Psueudocode

Main

main (int argc, const char *argv[])

```
Create a scanner
Create a token
Have scanner start reading the file
Check for <identifiers>
Return 0
```

Print

Print (char source_name[], char date[])

```
Set the filename to source_name
get current time
set the print date to the current time
set the page number to zero
```

printLine (char line[])

```
increment the line count
if  line_count> page height Print header
print the string argument
```

PrintPageHeader ()

```
Print header (page number, source file name , current date)
```

PrintToken (Token *token)

```
Increment the line count
Switch (token-> getCode()) {
        NUMBER is an integer ->print integer
        Number is a real -> print a real
        String  is a string -> print the string
Default -> print token
        }
```

Scanner

Scanner (FILE *source_file, char source_name[], char date[], Print printer)

```
Src_file= source_file
Copy (src_name, source name)
Copy (todays_date, date)
Initialize char table to identify what type of char we are looking at
Initialize Line numer=0
Source line [0] = '\0'
```

getSourceLine(char source_buffer)

```
create source buffer
create fale Boolean
get a line from the filestream
if line received then true
return Boolean
```

getToken()

```
initialize a character code variable
skip past all the blanks
```

```
examine ch for LETTER, DIGIT, QUOTE, EOF, or SPECIAL
call appropriate function depending on ch
return new_token
```

getChar(char souce_buffer[])

```
set a temp char to EOF
if at the end of line ->return null character
        else return the char at the index
```

skipBanks (char source_buffer[])

```
skip past the blanks
return pointer to the first non blank character
```

skipComments (char source_buffer[])

```
skip past the comments
return pointer to the first non blank character
watch for the EOF character
```

getWord (char *str, char *token_ptr. Token *tok)

```
Extract the word
Downshift the word, to make it lower case
Check if the word is a reserved word
If is not a reserved word its an identifier
Set token to identifier
```

getNumber (char *str, char *token_ptr, Token *tok)

```
extract number and convert it to a literal number
check if real or float
temp string number
```

```
set the token type to NUMBER
```

getString (char *str, char *token_ptr, Token *tok)

```
Initialize a temporary string
Whie char ch is not a '\"
    Read more characters
    Append characters to temp string
Set the setType to STRING_LIT
Set the setCode to STRING
```

getSpecial (char *str, char *token_ptr, Token *tok)

```
initialize the temp string
check for character operators (:,<,>,.,|)
    read next character
        if (= or .) -> append both to temp string
        else -> append first character to the temp string
```

downshiftWord (char word[])

```
make all characters in the incoming word lower case
```

isReservedWord (char *str, Token *tok)

```
Scan the token table for reserved words
If it is a reserved word -> set the token code member ->return True
Else -> return False
```

getLineNumer ()

```
return line_number
```

Token

Token ()
Initialize variables for binary search tree (lines, left, righ)

setCode (TokenCode newCode)
set newCode

getCode ()
Return token code member

setType (LiteralType newType)
set Type

getType ()
return Token code member

setLiteral (int newInteger)
setLiteral to integer

getIntLiteral ()
return Token code member

setLiteral (int newReal)
setLiteral to real

getRealLiteral ()
return Token code member

setLiteral (string newString)
setLiteral to String

malloc space for string
copy stringLiteral to newString

getStringLiteral ()

return Token code member

setTokenString (string s)

setTokenString = s

getTokenString (string s)

return Token code member

getLeft ()

get left “leaf”

getRight ()

get right “leaf”

//implement binary tree

addLineNumber (int lineNumber)

add line number to node

addTokenNodeToBinarySearchTree(Token* &headToken, Token* newToken, int lineNumber)

Add token node to the binary search tree

getLinesString ()

return lone to ToString Expand

getBinarySearchTreeLinesStringsInOrder (Token*head)

```
arrange print of head
get head left or right
```

LineNumberNode

LineNumberNode ()

```
Set val to 0
Set next to NULL
```

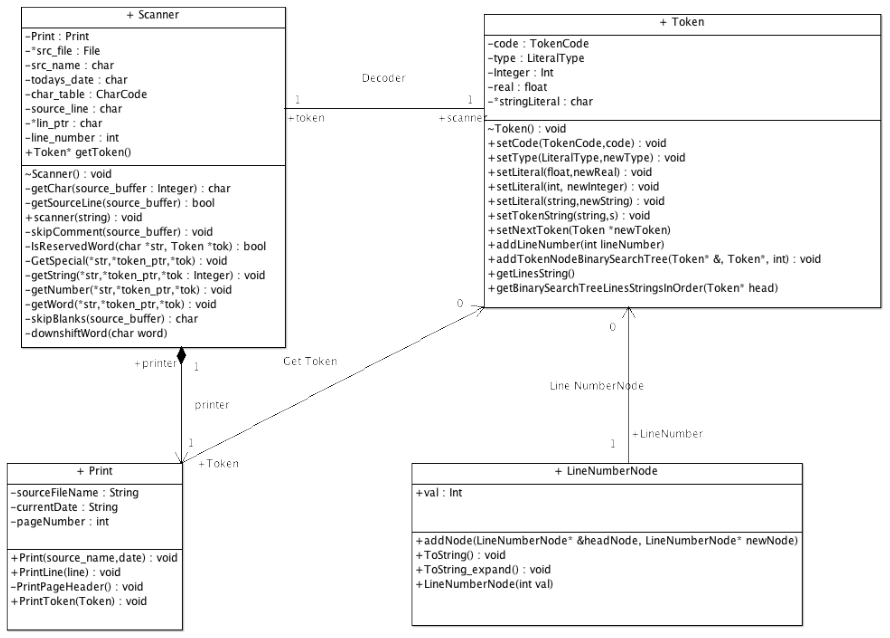
LineNumberNode (int val)

```
Set val to val
Set next to NULL
```

