CS 304: Programming Languages
Programming Assignment 2
Sep. 10, 2012
Due: Monday, Sep. 17th, 2012 before the beginning of the class period

1. (1 pt) Which of the three original goals of the ALGOL design committee, in your opinion, was most difficult to achieve at that time? Justify your answer.

2. (1 pt) Give and explain at least two reasons why pure interpretation is an acceptable implementation method for several recent scripting languages.

3. (1 pt) What are the arguments both for and against the idea of a typeless language?

4. (1 pt) The two mathematical models of language description are generation and recognition. Describe how each can define the syntax of a programming language.

5. (1 pt) Describe the unique feature that (at the time) made BASIC an important language in the early 1980s.

6. (1 pt) Rewrite BNF of Example 3.4 to give **+** *precedence* over ***** and force **+** to be *right associative*. The grammar must define the same language as before the amendments.

7. (1 pt) Write EBNF description for a C **switch** statement.

8. (1 pt) Using the grammar in example 3.4, show a parse tree and a leftmost derivation for each of the following statements:

   a. A = (A + B) * C

   b. A = B * (C * (A + B))

9. (2 pts) Given the following grammar

   ```
   <S>   →  <A>

   <A>   →  <A> + <A>  |  <id>

   <id>  →  a  |  b  |  c
   ```

   a) Show that this grammar is ambiguous.

   b) Construct a non-ambiguous grammar that is equivalent to the grammar from a).

Turn In Procedures:

You may turn in your assignment via email (bkerkez@yahoo.com) or in person: on paper or on any computer media. If you wish to turn in your assignment via email, your file name should be in the format
lastName_FirstName_AssignmentX.xxx

For example, John Smith's assignment2 turn in file would be named "Smith_John_Assignment2.xxx".

If you chose to turn in your assignment via email, please make sure that you send your email via AU email system, and that the subject of the email message reads "**CS304_Assignment**". Please print a paper copy of your assignment and turn it in as well.

Please make sure that I receive your assignments before the due date and time. Late assignments will be accepted for 24 hours after they are due and will be penalized by a 50% deduction. No assignments will be accepted after the 24 hour period expires.