

## CS3311 Chapter 4 handout

### Algorithm for constructing the CHAIN sets

#### Algorithm 4.3.1

#### Construction of the set CHAIN(A)

input: essentially noncontracting context-free grammar  $G = (V, \Sigma, P, S)$

private:

NEW : newly added variables

PREV : the set from the previous iteration

1. CHAIN (A) := {A}

2. PREV :=  $\emptyset$

3. **repeat**

    3.1 NEW := CHAIN(A) - PREV

    3.2 PREV := CHAIN (A)

    3.3 **for** each variable  $B \in$  NEW **do**

**for** each rule  $B \rightarrow C$  **do**

            CHAIN(A) := CHAIN(A) U C

**until** CHAIN(A) = PREV

**return** CHAIN(A)