Successful Parse Code Block	Log Results
{}\$	Beginning Lexing Session *Stings Treated As CharList*
	LEXER> T_OPENING_BRACE [{] on line 1 LEXER> T_CLOSING_BRACE [}] on line 1 LEXER> T_EOPS [\$] on line 1
	Lex Completed With 0 WARNING(S) and 0 ERROR(S)
	Beginning Parsing Session
	PARSER> PASSED! Expecting [T_OPENING_BRACE] found [T_OPENING_BRACE] on line 1 PARSER> PASSED! \(\lambda\) production on line 1 PARSER> PASSED! Expecting [T_CLOSING_BRACE] found [T_CLOSING_BRACE] on line 1 PARSER> PASSED! Expecting [T_EOPS] found [T_EOPS] on line 1
	Parse Completed With 0 WARNING(S) and 0 ERROR(S)
<pre>{ print("there is no spoon") }\$</pre>	Beginning Lexing Session *Stings Treated As CharList* LEXER> T_OPENING_BRACE [{ }] on line 1 LEXER> T_PRINT [print] on line 2 LEXER> T_OPENING_PARENTHESIS [(] on line 2 LEXER> T_QUOTE ["] on line 2 LEXER> T_CHAR [t] on line 2 LEXER> T_CHAR [e] on line 2 LEXER> T_CHAR [e] on line 2 LEXER> T_CHAR [e] on line 2 LEXER> T_CHAR [i] on line 2 LEXER> T_CHAR [i] on line 2 LEXER> T_CHAR [i] on line 2 LEXER> T_CHAR [n] on line 2
	LEXER> T_CLOSING_BRACE [}] on line 3 LEXER> T_EOPS [\$] on line 3

Lex Completed With 0 WARNING(S) and 0 ERROR(S)...

```
Beginning Parsing Session...
PARSER --> | PASSED! Expecting [ T_OPENING_BRACE ] found
[ T_OPENING_BRACE ] on line 1...
PARSER --> | PASSED! Expecting [ Statement ] found
[Statement] on line 2...
PARSER --> | PASSED! Expecting [ PrintStatement ] found
[T PRINT] on line 2...
PARSER --> | PASSED! Expecting [T PRINT] found [T PRINT]
on line 2...
PARSER --> | PASSED! Expecting [ T OPENING PARENTHESIS ]
found [T OPENING PARENTHESIS] on line 2...
PARSER --> | PASSED! Expecting [ Expr ] found [ StringExpr ] on
line 2...
PARSER --> | PASSED! Expecting [ T_QUOTE ] found
[T QUOTE] on line 2...
PARSER --> | PASSED! Expecting [ T CHAR ] found [ T CHAR ]
on line 2...
PARSER --> | PASSED! Expecting [ T CHAR ] found [ t ] on line
PARSER --> | PASSED! Expecting [ T CHAR ] found [ T CHAR ]
on line 2...
PARSER --> | PASSED! Expecting [T CHAR] found [h] on line
2...
PARSER --> | PASSED! Expecting [ T CHAR ] found [ T CHAR ]
on line 2...
PARSER --> | PASSED! Expecting [ T CHAR ] found [ e ] on line
PARSER --> | PASSED! Expecting [ T CHAR ] found [ T CHAR ]
on line 2...
PARSER --> | PASSED! Expecting [ T_CHAR ] found [ r ] on line
PARSER --> | PASSED! Expecting [ T_CHAR ] found [ T_CHAR ]
on line 2...
PARSER --> | PASSED! Expecting [ T_CHAR ] found [ e ] on line
PARSER --> | PASSED! Expecting [ T_CHAR ] found [ T_CHAR ]
on line 2...
PARSER --> | PASSED! Expecting [ T CHAR ] found [ ] on line
PARSER --> | PASSED! Expecting [ T CHAR ] found [ T CHAR ]
on line 2...
PARSER --> | PASSED! Expecting [T CHAR] found [i] on line
2...
```

```
PARSER --> | PASSED! Expecting [ T_CHAR ] found [ T_CHAR ]
on line 2...
PARSER --> | PASSED! Expecting [T CHAR] found [s] on line
PARSER --> | PASSED! Expecting [T CHAR] found [T CHAR]
on line 2...
PARSER --> | PASSED! Expecting [ T_CHAR ] found [ ] on line
2...
PARSER --> | PASSED! Expecting [ T CHAR ] found [ T CHAR ]
on line 2...
PARSER --> | PASSED! Expecting [T CHAR] found [n] on line
PARSER --> | PASSED! Expecting [ T CHAR ] found [ T CHAR ]
on line 2...
PARSER --> | PASSED! Expecting [ T_CHAR ] found [ o ] on line
2...
PARSER --> | PASSED! Expecting [ T CHAR ] found [ T CHAR ]
on line 2...
PARSER --> | PASSED! Expecting [ T CHAR ] found [ ] on line
PARSER --> | PASSED! Expecting [T CHAR] found [T CHAR]
on line 2...
PARSER --> | PASSED! Expecting [ T CHAR ] found [ s ] on line
PARSER --> | PASSED! Expecting [ T_CHAR ] found [ T_CHAR ]
on line 2...
PARSER --> | PASSED! Expecting [T_CHAR] found [p] on line
PARSER --> | PASSED! Expecting [ T_CHAR ] found [ T_CHAR ]
on line 2...
PARSER --> | PASSED! Expecting [ T CHAR ] found [ o ] on line
PARSER --> | PASSED! Expecting [ T CHAR ] found [ T CHAR ]
on line 2...
PARSER --> | PASSED! Expecting [ T CHAR ] found [ o ] on line
PARSER --> | PASSED! Expecting [ T CHAR ] found [ T CHAR ]
on line 2...
PARSER --> | PASSED! Expecting [T CHAR] found [n] on line
PARSER --> | PASSED! \lambda production on line 2...
PARSER --> | PASSED! Expecting [T QUOTE] found
[T QUOTE] on line 2...
PARSER --> | PASSED! Expecting [T CLOSING PARENTHESIS]
found [T CLOSING PARENTHESIS] on line 2...
PARSER --> | PASSED! \lambda production on line 3...
PARSER --> | PASSED! Expecting [ T_CLOSING_BRACE ] found
[T CLOSING BRACE] on line 3...
```

```
PARSER --> | PASSED! Expecting [T EOPS] found [T EOPS] on
                                     line 3...
                                     Parse Completed With 0 WARNING(S) and 0 ERROR(S)...
                                     Beginning Lexing Session... *Stings Treated As CharList*
{
        print((false == true))
       print((true != true))
                                     LEXER --> | T OPENING BRACE [ { ] on line 1...
        print((false != false))
                                     LEXER --> | T PRINT [ print ] on line 2...
        print((false != true))
                                     LEXER --> | T_OPENING_PARENTHESIS [ ( ] on line 2...
}
                                     LEXER --> | T_OPENING_PARENTHESIS [ ( ] on line 2...
                                     LEXER --> | T_BOOLEAN_VALUE [ false ] on line 2...
                                     LEXER --> | T_EQUALITY_OP [ == ] on line 2...
                                     LEXER --> | T BOOLEAN VALUE [true] on line 2...
                                     LEXER --> | T CLOSING PARENTHESIS [) ] on line 2...
                                     LEXER --> | T CLOSING PARENTHESIS [) ] on line 2...
                                     LEXER --> | T PRINT [ print ] on line 3...
                                     LEXER --> | T OPENING PARENTHESIS [ ( ] on line 3...
                                     LEXER --> | T OPENING PARENTHESIS [()] on line 3...
