

## **CS 306 Compiler Design Lab**

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CSE

## **Program 1**

## Q.1) Write a program to remove left recursion from the grammar.

```
import java.io.*;
public class LeftRecursion {
public static void main(String args[]) throws IOException {
BufferedReader br = new BufferedReader(new
InputStreamReader(System.in));
System.out.println("Enter the no. of Production Rules: ");
int n = Integer.parseInt(br.readLine());
System.out.println("Enter the production rules in the form
'E->EA | A' : ");
String s[] = new String[n];
for(int i=0; i<n; i++){
s[i] = br.readLine();
System.out.println("Grammar after removing left recursion if
any: ");
for(int i=0; i<n; i++){
String p = s[i];
if(p.indexOf('|')== -1){
System.out.println(p);
}else{
String[] q = p.split("\\|");
String a = q[0];
String b = q[q.length-1];
if(a.charAt(0) == a.charAt(3)){}
String x = a.substring(4);
char y = a.charAt(0);
System.out.println(y + "->" + b + y + """);
System.out.print(y + "'->" + x + y + "'");
```

```
for(int j=1; j<q.length-1; j++){
   String r = q[j];
   String d = r.substring(1);
   System.out.print("|" + d + y + """);
}
   System.out.print("|∈");
   System.out.println();
}else{
   System.out.println(p);
}
}
}</pre>
```

## **OUTPUT:**

```
run:
Enter the no. of Production Rules:
2
Enter the production rules in the form 'E->EA|A' :
A->ABd|Aa|a
B->Be|b
Grammar after removing left recursion if any:
A->aA'
A'->BdA'|aA'|\in B->bB'
B'->eB'|\in BUILD SUCCESSFUL (total time: 1 minute 21 seconds)
```