# CS536 P5 Description

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P5.java: we made a little change to the error checking for the type check procedure. Therefore, if the program contains type errors, the system will print out the warning for type error 255

ast.java: we made a few major changes to the classes besides the declaration parts. We initialized the abstract class for statement node abstract class and also the expression node abstract class. In this way, we can further the versatility of various types. We also developed the type checking error for all the possible situation listed on the project specification, which can be summarized as for functions, assignment, logical, relational, write, read and conditions.

test.cdull: It contains the correct code for type checking, which should not produce any type error warning.

typeError.cdull: It contains all the various possible situations where the type errors may be triggered.

The desired output to the system should be the following:

java -cp ./deps:. P5 test.cdull test.out
java -cp ./deps:. P5 typeErrors.cdull typeErrors.out
0:0 ***ERROR*** Missing return value
10:22 ***ERROR*** Arithmetic operator applied to non-numeric operand
10:18 ***ERROR*** Return with a value in a void function
11:17 ***ERROR*** Bad return value
16:13 ***ERROR*** Attempt to write a function
17:13 ***ERROR*** Attempt to write a struct name
18:13 ***ERROR*** Attempt to write a struct variable
19:13 ***ERROR*** Attempt to write void
20:12 ***ERROR*** Attempt to read a function
21:12 ***ERROR*** Attempt to read a struct name
22:12 ***ERROR*** Attempt to read a struct variable
24:5 ***ERROR*** Attempt to call a non-function
25:5 ***ERROR*** Attempt to call a non-function
26:5 ***ERROR*** Attempt to call a non-function
27:5 ***ERROR*** Attempt to call a non-function
29:5 ***ERROR*** Function call with wrong number of args
30:11 ***ERROR*** Logical operator applied to non-bool operand

30:16 \*\*\*ERROR\*\*\* Logical operator applied to non-bool operand
31:8 \*\*\*ERROR\*\*\* Type of actual does not match type of formal
33:5 \*\*\*ERROR\*\*\* Arithmetic operator applied to non-numeric operand
34:5 \*\*\*ERROR\*\*\* Arithmetic operator applied to non-numeric operand
35:9 \*\*\*ERROR\*\*\* Arithmetic operator applied to non-numeric operand
35:17 \*\*\*ERROR\*\*\* Arithmetic operator applied to non-numeric operand
35:25 \*\*\*ERROR\*\*\* Arithmetic operator applied to non-numeric operand
36:9 \*\*\*ERROR\*\*\* Arithmetic operator applied to non-numeric operand
36:16 \*\*\*ERROR\*\*\* Arithmetic operator applied to non-numeric operand
36:23 \*\*\*ERROR\*\*\* Arithmetic operator applied to non-numeric operand
37:9 \*\*\*ERROR\*\*\* Arithmetic operator applied to non-numeric operand
37:16 \*\*\*ERROR\*\*\* Arithmetic operator applied to non-numeric operand
37:23 \*\*\*ERROR\*\*\* Arithmetic operator applied to non-numeric operand
38:9 \*\*\*ERROR\*\*\* Arithmetic operator applied to non-numeric operand
38:16 \*\*\*ERROR\*\*\* Arithmetic operator applied to non-numeric operand
38:23 \*\*\*ERROR\*\*\* Arithmetic operator applied to non-numeric operand
39:17 \*\*\*ERROR\*\*\* Arithmetic operator applied to non-numeric operand
41:5 \*\*\*ERROR\*\*\* Type mismatch
42:10 \*\*\*ERROR\*\*\* Relational operator applied to non-numeric operand
43:5 \*\*\*ERROR\*\*\* Type mismatch
44:10 \*\*\*ERROR\*\*\* Relational operator applied to non-numeric operand
45:5 \*\*\*ERROR\*\*\* Type mismatch
46:10 \*\*\*ERROR\*\*\* Relational operator applied to non-numeric operand
47:5 \*\*\*ERROR\*\*\* Type mismatch
48:10 \*\*\*ERROR\*\*\* Relational operator applied to non-numeric operand
50:11 \*\*\*ERROR\*\*\* Logical operator applied to non-bool operand
50:16 \*\*\*ERROR\*\*\* Logical operator applied to non-bool operand
51:9 \*\*\*ERROR\*\*\* Logical operator applied to non-bool operand
51:14 \*\*\*ERROR\*\*\* Logical operator applied to non-bool operand
51:19 \*\*\*ERROR\*\*\* Logical operator applied to non-bool operand
52:9 \*\*\*ERROR\*\*\* Logical operator applied to non-bool operand
52:14 \*\*\*ERROR\*\*\* Logical operator applied to non-bool operand
52:19 \*\*\*ERROR\*\*\* Logical operator applied to non-bool operand
53:10 \*\*\*ERROR\*\*\* Logical operator applied to non-bool operand
53:16 \*\*\*ERROR\*\*\* Logical operator applied to non-bool operand
53:23 \*\*\*ERROR\*\*\* Logical operator applied to non-bool operand
57:8 \*\*\*ERROR\*\*\* Non-bool expression used as an if condition
58:11 \*\*\*ERROR\*\*\* Non-bool expression used as a while condition
59:12 \*\*\*ERROR\*\*\* Non-integer expression used as a repeat clause
60:12 \*\*\*ERROR\*\*\* Non-integer expression used as a repeat clause
61:12 \*\*\*ERROR\*\*\* Non-integer expression used as a repeat clause
65:8 \*\*\*ERROR\*\*\* Logical operator applied to non-bool operand
65:13 \*\*\*ERROR\*\*\* Logical operator applied to non-bool operand
65:18 \*\*\*ERROR\*\*\* Logical operator applied to non-bool operand
66:8 \*\*\*ERROR\*\*\* Logical operator applied to non-bool operand
66:13 \*\*\*ERROR\*\*\* Logical operator applied to non-bool operand

