Due date: 05/03/2024 11:59 pm

Final Project

Project Description

In this project, you need to complete the interpreter that receives arithmetic expressions and returns corresponding results. Your interpreter will consist of a lexer, parser, and evaluator parts as discussed in the class. Assume that users input only valid expressions. For example, they will not input an expression like `1/0` which gives a division error.

Main Program

Once possible guideline of your main program will be like the below which repeatedly gets user inputs and returns outputs. But you do not need to follow the below guideline for your main program.

```
while True:
    srcCode = input(">>> ")
    if srcCode == "exit":
        break
    srcList =  tokenize(srcCode)
    rootNode = parseEx(srcList)
    result =  evaluate(rootNode)
    print("The result is: ", result)
print("Now it is time to exit.")
```

Test Cases

Your project needs to get correct results from the test cases like the below:

```
>>> 1 * ( 2 + 5 )
The result is:  7

>>> (1 + 2) * 5 + 4
The result is:  19

>>> 23 * ((1 + 5) * 33)
The result is:  4554

>>> 5 - 13 / 21 + 21 * 6
The result is:  130.38095238095238

>>> 24
The result is:  24

>>> 125
The result is:  125

>>> -5
The result is:  -5
```

```
>>> --5
The result is:  5

>>> -(-5)
The result is:  5

>>> - 5 + 6 * 19
The result is:  109

>>> exit
Now it is time to exit.
```

Submission Guideline

1. You need to submit the files below on Blackboard:
    a. All Python files
        i. DO NOT compress them as a ZIP file. Submit them as individual files.
    b. Recording of demonstration of your interpreter
        i. In the video, you need to show your program passes the above test-cases including the `exit` command.