

# Principles of Programming Languages - Scrimmage I

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## 1 Instructions

1. The scrimmage will not be graded.
2. Attempt as many questions as you can.

## 2 Problems

1. Argue that if a programming language has a **while** statement, it does not need an **if** statement.  
(*Hint: Make the argument for the **C** programming language.*)
2. Write a Prolog-style fragment to implement the factorial function.
3. Write a functional-style (i.e., **C** with recursion) fragment for the problem of determining the number of digits of a positive integer.
4. Discuss how the following features have been promoted and violated in the **C** programming language: (a) Generality, and (b) Extensibility.