https://github.com/holmogigi/UNIVERSITY_WORK--UBB_FMI--/tree/4195383c3ed1bca4ce767bebe44a334244a5471b/5'th%20SEMESTER/FLCD%20(Formal%20Languages%20and%20Compiler%20Design)/LAB3

DOCUMENTATION

Symbol Table: Uses the hash table

Methods: - Add(self, item) : adds a symbol with a name in the table

- GetValuePosition(self, item) : gets the position index of a given item in the table

Hash Table: Implemented using open addressing as a collision resolution

Methods: - HashFunction(key) : calculating the sum of the unicode of the given key (a string)

- Add(self, key, value) : adds a key value pair to the hashtable and uses resize beforehand if the load factor is reached

- GetValuePosition(self, key) : gets the value of a given key from the hashtable

- ResizeTable(self, size) :if the load factor is reached the resize is called and the hashtable size is doubled also rehashing the table

Scanner: Has reserved words, operators and separators, all stored in lists

Methods: - IsIdentifier(elem) : regex that returns true or false depending on the input being a indentifier or not

- IsConstant(elem) : regex that returns true or false depending on the input being a constant or not

- GetReservedWords(self) : returns the list of reserved words

- GetSeparators(self) : returns the list of separators

- GetOperators(self) : returns the list of operators

- GetAllTokens(self) : returns all the lists: separators, operators and reserved words

- IsOperator(self, elem) : checks if a element is the operators list

- ReadTokens(self) : read the tokens from the Token.in file and add them in the appropiate lists

- String(token, tokens, line, i) : adds a given string from the line to to tokens list

- Operator(self, token, tokens, line, i) : adds a given operator from the line to the tokens list

- Separator(token, tokens, line, i) : adds a given separator from the line to the tokens list

- GetTokensFromLine(self, line) : gets all tokens from a given line and appends them to a list

PIF: Has a list for the pairs(tokens and positions) where they are added and printed

Methods: - Add(self, token, position) : Appends a pair of a token and position to the list

- __str__(self) : Prints all pairs in the list

FA: Has a list for the pairs(tokens and positions) where they are added and printed

Methods: - ReadFile(self) : Reads in the states, alphabet, initial state, final states, and transitions of the finite automaton

- PrintStates(self) : Prints states in finite automaton

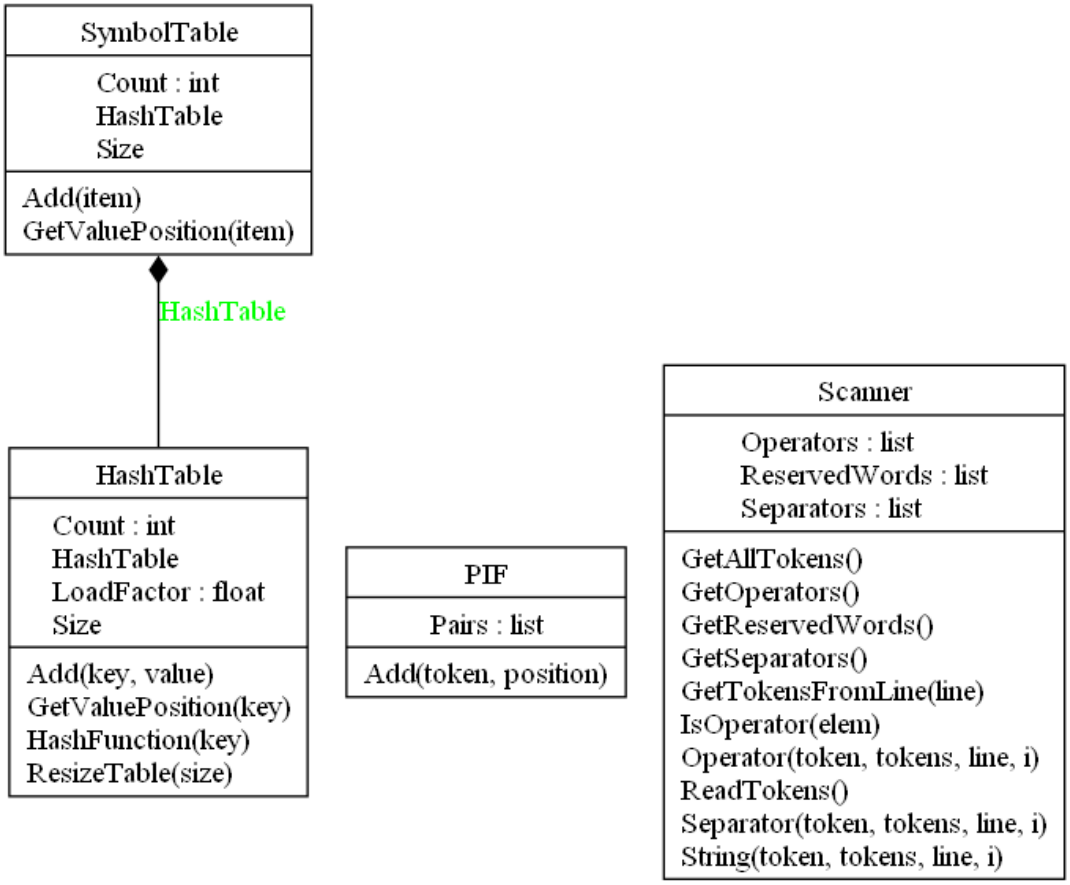
- PrintAlphabet(self) : Prints alphabet in finite automaton

- PrintFinalStates(self) : Prints final states in finite automaton

- PrintInitialState(self) : Prints initial states in finite automaton

- PrintTransitions(self) : Prints transitions in finite automaton

- CheckAccepted(self, word) -> bool : checks if a given word is accepted by the finite automaton. It starts from the initial state and follows the transitions based on the symbols in the word. If it ends in a final state, the word is accepted; otherwise, it’s not.


SymbolTable
Count : int
HashTable
Size
Add(item)
GetValuePosition(item)
HashTable
HashTable
Count : int
HashTable
LoadFactor : float
Size
Add(key, value)
GetValuePosition(key)
HashFunction(key)
ResizeTable(size)
PIF
Pairs : list
Add(token, position)
Scanner
Operators : list
ReservedWords : list
Separators : list
GetAllTokens()
GetOperators()
GetReservedWords()
GetSeparators()
GetTokensFromLine(line)
IsOperator(elem)
Operator(token, tokens, line, i)
ReadTokens()
Separator(token, tokens, line, i)
String(token, tokens, line, i)