Bank of Questions
Faculty of computer and Informations
Information Systems Program
Social Information Systems
**IS451**

Faculty of Science
Math. Dept.

Assiut University

Mark T or F for each true of false sentence, respectively.

1- The graph data structure can be used to solve complex problems. ✓

2- Behind each complex system there is a network, that defines the interactions between the component. ✓

3- Assume that, the matrix E represents the adjacency matrix for a graph, the matrix E x E has no information. ✗

4- The bipartite graph can be represented as the complete network. ✗

5- The social network is a graph data structure, where the node represents person and the edge represents link. ✓

6- The facebook's graph of people proofs that the six-degree separation theory is wrong. ✗

7- To proof the six-degree separation theory, we must estimate the shortest path between each two nodes. ✓

8- The oldest network is the metabolic network. ✗

9- The largest network containing nodes is the social network sites. ✓

10- In social networks, we can predict the link between the people. ✓

11- If you want to understand the spread of diseases, you need to figure out who will be in contact with whom. ✓

12- If you want to understand the structure of the Web, you have to analyze the 'links'. ✓

13- The random graph generator can represent the real-world networks. ✗

14- Assume that we have next graph, the cluster coefficient for red node is 0.9. ✗

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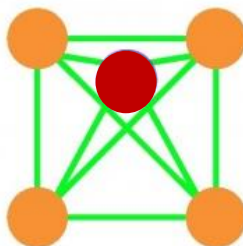
15- The concept of comes from the analysis social networks. ✗

16- Preferential Attachment model can represent the real network. ✓

17- A node with high value of cluster coefficient means that the neighbors of this node have many shared links. ✗

18- We can see the concept of homophily in birds. ✓

19- The Granovetter's concept says that the people knows about the jobs from their close friends ✓

20- Onnela's experiment proofed the Granovetter's concept in real-world network. ✓

21- If two nodes have small value for the overlap coefficient, this that the link between these nodes is weak tie. ✓

22- Assume, we have the next graph, the overlap coefficient for red nodes is 1.
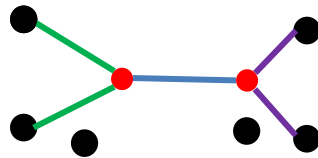
23- If someone becomes obese, then his/her friend can be obese. ✓

24- The enemy of my enemy is my friend, this is a balance network. ✓

25- The enemy of my enemy is my enemy, this is a balance network. ✗

26- This balance networks are changed a lot with time. ✓

27- the Barabási-Albert model is a model that can generate random graphs. ✓

28- The richer becomes richer is the idea of the Barabási-Albert model. ✓

29- Barabási-Albert model, we the node is selected randomly, this means that all nodes have the same probability. ✗

30- Zachary's Karate Club dataset used in community detection algorithms, because this dataset contains small number of nodes. ✓

31- Clique Finder is one the best methods to find community in social networks.

32- Two *k*-cliques are considered adjacent if they share *k* nodes

33- Assume we have next graph. The green nodes represent the complete clique.
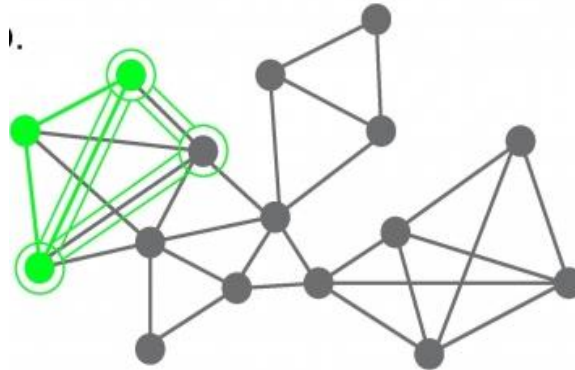
34- The maximum modularity hypothesis can measure the quality of community detection methods.

35- The agglomerative hierarchical clustering is one of easiest method to find community in social network graph.

36- The Ravasz Algorithm uses link betweenness measurement to find community detections.

37- Affiliation Networks contains two types of nodes: person and Focal points of social interaction.

38- We can use Affiliation networks in analyzing the spread of coronavirus.

