**7. Implement a C program to eliminate left factoring.**

**Code:**

**#include <stdio.h>**

**#include <string.h>**

**#include <stdlib.h>**

**#define MAX\_PRODUCTIONS 10**

**#define MAX\_LENGTH 100**

**void leftFactor(char nonTerminal, char productions[MAX\_PRODUCTIONS][MAX\_LENGTH], int count) {**

**char prefix[MAX\_LENGTH];**

**int prefixLen = strlen(productions[0]);**

**strcpy(prefix, productions[0]);**

**for (int i = 1; i < count; i++) {**

**int j = 0;**

**while (j < prefixLen && prefix[j] == productions[i][j]) {**

**j++;**

**}**

**prefix[j] = '\0';**

**prefixLen = j;**

**}**

**if (prefixLen == 0) {**

**printf("No left factoring required for %c\n", nonTerminal);**

**return;**

**}**

**printf("%c -> %s%c'\n", nonTerminal, prefix, nonTerminal);**

**printf("%c' -> ", nonTerminal);**

**int first = 1;**

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

**if (strcmp(productions[i], prefix) == 0) {**

**printf("ε ");**

**} else {**

**if (!first) {**

**printf("| ");**

**}**

**printf("%s ", productions[i] + prefixLen);**

**first = 0;**

**}**

**}**

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

**}**

**int main() {**

**char nonTerminal;**

**int count;**

**char productions[MAX\_PRODUCTIONS][MAX\_LENGTH];**

**printf("Enter the non-terminal: ");**

**scanf(" %c", &nonTerminal);**

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

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

**printf("Enter the productions:\n");**

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

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

**}**

**printf("\nGiven productions:\n");**

**printf("%c -> ", nonTerminal);**

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

**if (i > 0) printf(" | ");**

**printf("%s", productions[i]);**

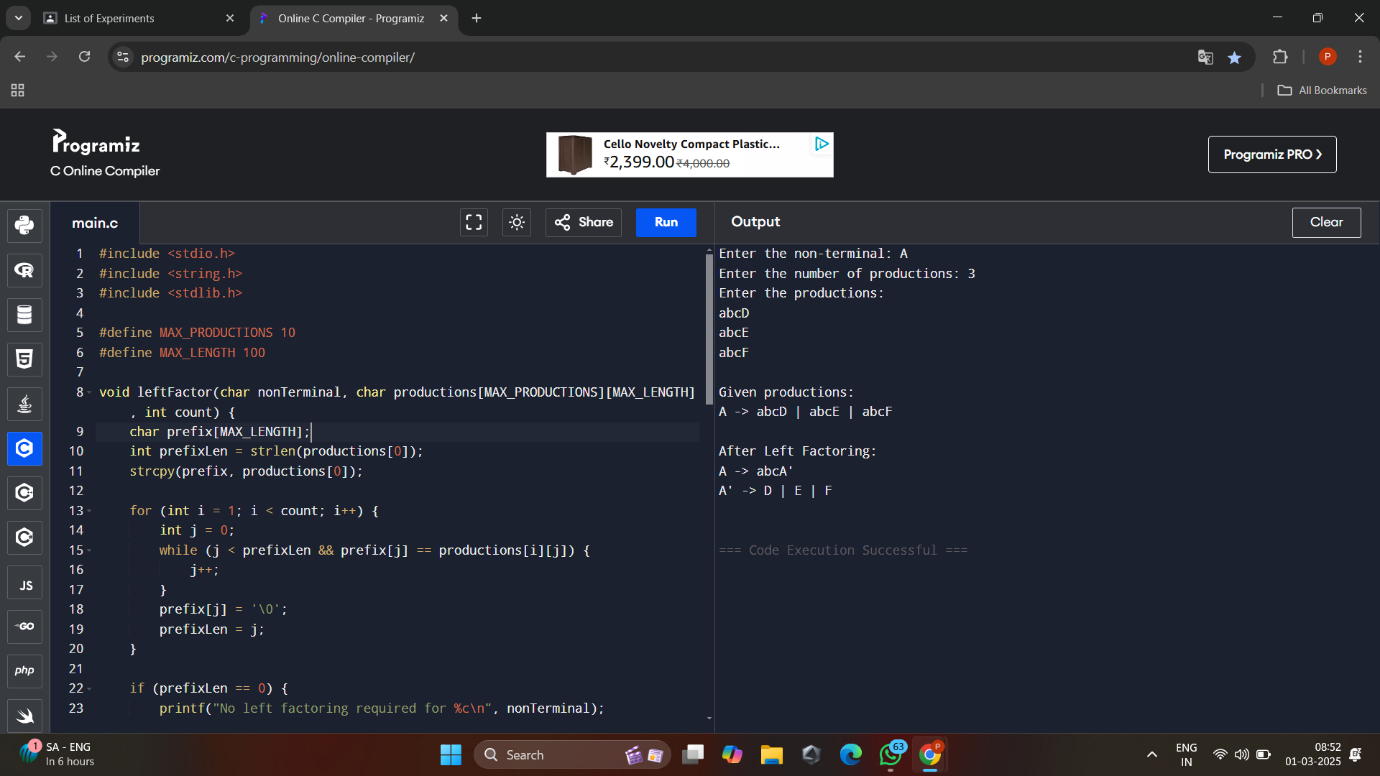
**}**

**printf("\n\nAfter Left Factoring:\n");**

**leftFactor(nonTerminal, productions, count);**

**return 0;**

**}**

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