Assignment 2 (Parser)

Compiler Construction CS4435 (Spring 2015)

University of Lahore

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Assigned: 8th April 2015. Due: 15th April 2015 11:59 PM

Parser

Write a predictive parser (top down parser) for subset of C++ grammar given in "GrammarC++.txt" file. This grammar has been left factored and left recursion has also been removed. You don't need to modify this grammar. Parse Table for this grammar is given in "ParseTable.txt". Each production is numbered and the parse table is using grammar numbers. Parse Table is tab separated file. First line of parse table is name of all valid input tokens.

Program Input

The input to your program will be C++ code. You will first pass this code through lexical analyser (you wrote for assignment # 1). The lexical analyser will generate tokens in a file. Your Parser program should read tokens from input file.

Program Output

If there are no syntax errors in the program then Parser should print the following: "The program is parsed successfully" If there is any syntax error in input C++ program then your program should terminate on first syntax error and print the line number of the first syntax error with error message. "Syntax Error: Line # 3"

Sample Input Program

Following is a sample C++ program. Keywords are written in bold.

```
void add(int a, float b)
{
    int sum = 0;
    while(sum <= 50000)
    {
        sum = sum - 10.43 + 34E4 ;
```

```
        if (sum == 4000)
            break;

    }
}
```

Above program has correct syntax so output of parser should be "The program is parsed successfully".

Following program has a syntax error at line 5 (Missing "(" after while) so output of parser for following program should be "Syntax Error: Line # 4"

```
void add(int a, float b)
{
    int sum = 0;
    while sum <= 5000)
    {
        sum = sum - 10.43 + 34E4 ;
        if (sum == 4000)
            break;

    }
}
```

Implementation of Parser

I have written a Java program for parser. You can find its source code ("Parser.java") on Piazza site. You can either make changes to this code or write your own parser from scratch. You can also write C++ version of this Java code if you want to program in C++. The parser code reads parse table from a text file and also reads input tokens from an input file. The parse function is written in pseudo code. You have to convert it into Java or C++ code.

Submission

Email a zip file containing your complete project (all source files, along with whatever other files are needed to compile them; sample input and output files) to the following address:
maryam.bashir@cs.uol.edu.pk

The name of zip file should be roll numbers of all students in the group as follows:
RollNumber1-RollNumber2
Subject of email should be Assignment 2 Parser.

You should try to work on this assignment individually. If you think your programming is very weak then you can work in group size of maximum 2 students.