                                     LEXER --> | T BOOLEAN VALUE [true] on line 3...
                                     LEXER --> | T INEQUALITY OP [!=] on line 3...
                                     LEXER --> | T_BOOLEAN_VALUE [ true ] on line 3...
                                     LEXER --> | T CLOSING PARENTHESIS [) ] on line 3...
                                     LEXER --> | T_CLOSING_PARENTHESIS [ ) ] on line 3...
                                     LEXER --> | T PRINT [ print ] on line 4...
                                     LEXER --> | T OPENING PARENTHESIS [()] on line 4...
                                     LEXER --> | T_OPENING_PARENTHESIS [ ( ] on line 4...
                                     LEXER --> | T BOOLEAN VALUE [ false ] on line 4...
                                     LEXER --> | T INEQUALITY OP [!=] on line 4...
                                     LEXER --> | T BOOLEAN VALUE [ false ] on line 4...
                                     LEXER --> | T CLOSING PARENTHESIS [) ] on line 4...
                                     LEXER --> | T CLOSING PARENTHESIS [) ] on line 4...
                                     LEXER --> | T PRINT [ print ] on line 5...
                                     LEXER --> | T_OPENING_PARENTHESIS [ ( ] on line 5...
                                     LEXER --> | T_OPENING_PARENTHESIS [ ( ] on line 5...
                                     LEXER --> | T_BOOLEAN_VALUE [ false ] on line 5...
                                     LEXER --> | T INEQUALITY OP [!=] on line 5...
                                     LEXER --> | T BOOLEAN VALUE [true] on line 5...
                                     LEXER --> | T CLOSING PARENTHESIS [) ] on line 5...
                                     LEXER --> | T CLOSING PARENTHESIS [) ] on line 5...
                                     LEXER --> | T CLOSING BRACE [ } ] on line 6...
                                     LEXER --> | WARNING! NO EOPS [$] detected. Added to end-of-
                                     file at line 6...
                                     Lex Completed With 1 WARNING(S) and 0 ERROR(S)...
                                     Beginning Parsing Session...
```

```
PARSER --> | PASSED! Expecting [ T_OPENING_BRACE ] found
[T OPENING BRACE] on line 1...
PARSER --> | PASSED! Expecting [ Statement ] found
[ Statement ] on line 2...
PARSER --> | PASSED! Expecting [ PrintStatement ] found
[T PRINT] on line 2...
PARSER --> | PASSED! Expecting [ T_PRINT ] found [ T_PRINT ]
on line 2...
PARSER --> | PASSED! Expecting [ T OPENING PARENTHESIS ]
found [T OPENING PARENTHESIS] on line 2...
PARSER --> | PASSED! Expecting [ Expr ] found [ BooleanExpr ]
on line 2...
PARSER --> | PASSED! Expecting [ T OPENING PARENTHESIS ]
found [(] on line 2...
PARSER --> | PASSED! Expecting [Expr] found [BooleanExpr]
on line 2...
PARSER --> | PASSED! Expecting [T BOOLEAN VALUE] found
[T BOOLEAN VALUE] on line 2...
PARSER --> | PASSED! Expecting [T BOOLEAN VALUE] found
[false] on line 2...
PARSER --> | PASSED! Expecting [T EQUALITY OP] found
[ == ] on line 2...
PARSER --> | PASSED! Expecting [Expr] found [BooleanExpr]
on line 2...
PARSER --> | PASSED! Expecting [ T_BOOLEAN_VALUE ] found
[T BOOLEAN VALUE] on line 2...
PARSER --> | PASSED! Expecting [ T_BOOLEAN_VALUE ] found
[true] on line 2...
PARSER --> | PASSED! Expecting [ T CLOSING PARENTHESIS ]
found [) on line 2...
PARSER --> | PASSED! Expecting [ T CLOSING PARENTHESIS ]
found [T CLOSING PARENTHESIS] on line 2...
PARSER --> | PASSED! Expecting [ StatementList ] found
[ Statement ] on line 3...
PARSER --> | PASSED! Expecting [ Statement ] found
[ Statement ] on line 3...
PARSER --> | PASSED! Expecting [ PrintStatement ] found
[T PRINT] on line 3...
PARSER --> | PASSED! Expecting [T PRINT] found [T PRINT]
on line 3...
PARSER --> | PASSED! Expecting [ T OPENING PARENTHESIS ]
found [T OPENING PARENTHESIS] on line 3...
PARSER --> | PASSED! Expecting [Expr] found [BooleanExpr]
on line 3...
PARSER --> | PASSED! Expecting [ T OPENING PARENTHESIS ]
found [(] on line 3...
PARSER --> | PASSED! Expecting [Expr] found [BooleanExpr]
on line 3...
```

```
PARSER --> | PASSED! Expecting [ T_BOOLEAN_VALUE ] found
[T BOOLEAN VALUE] on line 3...
PARSER --> | PASSED! Expecting [T BOOLEAN VALUE] found
[true] on line 3...
PARSER --> | PASSED! Expecting [T INEQUALITY OP] found
[!=] on line 3...
PARSER --> | PASSED! Expecting [ Expr ] found [ BooleanExpr ]
on line 3...
PARSER --> | PASSED! Expecting [T BOOLEAN VALUE] found
[T BOOLEAN VALUE] on line 3...
PARSER --> | PASSED! Expecting [T BOOLEAN VALUE] found
[true] on line 3...
PARSER --> | PASSED! Expecting [ T CLOSING PARENTHESIS ]
found [ ) ] on line 3...
PARSER --> | PASSED! Expecting [ T CLOSING PARENTHESIS ]
found [T_CLOSING_PARENTHESIS] on line 3...
PARSER --> | PASSED! Expecting [ StatementList ] found
[Statement] on line 4...
PARSER --> | PASSED! Expecting [ Statement ] found
[Statement] on line 4...
PARSER --> | PASSED! Expecting [ PrintStatement ] found
[T PRINT] on line 4...
PARSER --> | PASSED! Expecting [ T_PRINT ] found [ T_PRINT ]
on line 4...
PARSER --> | PASSED! Expecting [ T_OPENING_PARENTHESIS ]
found [T OPENING PARENTHESIS] on line 4...
PARSER --> | PASSED! Expecting [ Expr ] found [ BooleanExpr ]
on line 4...
PARSER --> | PASSED! Expecting [ T_OPENING_PARENTHESIS ]
found [(] on line 4...
PARSER --> | PASSED! Expecting [ Expr ] found [ BooleanExpr ]
on line 4...
PARSER --> | PASSED! Expecting [T BOOLEAN VALUE] found
[T BOOLEAN VALUE] on line 4...
PARSER --> | PASSED! Expecting [T BOOLEAN VALUE] found
[false] on line 4...
PARSER --> | PASSED! Expecting [ T INEQUALITY OP ] found
[!=] on line 4...
PARSER --> | PASSED! Expecting [Expr] found [BooleanExpr]
on line 4...
PARSER --> | PASSED! Expecting [T BOOLEAN VALUE] found
[T BOOLEAN VALUE] on line 4...
PARSER --> | PASSED! Expecting [T BOOLEAN VALUE] found
[false] on line 4...
PARSER --> | PASSED! Expecting [ T CLOSING PARENTHESIS ]
found [ ) ] on line 4...
PARSER --> | PASSED! Expecting [ T_CLOSING_PARENTHESIS ]
found [T CLOSING PARENTHESIS] on line 4...
```

```
PARSER --> | PASSED! Expecting [ StatementList ] found
                                    [ Statement ] on line 5...
