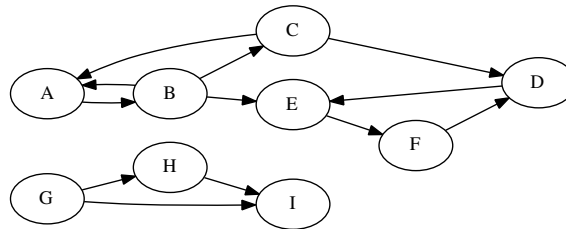


Today's topic: review.

Next class: **Midterm exam 2** on Thu., Nov. 15th.

- List the members of your group below. Underline your name.



- Answer the following for the above graph.
 - The graph's *order* is _____ .
 - The graph's *size* is _____ .
 - The number of *strongly connected components* is _____ .
 - The number of *connected components* (treating all edges as undirected) is _____ .
 - The number of *directed simple cycles* is _____ .
 - The number of *undirected simple cycles* is _____ .
 - The length of the *longest acyclic path* is _____ .
 - The *in-degree* and *out-degree* of the 'B' vertex are _____ and _____ .
 - The number of *distinct simple paths* from 'A' to 'D' is _____ .
 - The number of *edge-disjoint paths* from 'A' to 'D' is _____ .
 - The vertices *adjacent to* 'B' (its *out-neighbors*) are _____ .
 - The vertices *adjacent from* 'B' (its *in-neighbors*) are _____ .
- For the graph of Question 2, what is the number of *subgraphs* with vertex set $V_1 = \{B, C, D, E\}$? Explain your answer.

4. For the graph of Question 2, depict the *subgraph induced by* the vertex set $V_2 = \{B, C, D, E, F\}$.

5. Depict the (a) adjacency matrix and (b) adjacency lists representations of the graph of Question 2.

6. Depict the action of shellsort with increment sequence 1,3,4 (listed in reverse order of application, by convention) on the following array. After each k -sorting pass, for $k = 4, 3, 1$:

- Depict the state of the array.
- List all maximal k -sequences in the array.

26, 73, 31, 51, 99, 46, 90, 13, 27, 84