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CS121 Final Project - Relational Algebra

- 1) Get a list of all colleges and the number of defensive players that have attended the corresponding college.

$\text{player_colleges} \leftarrow \text{college} \bowtie_{\text{count-distinct}(\text{player_id}) \text{ as nfl_players}} (\Pi_{\text{player_id}, \text{college}} (\text{defense} \bowtie \text{player_info}))$

- 2) In football, a 2-way player is a player who plays on both offense and defense. Thus, these types of players have both offensive and defensive stats. Write a query that returns the names of NFL players that have both receiving statistics *and* defensive statistics.

$\text{two_way_players} \leftarrow \Pi_{\text{player_id}, \text{name}, \text{year}} (\text{defense} \bowtie \text{receiving} \bowtie \text{player_info})$
 $\text{two_way_names} \leftarrow \Pi_{\text{name}} (\text{player_id}, \text{name} \bowtie_{\text{count}(\text{year}) \text{ as seasons}} (\text{two_way_players}))$

- 3) We want to update the player table to only include players who are actively in the NFL, and the player_info table to include only players taller than 68 inches (under some imaginary height quota).

$\text{player} \leftarrow \text{player} - \sigma_{\text{status} = \text{'Retired'}} (\text{player})$
 $\text{player_info} \leftarrow \text{player_info} - \sigma_{\text{height_in} \leq 68} (\text{player_info})$