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 $\textbf{Today:} \ \ \text{Space complexity; Savitch's theorem; PSPACE completeness. } \S \$8.1-8.3.$

Next class: Classes N, NL; NL-completeness; coNL . §§8.4–8.6.

- 1. List the members of your group below. Underline your name.
- 2. Provide an example of a problem that is in PSPACE but not known to be in PTIME. Define the problem carefully, following the textbook's conventions, and justify your answer.

3. Solve the *ladder* problem from the textbook (Problem 8.9, p. 358).

4. Prove or disprove: NPSPACE = PSPACE.

- 5. Prove or disprove (separately): PSPACE is closed under
 - (a) union
 - (b) intersection
 - (c) complementation
 - (d) star (Kleene closure)