

本科实验报告

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| 课程名称： | 编译原理 |
| 姓 名： | 王俊 |
| 学 院： | 海洋学院 |
| 专 业： | 海洋工程与技术 |
| 学 号： | 3170100186 |
| 指导教师： | 鲁东明 |

2020年 4 月 4 日

Lab4—利用YACC生成能进行整数和实数运算的计算器

1. 实验内容

* Experiment purpose:Understand the basic methods of YACC attribute processing.
* Experimental requirements: Generate a calculator corresponding to the expression expressed in the following grammar

Exp->exp + exp | exp – exp

| exp \* exp |exp / exp

|exp ^ exp |-exp

|(exp) |NUM

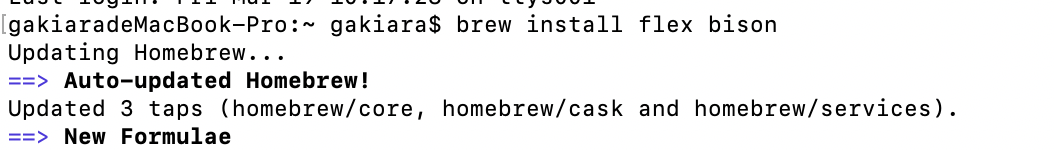
For the input infix expression, the result must be given. For example,

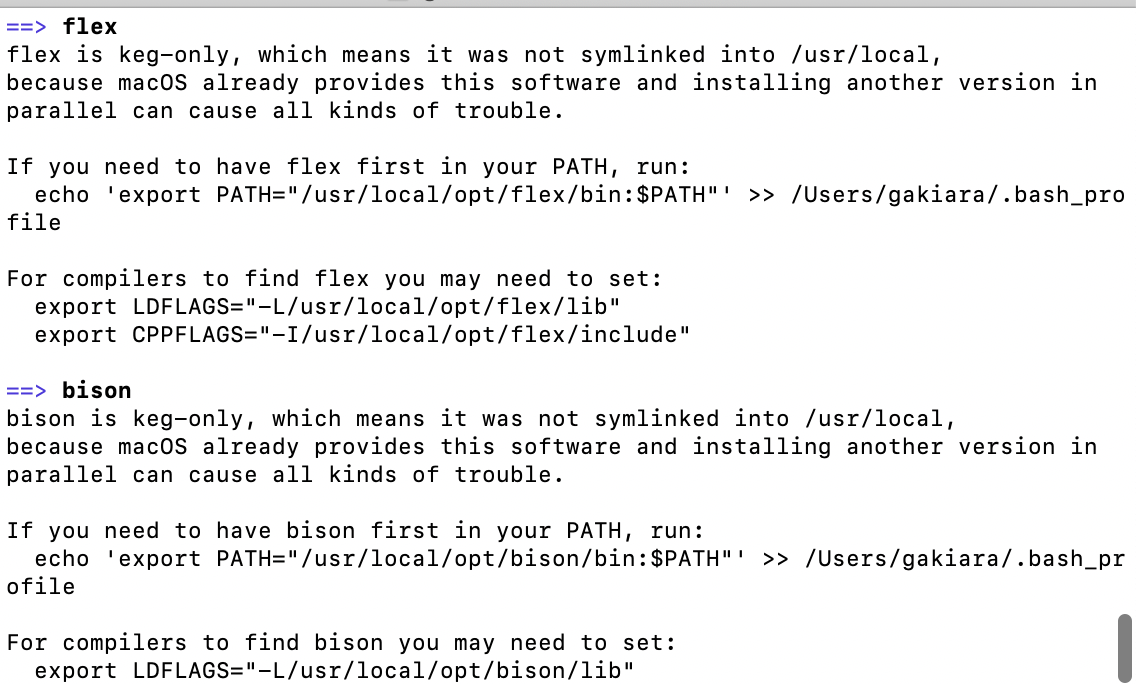
3 + (4 \* 5) = 23 3+ (4.2 \* 2) = 11.4 3.2+ (1/2) = 3.7 3+(1/2) = 3

It is required to be able to process several mathematical expressions continuously until the end of input or the end of the file.

