

Lab

Write a recursive recognizer program for the language:

$\langle S \rangle \Rightarrow \$ \mid \langle W \rangle \mid \$ \langle S \rangle$
 $\langle W \rangle \Rightarrow abb \mid a\langle W \rangle bb$

test for the strings:

\$, abb, \$\$\$, aabbbb, \$abb, \$a\$bb

- 0 Each nonTerminal string represents a method call
- 1 Process the characters of the string one at a time from left to right.

You task is to implement a class that determines if a string is part of a language. It should have the following data members

- 2 **line:** A String data member for the current string being evaluated
- 3 **currentToken:** the current character from the string to be evaluated.
- 4 **nextLocation:** An integer index, for the next character to be evaluated, it is set to zero when the evaluation begins.

Methods:

- 5 **default constructor**, which initializes the data members appropriately.
- 6 **public void getNextToken():** this method returns the character from the string referenced by the location "nextLocation", and stores it in the data member "currentToken". The location "nextLocation" is then incremented. If we are at the end of the string, e.g. "nextLocation" == line.length, then return a special "end of Line" character '\u0000' is stored in "currentToken".
- 7 **public char getCurrentToken():** This method returns the value stored in the "currentToken" data member.
- 8 **public void initialize(String aLine):** This method receives a line, stores it, sets the currentToken to the first character of the string, and initializes
- 9 **public boolean recognize():** This method is called AFTER initialize to determine if a string is in the language. It will call private methods in the class for each of the non-terminal symbols in the grammar.
- 10 **Your class will also contain a set of private methods** representing the method calls that are part of the language itself.

Main Program:

The main program should create an instance of the class,

and call initialize and recognize multiple times to test a variety of strings. You should print out each test string and whether or not it is a valid string.