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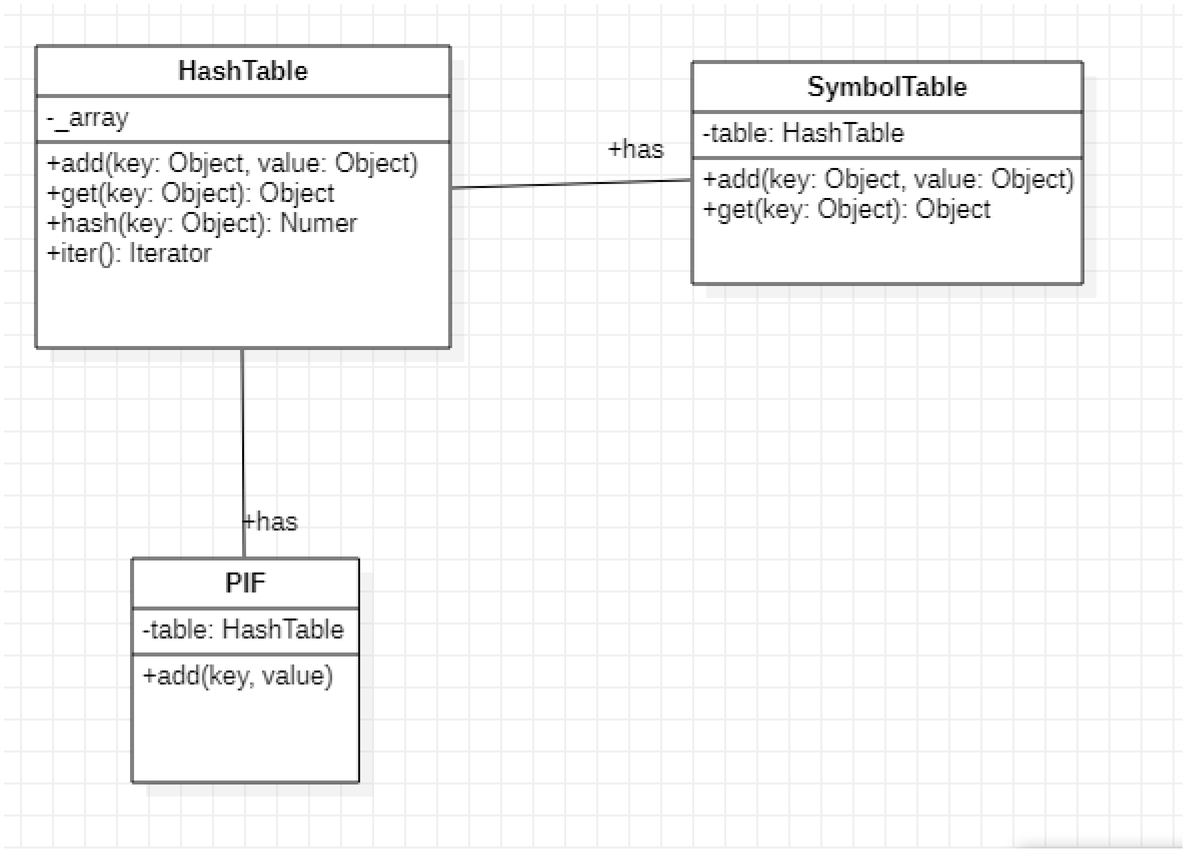
Lab3
Group 932/1

Lab 3

Repo: https://github.com/cinnamonbreakfast/flcd/tree/main/lab3

Lab 3 Documentation

Function	Pre-condition	Post-condition	Observations
Detect(program)	<program>: string – valid name for an input source file	<program>_PIF.out : contains PIF data <program>_ST.out : contains ST data	Using Regex to fetch the program, then send the tokens through filters
is_ident_const(cod)	cod : token	Boolean	Function checks if the current token is an identifier or constant
is_reserved(cod)	cod : token	Boolean	Checks if the current token is a reserved work or token.


HashTable
-_array
+add(key: Object, value: Object)
+get(key: Object): Object
+hash(key: Object): Numer
+iter(): Iterator
+has
SymbolTable
-table: HashTable
+add(key: Object, value: Object)
+get(key: Object): Object
+has
PIF
-table: HashTable
+add(key, value)

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The algorithm works as following:

It reads the file content and splits by every token (we end up with a list of every token, eg: [entry, {, int, number, ..etc]). Then, we parse the list and we check ***if the token is a reserved word, operator or separator***, and add it to PIF. Otherwise, we check **if the token is an identifier or constant** and add it to SymbolTable, get the index inside SymbolTable, and add the token together (pair) in PIF. **If none** of these two conditions are fulfilled, **there is a lexical error**.

```
code_data = re.split('([^a-zA-Z0-9])', line)

code_data = list(filter(None, code_data))
code_data = map(lambda e: e.strip(), code_data)
code_data = list(filter(None, code_data))

for e in code_data:
    if(is_reserved(e)):
        pif.add(e, 0)
    elif is_ident_const(e):
        index = 0
        try:
            index = st.add(e, 0)
            pif.add(e, index)
        except:
            continue
    else:
        print("Lexical error for " + e)
```

input:

```
entry {
    int number;

    number = 3;

    if(number > 5) {
        WRITE("SARMALE");
    }
}
```

ST.out is:

```
Using a HashTable:
[['number', 0], ['3', 0]]
[]
[['5', 0], ['SARMALE', 0]]
```

PIF.out is:

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```
('{', 0)
('int', 0)
('number', 0)
(';', 0)
('=', 0)
('3', 1)
(';', 0)
('if', 0)
('(', 0)
('>', 0)
('5', 0)
(')', 0)
('{', 0)
('WRITE', 0)
('(', 0)
('"', 0)
('SARMALE', 1)
('"', 0)
(')', 0)
(';', 0)
('}', 0)
('}', 0)
```