DOCUMENTATION

Github link -> https://github.com/Moldovan-Andrei-Bogdan/flcd/tree/main/lab3

--- Symbol Table ---

Composed from 3 separate hash tables, one for identifiers, one for integer constants and one for string co nstants.

Hash tables are represented each by a list where its elements are also lists in order to be able to store ele ments that hash to the same value. Each hash table has a size.

An element from the symbol table has as its position a pair of indices, the first one being the index of the li st in which the element is stored and the second one being the actual position in the list.

In the case of integer values, the hash function is the value % n, where n is the size.

In the case of string constants/identifiers, the hash function is the sum of ASCII codes % n, where n is the size.

Note -> the hash table is generic

-- Operations --

** Hash Table **

- hash(key: int): int - computes the position in the ST where the integer constant will be added

- hash(key: string): int - computes the position in the HT where the constant / identifier will be added

- getSize(): int - return the size of the hash table

- getHashValue(key: T): int - return the corresponding position in the ST based on the type of the key

- add(key: T): (int, int) - add the key to the hash table and return its position if the operation has been succ essful, otherwise throw an exception

- contains(key: T): boolean - return true if the key is in the hash table, false otherwise

- getPosition(key: T): (int, int) - return the position in the HT of the given key, if it exists, otherwise return (- 1, -1)

- toString(): string - return the string representation of the hashTable

** Symbol Table **

- has 3 hash tables -> one for identifiers, one for string constants and one for integer constants

- addIdentifier(name: string): (int, int) - add an identifier and return its position in the ST

- addIntConstant(constant: int): (int, int) - add an integer constant and return its position in the ST

- addStringConstant(constant: string): (int, int) - add a string constant and return its position in the ST

- hasIdentifier(name: string): boolean - return true if the given identifier is in the ST, otherwise return false

- hasIntConstant(constant: int): boolean - return true if the given integer constant is in the ST, otherwise re turn false

- hasStringConstant(constant: string): boolean - return if the given string constant is in the ST, otherwise r eturn false

- getPositionIdentifier(name: string): (int, int) - get the position of the identifier in the ST

- getPositionIntConstant(constant: int): (int, int) - get the position of the integer constant in the ST

- getPositionStringConstant(constant: string): (int, int) - get the position of the string constant in the ST

- toString() - get the string representation of the symbol table