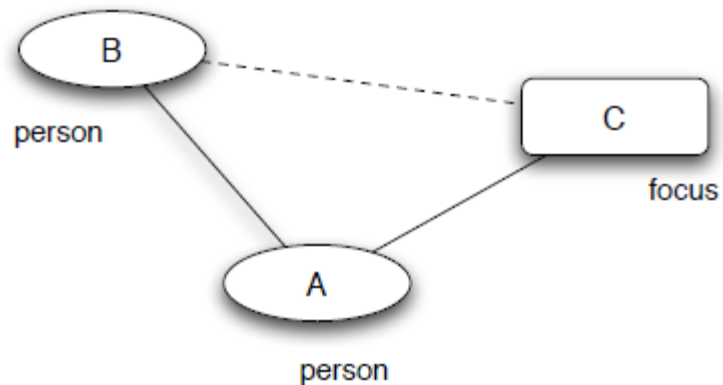39- We cannot predict how the social network is formulated during large number of years.

40- Ego network contains the persons and their behaviors.

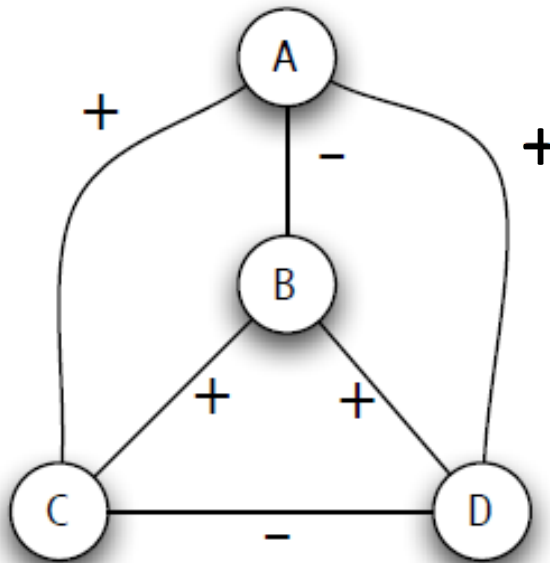41- The fake news can be diffused into the social network.

42- We can know the importance of the graph node from its degree.

43- The next graph is called membership closure.

44- The next network is a balanced network.

45- The student friendship in the first year in the university is a random network.

46- For Erdős-Rényi network, the node degree distribution is only Poisson distribution. F
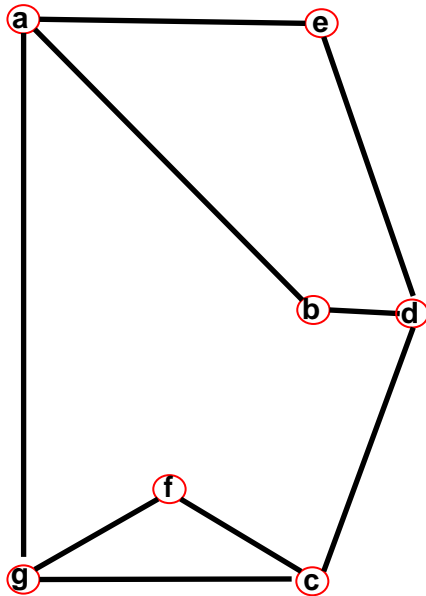
47- Social network can be used to predict the criminals.

48- Network science is can be used in biology.

49- Real Networks are supercritical.

50- The critical point separates the regime where there is not yet a giant component (<k> > 1). ✗

Assume we have the next graph and the adjacency matrix.

	a	b	c	d	e	f	g
a	I					II	
b							
c	III						IV
d							
e		V					
f							
g							
h							

51- What is the value of I
   a) 0   b) 1   c) 2
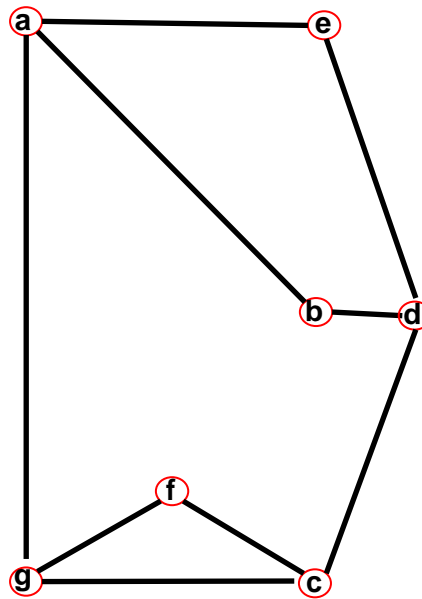
52- What is the value of I
   a) 0   b) 1   c) 2

53- What is the value of I
   a) 0   b) 1   c) 2

54- What is the value of I
   a) 0   b) 1   c) 2

55- What is the value of I
   a) 0   b) 1   c) 2

Assume we have the next graph and the adjacency matrix.

