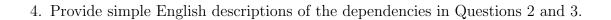
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Today's class: relational design theory; dependencies. $\S\S3.\{1,2\}$. Next class: schema design $\S\S3.\{4,5\}$.

- 1. List the members of your group below. Underline your name.
- 2. Refer to our running example of a student-course-enrollment database. Provide, with brief explanation, the smallest possible instance of the Students relation that *violates* the functional dependency id—name, year.

3. Provide, with brief explanation, the smallest possible instance of the Courses relation that *violates* both the functional dependencies id—title and ta, title—id.



5. List all superkeys and all keys of Courses, given the dependencies in Question 3.

6. Compute $\{\mathtt{title}\}^+$ and $\{\mathtt{id},\mathtt{ta}\}^+$ given the dependencies of Question 3.

7. Consider R(A,B,C,D,E) with dependencies

$$\begin{array}{cccc} AB & \rightarrow & C \\ BC & \rightarrow & A \\ D & \rightarrow E \\ CE & \rightarrow B \end{array}$$

List all keys of R

8. Project the dependencies of Question 7 onto the relation R'(A, B, C).