

EXPERIMENT-10

AIM:

Implement a C program to eliminate left factoring from a given CFG.

PROGRAM:

The screenshot shows the Dev-C++ IDE interface. The main window displays a C++ source code file named EXP_1.cpp. The code implements a program to eliminate left factoring from a given CFG. It prompts the user for a non-terminal symbol (nt), two productions (p1 and p2), and then performs left factoring by comparing p1[i] and p2[i]. If they are equal, it adds the character to a common string. Finally, it prints the resulting common string and the main rule A -> common A'. The code also includes comments for the main rule and the output filename.

```
1 #include <stdio.h>
2 #include <string.h>
3 int main() {
4     char nt, p1[20], p2[20], common[20];
5     int i = 0, j = 0;
6     printf("Enter Non-Terminal (Example: A): ");
7     scanf(" %c", &nt);
8     printf("Enter first production (Example: abcd): ");
9     scanf("%s", p1);
10    printf("Enter second production (Example: abef): ");
11    scanf("%s", p2);
12    while (p1[i] != '\0' && p2[i] != '\0' && p1[i] == p2[i]) {
13        common[j++] = p1[i];
14        i++;
15    }
16    common[j] = '\0';
17
18    if (strlen(common) == 0) {
19        printf("\nNo Left Factoring Required.\n");
20    } else {
21        printf("\nAfter Left Factoring:\n");
22
23        // Main rule: A -> common A'
24        printf("%c -> %s%c'\n", nt, common, nt);
25    }
26}
```

The bottom panel shows the compilation results, indicating no errors or warnings, and provides details about the output file (C:\Users\Haritha\OneDrive\Documents\EXP_1.exe), size (128.7705078125 KiB), and compilation time (0.50s).

OUTPUT:

The screenshot shows a terminal window displaying the execution of the program. The user enters the non-terminal symbol 'A', followed by two productions: 'abcd' and 'abef'. The program then outputs the result of the left factoring, which is 'A -> abA' and 'A' -> cd | ef'. Finally, it prints a standard message indicating the process exited successfully after 36.58 seconds.

```
Enter Non-Terminal (Example: A): A
Enter first production (Example: abcd): abcd
Enter second production (Example: abef): abef

After Left Factoring:
A -> abA'
A' -> cd | ef

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Process exited after 36.58 seconds with return value 0
Press any key to continue . . . |
```