                                     PARSER --> | PASSED! Expecting [ Statement ] found
                                    [Statement] on line 5...
                                     PARSER --> | PASSED! Expecting [ PrintStatement ] found
                                    [T PRINT] on line 5...
                                     PARSER --> | PASSED! Expecting [ T_PRINT ] found [ T_PRINT ]
                                    on line 5...
                                     PARSER --> | PASSED! Expecting [ T OPENING PARENTHESIS ]
                                    found [T OPENING PARENTHESIS] on line 5...
                                     PARSER --> | PASSED! Expecting [ Expr ] found [ BooleanExpr ]
                                    on line 5...
                                     PARSER --> | PASSED! Expecting [ T OPENING PARENTHESIS ]
                                    found [(] on line 5...
                                     PARSER --> | PASSED! Expecting [Expr] found [BooleanExpr]
                                    on line 5...
                                     PARSER --> | PASSED! Expecting [T BOOLEAN VALUE] found
                                    [T BOOLEAN VALUE] on line 5...
                                     PARSER --> | PASSED! Expecting [T BOOLEAN VALUE] found
                                    [false] on line 5...
                                     PARSER --> | PASSED! Expecting [T INEQUALITY OP] found
                                     [!=] on line 5...
                                     PARSER --> | PASSED! Expecting [Expr] found [BooleanExpr]
                                    on line 5...
                                     PARSER --> | PASSED! Expecting [ T_BOOLEAN_VALUE ] found
                                    [T BOOLEAN VALUE] on line 5...
                                     PARSER --> | PASSED! Expecting [ T_BOOLEAN_VALUE ] found
                                    [true] on line 5...
                                     PARSER --> | PASSED! Expecting [ T_CLOSING_PARENTHESIS ]
                                    found [) on line 5...
                                     PARSER --> | PASSED! Expecting [ T CLOSING PARENTHESIS ]
                                    found [T CLOSING PARENTHESIS] on line 5...
                                     PARSER --> | PASSED! \lambda production on line 6...
                                     PARSER --> | PASSED! Expecting [ T CLOSING BRACE ] found
                                    [T CLOSING BRACE] on line 6...
                                     PARSER --> | PASSED! Expecting [ T_EOPS ] found [ T_EOPS ] on
                                    line 6...
                                    Parse Completed With 0 WARNING(S) and 0 ERROR(S)...
{
                                     Beginning Lexing Session... *Stings Treated As CharList*
         int a
         int b
                                     LEXER --> | T_OPENING_BRACE [ { ] on line 1...
                                     LEXER --> | T VARIABLE TYPE [int ] on line 2...
         a = 0
                                     LEXER --> | T_ID [ a ] on line 2...
         b = 0
                                     LEXER --> | T_VARIABLE_TYPE [ int ] on line 3...
                                     LEXER --> | T_ID [ b ] on line 3...
         while (a != 3) {
                                     LEXER --> | T_ID [ a ] on line 5...
```

```
print(a)
                                      LEXER --> | T ASSIGNMENT OP [ = ] on line 5...
         while (b != 3) {
                                      LEXER --> | T_DIGIT [ 0 ] on line 5...
                                      LEXER --> | T ID [ b ] on line 6...
                print(b)
                b = 1 + b
                                      LEXER --> | T_ASSIGNMENT_OP [ = ] on line 6...
                if (b == 2) {
                                      LEXER --> | T DIGIT [0] on line 6...
                print("there is no
                                      LEXER --> | T_WHILE [ while ] on line 8...
spoon")
                                      LEXER --> | T_OPENING_PARENTHESIS [ ( ] on line 8...
                                      LEXER --> | T ID [a] on line 8...
                }
         }
                                      LEXER --> | T INEQUALITY OP [!=] on line 8...
                                      LEXER --> | T DIGIT [3] on line 8...
         b = 0
                                      LEXER --> | T CLOSING PARENTHESIS [) ] on line 8...
         a = 1 + a
                                      LEXER --> | T OPENING BRACE [ { ] on line 8...
          }
                                      LEXER --> | T PRINT [ print ] on line 9...
}$
                                      LEXER --> | T OPENING PARENTHESIS [()] on line 9...
                                      LEXER --> | T_ID [ a ] on line 9...
                                      LEXER --> | T_CLOSING_PARENTHESIS [ ) ] on line 9...
                                      LEXER --> | T WHILE [ while ] on line 10...
                                      LEXER --> | T_OPENING_PARENTHESIS [ ( ] on line 10...
                                      LEXER --> | T ID [ b ] on line 10...
                                      LEXER --> | T INEQUALITY OP [ != ] on line 10...
                                      LEXER --> | T DIGIT [ 3 ] on line 10...
                                      LEXER --> | T CLOSING PARENTHESIS [) ] on line 10...
                                      LEXER --> | T OPENING BRACE [ { ] on line 10...
                                      LEXER --> | T PRINT [ print ] on line 11...
                                      LEXER --> | T_OPENING_PARENTHESIS [ ( ] on line 11...
                                      LEXER --> | T_ID [ b ] on line 11...
                                      LEXER --> | T_CLOSING_PARENTHESIS[)] on line 11...
                                      LEXER --> | T ID [b] on line 12...
                                      LEXER --> | T_ASSIGNMENT_OP [ = ] on line 12...
                                      LEXER --> | T DIGIT [1] on line 12...
                                      LEXER --> | T ADDITION OP [+] on line 12...
                                      LEXER --> | T ID [ b ] on line 12...
                                      LEXER --> | T IF [ if ] on line 13...
                                      LEXER --> | T OPENING PARENTHESIS [ ( ] on line 13...
                                      LEXER --> | T ID [ b ] on line 13...
                                      LEXER --> | T_EQUALITY_OP [ == ] on line 13...
                                      LEXER --> | T_DIGIT [ 2 ] on line 13...
                                      LEXER --> | T_CLOSING_PARENTHESIS [ ) ] on line 13...
                                      LEXER --> | T OPENING BRACE [ { ] on line 13...
                                      LEXER --> | T PRINT [ print ] on line 14...
                                      LEXER --> | T OPENING PARENTHESIS [ ( ] on line 14...
                                      LEXER --> | T QUOTE [ " ] on line 14...
                                      LEXER --> | T CHAR [t] on line 14...
                                      LEXER --> | T CHAR [h] on line 14...
                                      LEXER --> | T CHAR [e] on line 14...
                                      LEXER --> | T CHAR [r] on line 14...
                                      LEXER --> | T_CHAR [ e ] on line 14...
                                      LEXER --> | T CHAR [ ] on line 14...
```

```
LEXER --> | T CHAR [i] on line 14...
LEXER --> | T CHAR [s] on line 14...
LEXER --> | T CHAR [ ] on line 14...
LEXER --> | T_CHAR [ n ] on line 14...
LEXER --> | T CHAR [o] on line 14...
LEXER --> | T_CHAR [ ] on line 14...
LEXER --> | T_CHAR [s] on line 14...
LEXER --> | T CHAR [ p ] on line 14...
LEXER --> | T CHAR [o] on line 14...
LEXER --> | T CHAR [o] on line 14...
LEXER --> | T CHAR [ n ] on line 14...
LEXER --> | T QUOTE [ " ] on line 14...
LEXER --> | T CLOSING PARENTHESIS [ ) ] on line 14...
LEXER --> | T CLOSING BRACE [ } ] on line 15...
LEXER --> | T_CLOSING_BRACE [ } ] on line 16...
LEXER --> | T_ID [ b ] on line 18...
LEXER --> | T ASSIGNMENT OP [ = ] on line 18...
