1.)#include <stdio.h>

#include <stdlib.h>

```c
// Function to check if the character is an arithmetic operator
const char* check_operator(char ch) {
    switch (ch) {
        case '+':
            return "PLUS";
        case '-':
            return "MINUS";
        case '*':
            return "MULTIPLY";
        case '/':
            return "DIVIDE";
        default:
            return "INVALID";
    }
}

// Function to analyze the input string
```

```c
void analyze(const char* input) {

    int i = 0;

    while (input[i] != '\0') {

        const char* result = check_operator(input[i]);

        if (result != "INVALID") {

            printf("Character '%c' is an operator: %s\n", input[i],
result);

        } else {

            printf("Character '%c' is invalid\n", input[i]);

        }

        i++;

    }
}

int main() {
    char input[100];

    // Read input string from the user
    printf("Enter a string: ");
    scanf("%s", input);
```
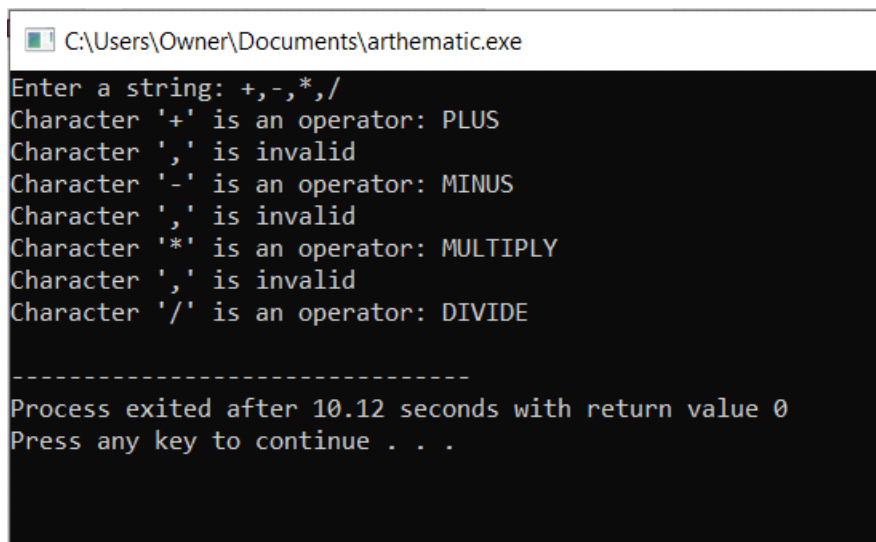
```
// Analyze the input string

analyze(input);


return 0;

}
```
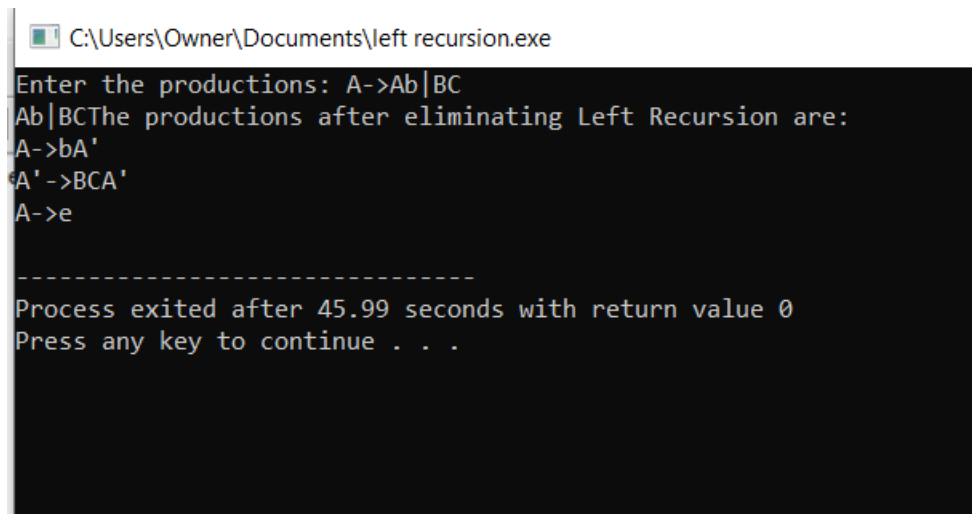
```
C:\Users\Owner\Documents\arthematic.exe
Enter a string: +,-,*,/
Character '+' is an operator: PLUS
Character ',' is invalid
Character '-' is an operator: MINUS
Character ',' is invalid
Character '*' is an operator: MULTIPLY
Character ',' is invalid
Character '/' is an operator: DIVIDE

---------------------------------
Process exited after 10.12 seconds with return value 0
Press any key to continue . . .
```

2.)left recursion output:

```
C:\Users\Owner\Documents\left recursion.exe
Enter the productions: A->Ab|BC
Ab|BCThe productions after eliminating Left Recursion are:
A->bA'
A'->BCA'
A->e

---------------------------------
Process exited after 45.99 seconds with return value 0
Press any key to continue . . .
```

3.)left factoring output:

```
Enter Production : A->BC|Bc

 A->BX
 X->C|c


------------------------------
Process exited after 58.31 seconds with return value 0
Press any key to continue . . .
```

4.)symbol table

```
label is found
1.insert
2.display
3.search
4.modify
5.exit

4
enter the labe:label1
label is found
enter the address150

1.insert
2.display
3.search
4.modify
5.exit
2
label1  150

1.insert
2.display
3.search
4.modify
5.exit
5


------------------------------
Process exited after 154.4 seconds with return value 0
Press any key to continue . . .
```

5.)recognize operators:

```
C:\Users\Owner\Documents\recognizze the operators.exe

Enter any operator:<=

Less than or equal
-------------------------------
Process exited after 3.753 seconds with return value 0
Press any key to continue . . .
```

6.)recursive decent parsing:

```
C:\Users\Owner\Documents\recursive decent parsing.exe

Recursive descent parsing for the following grammar

E -> TE'
E' -> +TE'/@
T -> FT'
T' -> *FT'/@
F -> (E)/ID

Enter the string to be checked:a*b

String is accepted
-------------------------------
Process exited after 6.549 seconds with return value 0
Press any key to continue . . .
```

7.)comments:

```
C:\Users\Owner\Documents\comments.exe

Enter comment:This is a comment

It is not a comment
-------------------------------
Process exited after 97.1 seconds with return value 0
Press any key to continue . . .
```

8.)id and operator output:

```
enter the string : a = b + 3 - 5 * 2
 identifiers : a b
 constants : 3 5 2
 operators : = + - *
--------------------------------
Process exited after 37.44 seconds with return value 0
Press any key to continue . . .
```