

# CS 4308 – Concepts of Programming Languages

## Course Project Spring 2020

The CS4308 project consists of the development of an interpreter for a simplified Monkey language. The interpreter can be implemented in any programming language, such as C, C++, Java, Python, and so on.

### Interpreter Project

The interpreter has mainly three parts, a lexer, a parser, and an evaluator.

The interpreter will process a Monkey program. The parsing algorithm should detect any syntactical or semantic error. The first such error discovered should cause an appropriate error message to be printed, and then the interpreter should terminate. Run-time errors should also be detected with appropriate error messages being printed.

1. Write the grammar specification of the simplified Monkey language based on the below source code. (10 pts) Hint: the language supports variable declarations, functions, and additions.
2. Implement a lexical analyzer. (30 pts)
3. Implement a parser. (30 pts)
4. Implement an evaluator. (30 pts)

Your interpreter executes the following program.

```
let a = 5;  
let b = 10;  
let add = fn(x, y) {  
  x + y;  
};  
add(a, b);
```

Result => 15

Please submit a **pdf file** that includes the grammar specification and screenshots of results, and **source code files**.

### References

1. Monkey Language: <https://monkeylang.org/>
2. Let's Build A Simple Interpreter: <https://ruslanspivak.com/lbasi-part1/>