**Scanner Documentation**

**Regex:**

String Constant regex: "**\"**[a**-**zA**-**Z0**-**9!@#$%^&\* ()+=]\***\"**")

Number Constant regex: "[0-9]\*"

Identifier regex: "[a-zA-Z][a-zA-Z0-9]\*"

**Data Structures:**

For PIF:

ArrayList<Tuple<String,Integer>> pif;

The PIF is implemented as an ArrayList from Java that stores objects of type Tuple which is a simple class that stores objects of two types in this case a String and an Integer that represent the token and 0 or the token type and the position in the symbol table for identifier and constants.

For ST:

The Symbol Table is implemented as a HashTable which is formed of an Array of ArrayLists that store Tuple objects of String and Integer types which represent the token (identifier or constant) and the address. It also has an integer that stores the last used address.

**Methods**

void genPIF(String token, Integer position)

Adds a new Tuple containing the token and its address in the PIF.

String scan(String doc)

Scans the given file and returns a String Error if any lexical error is found.