Jeremiah Howden
Elias Moreno

# Scanner Report

## Data Structures

- 2D - Array: We are conveniently importing each line from the .txt files in order for the Scanner class to easily be able to parse through each line to determine whether or not it is a valid id, number, plus, minus, etc.
- 1D - Arrays: throughout the .py files I use many 1D - Arrays in order to simplify my approach to storing values, strings of characters, characters themselves, and lists of tokens to return given a .txt file.While there may be various other ways to more efficiently store the data that we are working with from each .txt file, for the sake of time and functionality, simple 1D - Arrays are sufficient enough to keep track of everything that we need to keep track of for each of the test cases.

## Pseudo-Code

```
Def main():
    Import test cases from getTestCases() into a 2D - Array that is ready for parsing

    For each array in the 2D - Array:
        Create an instance of the Scanner class
        Use the scan() function to initiate the scan of a single array


Class Scanner:
    List all of the simple symbols such as +, -, *, /, and so on and assign them to a variable name
    Def scan():
        For each line in a single array from the list of arrays
            If index is a letter:
                Continue to read the letters to make sure that it is a valid id
                If entire word is ‘read’ or ‘write’ then print those words respectively
                If the entire word seems to checkout as an id:
                    Print ‘id’
                Else
                    Throw error
            If index is ‘:’
                If next index is ‘=’:
```

```
                Then print ‘assignment’
            Else: throw error

        If index is “.”
            If digit is before or after
                Then it is a float digit therefore print number
        Else
            Return error
```

skipComment() returns what lines to skip because ‘/* is being read by the scanner so starting at that line, lines following must be skipped.

getTestCases() returns a 2D array that pipelines data from 6 .txt files that are then sent to the scanner class which has the scan() function so that tokens can be validated.

# Test Cases

Batch 1 - ids.txt

- dog
- rabbit
- moon56
- stove345top

Batch 2 - numbers.txt

- 1
- 12
- 3.14159
- 234
- .345
- 17
- -20

Batch 3 - symbols.txt

- ()
- +-
- / *
- y := 42

Batch 4 - comments.txt

- /*
- Make sure this line is ignored
- */
- read
- write
- /*
- Make sure this line is ignored too
- */
- write

Batch 5 - misc.txt

- /*
- Make sure this line is ignored
- */
- Se7en 7
- (3.13)
- X + 17
- orange

Batch 6 - errors.txt

- 47purple
- 1.5.6

# Acknowledgements

- Elias Moreno
- Jeremiah Howden