

## **Contents:**

The andric.milica.P5 zip file should contain the following:

files/

+---+ deps/

+---+ ast.java

+---+ cminusminus.cup

+---+ cminusminus.jlex

+---+ DuplicateSymException.java

+---+ EmptySymTableException.java

+---+ ErrMsg.java

+---+ Makefile

+---+ P5.java

+---+ TSym.java

+---+ SymTable.java

+---+ Type.java

+---+ typeErrors.cminusminus

+---+ test.cminusminus

+---+ andric.milica.P5.pdf

## **How to build and invoke the program**

For convenience, place all project files into one folder. This project requires a Makefile. Run `make` to compile.

Next, run `make test` to run P4.

Run `make clean` and `make cleantest` to remove any files that got created by the program when P5 was run.

### **Expected errors (typeErrors.cminusminus) and output (test.minusminus):**

Below is a copy of the expected output when running `make test`:

```
java -cp ./deps:. P5 test.cminusminus test.out
java -cp ./deps:. P5 typeErrors.cminusminus testErr.out
44:13 ***ERROR*** Attempt to write a function
45:13 ***ERROR*** Attempt to write a struct name
48:11 ***ERROR*** Arithmetic operator applied to non-numeric operand
48:15 ***ERROR*** Arithmetic operator applied to non-numeric operand
49:11 ***ERROR*** Type mismatch
50:11 ***ERROR*** Relational operator applied to non-numeric operand
50:15 ***ERROR*** Relational operator applied to non-numeric operand
51:11 ***ERROR*** Equality operator applied to functions
54:5 ***ERROR*** Type mismatch
55:5 ***ERROR*** Struct variable assignment
56:12 ***ERROR*** Attempt to read a struct name
57:17 ***ERROR*** Logical operator applied to non-bool operand
58:11 ***ERROR*** Logical operator applied to non-bool operand
58:18 ***ERROR*** Logical operator applied to non-bool operand
61:12 ***ERROR*** Return with a value in a void function
64:18 ***ERROR*** Arithmetic operator applied to non-numeric operand
65:17 ***ERROR*** Arithmetic operator applied to non-numeric operand
66:5 ***ERROR*** Type mismatch
69:18 ***ERROR*** Arithmetic operator applied to non-numeric operand
```

69:28 \*\*\*ERROR\*\*\* Relational operator applied to non-numeric operand  
69:34 \*\*\*ERROR\*\*\* Relational operator applied to non-numeric operand  
71:13 \*\*\*ERROR\*\*\* Arithmetic operator applied to non-numeric operand  
74:13 \*\*\*ERROR\*\*\* Attempt to write a struct variable  
75:13 \*\*\*ERROR\*\*\* Attempt to write a void  
76:12 \*\*\*ERROR\*\*\* Attempt to read a function  
77:12 \*\*\*ERROR\*\*\* Attempt to read a struct name  
78:12 \*\*\*ERROR\*\*\* Attempt to read a struct variable  
0:0 \*\*\*ERROR\*\*\* Missing return value  
0:0 \*\*\*ERROR\*\*\* Missing return value  
0:0 \*\*\*ERROR\*\*\* Missing return value  
0:0 \*\*\*ERROR\*\*\* Missing return value  
0:0 \*\*\*ERROR\*\*\* Missing return value  
101:16 \*\*\*ERROR\*\*\* Return with a value in a void function  
104:9 \*\*\*ERROR\*\*\* Return with a value in a void function  
106:16 \*\*\*ERROR\*\*\* Return with a value in a void function  
109:16 \*\*\*ERROR\*\*\* Return with a value in a void function  
112:16 \*\*\*ERROR\*\*\* Return with a value in a void function  
114:12 \*\*\*ERROR\*\*\* Return with a value in a void function  
119:16 \*\*\*ERROR\*\*\* Return with a value in a void function  
122:9 \*\*\*ERROR\*\*\* Return with a value in a void function  
124:16 \*\*\*ERROR\*\*\* Return with a value in a void function  
127:16 \*\*\*ERROR\*\*\* Return with a value in a void function  
130:16 \*\*\*ERROR\*\*\* Return with a value in a void function  
132:12 \*\*\*ERROR\*\*\* Return with a value in a void function  
137:16 \*\*\*ERROR\*\*\* Bad return value  
140:9 \*\*\*ERROR\*\*\* Bad return value  
142:16 \*\*\*ERROR\*\*\* Bad return value  
145:16 \*\*\*ERROR\*\*\* Bad return value

