CP2 Exercise 17 **19/03/2007**

1. Given the following formal grammar:

```
S ::= ABC
A ::= s |
B ::= Dt | Et
C ::= u | v |
D ::= w | x
E ::= Fy | y
F ::= z
```

Generate parsing traces for the following sentences.

- wt
- szytu
- syt
- sxtv

2. Given the following formal grammar:

```
<A> ::= <B> | (<B>)
<B> ::= <C> {<D>}
<C> ::= <E> {<F>}
<D> ::= +<C> | -<C>
<E> ::= x | <A>
<F> ::= *<E> | /<E>
```

a) Create a syntax graph for each of the non-terminal symbols of this grammar and try to optimize the syntax graphs as much as possible.

b) Write a simple parsing program for this grammar (*use program parse_1c.c – pages 17-18 in last week's handout – as a guide*).

c) Modify the grammar by substituting the symbol **x** with a symbol **<number>** which is defined to be a sequence of 1 to 10 digits. Then modify the simple parsing program to use this new grammar.

3. Have look at the files on **gl0** at *~eanderson/gl0/*
Compile file GL0_parser_1.c and then try parsing the program on page 20 with it.