

AIM: Program to Remove Left Factoring.

Output:

1. **A→aa|ab**

A→aX

X→a|b

```
E:\College\Sem 6\LT\new\LeftFactoring.exe
Enter the Terms:A->aa|ab
Final Terms after eliminating Left Factor
A->aA1
A1->b|a
-----
```

2. **A→aaaAB|aaAa|AaB**

A→aaX|AaB

X→aAB|Aa

```
E:\College\Sem 6\LT\new\LeftFactoring.exe
Enter the Terms:A->aaaAB|aaAa|AaB
Final Terms after eliminating Left Factor
A->aaA1|AaB
A1->Aa|aAB
-----
```

3. **A→aaaB|aaC|aD|h**

A→aX|h

X→aaB|aC|D // here we got indirect left factoring, therefore again we have to do

X→aaB|aC|D

X→aY|D

Y→aB|C

Final

$A \rightarrow aX|h$ //in screenshot $X = A2$ & $Y = A1$

$X \rightarrow aY|D$

$Y \rightarrow aB|C$

```
E:\College\Sem 6\LT\new\LeftFactoring.exe
Enter the Terms:A->aaaB|aaC|aD|h
Final Terms after eliminating Left Factor
A->aA2|h
A2->aA1|D
A1->C|aB
-----
```

4. $A \rightarrow bAB|bBc|aAc|aB$

$A \rightarrow bX|aAc|aB$ //indirect so, again doing

$X \rightarrow AB|Bc$

$A \rightarrow bX|aAc|aB$

$A \rightarrow aY|bX$

$Y \rightarrow Ac|B$

Final:

$A \rightarrow aY|bX$ //in screenshot $X = A2$ & $Y = A1$

$X \rightarrow AB|Bc$

$Y \rightarrow Ac|B$

```
E:\College\Sem 6\LT\new\LeftFactoring.exe
Enter the Terms:A->bAB|bBc|aAc|aB
Final Terms after eliminating Left Factor
A->aA2|bA1
A2->B|Ac
A1->Bc|AB
-----
```