# Tokenizer Java Program

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# Approach Taken:

When starting the project, I had a mindset that no matter the outcome, I will not be using any online resource nor chatgpt. While not optimal nor very coherent, I’m happy to say this was all my work.

I had many ideas of using recursion for recycling functions and for iterations. But with testing, it turned out to be overly complicated, and while some methods do use recursion (like validateIfStatement and validateIfCondition using run() , basic iteration was optimal.

I tried my best to section each important part in how the program runs to avoid unnecessary steps, like the tokenize() function, which calls one of 5 functions according to the condition. Consequently, this helped me in debugging lots of parts, because the complex parts of my work that im sure work fine are hidden.

For syntax checking, the program sections the input string and iterates over it, calling many methods to validate and tokenize the input.

# Edge Cases

I used arraylists for type checking and validating sequences, it turned out to be a messy process, and I’m sure that there are easier and more coherent ways. Consequently, my program checks for:

* Assignment, declaration and if statements’ sequences validity
* If the variable in the assignment statement is not declared
* If the variable in the declaration is already defined
* If the assignment is of a type that does not match the variable
* If the declaration assignment is of a type that does not match the variable
* If the parenthesis match.

Program consequently outputs an error and stops the program.

# Challenges:

* Not documenting while writing my code was a terrible mistake. I had no idea the code would be big and messy, and the multiple debugging processes gave me a headache. Thorough debugging solved most problems I had.
* There were many things that I could not fix, like I could not think of another way of writing test cases without a space after each element, because a space is very crucial for how the program works. Consequently, any such change would mean changing the logic of the program. And for some reason, the If statement combined with statements separate from it would cause errors which I could not find a solution to even after debugging.
* Debugging was very time and energy consuming.