148:16 \*\*\*ERROR\*\*\* Bad return value  
150:12 \*\*\*ERROR\*\*\* Bad return value  
155:16 \*\*\*ERROR\*\*\* Bad return value  
158:9 \*\*\*ERROR\*\*\* Bad return value  
160:16 \*\*\*ERROR\*\*\* Bad return value  
163:16 \*\*\*ERROR\*\*\* Bad return value  
166:16 \*\*\*ERROR\*\*\* Bad return value  
168:12 \*\*\*ERROR\*\*\* Bad return value  
184:9 \*\*\*ERROR\*\*\* Arithmetic operator applied to non-numeric operand  
185:13 \*\*\*ERROR\*\*\* Arithmetic operator applied to non-numeric operand  
186:9 \*\*\*ERROR\*\*\* Arithmetic operator applied to non-numeric operand  
187:13 \*\*\*ERROR\*\*\* Arithmetic operator applied to non-numeric operand  
188:9 \*\*\*ERROR\*\*\* Arithmetic operator applied to non-numeric operand  
189:13 \*\*\*ERROR\*\*\* Arithmetic operator applied to non-numeric operand  
190:9 \*\*\*ERROR\*\*\* Arithmetic operator applied to non-numeric operand  
191:13 \*\*\*ERROR\*\*\* Arithmetic operator applied to non-numeric operand  
192:5 \*\*\*ERROR\*\*\* Arithmetic operator applied to non-numeric operand  
193:5 \*\*\*ERROR\*\*\* Arithmetic operator applied to non-numeric operand  
194:10 \*\*\*ERROR\*\*\* Relational operator applied to non-numeric operand  
194:14 \*\*\*ERROR\*\*\* Relational operator applied to non-numeric operand  
195:10 \*\*\*ERROR\*\*\* Relational operator applied to non-numeric operand  
195:14 \*\*\*ERROR\*\*\* Relational operator applied to non-numeric operand  
196:10 \*\*\*ERROR\*\*\* Relational operator applied to non-numeric operand  
196:15 \*\*\*ERROR\*\*\* Relational operator applied to non-numeric operand  
197:10 \*\*\*ERROR\*\*\* Relational operator applied to non-numeric operand  
197:15 \*\*\*ERROR\*\*\* Relational operator applied to non-numeric operand  
198:12 \*\*\*ERROR\*\*\* Logical operator applied to non-bool operand  
199:12 \*\*\*ERROR\*\*\* Logical operator applied to non-bool operand  
200:11 \*\*\*ERROR\*\*\* Logical operator applied to non-bool operand

201:16 \*\*\*ERROR\*\*\* Logical operator applied to non-bool operand  
202:11 \*\*\*ERROR\*\*\* Logical operator applied to non-bool operand  
203:16 \*\*\*ERROR\*\*\* Logical operator applied to non-bool operand  
205:9 \*\*\*ERROR\*\*\* Non-bool expression used as an if condition  
208:9 \*\*\*ERROR\*\*\* Non-bool expression used as an if condition  
213:11 \*\*\*ERROR\*\*\* Non-bool expression used as a while condition  
216:12 \*\*\*ERROR\*\*\* Non-integer expression used as a repeat clause  
219:11 \*\*\*ERROR\*\*\* Type mismatch  
220:11 \*\*\*ERROR\*\*\* Type mismatch  
221:11 \*\*\*ERROR\*\*\* Type mismatch  
222:11 \*\*\*ERROR\*\*\* Type mismatch  
223:11 \*\*\*ERROR\*\*\* Type mismatch  
224:11 \*\*\*ERROR\*\*\* Type mismatch

Type checking error

#### **Other notes:**

I have made appropriate comment in my ast.java file, but the typeCheck() method in my CallExpNode class is incomplete. I am aware of this issue and expect to lose some points here.