Assignment 3
<u>Link-Analysis based Ranking of Vertices and Community Detection Algorithms</u>

Due: March 29, 2016: 4 PM (hard deadline; no postponement)   **Max. Points:** 125

Q1) (50 pts) Determine a ranking of the vertices in the graph assigned to you based on each of the following:
(i) The assortativity scores (break any ties using the hub scores) computed using the HITS algorithm. Show all the work.
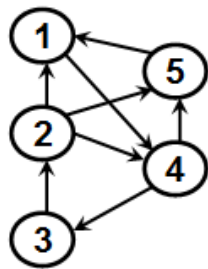(ii) Page Rank
(iii) In-degree eigenvector centrality (use the JAMA package).
(iv) Run the Spearman's correlation coefficient algorithm to determine the extent of similarity between the rankings for the Assortativity scores and Page Rank.
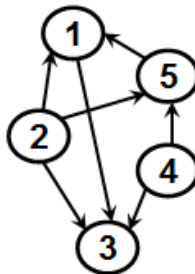(v) Run the Spearman's correlation coefficient algorithm to determine the extent of similarity between the rankings for the Page Rank and In-degree eigenvector centrality.
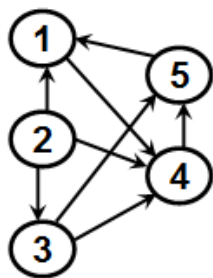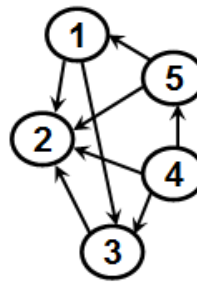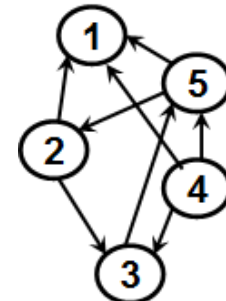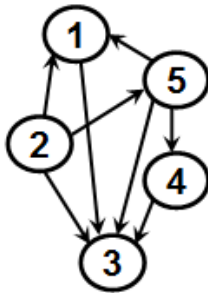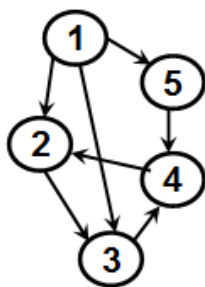

Damon   Harish   Nanda   Victoria   Andrew
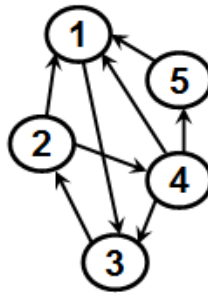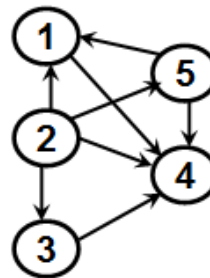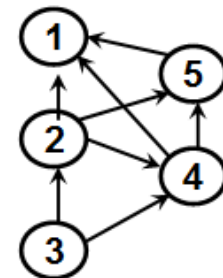

Jerry   Mesafint   Phillip   Deepak   Kranthi

Keerthi

Q2-45 pts
(a-30 pts) Run the "complete linkage clustering" algorithm to determine a hierarchy of clusters
(b-15 pts) Compute the modularity scores of the communities at each level of the hierarchy and determine
the partition of vertices into communities with the largest possible modularity score

