

**SSN COLLEGE OF ENGINEERING, KALAVAKKAM**  
**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

**Compiler Design Lab – CS8602**

**Programming Assignment-3 - Implementation of Left Recursion  
Elimination**

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Write a program to find whether the given grammar is left recursive or not.

Eliminate the left recursion using the following rule

$A \rightarrow A \alpha \mid \beta$                       where  $\beta$  does not start with A

$\Downarrow$

eliminate immediate left recursion

$A \rightarrow \beta A'$

$A' \rightarrow \alpha A' \mid \epsilon$  an equivalent grammar

Sample

Input

$E \rightarrow E+T \mid T$

$T \rightarrow T * F \mid F$

$F \rightarrow id \mid (E)$

Output

$E \rightarrow T E'$

$E' \rightarrow +T E' \mid \epsilon$

$T \rightarrow F T'$

$T' \rightarrow *F T' \mid \epsilon$

$F \rightarrow id \mid (E)$