COMP 340 – Bonus Part (5 pts)

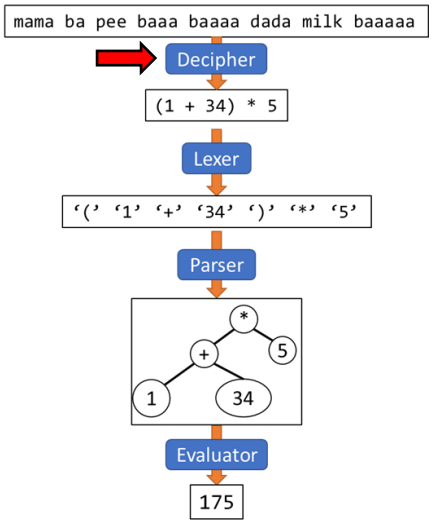
Due date: 05/07/2024 11:59 pm

Decipher

***DO NOT use `.replace()` in Python. Or you will not get any point.**

Project Description

In this project, you need to implement a decipher part of an interpreter which makes user input baby language code instead of an arithmetic expression. The decipher needs to convert a baby expression to a source code as shown below.



The baby expression includes baby words, and the words correspond to specific characters. The relationship between baby words and characters is shown in the below table.

Baby Word	**Character**
pee	+
gah	-
milk	*
heh	/
mama	(
dada	)
b	0
ba	1
baa	2
baaa	3
baaaa	4
baaaaa	5
baaaaaa	6
baaaaaaa	7
baaaaaaaa	8
baaaaaaaaa	9

**** In a baby expression, when digit-baby words have white spaces between them such as "baa ba" and "baaa ba baaa", they will correspond to a single number with multiple digits like "31" and "313".***

Project Guideline

The basic structure of the function is given below.

```
def decipher(babyExp):
    srcCode = ""

    ##main part##

    return srcCode
```

In the function, `babyExp` is a string of a baby expression, and `srcCode` is a string of characters corresponding to baby words of `babyExp`.

You will implement `##main part##` of the function that converts `babyExp` to `srcCode`. For example, when `babyExp` is "baa ba", the function will convert it to `srcCode` which is "21".

Then, you will modify your main program with the decipher like the below to complete our baby language interpreter program.

```
print("\nHello baby language.\nEnter baby exp and see what you get.")

while True:
    babyExp = input(">>> ")
    if babyExp == "poopoo":
        break
    srcCode = decipher(babyExp)
    print("Interpreted as: ", srcCode)
    srcList = tokenize(srcCode)
    rootNode = parseEx(srcList)
    result = evaluate(rootNode)
    print("The result is: ", result)

print("Now it is time to go poo poo.")
```

Test Cases

Your baby language interpreter should work with the below test cases. The test cases (baby expressions) are noted by the bold texts. *Note that your decipher should work even when a baby expression does not have any whitespaces.*

```
Hello baby language.
Enter baby exp and see what you get.

>>> babapeebaaaaa
Interpreted as:  11+5
The result is:  16

>>> baaaaab
Interpreted as:  50
The result is:  50
```

```
>>> gahbaaaba
Interpreted as:  -31
The result is:  -31

>>> baaaaa milk mamababaa gah baaaaa dada
Interpreted as:  5*(12-5)
The result is:  35

>>> baaaaa gah ba baaa heh baa bapeebaa ba milk baaaaaa
Interpreted as:  5-13/21+21*6
The result is:  130.38095238095238

>>> mama mama baaaaaba gah baaaa dada milk baaa dada
Interpreted as:  ((51-4)*3)
The result is:  141

>>> poopoo
Now it is time to go poo poo.
```

Submission Guideline

1. You need to submit the below files on Blackboard.
    a. All the Python files including the decipher
        i. DO NOT compress them as a ZIP file. Submit them as individual files.
    b. Recording of demonstration of your program
        i. In the video, you need to show that your program works with the above test cases including the poopoo command.