Department of Computer Science
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Compiler Design Parser Project

Topic : C++ parser ; Right shift and left shift operators, Pre-increment and Post- increment

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Project Overview

Simple parser for Right shift and left shift operators & Pre-increment and Post- increment. This project presents a simple parser for Right shift and left shift operators, Pre-increment and Post-increment with limited use cases and tokens supported. It's made for academic purposes and learning purposes.

The source file of yacc is defined in code.y The source file of lex is defined in code.l

What does the parser do?

The parser analyses the syntax of an Right shift and left shift operators & Pre-increment and Post-increment entered by the user and tells whether the statement is valid or not.

The parser works perfectly for all the ideal test cases of the following syntax :

1. **A++ , ++A**
2. **X<<Y , Y>>X**

Strengths of Parser

1. Identifies ambiguous statements like cout<<a , cin>>a where this is not a valid shift operation.
2. Handles all types string, integer, float data type.

Limitations of Parser

1. Can’t handle mixed statements such as cout<<(a++);

Commands to run code :

Windows

1. flex code.l
2. bison -vdy code.y
3. gcc lex.yy.c y.tab.c
4. ./a.exe

Linux

1. yacc -d --verbose code.y
2. lex code.l
3. gcc lex.yy.c y.tab.c
4. ./a.out

Valid cases :

a<<b;

Output:-

Identifier: a

Operator Left Shift

Identifier: b

Valid statement!

9>>6;

Output:-

Number:

Operator Right Shift

Number:

Valid statement!

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a++;

Output:-

Identifier: a

INCREMENT

Valid statement!

++b;

Output:-

INCREMENT

Identifier: b

Valid statement!

Invalid cases :

a>>b>>;

Output:-

Identifier: a

Operator Right Shift

Identifier: b

Operator Right Shift

Error: syntax error

(a<<(b<<c);

Output:-

Identifier: a

Operator Left Shift

Identifier: b

Operator Left Shift

Identifier: c

Error: syntax error

++9;

Output:-

INCREMENT

Number:

Error: lvalue required as pre-increment operand!