1. 实验过程以及截图

* **Install flex&bison on the mac OS**





* **Code writing**

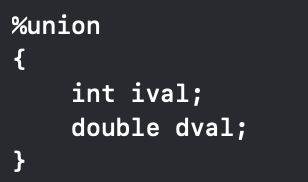
**Lex:**

**Return the Integer and Decimal**

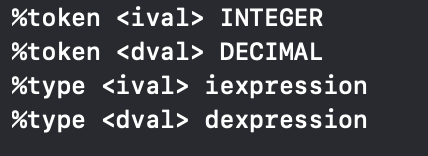


**Yacc:**

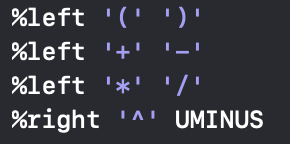
* **定义union的这个结构**



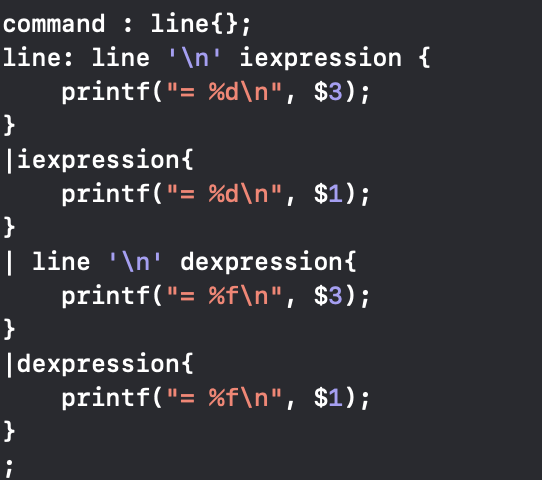
* **提取int 和 double 两种数据类型**



* **定义优先级**

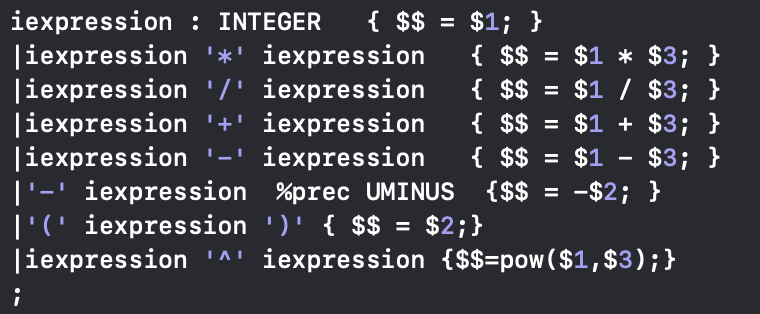


* **按行读取和处理**

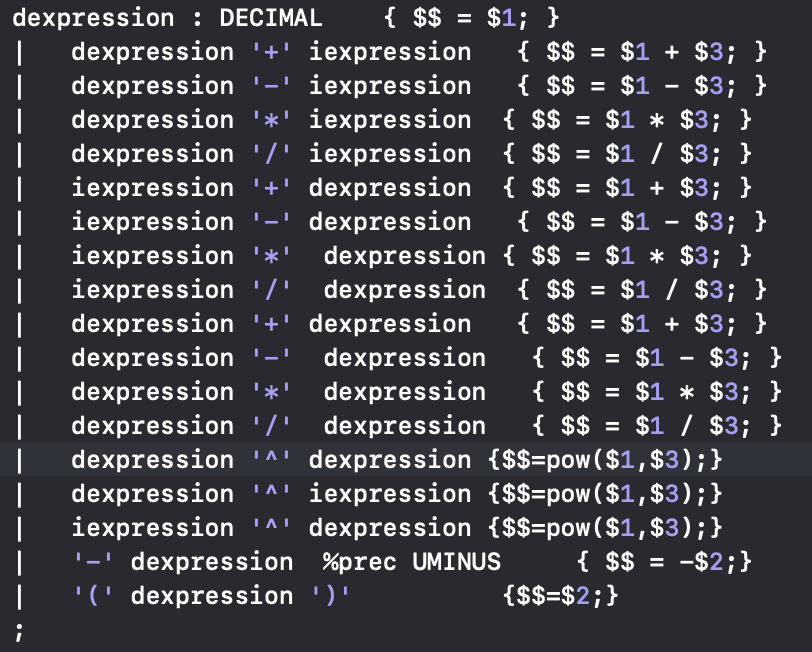


* **按照文法分成int和double**

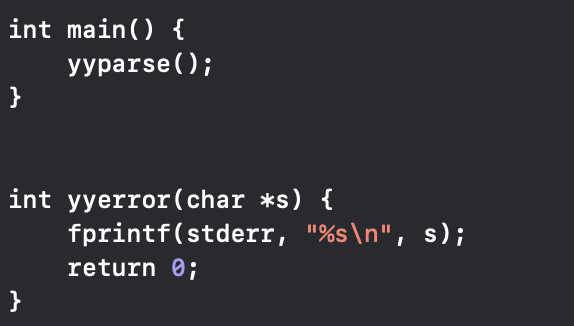
**Int:**



**Double:**



* **主程序**



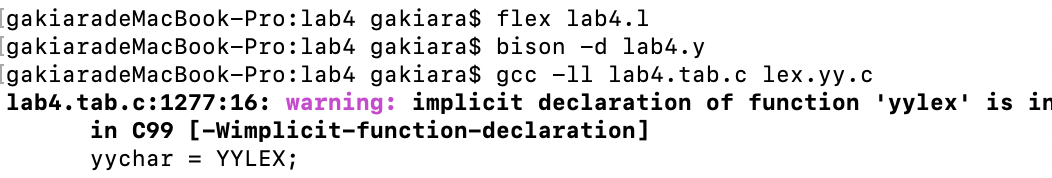
1. 测试和结果

**编译：**

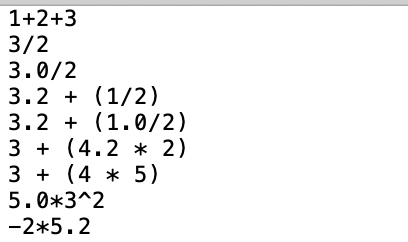
