Today’s topic: review.
Next class: **Midterm exam 2** on Thu., Nov. 15th.

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

2. Answer the following for the above graph.

   (a) The graph’s **order** is _____.
   (b) The graph’s **size** is _____.
   (c) The number of **strongly connected components** is _____.
   (d) The number of **connected components** (treating all edges as undirected) is ____.
   (e) The number of **directed simple cycles** is _____.
   (f) The number of **undirected simple cycles** is _____.
   (g) The length of the **longest acyclic path** is _____.
   (h) The **in-degree** and **out-degree** of the ‘B’ vertex are _____ and ______.
   (i) The number of **distinct simple paths** from ‘A’ to ‘D’ is _____.
   (j) The number of **edge-disjoint paths** from ‘A’ to ‘D’ is _____.
   (k) The vertices **adjacent to** ‘B’ (its **out-neighbors**) are _________________.
   (l) The vertices **adjacent from** ‘B’ (its **in-neighbors**) are _________________.

3. 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.

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