LAB PROGRAMS 6-8

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CSE AI& DS

CSAA1402

6.Implement a C program to eliminate left recursion.

CODE:

```
#include <stdio.h>
#include <string.h>
int main() {
   char a, alpha[10], beta[10];
   printf("Enter production (Example: A->Aa|b): ");
   scanf("%c->%[^|]|%s", &a, alpha, beta);
   if (alpha[0] == a)
      printf("After eliminating left recursion:\n%c->%s%c'\n%c'->%s%c'|e\n",
            a, beta, a, a, alpha + 1, a);
   else
      printf("No left recursion found.\n");
   return 0;
}
```

SAMPLE OUTPUT:

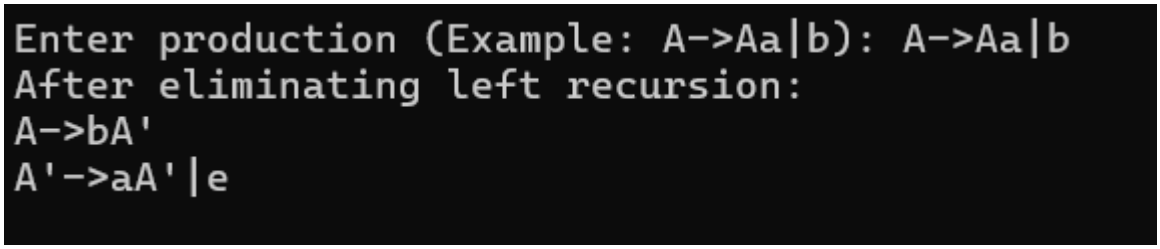
Enter production : A->Aa|b

After eliminating left recursion:

A->bA'

A'->aA'|e

OUTPUT:



7. Implement a C program to eliminate left factoring.

CODE:

```
#include <stdio.h>
#include <string.h>
int main() {
   char a, alpha[10], beta[10];
   int i = 0, j = 0;
   printf("Enter production (Example: A->abC|abD): ");
   scanf("%c->%[^|]|%s", &a, alpha, beta);
   while (alpha[i] == beta[i] && alpha[i] != '\0')
      i++;
   if (i == 0)
      printf("No left factoring found.\n");
   else {
      printf("After eliminating left factoring:\n");
      printf("%c->", a);
      for (j = 0; j < i; j++)
         printf("%c", alpha[j]);
      printf("%c'\n", a);
      printf("%c'->%s|%s\n", a, alpha + i, beta + i);
   }
   return 0;
}
```

SAMPLE OUTPUT:

```
Enter production (Example: A->abC|abD): A->abC|abD
After eliminating left factoring:
A->abA'
A'->C|D
```

OUTPUT:

```
Enter production (Example: A->abC|abD): A->abC|abD
After eliminating left factoring:
A->abA'
A'->C|D
```

8. Implement a C program to perform symbol table operations.

CODE:

```
#include <stdio.h>
#include <string.h>
struct Symbol {
    char name[20];
    char type[10];
    int value;
};
int main() {
    struct Symbol table[50];
    int n, i;
    printf("Enter number of symbols: ");
    scanf("%d", &n);
    for (i = 0; i < n; i++) {
        printf("\nEnter symbol %d name: ", i+1);
        scanf("%s", table[i].name);
        printf("Enter symbol %d type: ", i+1);
        scanf("%s", table[i].type);
        printf("Enter symbol %d value: ", i+1);
        scanf("%d", &table[i].value);
```

```
    }
    printf("\nSymbol Table:\n");
    printf("Name\tType\tValue\n");
    printf("---------------------\n");
    for (i = 0; i < n; i++) {
        printf("%s\t%s\t%d\n", table[i].name, table[i].type, table[i].value);
    }
    return 0;
}
```

SAMPLE OUTPUT:

```
Enter number of symbols: 2
Enter symbol 1 name: x
Enter symbol 1 type: int
Enter symbol 1 value: 10
Enter symbol 2 name: y
Enter symbol 2 type: int
Enter symbol 2 value: 20
Symbol Table:
Name   Type    Value
----------------------
x         int       10
y         float     20
```

OUTPUT:

```
Enter number of symbols: 2

Enter symbol 1 name: X
Enter symbol 1 type: int
Enter symbol 1 value: 10

Enter symbol 2 name: y
Enter symbol 2 type: float
Enter symbol 2 value: 20

Symbol Table:
Name    Type    Value
----------------------
X       int     10
y       float   20

--------------------------------
```