**bison -d lab4.y**

**flex lab4.l**

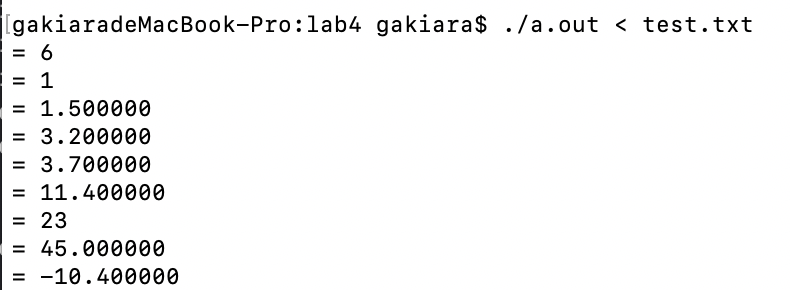
**gcc -ll lab4.tab.c lex.yy.c**



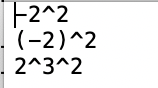
* test.txt:



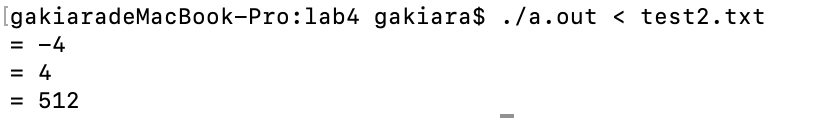
**Result:**



* test2.txt:

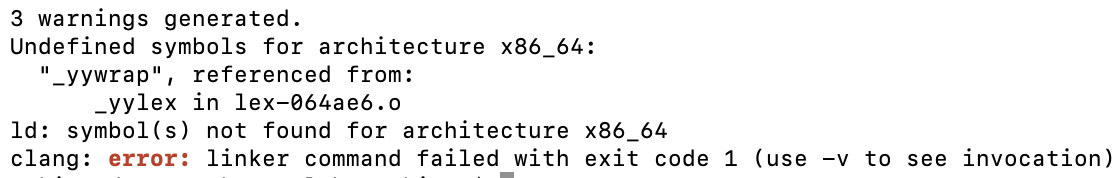


**Result:**

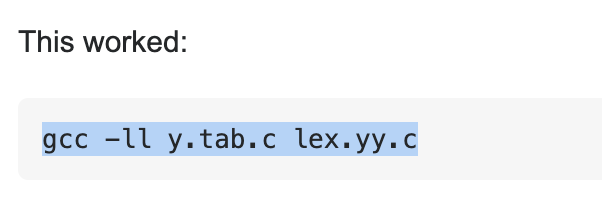


1. 总结和反思

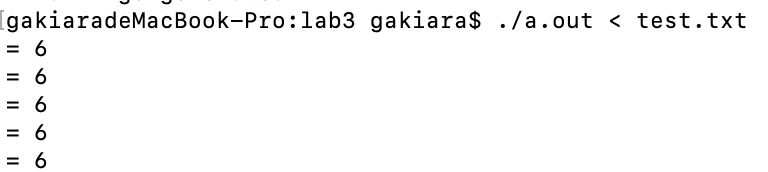
* Deal with the warning:

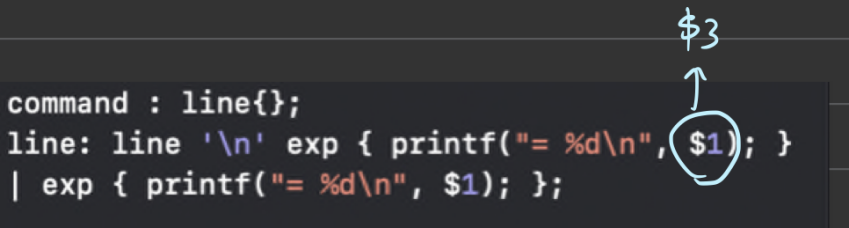




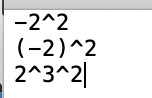


* Should be $3:





* The situation that the last line in the test.txt without ‘\n’ must be considered:



**Otherwise, the last line would have syntax problem;**