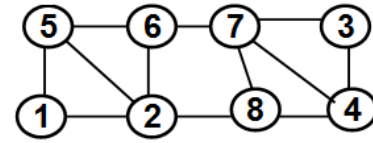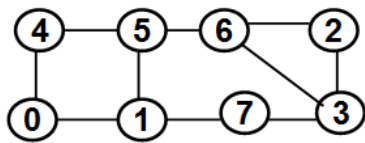
Ashley Abraham

Jonathan Adams
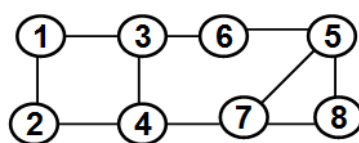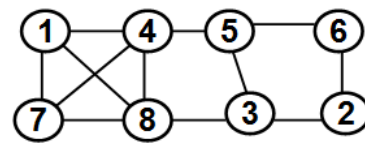
Uzochukwu Akabueze

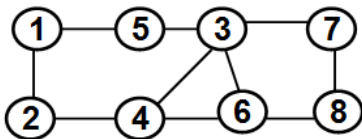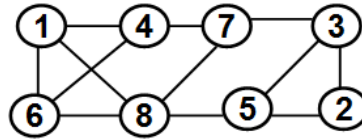Mahzabin Akhter

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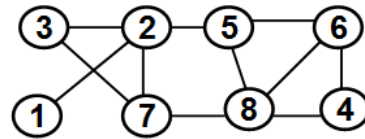
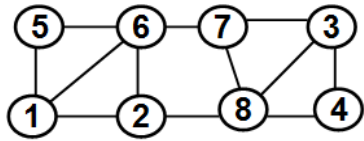Bejnamin Garlington

Md Mohiuddin Hasan
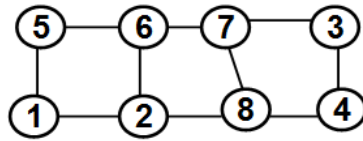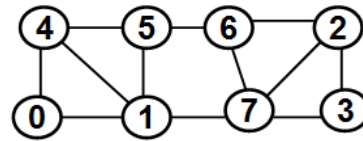
Anthony Lam

Peter Lowe

Md A. Rahman

Maruful A. Sumon

Ying Zhang

3) (30 pts) (a) Determine the threshold NOVER score (minimum NOVER score) that would guarantee the satisfaction of the **strong triadic closure** property for the edges in the following graph.
(b) Using the threshold NOVER score determined, identify the strong and weak ties.
(c) Determine a partitioning of the graph into communities based on the strong/weak ties identified.
(d) Determine the modularity score for each of the communities and the total modularity score. Also, draw the partitioning hierarchy and indicate the modularity score of the partitions/communities.
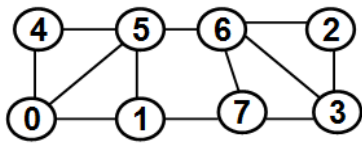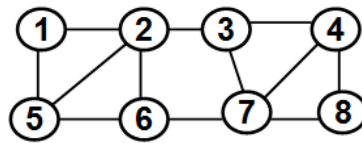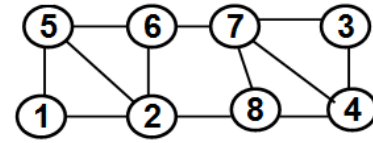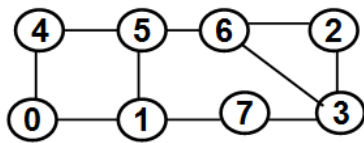
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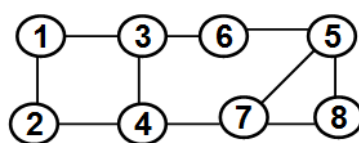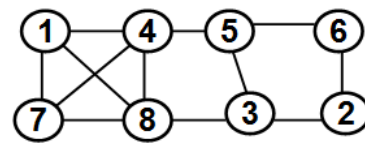
Jonathan Adams

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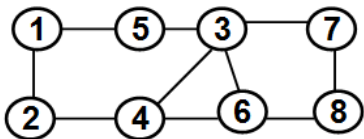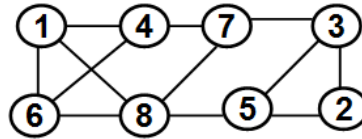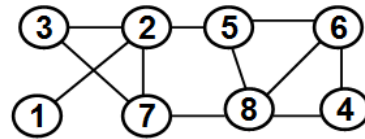Omar Aljawfi

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