

## Assignment 2: The Parser

This is due on Monday, March 7.

Write a parser for BPL. Your parser should take as input a BPL program and output a parse tree for the full program. You should include a `main()` program that in some way gets the the BPL file (either assume it is a command-line argument or prompt the user for the file name), builds the parse tree, then prints the parse tree. This printing is supposed to demonstrate that you are building the tree correctly, so build the whole tree first, then print the tree; I don't want you to print as you parse. Your printing of the tree should include line numbers.

Please include a README file that tells me how to run your program and how to make sense out of the tree you are printing.

On the next page is a short BPL program and the output my code gives when I print the parse tree. I have inserted into the output the names of my token kinds to make this a little easier for you to follow

```

1    /* A simple program */
2
3    int f(int a) {
4        return a+1;
5    }
6
7    void b( int x ) {
8        write( x );
9    }
10
11   void main(void) {
12       int x;
13       x = 1;
14       b( f (x) );
15   }

```

Parser Output:

```

Line 3: FunDecNode id: f return type 100 (INT)
        params: Line 3: VarDecNode id = a type = 100
        body: Line 3: CompoundStatementNode
Line 4: ReturnNode
Line 4: OpNode token = 116 (PLUS)
Line 4: VariableNode id = a
Line 4: IntValueNode value = 1
Line 7: FunDecNode id: b return type 101 (VOID)
        params: Line 7: VarDecNode id = x type = 100 (INT)
        body: Line 7: CompoundStatementNode
Line 8 WriteNode kind = 107 (WRITE)
Line 8: VariableNode id = x
Line 11: FunDecNode id: main return type 101 VOID)
        params:
        body: Line 11: CompoundStatementNode
Line 12: VarDecNode id = x type = 100 (INT)
Line 13: ExpressionStatementNode
Line 13: OpNode token = 121 (ASSIGN)
Line 13: VariableNode id = x
Line 13: IntValueNode value = 1
Line 14: ExpressionStatementNode
Line 14: FunCallNode name:b
        params:
Line 14: FunCallNode name:f
        params:
Line 14: VariableNode id = x

```