Title: Recursion or Iteration: Does it Matter What Students Choose?

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Abstract:
The paper analyzes student responses on an exam question that could be solved with recursion or iteration. It examines what strategies students choose and how choice relates to correctness.

Introduction:
- Recursion and iteration are key topics in CS2 where recursion is typically introduced.
- For simple problems, iteration usually suffices but some problems are easier solved recursively.
- When given a choice, what strategy do students use? How does this relate to correctness?
- The study analyzes student responses to an exam question on finding deepest common ancestors in trees.

Method:
- 397 student exam responses were collected for the question.
- Solutions were categorized as: inadequate, iterative, recursive, or mixed.
- 10 test cases were designed to evaluate correctness.
- Relationships were analyzed between choice of strategy and correctness.

Results:
- 19% iterative, 51% recursive, 16% mixed strategies were used.
- Iterative solutions were most correct, followed by mixed and recursive.
- Students with higher exam grades were more likely to use iteration.
- Common mistakes included missing base cases and unnecessary complexity.

Discussion:
- Most students used recursion despite lower performance. This may be an over-default.
- Mixed solutions were often unnecessarily complex.
- The question seems reasonably difficult as part of a broader exam.
- Guidance may help students better choose between recursion and iteration.

Conclusion:
- Students may lack intuition for choosing recursion vs iteration.
- Teaching should cultivate this as an important skill.