AllenScanner

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**Overview:**

The AllenScanner program will read the input characters from a plain text file and output a sequence of tokens for the parser. Every token will consist of the lexeme, or characters in input stream, and the token type. Then the scanner is going to distinguish which characters are keywords and which are user made variables.

**Design:**

The scanner program is going to scan through the input file and return a lexeme. The lexeme is going to be the string containing the actual characters that were read in that make up one particular token in the language. The token type is the individual token type descriptor of the keywords, identifiers, and symbols. The keywords and symbols are listed after the design section, anything else is an identifier.

Scanners have a state machine that does pattern matching, a diagram of the state machine can be seen below. As long as the scanner sees characters that are not spaces, newline characters, or tabs, it will keep adding them to the lexeme. If the scanner does see those, and it already has a lexeme, it’s going to push any spaces, newline characters, or tabs back into the input stream and return the lexeme because it’s done. If the scanner sees a space, newline characters, or tab, and it doesn’t have a lexeme yet it keeps going to find a lexeme and throws the whitespace character away.

This program contains four java files – Token, TokenType, TestMyScanner, and MyScanner. The Token class is a constructor class for a token object. All the tokens will consist of the lexeme, or characters in the input stream, and the token type. The TokenType class consists of all of the different types a token can be. These types are then passed into the scanner class. There is a type for every keyword and symbol as well as two types for ID and number. TestMyScanner takes an input file from the command line and feeds the characters into a the scanner class. As long as the scanner doesn't hit a null token, the scanner prints out any tokens that are not whitespace tokens or null tokens. The MyScanner file is the java file that was created when the AllenScanner jflex file was run. The scanner for this class uses the key words and symbols defined for the token and prints out the tokens that are not whitespace tokens or null tokens along with any errors.

**List of Keywords/Reserved Words:**

program

var

array

of

function

procedure

begin

end

if

then

else

while

do

not

or

and

div

mod

integer

real

read

write

return

**List of Symbols:**

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