

UNBC Homework Assignment 3

CPSC 320
Fall 2007

This assignment is due by e-mail to Robert Pringle, Thursday 2007-09-27 at 14:30.

The purpose of this question is to become more familiar with Backus-Naur Form for expressing grammars. The way that BNF is expressed in *Louden* is good for human understanding, but not for easy input into computer tools.

What follows is an English language description of particular grammar for BNF suitable for use with computer tools. In this grammar:

1. Non-terminals are expressed as identifiers surrounded by $\langle \dots \rangle$ brackets;
2. The " \rightarrow " symbol is written as $::=$;
3. The alternative symbol (" $|$ ") is written as $|$;
4. A sequence of non-" characters surrounded by "...", or a sequence of non-' characters surrounded by '...' stands for the terminal whose literal representation is the sequence of characters between the '-quotes; and
5. Anything else is assumed to be a terminal.

Thus, what Louden writes as

$sentence \rightarrow noun\text{-}phrase \ verb\text{-}phrase \ .$ (1)

$noun\text{-}phrase \rightarrow article \ noun$ (2)

$article \rightarrow a \ | \ the$ (3)

$noun \rightarrow girl \ | \ dog$ (4)

$verb\text{-}phrase \rightarrow verb \ noun\text{-}phrase$ (5)

$verb \rightarrow sees \ | \ pets$ (6)

we would write as

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<sentence> ::= <noun-phrase> <verb-phrase> "."
<noun-phrase> ::= <article> <noun>
<article> ::= a | the
<noun> ::= girl | dog
<verb-phrase> ::= <verb> <noun-phrase>
<verb> ::= sees | pets
```

Assignment Write a grammar for this grammar using this grammar.