

**Today: Homework 4 due.** All-pairs shortest paths. 25.{0,1,2}.

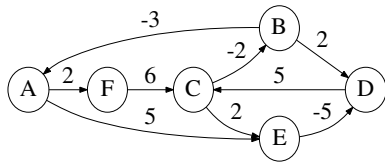
**Next class: Quiz 2.** String Matching basics. 32.{0,1}.

**Reminders:** The class newsgroup is *required reading*; writing encouraged.

1. List the members of your group below. Underline your name.
  
2. (4 pts.) Is the following a valid *predecessor matrix* for a graph with vertices  $\{1, 2, 3, 4\}$ . (where  $\perp$  denotes NIL)? If so, depict the shortest-paths tree it encodes for source vertex 3; otherwise, explain clearly why it is not valid.

$$\begin{pmatrix} \perp & 3 & 4 & 1 \\ 2 & \perp & 2 & 3 \\ 2 & 3 & \perp & 2 \\ 4 & 4 & 1 & \perp \end{pmatrix}$$

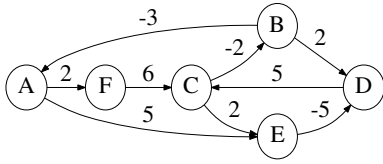
3. Provide the adjacency matrix of the directed graph depicted below, indexing the vertices in alphabetical order.



4. Depict the output of EXTEND-SHORTEST-PATHS( $W, W$ ) (p. 688 of the textbook), where  $W$  is the matrix of Question 3.

5. Trace the execution of the textbook's SLOW-ALL-PAIRS-SHORTEST-PATHS algorithm (p. 689) on the graph of Question 3, using Fig. 25.1 (p. 690) as a guide.

6. Repeat Question 5 using the textbook's FASTER-ALL-PAIRS-SHORTEST-PATHS algorithm (p. 691).



7. Repeat Question 5 using the FLOYD-WARSHALL algorithm.