LEXER --> | T_DIGIT [ 0 ] on line 18...
LEXER --> | T ID [a] on line 19...
LEXER --> | T ASSIGNMENT OP [ = ] on line 19...
LEXER --> | T DIGIT [ 1 ] on line 19...
LEXER --> | T ADDITION OP [+] on line 19...
LEXER --> | T ID [a] on line 19...
LEXER --> | T CLOSING BRACE [ } ] on line 20...
LEXER --> | T_CLOSING_BRACE [ } ] on line 21...
LEXER --> | T_EOPS [ $ ] on line 21...
Lex Completed With 0 WARNING(S) and 0 ERROR(S)...
Beginning Parsing Session...
PARSER --> | PASSED! Expecting [ T OPENING BRACE ] found
[T OPENING BRACE] on line 1...
PARSER --> | PASSED! Expecting [ Statement ] found
[ Statement ] on line 2...
PARSER --> | PASSED! Expecting [ VarDecl ] found
[T VARIABLE TYPE] on line 2...
PARSER --> | PASSED! Expecting [ T_VARIABLE_TYPE ] found
[T VARIABLE TYPE] on line 2...
PARSER --> | PASSED! Expecting [ T_VARIABLE_TYPE ] found
[ int ] on line 2...
PARSER --> | PASSED! Expecting [T ID] found [T ID] on line
PARSER --> | PASSED! Expecting [T_ID] found [a] on line 2...
PARSER --> | PASSED! Expecting [ StatementList ] found
[ Statement ] on line 3...
PARSER --> | PASSED! Expecting [ Statement ] found
[Statement] on line 3...
```

```
PARSER --> | PASSED! Expecting [ VarDecl ] found
[T_VARIABLE_TYPE] on line 3...
PARSER --> | PASSED! Expecting [T VARIABLE TYPE] found
[ T_VARIABLE_TYPE ] on line 3...
PARSER --> | PASSED! Expecting [T VARIABLE TYPE] found
[ int ] on line 3...
PARSER --> | PASSED! Expecting [ T_ID ] found [ T_ID ] on line
3...
PARSER --> | PASSED! Expecting [T ID] found [b] on line 3...
PARSER --> | PASSED! Expecting [ StatementList ] found
[ Statement ] on line 5...
PARSER --> | PASSED! Expecting [ Statement ] found
[Statement] on line 5...
PARSER --> | PASSED! Expecting [ AssignmentStatement ]
found [T ID] on line 5...
PARSER --> | PASSED! Expecting [ T_ID ] found [ T_ID ] on line
PARSER --> | PASSED! Expecting [T_ID] found [a] on line 5...
PARSER --> | PASSED! Expecting [ T ASSIGNMENT OP ] found
[ = ] on line 5...
PARSER --> | PASSED! Expecting [Expr] found [IntExpr] on
PARSER --> | PASSED! Expecting [IntExpr] found [IntExpr] on
line 5...
PARSER --> | PASSED! Expecting [ T_DIGIT ] found [ 0 ] on line
PARSER --> | PASSED! Expecting [ StatementList ] found
[Statement] on line 6...
PARSER --> | PASSED! Expecting [ Statement ] found
[ Statement ] on line 6...
PARSER --> | PASSED! Expecting [ AssignmentStatement ]
found [T ID] on line 6...
PARSER --> | PASSED! Expecting [T ID] found [T ID] on line
PARSER --> | PASSED! Expecting [T ID] found [b] on line 6...
PARSER --> | PASSED! Expecting [ T_ASSIGNMENT_OP ] found
[ = ] on line 6...
PARSER --> | PASSED! Expecting [ Expr ] found [ IntExpr ] on
line 6...
PARSER --> | PASSED! Expecting [IntExpr] found [IntExpr] on
line 6...
PARSER --> | PASSED! Expecting [T DIGIT] found [0] on line
PARSER --> | PASSED! Expecting [ StatementList ] found
[ Statement ] on line 8...
PARSER --> | PASSED! Expecting [ Statement ] found
[ Statement ] on line 8...
```

```
[T WHILE] on line 8...
PARSER --> | PASSED! Expecting [ T WHILE ] found [ while ] on
line 8...
PARSER --> | PASSED! Expecting [ T OPENING PARENTHESIS ]
found [(] on line 8...
PARSER --> | PASSED! Expecting [Expr] found [Id] on line 8...
PARSER --> | PASSED! Expecting [T ID] found [a] on line 8...
PARSER --> | PASSED! Expecting [T INEQUALITY OP] found
[!=] on line 8...
PARSER --> | PASSED! Expecting [ Expr ] found [ IntExpr ] on
PARSER --> | PASSED! Expecting [IntExpr] found [IntExpr] on
line 8...
PARSER --> | PASSED! Expecting [T DIGIT] found [3] on line
8...
PARSER --> | PASSED! Expecting [ T CLOSING PARENTHESIS ]
found [ ) ] on line 8...
PARSER --> | PASSED! Expecting [ T OPENING BRACE ] found
[T OPENING BRACE] on line 8...
PARSER --> | PASSED! Expecting [ Statement ] found
[Statement] on line 9...
PARSER --> | PASSED! Expecting [ PrintStatement ] found
[T PRINT] on line 9...
PARSER --> | PASSED! Expecting [ T_PRINT ] found [ T_PRINT ]
on line 9...
PARSER --> | PASSED! Expecting [ T_OPENING_PARENTHESIS ]
found [T OPENING PARENTHESIS] on line 9...
PARSER --> | PASSED! Expecting [Expr] found [Id] on line 9...
PARSER --> | PASSED! Expecting [T ID] found [a] on line 9...
PARSER --> | PASSED! Expecting [ T CLOSING PARENTHESIS ]
found [T CLOSING PARENTHESIS] on line 9...
PARSER --> | PASSED! Expecting [ StatementList ] found
[ Statement ] on line 10...
PARSER --> | PASSED! Expecting [ Statement ] found
[Statement] on line 10...
PARSER --> | PASSED! Expecting [ WhileStatement ] found
[T WHILE] on line 10...
PARSER --> | PASSED! Expecting [T WHILE] found [while] on
line 10...
PARSER --> | PASSED! Expecting [ T OPENING PARENTHESIS ]
found [ ( ] on line 10...
PARSER --> | PASSED! Expecting [Expr] found [Id] on line 10...
PARSER --> | PASSED! Expecting [T ID] found [b] on line 10...
PARSER --> | PASSED! Expecting [T INEQUALITY OP] found
[!=] on line 10...
PARSER --> | PASSED! Expecting [Expr] found [IntExpr] on
line 10...
```

PARSER --> | PASSED! Expecting [WhileStatement] found

```
line 10...
PARSER --> | PASSED! Expecting [T DIGIT] found [3] on line
10...
PARSER --> | PASSED! Expecting [T CLOSING PARENTHESIS]
found [ ) ] on line 10...
PARSER --> | PASSED! Expecting [ T_OPENING_BRACE ] found
[T OPENING BRACE] on line 10...
PARSER --> | PASSED! Expecting [ Statement ] found
[ Statement ] on line 11...
PARSER --> | PASSED! Expecting [ PrintStatement ] found
[T PRINT] on line 11...
PARSER --> | PASSED! Expecting [T PRINT] found [T PRINT]
on line 11...
PARSER --> | PASSED! Expecting [ T OPENING PARENTHESIS ]
found [ T OPENING_PARENTHESIS ] on line 11...
PARSER --> | PASSED! Expecting [ Expr ] found [ Id ] on line 11...
