Advanced Programming

Lab # 2– INTERPRETER

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# Documentation

Public repo: NUST internet was not working

## INTERPRETER:

Interpreter is program which read line from the file and evaluate the expression according to the syntax used by the developer.

### Hashmap<String, Integer>:

Hashmap are used to store the variable provided by the user of later use. Hashmap is initialized in the default constructor key = string (name of the variable) value = data (value of the variable). Get and put function are used to retrieve and store the variable in the Hashmap.

### ReadFile ():

Read the file provided by the user line by line and called the CheckSyntax ().

### CheckSyntax (String a):

Split the line on the basic of ‘spaces’ and matches which instruction is being called. Using matches function on string to find out which operation is being used and pass the line to that that checker for error handling and execution of the instructions. If no match is found than the function throw an exception by printing the error line meaning the basic syntax is wrong or that functionality is not provided.

### Checklet (String a):

Received a let instruction line as string. Check and apply different various syntax error handling procedure. Check that the variable should be a string not a number. Assigning value to the variable must be in the Hashmap or be a digit. Assignment operator must be in the proper place. In case of failure the function throw an exception by printing the error line.

### Letline (String a):

Receive line having proper syntax thus the function add the entry of the variable in Hashmap. Check only if the assigning value is a variable itself than get the value of the variable and then place it in the Hashmap if not initialized than error of variable not initialized is thrown. In case of failure the function throw an exception by printing the error line.

### Printline (String a):

Receive print instruction line and check the proper syntax of the statement. Check if the print is a classic operation so print the string out. Otherwise check if variable is to printed out. If yes than get the value of the variable from the Hashmap than print it out. If the variable is not found in the Hashmap than the function throw an exception by printing the error line.

### Operation (String a):

Receive an operation instruction line and check the proper syntax of the statement as the developer has defined it. Check variable if are accessed should be initialized and or otherwise the value should be digit excluding the variable which is to be assigned the result of the operation. Addition, Subtraction division and Multiplication operation are checked. Two format of operation expression are handled x = 3 and x = x + 5. Similar format are accepted for operation and handled differently.

After the operation are performed on the variable the appropriate variable is updated in the Hashmap using put function of Hashmap.

### Print ():

Print the variable in the Hashmap

## UNIT TEST:

### UnitTest\_let ():

Test the basics functionality of the let instruction. In case of failure the function throw an exception by printing the error line or variable not defined if that is the case.

### UnitTest\_op ():

Test the basics functionality of the operation instruction. In case of failure the function throw an exception by printing the error line or variable not defined if that is the case.

### UnitTest\_print ():

Test the basics functionality of the print instruction. Print out classic print statement and variable from the Hashmap if initialized. In case of failure the function throw an exception by printing the error line or variable not defined if that is the case.

### UnitTest\_command ():

Basic flow of random input from the file. . In case of failure the function throw an exception by printing the error line or variable not defined if that is the case.

## Other Information about the Source code:

-help

<http://stackoverflow.com/questions/18590901/check-if-a-string-contains-numbers-java>

<http://stackoverflow.com/questions/6344867/checking-whether-the-string-contains-only-a-number-value>

<http://docs.oracle.com/javase/7/docs/api/java/util/HashMap.html>

<http://www.tutorialspoint.com/java/java_hashmap_class.htm>