Documentation

Symbol Table Implementation

Classes Overview

-**Pair**:

Represents a pair of integers used to indicate the position of an element in the hash table.

Attributes:

first: Integer representing the index of the hash table (the bucket index).

second: Integer representing the index within the list at that hash table specific bucket.

Methods:

getFirst(): Returns the first element of the pair (bucket index).

getSecond(): Returns the second element of the pair (index of element at already given bucket).

-**HashTable**:

Attributes:

size: The number of buckets in the hash table.

table: An array list of array lists (buckets) that holds the elements.

Methods:

findByPos(Pair pos): Retrieves the string at the given position.

getSize(): Returns the size of the hash table.

findPositionOfTerm(String term): Finds the position of a term in the hash table.

hash(String key): Generates a hash code for the given key.

containsTerm(String term): Checks if the term exists in the hash table.

add(String term): Adds a term to the hash table, returning true if successful.

Remove(String term): removes an element by the given name of the symbol, returns the removed element

-**SymbolTable**:

Fields

identifierTable: A hash table for storing identifiers, such as variable names.

constantTable: A hash table for storing constants, such as numeric values.

Constructor

SymbolTable: Creates a new symbol table with a specified initial size for the hash tables.

Methods

findByPosition: Returns the term at the specified position in the identifier or constant table.

getIdentifierTable: Returns the hash table for identifiers.

getConstantTable: Returns the hash table for constants.

getIdentifierSize: Returns the number of identifiers in the table.

getConstantSize: Returns the number of constants in the table.

findPositionOfTerm: Finds and returns the position of the given term in the identifier or constant table.

containsTerm: Checks if the given term exists in the identifier or constant table.

addTerm: Adds a term to the identifier or constant table.

removeTerm: Removes a term from the identifier or constant table.

addIdentifier: Adds an identifier to the identifier table. Prints a message if it already exists.

addConstant: Adds a constant to the constant table. Prints a message if it already exists.

**-Main Program**:

The entry point for testing the symbol table implementation.

Demonstrates adding terms, checking for existence, finding positions, and displaying the hash table.