PARSER --> | PASSED! Expecting [T ID] found [b] on line 11...
PARSER --> | PASSED! Expecting [ T CLOSING PARENTHESIS ]
found [T CLOSING PARENTHESIS] on line 11...
PARSER --> | PASSED! Expecting [ StatementList ] found
[ Statement ] on line 12...
PARSER --> | PASSED! Expecting [ Statement ] found
[ Statement ] on line 12...
PARSER --> | PASSED! Expecting [ AssignmentStatement ]
found [T ID] on line 12...
PARSER --> | PASSED! Expecting [ T_ID ] found [ T_ID ] on line
12...
PARSER --> | PASSED! Expecting [ T_ID ] found [ b ] on line 12...
PARSER --> | PASSED! Expecting [ T ASSIGNMENT OP ] found
[ = ] on line 12...
PARSER --> | PASSED! Expecting [ Expr ] found [ IntExpr ] on
PARSER --> | PASSED! Expecting [IntExpr] found [T DIGIT] on
line 12...
PARSER --> | PASSED! Expecting [T_DIGIT] found [1] on line
PARSER --> | PASSED! Expecting [ T_ADDITION_OP ] found [ + ]
on line 12...
PARSER --> | PASSED! Expecting [Expr] found [Id] on line 12...
PARSER --> | PASSED! Expecting [ T ID ] found [ b ] on line 12...
PARSER --> | PASSED! Expecting [ StatementList ] found
[Statement] on line 13...
PARSER --> | PASSED! Expecting [ Statement ] found
[ Statement ] on line 13...
PARSER --> | PASSED! Expecting [IfStatement] found [T IF]
on line 13...
PARSER --> | PASSED! Expecting [T IF] found [if] on line 13...
```

PARSER --> | PASSED! Expecting [IntExpr] found [IntExpr] on

```
PARSER --> | PASSED! Expecting [ T_OPENING_PARENTHESIS ]
found [ ( ] on line 13...
PARSER --> | PASSED! Expecting [Expr] found [Id] on line 13...
PARSER --> | PASSED! Expecting [T_ID] found [b] on line 13...
PARSER --> | PASSED! Expecting [T EQUALITY OP] found
[ == ] on line 13...
PARSER --> | PASSED! Expecting [ Expr ] found [ IntExpr ] on
line 13...
PARSER --> | PASSED! Expecting [IntExpr] found [IntExpr] on
line 13...
PARSER --> | PASSED! Expecting [T DIGIT] found [2] on line
13...
PARSER --> | PASSED! Expecting [ T CLOSING PARENTHESIS ]
found [ ) ] on line 13...
PARSER --> | PASSED! Expecting [ T_OPENING_BRACE ] found
[ T_OPENING_BRACE ] on line 13...
PARSER --> | PASSED! Expecting [ Statement ] found
[Statement] on line 14...
PARSER --> | PASSED! Expecting [ PrintStatement ] found
[T PRINT] on line 14...
PARSER --> | PASSED! Expecting [T PRINT] found [T PRINT]
on line 14...
PARSER --> | PASSED! Expecting [ T_OPENING_PARENTHESIS ]
found [T OPENING PARENTHESIS] on line 14...
PARSER --> | PASSED! Expecting [ Expr ] found [ StringExpr ] on
line 14...
PARSER --> | PASSED! Expecting [ T_QUOTE ] found
[T QUOTE] on line 14...
PARSER --> | PASSED! Expecting [ T_CHAR ] found [ T_CHAR ]
on line 14...
PARSER --> | PASSED! Expecting [ T CHAR ] found [ t ] on line
14...
PARSER --> | PASSED! Expecting [ T CHAR ] found [ T CHAR ]
on line 14...
PARSER --> | PASSED! Expecting [T CHAR] found [h] on line
PARSER --> | PASSED! Expecting [ T CHAR ] found [ T CHAR ]
on line 14...
PARSER --> | PASSED! Expecting [T CHAR] found [e] on line
PARSER --> | PASSED! Expecting [ T CHAR ] found [ T CHAR ]
on line 14...
PARSER --> | PASSED! Expecting [ T CHAR ] found [ r ] on line
PARSER --> | PASSED! Expecting [ T CHAR ] found [ T CHAR ]
on line 14...
PARSER --> | PASSED! Expecting [ T_CHAR ] found [ e ] on line
14...
```

```
PARSER --> | PASSED! Expecting [ T CHAR ] found [ T CHAR ]
on line 14...
PARSER --> | PASSED! Expecting [ T CHAR ] found [ ] on line
PARSER --> | PASSED! Expecting [T CHAR] found [T CHAR]
on line 14...
PARSER --> | PASSED! Expecting [ T_CHAR ] found [ i ] on line
14...
PARSER --> | PASSED! Expecting [ T CHAR ] found [ T CHAR ]
on line 14...
PARSER --> | PASSED! Expecting [ T CHAR ] found [ s ] on line
PARSER --> | PASSED! Expecting [ T CHAR ] found [ T CHAR ]
on line 14...
PARSER --> | PASSED! Expecting [ T_CHAR ] found [ ] on line
14...
PARSER --> | PASSED! Expecting [T CHAR] found [T CHAR]
on line 14...
PARSER --> | PASSED! Expecting [T CHAR] found [n] on line
PARSER --> | PASSED! Expecting [T CHAR] found [T CHAR]
on line 14...
PARSER --> | PASSED! Expecting [ T CHAR ] found [ o ] on line
PARSER --> | PASSED! Expecting [ T_CHAR ] found [ T_CHAR ]
on line 14...
PARSER --> | PASSED! Expecting [ T_CHAR ] found [ ] on line
PARSER --> | PASSED! Expecting [ T_CHAR ] found [ T_CHAR ]
on line 14...
PARSER --> | PASSED! Expecting [T CHAR] found [s] on line
14...
PARSER --> | PASSED! Expecting [ T CHAR ] found [ T CHAR ]
on line 14...
PARSER --> | PASSED! Expecting [ T CHAR ] found [ p ] on line
PARSER --> | PASSED! Expecting [ T CHAR ] found [ T CHAR ]
on line 14...
PARSER --> | PASSED! Expecting [T CHAR] found [o] on line
PARSER --> | PASSED! Expecting [ T CHAR ] found [ T CHAR ]
on line 14...
PARSER --> | PASSED! Expecting [T CHAR] found [o] on line
PARSER --> | PASSED! Expecting [ T CHAR ] found [ T CHAR ]
on line 14...
PARSER --> | PASSED! Expecting [ T_CHAR ] found [ n ] on line
14...
```

```
PARSER --> | PASSED! \lambda production on line 14...
PARSER --> | PASSED! Expecting [T QUOTE] found
[T QUOTE] on line 14...
PARSER --> | PASSED! Expecting [ T_CLOSING_PARENTHESIS ]
found [T CLOSING PARENTHESIS] on line 14...
PARSER --> | PASSED! \lambda production on line 15...
PARSER --> | PASSED! Expecting [ T_CLOSING_BRACE ] found
[T CLOSING BRACE] on line 15...
PARSER --> | PASSED! λ production on line 16...
PARSER --> | PASSED! Expecting [ T_CLOSING_BRACE ] found
[T CLOSING BRACE] on line 16...
PARSER --> | PASSED! Expecting [ StatementList ] found
[ Statement ] on line 18...
PARSER --> | PASSED! Expecting [ Statement ] found
[ Statement ] on line 18...
PARSER --> | PASSED! Expecting [ AssignmentStatement ]
found [T ID] on line 18...