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66:18 ***ERROR*** Logical operator applied to non-bool operand
67:11 ***ERROR*** Logical operator applied to non-bool operand
68:11 ***ERROR*** Logical operator applied to non-bool operand
68:16 ***ERROR*** Logical operator applied to non-bool operand
68:21 ***ERROR*** Logical operator applied to non-bool operand
69:11 ***ERROR*** Logical operator applied to non-bool operand
69:16 ***ERROR*** Logical operator applied to non-bool operand
69:21 ***ERROR*** Logical operator applied to non-bool operand
70:13 ***ERROR*** Logical operator applied to non-bool operand
71:27 ***ERROR*** Logical operator applied to non-bool operand
73:5 ***ERROR*** Type mismatch
74:5 ***ERROR*** Type mismatch
75:5 ***ERROR*** Type mismatch
76:5 ***ERROR*** Type mismatch
77:9 ***ERROR*** Arithmetic operator applied to non-numeric operand
77:24 ***ERROR*** Arithmetic operator applied to non-numeric operand
78:5 ***ERROR*** Type mismatch
80:9 ***ERROR*** Equality operator applied to void functions
81:9 ***ERROR*** Equality operator applied to void functions
82:9 ***ERROR*** Equality operator applied to functions
83:9 ***ERROR*** Equality operator applied to functions
84:9 ***ERROR*** Equality operator applied to functions
85:9 ***ERROR*** Equality operator applied to functions
86:9 ***ERROR*** Equality operator applied to struct names
87:9 ***ERROR*** Equality operator applied to struct names
88:9 ***ERROR*** Equality operator applied to struct variables
89:9 ***ERROR*** Equality operator applied to struct variables
91:5 ***ERROR*** Function assignment
92:5 ***ERROR*** Struct name assignment
93:5 ***ERROR*** Struct variable assignment
95:13 ***ERROR*** Arithmetic operator applied to non-numeric operand
96:10 ***ERROR*** Arithmetic operator applied to non-numeric operand
97:27 ***ERROR*** Logical operator applied to non-bool operand
98:5 ***ERROR*** Function call with wrong number of args
99:13 ***ERROR*** Attempt to call a non-function
100:10 ***ERROR*** Arithmetic operator applied to non-numeric operand
102:9 ***ERROR*** Arithmetic operator applied to non-numeric operand
102:16 ***ERROR*** Arithmetic operator applied to non-numeric operand
103:16 ***ERROR*** Type of actual does not match type of formal
103:13 ***ERROR*** Arithmetic operator applied to non-numeric operand
104:13 ***ERROR*** Function call with wrong number of args
104:13 ***ERROR*** Arithmetic operator applied to non-numeric operand
Type checking error
Makefile:63: recipe for target 'test' failed
make: *** [test] Error 255
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