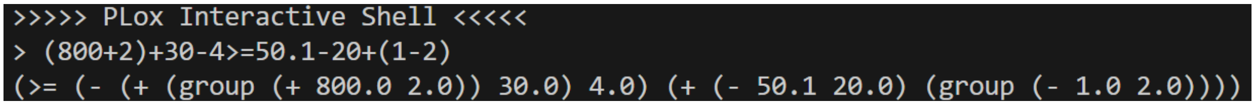
Example Expression:

Program Input:

(800+2)+30-4>=50.1-20+(1-2)

Screenshot of Program:



```
>>>>> PLox Interactive Shell <<<<<
> (800+2)+30-4>=50.1-20+(1-2)
(>= (- (+ (group (+ 800.0 2.0)) 30.0) 4.0) (+ (- 50.1 20.0) (group (- 1.0 2.0))))
```

AST Output:

(>= (- (+ (group (+ 800.0 2.0)) 30.0) 4.0) (+ (- 50.1 20.0) (group (- 1.0 2.0))))

Drawn Out Syntax Tree:

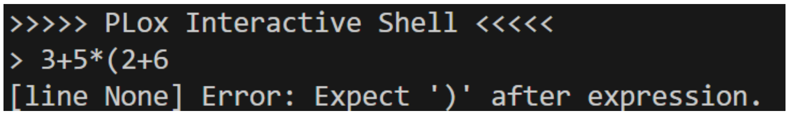
```
                       (>=)
                     /     \
                 (-)         (+)
                /   \        /    \
            (+)     4.0    (-)     (group)
           /   \          /  \         |
   (group)   30.0     50.1  20.0    (-)
       |                            /   \
      (+)                         1.0   2.0
     /    \
800.0     2.0
```

Comparison:

The printed syntax tree and the drawn out syntax tree match, but are represented in very different styles.

Error Catching:

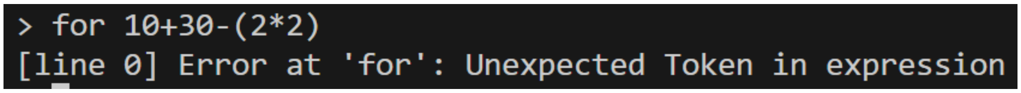
Unmatched Parentheses:



```
>>>>> PLox Interactive Shell <<<<<
> 3+5*(2+6
[line None] Error: Expect ')' after expression.
```

Because there is no right parentheses after the expression “2+6” to match the left parentheses the program reports an error.

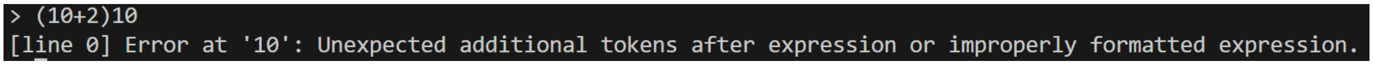
Unexpected Token:



```
> for 10+30-(2*2)
[line 0] Error at 'for': Unexpected Token in expression
```

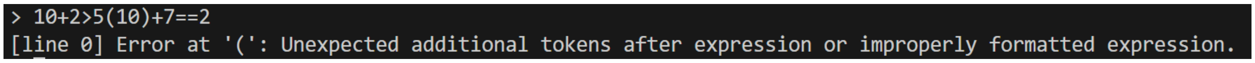
Since the “FOR” token is not expected for our expression parser the program reports an error.

Extra Tokens/Improper Format:



```
> (10+2)10
[line 0] Error at '10': Unexpected additional tokens after expression or improperly formatted expression.
```

Because the expression “(10+2)” is a complete expression on its own, the 10 is considered extraneous, therefore the program reports an error.



```
> 10+2>5(10)+7==2
[line 0] Error at '(': Unexpected additional tokens after expression or improperly formatted expression.
```

Because we cannot parse the sub-expression “5(10)” the program stops after parsing “10+2>5” and when it sees the extraneous tokens it reports an error.

This error can be triggered because the parser doesn’t capture all the tokens because of improper format, or because there are extra tokens leftover after a complete expression.