PARSER --> | PASSED! Expecting [ T_ID ] found [ T_ID ] on line
18...
PARSER --> | PASSED! Expecting [T ID] found [b] on line 18...
PARSER --> | PASSED! Expecting [ T ASSIGNMENT OP ] found
[ = ] on line 18...
PARSER --> | PASSED! Expecting [ Expr ] found [ IntExpr ] on
line 18...
PARSER --> | PASSED! Expecting [IntExpr] found [IntExpr] on
line 18...
PARSER --> | PASSED! Expecting [ T_DIGIT ] found [ 0 ] on line
18...
PARSER --> | PASSED! Expecting [ StatementList ] found
[Statement] on line 19...
PARSER --> | PASSED! Expecting [ Statement ] found
[Statement] on line 19...
PARSER --> | PASSED! Expecting [ AssignmentStatement ]
found [T ID] on line 19...
PARSER --> | PASSED! Expecting [T ID] found [T ID] on line
19...
PARSER --> | PASSED! Expecting [T ID] found [a] on line 19...
PARSER --> | PASSED! Expecting [ T_ASSIGNMENT_OP ] found
[ = ] on line 19...
PARSER --> | PASSED! Expecting [Expr] found [IntExpr] on
line 19...
PARSER --> | PASSED! Expecting [IntExpr] found [T DIGIT] on
line 19...
PARSER --> | PASSED! Expecting [T DIGIT] found [1] on line
PARSER --> | PASSED! Expecting [T ADDITION OP] found [+]
on line 19...
PARSER --> | PASSED! Expecting [ Expr ] found [ Id ] on line 19...
```

PARSER Test Cases and Results

```
PARSER --> | PASSED! Expecting [ T_ID ] found [ a ] on line 19...

PARSER --> | PASSED! λ production on line 20...

PARSER --> | PASSED! Expecting [ T_CLOSING_BRACE ] found

[ T_CLOSING_BRACE ] on line 20...

PARSER --> | PASSED! λ production on line 21...

PARSER --> | PASSED! Expecting [ T_CLOSING_BRACE ] found

[ T_CLOSING_BRACE ] on line 21...

PARSER --> | PASSED! Expecting [ T_EOPS ] found [ T_EOPS ] on line 21...

Parse Completed With 0 WARNING(S) and 0 ERROR(S)...
```

	Failed Lex Code Block	Log Results
{ }\$	string 1	Log Results Beginning Lexing Session *Stings Treated As CharList* LEXER> T_OPENING_BRACE [{] on line 1 LEXER> T_VARIABLE_TYPE [string] on line 2 LEXER> T_DIGIT [1] on line 2 LEXER> T_CLOSING_BRACE [{ }] on line 3 LEXER> T_EOPS [\$] on line 3 Lex Completed With 0 WARNING(S) and 0 ERROR(S) Beginning Parsing Session PARSER> PASSED! Expecting [T_OPENING_BRACE] found [T_OPENING_BRACE] on line 1 PARSER> PASSED! Expecting [Statement] found [Statement] on line 2 PARSER> PASSED! Expecting [VarDecl] found [T_VARIABLE_TYPE] on line 2 PARSER> PASSED! Expecting [T_VARIABLE_TYPE] found [T_VARIABLE_TYPE] on line 2 PARSER> PASSED! Expecting [T_VARIABLE_TYPE] found [string] on line 2 PARSER> ERROR! Expecting [T_ID] found [1] on line 2 Parse Completed With 0 WARNING(S) and 1 ERROR(S)
{ }\$	a + 3	Beginning Lexing Session *Stings Treated As CharList* LEXER> T_OPENING_BRACE [{] on line 1 LEXER> T_ID [a] on line 2 LEXER> T_ADDITION_OP [+] on line 2 LEXER> T_DIGIT [3] on line 2 LEXER> T_CLOSING_BRACE [}] on line 3

	LEXER> T_EOPS [\$] on line 3
	Lex Completed With 0 WARNING(S) and 0 ERROR(S)
	Beginning Parsing Session
	PARSER> PASSED! Expecting [T_OPENING_BRACE] found [T_OPENING_BRACE] on line 1 PARSER> PASSED! Expecting [Statement] found [Statement] on line 2 PARSER> PASSED! Expecting [AssignmentStatement] found [T_ID] on line 2 PARSER> PASSED! Expecting [T_ID] found [T_ID] on line 2 PARSER> PASSED! Expecting [T_ID] found [a] on line 2 PARSER> ERROR! Expecting [=] found [+] on line 2 Parse Completed With 0 WARNING(S) and 1 ERROR(S)
{	Beginning Lexing Session *Stings Treated As CharList* LEXER> T_OPENING_BRACE [{] on line 1 LEXER> T_PRINT [print] on line 2 LEXER> T_OPENING_PARENTHESIS [(] on line 2 LEXER> T_EOPS [\$] on line 2 LEXER> T_CLOSING_PARENTHESIS [)] on line 2 LEXER> T_CLOSING_BRACE [}] on line 3 LEXER> T_EOPS [\$] on line 3 LEXER> T_EOPS [\$] on line 3 LEX Completed With 0 WARNING(S) and 0 ERROR(S) Beginning Parsing Session PARSER> PASSED! Expecting [T_OPENING_BRACE] found [T_OPENING_BRACE] on line 1 PARSER> PASSED! Expecting [Statement] found [Statement] on line 2 PARSER> PASSED! Expecting [T_PRINT] found [T_PRINT] on line 2 PARSER> PASSED! Expecting [T_OPENING_PARENTHESIS] found [T_OPENING_PARENTHESIS] found [T_OPENING_PARENTHESIS] found [T_OPENING_PARENTHESIS] on line 2 PARSER> ERROR! Expecting [IntExpr StringExpr BooleanExpr Id] found [\$] on line 2
	Parse Completed With 0 WARNING(S) and 1 ERROR(S)

```
{
                                       Beginning Lexing Session... *Stings Treated As CharList*
        int a
                                       LEXER --> | T OPENING_BRACE [ { ] on line 1...
        int b
                                       LEXER --> | T_VARIABLE_TYPE [ int ] on line 2...
        a = 0
                                       LEXER --> | T ID [a] on line 2...
        b = 0
                                       LEXER --> | T_VARIABLE_TYPE [ int ] on line 3...
                                       LEXER --> | T_ID [ b ] on line 3...
        while (a != 3) {
                                       LEXER --> | T ID [a] on line 5...
        print(a)
                                       LEXER --> | T ASSIGNMENT OP [ = ] on line 5...
                                       LEXER --> | T DIGIT [0] on line 5...
        while (b != 3) {
                print(b)
                                       LEXER --> | T ID [ b ] on line 6...
                                       LEXER --> | T_ASSIGNMENT_OP [ = ] on line 6...
                b = 1 + b
                if (b == 2) {
                                       LEXER --> | T DIGIT [0] on line 6...
                                       LEXER --> | T_WHILE [ while ] on line 8...
        print("there is no spoon")
                                       LEXER --> | T_OPENING_PARENTHESIS [ ( ] on line 8...
                                       LEXER --> | T_ID [ a ] on line 8...
                }
        }
                                       LEXER --> | T_INEQUALITY_OP [ != ] on line 8...
                                       LEXER --> | T_DIGIT [ 3 ] on line 8...
        b = 0
                                       LEXER --> | T CLOSING PARENTHESIS [) ] on line 8...
        a = 1 +
                                       LEXER --> | T OPENING BRACE [ { ] on line 8...
        }
                                       LEXER --> | T PRINT [ print ] on line 9...