56- What is the degree of the node e
a) 2   b) 3   c) 4

57- What is the degree of the node b
a) 2   b) 3   c) 4

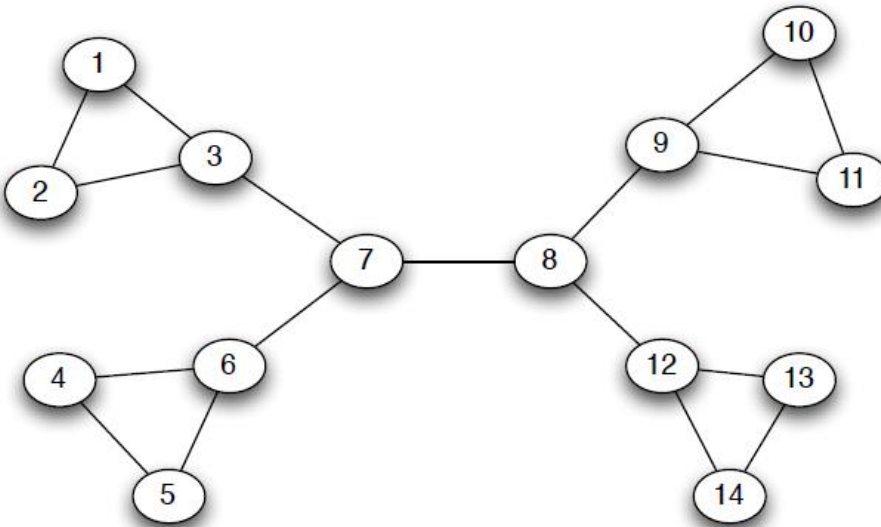58- What is the degree of the node c
a) 2   b) 3   c) 4

59- What is the degree of the node f
a) 2   b) 3   c) 4

60- What is the degree of the node g
a) 2   b) 3   c) 4

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Assume we have the next graph:

61- What is the value of link betweenness for the node 5 and 7?

   a) 49   b) 33   c) 12

62- What is the value of link betweenness for the node 6 and 7?
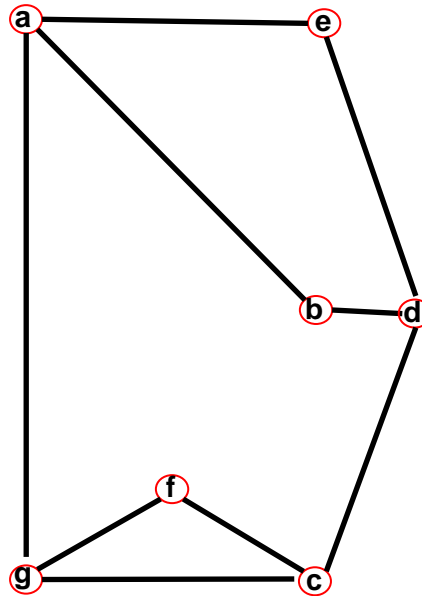
   a) 49   b) 33   c) 12

63- What is the value of link betweenness for the node 4 and 6?

   a) 49   b) 33   c) 12

64- Which algorithm uses the link?

   a) Girvan-Newman Algorithm

   b) hierarchical clustering

   c) Clique finder

65- In graph partitioning method, the first removed link is ….

   a) 7-8   b) 6-7   c) 1-2

Assume we have the next graph:

66- The edge between c and d is called

    b) link   b) bridge   c) tie

67- The edge between a and g is called

    a) link   b) bridge   c) tie

68- How many are community in this graph?

    b) 2   b) 3   c) 4

69- The relation between c and d is

    b) normal   b) strong   c) weak

70- If d has strong relation with e and b, then e and b can has …..

    b) a strong relation.   b) a weak relation.   c) a strong or weak relation.