

Worksheet: Eliminating indirect left-recursion

*Arrange the NTs in some order  $A_1, A_2, \dots, A_n$*

*for  $i := 1$  to  $n$*

*for  $s := 1$  to  $i - 1$*

*replace each production  $A_i \rightarrow A_s \gamma$*

*with  $A_i \rightarrow \delta_1 \gamma \mid \delta_2 \gamma \mid \dots \mid \delta_k \gamma$ , where  $A_s \rightarrow \delta_1 \mid \delta_2 \mid \dots \mid \delta_k$   
are all the current productions for  $A_s$*

*eliminate any immediate left recursion on  $A_i$   
using the direct transformation*

$S \rightarrow Aa \mid b$

$A \rightarrow Ac \mid Sd$