addNode (LineNumberNode *&headNode, LineNumberNode* newNode)

```
if headNode= Null
headNode is NewNode
return
else
ptr next= newNode
return
```

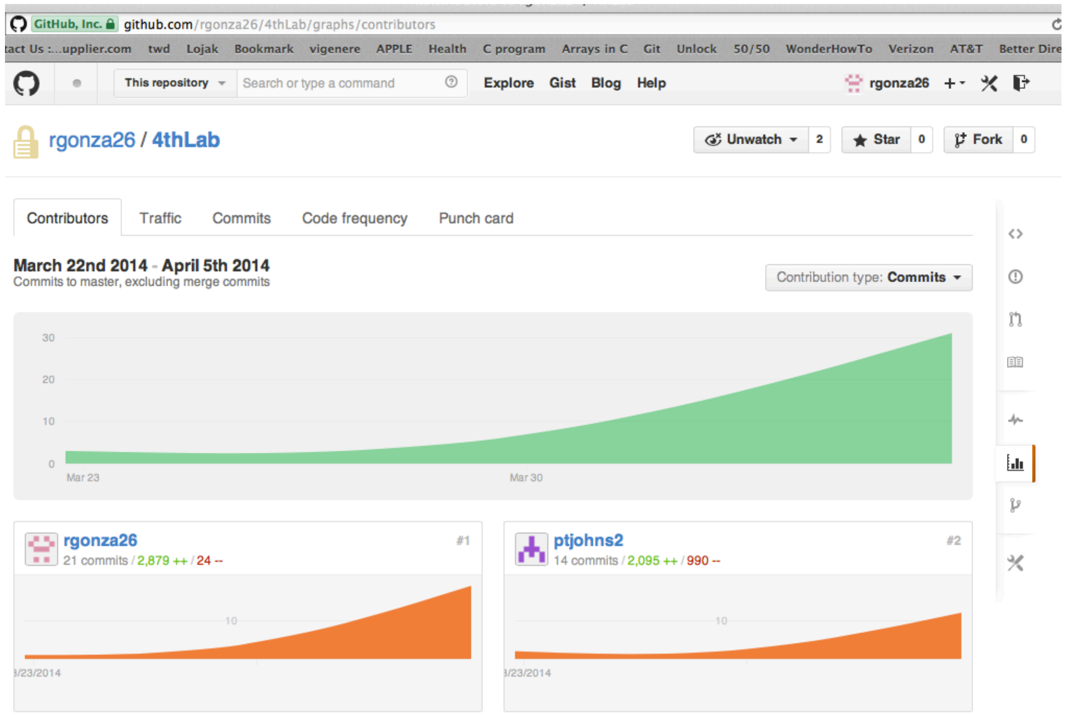
UML Diagram


+ Scanner
-Print : Print
-*src_file : File
-src_name : char
-todays_date : char
-char_table : CharCode
-source_line : char
-*lin_ptr : char
-line_number : int
+Token* getToken()
~Scanner() : void
-getChar(source_buffer : Integer) : char
-getSourceLine(source_buffer) : bool
+scanner(string) : void
-skipComment(source_buffer) : void
-IsReservedWord(char *str, Token *tok) : bool
-GetSpecial(*str,*token_ptr,*tok) : void
-getString(*str,*token_ptr,*tok : Integer) : void
-getNumber(*str,*token_ptr,*tok) : void
-getWord(*str,*token_ptr,*tok) : void
-skipBlanks(source_buffer) : char
-downshiftWord(char word)
Decoder
1
+token
1
+scanner
+ Token
-code : TokenCode
-type : LiteralType
-Integer : Int
-real : float
-*stringLiteral : char
~Token() : void
+setCode(TokenCode,code) : void
+setType(LiteralType,newType) : void
+setLiteral(float,newReal) : void
+setLiteral(int, newInteger) : void
+setLiteral(string,newString) : void
+setTokenString(string,s) : void
+setNextToken(Token *newToken)
+addLineNumber(int lineNumber)
+addTokenNodeBinarySearchTree(Token* &, Token*, int) : void
+getLinesString()
+getBinarySearchTreeLinesStringsInOrder(Token* head)
0
Get Token
0
+printer
1
printer
Line NumberNode
+LineNumber
1
1
+Token
+ Print
-sourceFileName : String
-currentDate : String
-pageNumber : int
+Print(source_name,date) : void
+PrintLine(line) : void
-PrintPageHeader() : void
+PrintToken(Token) : void
+ LineNumberNode
+val : Int
+addNode(LineNumberNode* &headNode, LineNumberNode* newNode)
+ToString() : void
+ToString_expand() : void
+LineNumberNode(int val)

