Identifying SQL Misconceptions to Improve Database Education

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Abstract

SQL is the most commonly taught database query language. While previous research has investigated the errors made by novices during SQL query formulation [1, 2, 4, 5, 6], the underlying causes for these errors have remained largely unexplored. Understanding the basic misconceptions held by novices that lead to these errors, can give us pointers on how to improve SQL education.

In a recent paper, we identified the misconceptions that might be the causes of documented SQL errors that novices make [3]. We gathered information on the thinking process of university students solving query formulation problems through think-aloud experiments. With the queries in hand, we analyzed the underlying causes for the errors made by our participants.

Our findings include four top-level SQL misconception categories: misconceptions based in previous course knowledge, generalization-based misconceptions, language-based misconceptions, and misconceptions due to an incomplete or incorrect mental model. Further research on these misconceptions, and the design of interventions, can lead to more efficient SQL education.

References


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