}$
                                       LEXER --> | T OPENING PARENTHESIS [()] on line 9...
                                       LEXER --> | T ID [ a ] on line 9...
                                       LEXER --> | T CLOSING PARENTHESIS [) ] on line 9...
                                       LEXER --> | T_WHILE [ while ] on line 10...
                                       LEXER --> | T_OPENING_PARENTHESIS [ ( ] on line 10...
                                       LEXER --> | T_ID [ b ] on line 10...
                                       LEXER --> | T INEQUALITY OP [!=] on line 10...
                                       LEXER --> | T DIGIT [ 3 ] on line 10...
                                       LEXER --> | T CLOSING PARENTHESIS [) ] on line 10...
                                       LEXER --> | T OPENING BRACE [ { ] on line 10...
                                       LEXER --> | T PRINT [ print ] on line 11...
                                       LEXER --> | T OPENING PARENTHESIS [ ( ] on line 11...
                                       LEXER --> | T ID [ b ] on line 11...
                                       LEXER --> | T CLOSING PARENTHESIS [ ) ] on line 11...
                                       LEXER --> | T_ID [ b ] on line 12...
                                       LEXER --> | T_ASSIGNMENT_OP [ = ] on line 12...
                                       LEXER --> | T_DIGIT [ 1 ] on line 12...
                                       LEXER --> | T ADDITION OP [+] on line 12...
                                       LEXER --> | T ID [b] on line 12...
                                       LEXER --> | T IF [ if ] on line 13...
                                       LEXER --> | T OPENING PARENTHESIS [ ( ] on line 13...
                                       LEXER --> | T ID [ b ] on line 13...
                                       LEXER --> | T EQUALITY OP [ == ] on line 13...
                                       LEXER --> | T DIGIT [2] on line 13...
                                       LEXER --> | T CLOSING PARENTHESIS [) ] on line 13...
                                       LEXER --> | T_OPENING_BRACE [ { ] on line 13...
                                       LEXER --> | T PRINT [ print ] on line 14...
```

```
LEXER --> | T OPENING PARENTHESIS [() on line 14...
LEXER --> | T QUOTE [ " ] on line 14...
LEXER --> | T CHAR [t] on line 14...
LEXER --> | T_CHAR [ h ] on line 14...
LEXER --> | T CHAR [e] on line 14...
LEXER --> | T_CHAR [ r ] on line 14...
LEXER --> | T_CHAR [e] on line 14...
LEXER --> | T CHAR [ ] on line 14...
LEXER --> | T CHAR [i] on line 14...
LEXER --> | T CHAR [s] on line 14...
LEXER --> | T CHAR [ ] on line 14...
LEXER --> | T CHAR [ n ] on line 14...
LEXER --> | T CHAR [o] on line 14...
LEXER --> | T_CHAR [ ] on line 14...
LEXER --> | T_CHAR [ s ] on line 14...
LEXER --> | T_CHAR [ p ] on line 14...
LEXER --> | T_CHAR [o] on line 14...
LEXER --> | T_CHAR [o] on line 14...
LEXER --> | T CHAR [ n ] on line 14...
LEXER --> | T QUOTE [ " ] on line 14...
LEXER --> | T_CLOSING_PARENTHESIS[)] on line 14...
LEXER --> | T CLOSING BRACE [ } ] on line 15...
LEXER --> | T CLOSING BRACE [ } ] on line 16...
LEXER --> | T ID [ b ] on line 18...
LEXER --> | T_ASSIGNMENT_OP [ = ] on line 18...
LEXER --> | T_DIGIT [ 0 ] on line 18...
LEXER --> | T_ID [ a ] on line 19...
LEXER --> | T ASSIGNMENT OP [ = ] on line 19...
LEXER --> | T DIGIT [ 1 ] on line 19...
LEXER --> | T ADDITION OP [+] on line 19...
LEXER --> | T CLOSING BRACE [ } ] on line 20...
LEXER --> | T CLOSING BRACE [ } ] on line 21...
LEXER --> | T EOPS [ $ ] on line 21...
Lex Completed With 0 WARNING(S) and 0 ERROR(S)...
Beginning Parsing Session...
PARSER --> | PASSED! Expecting [ T OPENING BRACE ] found
[T OPENING BRACE] on line 1...
PARSER --> | PASSED! Expecting [ Statement ] found
[ Statement ] on line 2...
PARSER --> | PASSED! Expecting [ VarDecl ] found
[T VARIABLE TYPE] on line 2...
PARSER --> | PASSED! Expecting [ T_VARIABLE_TYPE ] found
[T VARIABLE TYPE] on line 2...
PARSER --> | PASSED! Expecting [ T_VARIABLE_TYPE ] found
[ int ] on line 2...
```

```
PARSER --> | PASSED! Expecting [T_ID] found [T_ID] on line
2...
PARSER --> | PASSED! Expecting [T ID] found [a] on line 2...
PARSER --> | PASSED! Expecting [ StatementList ] found
[Statement] on line 3...
PARSER --> | PASSED! Expecting [ Statement ] found
[Statement] on line 3...
PARSER --> | PASSED! Expecting [ VarDecl ] found
[T VARIABLE TYPE] on line 3...
PARSER --> | PASSED! Expecting [ T_VARIABLE_TYPE ] found
[T_VARIABLE_TYPE] on line 3...
PARSER --> | PASSED! Expecting [T VARIABLE TYPE] found
[ int ] on line 3...
PARSER --> | PASSED! Expecting [T ID] found [T ID] on line
PARSER --> | PASSED! Expecting [T_ID] found [b] on line 3...
PARSER --> | PASSED! Expecting [ StatementList ] found
[Statement] on line 5...
PARSER --> | PASSED! Expecting [ Statement ] found
[Statement] on line 5...
PARSER --> | PASSED! Expecting [ AssignmentStatement ]
found [T ID] on line 5...
PARSER --> | PASSED! Expecting [T ID] found [T ID] on line
5...
PARSER --> | PASSED! Expecting [T_ID] found [a] on line 5...
PARSER --> | PASSED! Expecting [T ASSIGNMENT OP] found
[ = ] on line 5...
PARSER --> | PASSED! Expecting [Expr] found [IntExpr] on
line 5...
PARSER --> | PASSED! Expecting [IntExpr] found [IntExpr] on
line 5...
PARSER --> | PASSED! Expecting [T DIGIT] found [0] on line
PARSER --> | PASSED! Expecting [ StatementList ] found
[ Statement ] on line 6...
PARSER --> | PASSED! Expecting [ Statement ] found
[Statement] on line 6...
PARSER --> | PASSED! Expecting [ AssignmentStatement ]
found [T ID] on line 6...
PARSER --> | PASSED! Expecting [ T_ID ] found [ T_ID ] on line
6...
PARSER --> | PASSED! Expecting [T ID] found [b] on line 6...
PARSER --> | PASSED! Expecting [ T ASSIGNMENT OP ] found
[ = ] on line 6...
PARSER --> | PASSED! Expecting [ Expr ] found [ IntExpr ] on
PARSER --> | PASSED! Expecting [IntExpr] found [IntExpr] on
line 6...
```

```
PARSER --> | PASSED! Expecting [ T_DIGIT ] found [ 0 ] on line
6...
PARSER --> | PASSED! Expecting [ StatementList ] found
[ Statement ] on line 8...
PARSER --> | PASSED! Expecting [ Statement ] found
[Statement] on line 8...
PARSER --> | PASSED! Expecting [WhileStatement] found
[T WHILE] on line 8...
