CS323 Documentation

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1. Problem Statement
For the third assignment we chose to implement the While, If, and bool/int statements.

2. How to use your program
Simply run the executable and it will read from the input.txt file and yield the output of the program's process to the output.txt file

3. Design of your program

Major Components:

Production Rules

-These rules are taken from the textbook and are first removed of left recursion.

-These rules are then used to populate the table

+We derived the first and follow set of each of the rules in order to create a n effective Top Down Predictive Parser.

+Added support for if - then statements

Simple file IO for reading in the text to be sent through the lexical analyzer.

-Program reads in the text for the input.txt file.

-Program outputs lexeme-token pairs in output.txt

Determines if a input's code is syntactically correct or not and reports a Success or Error result in the final output.

Semaphore based while/if flagging.

-Allows for the compiler to easily asses scope by checking the value of the semaphore. E.G. Semaplore == 1 yields one if or while loop deep scope.

Additional Rule Checking for variable Definition!

4. Any Limitation

Recognized Operators are: + - * /

Recognized Separators are: ( )

int VARIABLE_NAME = VALUE

bool VARIABLE_NAME = VALUE

All else should be recognized as an identifier.

Production Rules are as follows:

<Non-Terminal if> -> if <if NT internal> then

T -> FR

Q -> +TQ | -TQ | Epsilon
F -> (E) | i
S -> i | E
E -> TQ

New Rules

INT_SET -> int S
BOOL_SET -> bool S

5. Any shortcomings

No shortcomings, should work as intended.