Victoria

Keerthi

Damon

Andrew

Mesafint
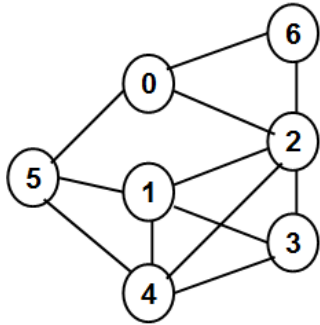

Harish

Jerry

Deepak

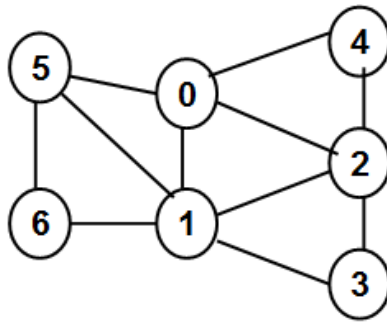

Nanda

Phillip

Kranthi

Q3-30 pts
(a-20 pts) Use the Java code for calculating the Edge Betweenness given to you to determine an optimal partitioning of the graph into communities using the Girvan-Newman Algorithm.
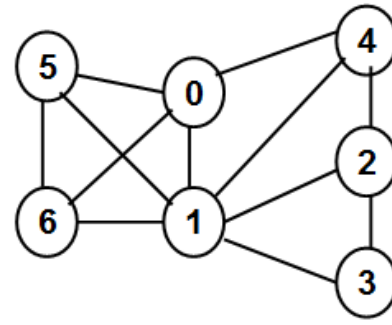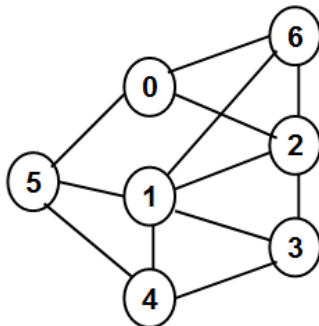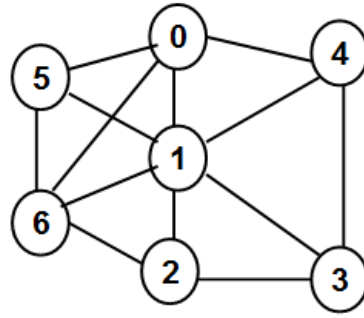(b-10 pts) Compute the modularity scores of the communities at each level of the hierarchy and determine the partition of vertices into communities with the largest possible modularity score
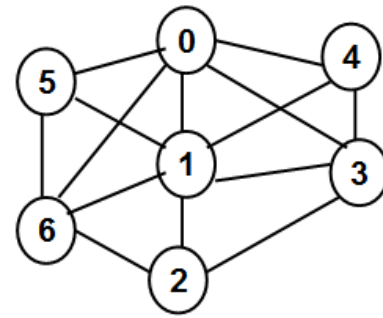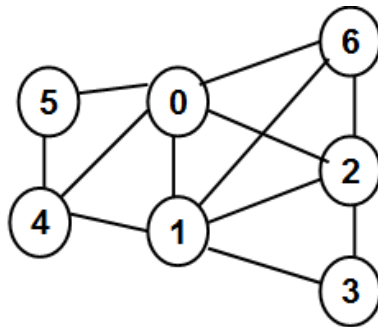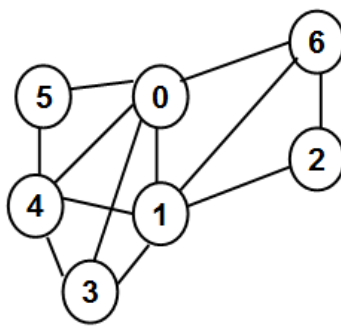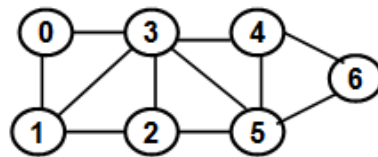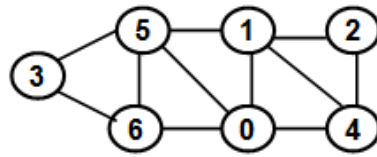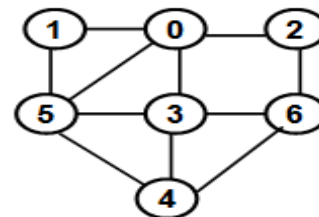

Victoria

Keerthi

Damon

Andrew

Mesafint

Harish

Jerry

Deepak

Nanda

Phillip

Kranthi