Team Contribution Table

Name	Login	Score (0= No contribution 2= good contribution)
Peter Johnson	ptjohns2	2
Roberto Gonzalez	rgonza26	2

URL to Repository: https://github.com/rgonza26/4thLab



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30
20
10
0
Mar 23
Mar 30
#1
#2
10
3/23/2014

github.com/rgonza26/4thLab/graphs/contributors

rgonza26 / 4thLab

March 22nd 2014 - April 5th 2014
Commits to master, excluding merge commits

rgonza26
21 commits / 2,879 ++ / 24 --

ptjohns2
14 commits / 2,095 ++ / 990 --

TEST CASES

Function	Parameter (V->Valid, I ->Invalid)	Expected Result	Acutal Result
main	argv		
Test 1	V	Program Produces Expected Results	Expected result
Test 2	I	Application Crashes	Expected result

Function	Parameter (V->Valid, I ->Invalid)	Expected Result	Acutal Result
print	sourceFileName		
Test 3	V	File Name matches valid flie name	Expected result
Test 4	I	File Name does not match valid file name	Expected result
printLine	line		
Test 5	V	prints line	Expected result
Test 6	I	prints nothing	Expected result
printPageHeader			
Test 7		prints header	Expected result
printToken	Token		
Test 8	V (4)	Prints the integer literal	Expected result
Test 9	V (3.1)	Prints the Float literal	Expected result
Test 10	V ("test")	Prints the STRING literal	Expected result
Test 11	V ("PROGRAM")	Prints the Token	Expected result
Test 12	I	Nothing Prints NO_Token type	Expected result

Function	Parameter (V->Valid, I ->Invalid)	Expected Result	Acutal Result
Scanner	Tested during Main		
getSourceLine	Tested during Main		
getToken	Tested during Main		
getChar	source_buffer		
Test 13	V ("test)	returns 't'	Expected result
Test 14	I ""	returns"	Expected result
skipBlanks	source_buffer		
Test 15	V (two spaces)	returns 2	Expected result
Test 16	I (spaces here"	returns 1	Expected result
skipComment	source_buffer		
Test 17	V "this is a {comment}"	Removes Comment from source line	Expected result
Test 18	I "this is a comment"	Prints the line	Expected result
getWord	ch		
Test 19	V 'a'	Tested during print	Expected result
Test 20	I '{'	Empty token string	Expected result
getNumber	ch		
Test 21	V '5'	Tested during print	Expected result
Test 22	I '{'	Empty token string	Expected result
getString	ch		
Test 23	V	Tested during print	Expected result
Test 24	I '{'	Empty token string	Expected result
getSpecial	str		
Test 25	V "program"	returns 1	Expected result
Test 26	I 'nothing"	returns false	Expected result

downshitfWord	char		
Test 27	V 'OK'	ok	Expected result
Test 28	I '{'	Empty token string	Expected result
isREservedWord	ch		
Test 29	V"DO"	Tested during print	Expected result
Test 30	I '{'	Empty token string	Expected result

Function	Parameter (V->Valid, I ->Invalid)	Expected Result	Acutal Result
Token	Tested during Main		
setCode	Tested during Main		
setType	Tested during Main		
setLiteral	Tested during Main		
setLiteral	Tested during Main		
setLiteral	Tested during Main		
setTokenString	Tested during Main		
getLeft	ch		
Test 31	V (1)	left=1	Expected result
Test 32	I(")	invalid	Expected result
getRight	ch		
Test 33	V(2)	right=2	Expected result

Test 34	I(~)	invalid	Expected result
addlLineNumber	int		
Test 35	V(1)	lineNumber=1	Expected result
Test 36	I(A)	invalid	Expected result
addTokenNodeToBinary-SearchTree	ch, ch, int		
Test 37	V V V	added TokenNode to BST	Expected result
Test 38	I	invalid	Expected result
getBinarySearchTree-LinesStringsInOrder	char		
Test 41	V	return oss.str()	Expected result
Test42	I	invalid	Expected result

Function	Parameter (V->Valid, I ->Invalid)	Expected Result	Acutal Result
LineNumberNode			
addNode	char		
Test 43	V	LuneNumberNode* ptr= headNode	Expected result
Test 44	I	invalid	Expected result