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a<<b

Output:-

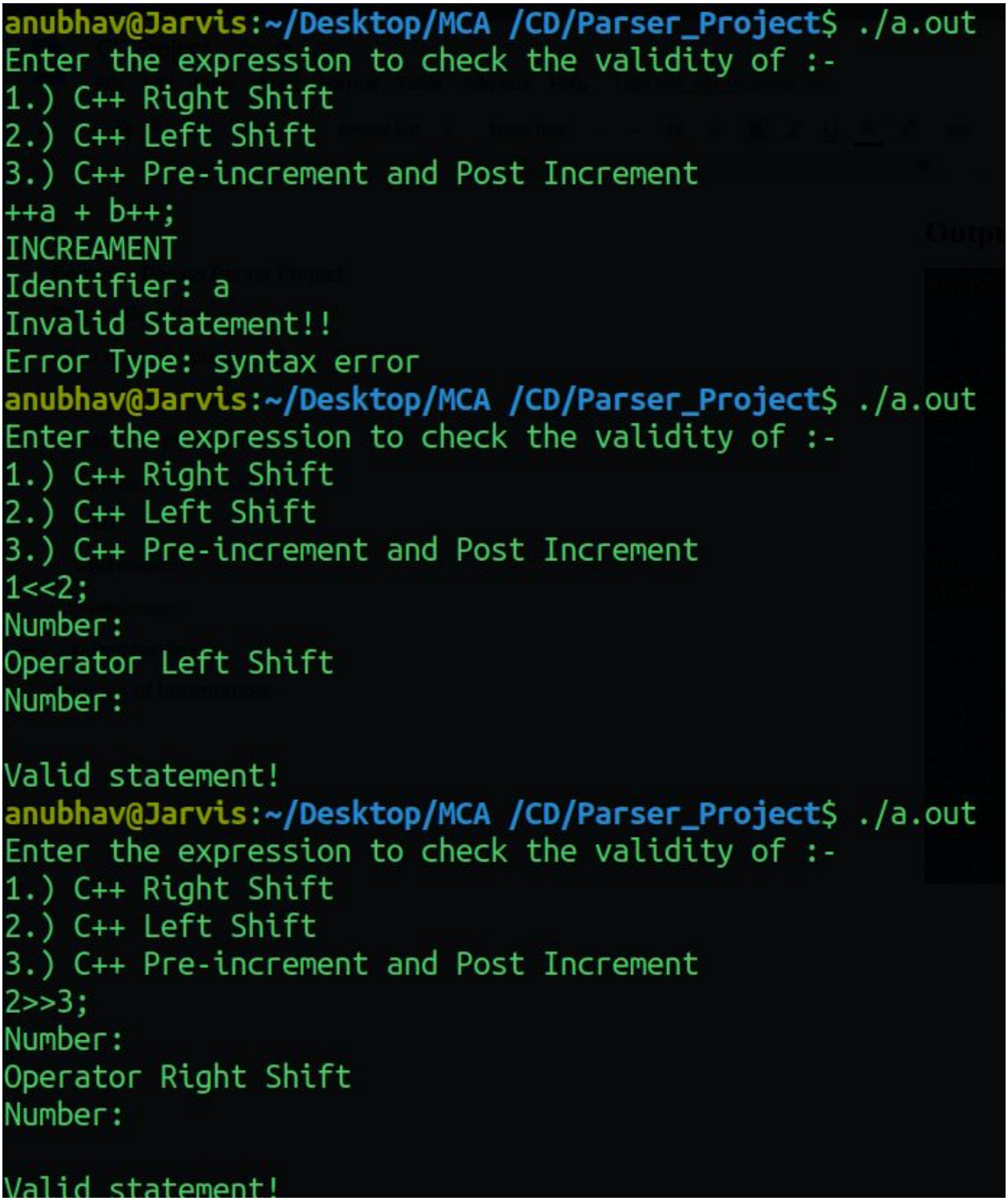
Identifier: a

Operator Left Shift

Identifier: b

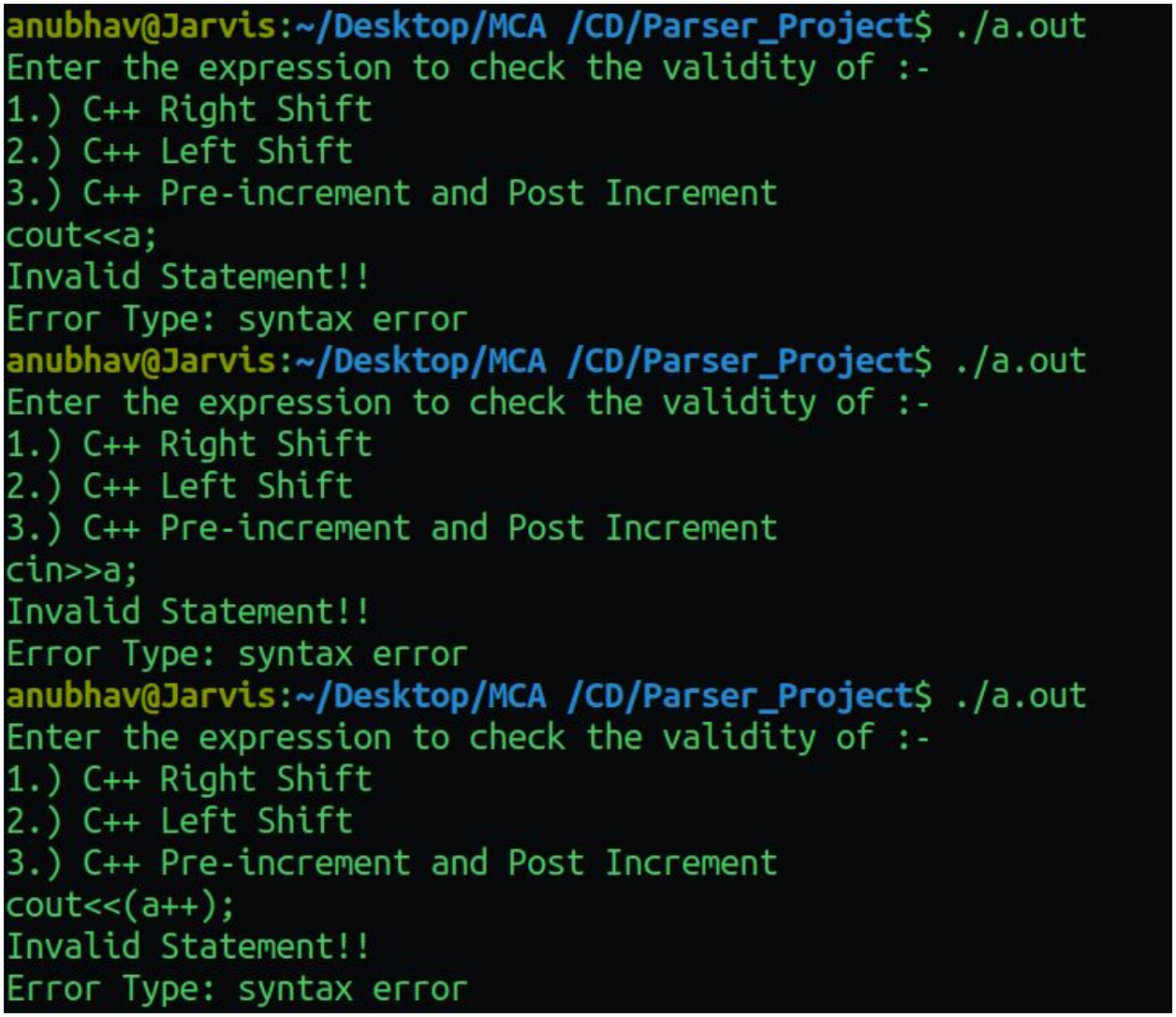
Error: syntax error

Output Screens:



```
anubhav@Jarvis:~/Desktop/MCA /CD/Parser_Project$ ./a.out
Enter the expression to check the validity of :-
1.) C++ Right Shift
2.) C++ Left Shift
3.) C++ Pre-increment and Post Increment
++a;
INCREAMENT
Identifier: a

Valid statement!
anubhav@Jarvis:~/Desktop/MCA /CD/Parser_Project$ ./a.out
Enter the expression to check the validity of :-
1.) C++ Right Shift
2.) C++ Left Shift
3.) C++ Pre-increment and Post Increment
a++;
Identifier: a
INCREAMENT

Valid statement!
```

```
anubhav@Jarvis:~/Desktop/MCA /CD/Parser_Project$ ./a.out
Enter the expression to check the validity of :-
1.) C++ Right Shift
2.) C++ Left Shift
3.) C++ Pre-increment and Post Increment
a<<1;
Identifier: a
Operator Left Shift
Number:

Valid statement!
anubhav@Jarvis:~/Desktop/MCA /CD/Parser_Project$ ./a.out
Enter the expression to check the validity of :-
1.) C++ Right Shift
2.) C++ Left Shift
3.) C++ Pre-increment and Post Increment
a>>2;
Identifier: a
Operator Right Shift
Number:

Valid statement!
```



Sources of Information:

1. Lex and YACC Program Information - IBM Knowledge Center
https://www.ibm.com/support/knowledgecenter/ssw_aix_71/generalprogramming/chapter13.html