**Compiler Design Lab**

**Assignment-3**

**Elimination of Immediate Left Recursion using C**

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**Code:**

#include<stdio.h>

#include<string.h>

#include<stdlib.h>

char**\*** get\_alpha**(**char input**[**20**][**50**],**int in**)**

**{**

char nt**,\***temp**;**

strncpy**(**temp**,**input**[**in**]+**4**,**strlen**(**input**[**in**]));**

**return** temp**;**

**}**

char**\*** get\_beta**(**char input**[**20**][**50**],**int in**)**

**{**

char nt**,\***temp**;**

nt**=**input**[**in**][**0**];**

**while(**nt**==**input**[**in**][**0**])**

in**++;**

in**--;**

strncpy**(**temp**,**input**[**in**]+**3**,**strlen**(**input**[**in**]));**

**return** temp**;**

**}**

int notin**(**char update**[**20**][**50**],**int in**)**

**{**

int i**;**

**for(**i**=**0**;**i**<**in**;**i**++)**

**{**

**if(**strcmp**(**update**[**i**],**update**[**in**])==**0**)**

**{**

**return** 0**;**

**}**

**}**

**return** 1**;**

**}**

void main**()**

**{**

char input**[**20**][**50**];**

char update**[**20**][**50**];**

int i**,**j**,**count**,**ncount**,**flag**=**0**;**

printf**(**"Enter the number of productions : "**);**

scanf**(**" %d"**,&**count**);**

**for(**i**=**0**;**i**<**count**;**i**++)**

**{**

printf**(**"\n %d : "**,**i**+**1**);**

scanf**(**" %s"**,**input**[**i**]);**

**}**

printf**(**"\n\nGrammar:\n"**);**

**for(**i**=**0**;**i**<**count**;**i**++)**

**{**

printf**(**" %d : %s\n"**,**i**+**1**,**input**[**i**]);**

**if(**input**[**i**][**0**]==**input**[**i**][**3**])**

flag**=**1**;**

**}**

**if(**flag**==**1**)**

**{**

printf**(**"\nLeft Recursive\n"**);**

printf**(**"\nEliminating Left recursion\n"**);**

**}**

**else**

printf**(**"\nNo Left Recursion\n"**);**

char nt**,**old\_nt**;**

char alpha**[**20**],**beta**[**20**];**

int index**=**3**;**

**for(**i**=**0**,**j**=**0**;**i**<**count**;**i**++)**

**{**

nt**=**input**[**i**][**0**];**

**if(**nt**==**input**[**i**][**index**])**

**{**

strcpy**(**alpha**,**get\_alpha**(**input**,**i**));**

strcpy**(**beta**,**get\_beta**(**input**,**i**));**

sprintf**(**update**[**j**],**"%c->%s%c\'"**,**nt**,**beta**,**nt**);**

j**++;**

sprintf**(**update**[**j**],**"%c\'->%s%c\'|eps"**,**nt**,**alpha**,**nt**);**

j**++;**

old\_nt**=**input**[**i**][**0**];**

**}**

**else** **if(**old\_nt**==**nt**)**

**continue;**

**else**

**{**

strcpy**(**update**[**j**],**input**[**i**]);**

j**++;**

**}**

ncount**=**j**;**

**}**

**for(**i**=**0**,**j**=**0**;**i**<**ncount**;**i**++)**

**{**

**if(**notin**(**update**,**i**))**

**{**

printf**(**" %d : %s\n"**,**j**+**1**,**update**[**i**]);**

j**++;**

**}**

**}**

**}**

**Output:**

