

Project 3

A Simple C Interpreter

In this project, you should implement a simple C interpreter. The supported input file should at least contain the following features:

- (1) integer data type: `int`
- (2) Statements for arithmetic computation. (ex: `a = b+2*(100-1)`)
- (3) Comparison expression. (ex: `a > b`)
- (4) if-then-else program construct.
- (5) `printf()` function with one/two parameters. (supported type: `%d`)
- (6) `scanf()` function. (supported type: `%d`)

The following is a sample C program (input file):

```
1. void main()
2. {
3.     int num, result;
4.
5.     printf("Please enter a number:");
6.     scanf("%d", &num);
7.
8.     if (num > 10) {
9.         result = 3 * (num - 1);
10.    } else {
11.        result = num * (num - 2);
12.    }
13.
14.    printf("The result is %d\n", result);
16. }
```

In your hand-in report, you need to have the followings:

- **Describe the C subset supported by your interpreter.**
- Give a set of testing programs which can illustrate the features of your interpreter. (at least 3 test programs)
- Use the “ANTLR” to help you develop your interpreter.
- You can use **Java** or **other programming languages** to write your interpreter. (Java is recommended)

Please turn in the following:

- A file describes your C subset supported by your interpreter. (MS-WORD file)
- The source codes:
 - ANTLR grammar file, `myInterp.g`.
 - A program to call ANTLR-generated files, `myInterp_test.java`.
 - Testing programs. (at least 3 programs)
- A readme file (pure text file) describes how to compile and execute your interpreter, and the features of your interpreter.
- A “Makefile”.

Due Date: May 16 (Monday), 24:00pm, 2022.