## Principles of Programming Languages - Homework I

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## 1 Instructions

- 1. The homework is due on February 3, in class. (Due to weather disruptions, you can turn it in, on February 5, if you wish.)
- 2. Each question is worth 3 points.
- 3. Attempt as many problems as you can. You will be given partial credit, as per the policy discussed in class.

## 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. (*Hint: Pg.* 19 of [Lou02].)
- Write a functional-style (i.e., C with recursion) fragment for the problem of determining the number of digits of a positive integer. (*Hint: Pg. 30 of [Lou02].*)
- 4. Provide a brief discussion on how the internet affected the development of programming languages.
- 5. Discuss how the following features have been promoted and violated in the C programming language: (a) Generality, and (b) Extensibility.

## References

[Lou02] Kennenth C. Louden. Programming Languages: Principles and Practice. Brooks/Cole, 2002.