Wesley Kepke CS 460 – Compiler Construction – Dr. Fred Harris PA4 – Calculator Yacc (Bison) File

• This screen-shot shows various input to my calculator program. Much of the input has whitespace; this demonstrates that my program is not affected by whitespace and can compute values as expected. Moreover, the last line shows an invalid input.

```
wesley@wesley-XPS-L521X: ~/Documents/cs460/PA4
bison -d calc.y
flex calc.l
g++ -c -o lex.yy.o lex.yy.c
       -c -o calc.tab.o calc.tab.c
q++
g++ -o calc lex.yy.o calc.tab.o -L/usr/local/lib -lfl
wesley@wesley-XPS-L521X:~/Documents/cs460/PA4$ ls
calc calc.l calc.tab.c calc.tab.h calc.tab.o calc.y lex.yy.c lex.yy.o makefile
wesley@wesley-XPS-L521X:~/Documents/cs460/PA4$ ./calc
1 + 23;
>> Result: 24
99 - 312;
>> Result: -213
100
                                3;
>> Result: 33
3*
                        7;
>> Result: 21
2*(3+2);
>> Result: 10
(50/2)+(11-7)
                             3;
>> Result: 37
((50/2)+(11-7))
                                                        3:
>> Result: 87
3 + a;
----^
Error on line #8: syntax error
wesley@wesley-XPS-L521X:~/Documents/cs460/PA4$
```

This screen-shot shows some syntax errors and the message that appears when each is
encountered. I've included a carrot symbol under the token that caused the error.

```
🔞 🖨 📵 wesley@wesley-XPS-L521X: ~/Documents/cs460/PA4
bison -d calc.y
flex calc.l
       -c -o lex.yy.o lex.yy.c
       -c -o calc.tab.o calc.tab.c
a++
g++ -o calc lex.yy.o calc.tab.o -L/usr/local/lib -lfl
wesley@wesley-XPS-L521X:~/Documents/cs460/PA4$ ./calc
                        3 +
                                a:
Error on line #1: syntax error
wesley@wesley-XPS-L521X:~/Documents/cs460/PA4$ ./calc
                                        2 + a;
Error on line #1: syntax error
wesley@wesley-XPS-L521X:~/Documents/cs460/PA4$ ./calc
     / 3 + 1 - 8 * 2 / a;
Error on line #1: syntax error
wesley@wesley-XPS-L521X:~/Documents/cs460/PA4$
```

• This final screen-shot shows what happens when a value too large for an int datatype is entered into the program, when the user attempts to divide by 0, and when the result of an addition yields a value that is too large for an int datatype (respectively). Each error corresponds to a different error message.

```
wesley@wesley-XPS-L521X: ~/Documents/cs460/PA4
bison -d calc.v
flex calc.l
g++ -c -o lex.yy.o lex.yy.c
       -c -o calc.tab.o calc.tab.c
g++ -o calc lex.yy.o calc.tab.o -L/usr/local/lib -lfl
wesley@wesley-XPS-L521X:~/Documents/cs460/PA4$ ./calc
Error on line #1: Integer out of range.
wesley@wesley-XPS-L521X:~/Documents/cs460/PA4$ ./calc
42 / 0;
Error on line #1: Division by 0.
wesley@wesley-XPS-L521X:~/Documents/cs460/PA4$ ./calc
2147483646 + 2147483646;
Error on line #1: Integer out of range.
wesley@wesley-XPS-L521X:~/Documents/cs460/PA4$
```

• The code for both calc.1 and calc.y is included in the remaining pages of this document.