PARSER --> | PASSED! Expecting [ T WHILE ] found [ while ] on
line 8...
PARSER --> | PASSED! Expecting [ T OPENING PARENTHESIS ]
found [(] on line 8...
PARSER --> | PASSED! Expecting [Expr] found [Id] on line 8...
PARSER --> | PASSED! Expecting [T ID] found [a] on line 8...
PARSER --> | PASSED! Expecting [T INEQUALITY OP] found
[!=] on line 8...
PARSER --> | PASSED! Expecting [Expr] found [IntExpr] on
line 8...
PARSER --> | PASSED! Expecting [IntExpr] found [IntExpr] on
line 8...
PARSER --> | PASSED! Expecting [T DIGIT] found [3] on line
PARSER --> | PASSED! Expecting [ T CLOSING PARENTHESIS ]
found [ ) ] on line 8...
PARSER --> | PASSED! Expecting [ T_OPENING_BRACE ] found
[T OPENING BRACE] on line 8...
PARSER --> | PASSED! Expecting [ Statement ] found
[Statement] on line 9...
PARSER --> | PASSED! Expecting [ PrintStatement ] found
[T PRINT] on line 9...
PARSER --> | PASSED! Expecting [T PRINT] found [T PRINT]
on line 9...
PARSER --> | PASSED! Expecting [ T OPENING PARENTHESIS ]
found [T OPENING PARENTHESIS] on line 9...
PARSER --> | PASSED! Expecting [Expr] found [Id] on line 9...
PARSER --> | PASSED! Expecting [T_ID] found [a] on line 9...
PARSER --> | PASSED! Expecting [ T CLOSING PARENTHESIS ]
found [T_CLOSING_PARENTHESIS] on line 9...
PARSER --> | PASSED! Expecting [ StatementList ] found
[ Statement ] on line 10...
PARSER --> | PASSED! Expecting [ Statement ] found
[ Statement ] on line 10...
PARSER --> | PASSED! Expecting [ WhileStatement ] found
[T WHILE] on line 10...
PARSER --> | PASSED! Expecting [ T_WHILE ] found [ while ] on
line 10...
PARSER --> | PASSED! Expecting [ T OPENING PARENTHESIS ]
found [ ( ] on line 10...
```

```
PARSER --> | PASSED! Expecting [Expr] found [Id] on line 10...
PARSER --> | PASSED! Expecting [T_ID] found [b] on line 10...
PARSER --> | PASSED! Expecting [ T_INEQUALITY_OP ] found
[!=] on line 10...
PARSER --> | PASSED! Expecting [ Expr ] found [ IntExpr ] on
line 10...
PARSER --> | PASSED! Expecting [IntExpr] found [IntExpr] on
line 10...
PARSER --> | PASSED! Expecting [T DIGIT] found [3] on line
10...
PARSER --> | PASSED! Expecting [ T CLOSING PARENTHESIS ]
found [ ) ] on line 10...
PARSER --> | PASSED! Expecting [ T OPENING BRACE ] found
[T OPENING BRACE] on line 10...
PARSER --> | PASSED! Expecting [ Statement ] found
[Statement] on line 11...
PARSER --> | PASSED! Expecting [ PrintStatement ] found
[T PRINT] on line 11...
PARSER --> | PASSED! Expecting [T PRINT] found [T PRINT]
on line 11...
PARSER --> | PASSED! Expecting [ T OPENING PARENTHESIS ]
found [T OPENING PARENTHESIS] on line 11...
PARSER --> | PASSED! Expecting [Expr] found [Id] on line 11...
PARSER --> | PASSED! Expecting [T ID] found [b] on line 11...
PARSER --> | PASSED! Expecting [ T_CLOSING_PARENTHESIS ]
found [T_CLOSING_PARENTHESIS] on line 11...
PARSER --> | PASSED! Expecting [ StatementList ] found
[Statement] on line 12...
PARSER --> | PASSED! Expecting [ Statement ] found
[ Statement ] on line 12...
PARSER --> | PASSED! Expecting [ AssignmentStatement ]
found [T ID] on line 12...
PARSER --> | PASSED! Expecting [T ID] found [T ID] on line
PARSER --> | PASSED! Expecting [T ID] found [b] on line 12...
PARSER --> | PASSED! Expecting [ T_ASSIGNMENT_OP ] found
[ = ] on line 12...
PARSER --> | PASSED! Expecting [ Expr ] found [ IntExpr ] on
line 12...
PARSER --> | PASSED! Expecting [IntExpr] found [T DIGIT] on
line 12...
PARSER --> | PASSED! Expecting [T DIGIT] found [1] on line
PARSER --> | PASSED! Expecting [T ADDITION OP] found [+]
on line 12...
PARSER --> | PASSED! Expecting [Expr] found [Id] on line 12...
PARSER --> | PASSED! Expecting [T_ID] found [b] on line 12...
```

```
PARSER --> | PASSED! Expecting [ StatementList ] found
[Statement] on line 13...
PARSER --> | PASSED! Expecting [ Statement ] found
[ Statement ] on line 13...
PARSER --> | PASSED! Expecting [IfStatement] found [T IF]
on line 13...
PARSER --> | PASSED! Expecting [T_IF] found [if] on line 13...
PARSER --> | PASSED! Expecting [ T OPENING PARENTHESIS ]
found [ ( ] on line 13...
PARSER --> | PASSED! Expecting [Expr] found [Id] on line 13...
PARSER --> | PASSED! Expecting [T ID] found [b] on line 13...
PARSER --> | PASSED! Expecting [ T EQUALITY OP ] found
[ == ] on line 13...
PARSER --> | PASSED! Expecting [Expr] found [IntExpr] on
line 13...
PARSER --> | PASSED! Expecting [IntExpr] found [IntExpr] on
line 13...
PARSER --> | PASSED! Expecting [ T_DIGIT ] found [ 2 ] on line
13...
PARSER --> | PASSED! Expecting [ T CLOSING PARENTHESIS ]
found [ ) ] on line 13...
PARSER --> | PASSED! Expecting [ T OPENING BRACE ] found
[T OPENING BRACE] on line 13...
PARSER --> | PASSED! Expecting [ Statement ] found
[Statement] on line 14...
PARSER --> | PASSED! Expecting [ PrintStatement ] found
[T PRINT] on line 14...
PARSER --> | PASSED! Expecting [T PRINT] found [T PRINT]
on line 14...
PARSER --> | PASSED! Expecting [ T OPENING PARENTHESIS ]
found [T OPENING PARENTHESIS] on line 14...
PARSER --> | PASSED! Expecting [Expr] found [StringExpr] on
line 14...
PARSER --> | PASSED! Expecting [T QUOTE] found
[T QUOTE] on line 14...
PARSER --> | PASSED! Expecting [ T_CHAR ] found [ T_CHAR ]
on line 14...
PARSER --> | PASSED! Expecting [ T_CHAR ] found [ t ] on line
PARSER --> | PASSED! Expecting [ T_CHAR ] found [ T_CHAR ]
on line 14...
PARSER --> | PASSED! Expecting [ T CHAR ] found [ h ] on line
PARSER --> | PASSED! Expecting [ T CHAR ] found [ T CHAR ]
on line 14...
PARSER --> | PASSED! Expecting [T CHAR] found [e] on line
14...
```

```
PARSER --> | PASSED! Expecting [ T CHAR ] found [ T CHAR ]
on line 14...
PARSER --> | PASSED! Expecting [T CHAR] found [r] on line
PARSER --> | PASSED! Expecting [T CHAR] found [T CHAR]
on line 14...
PARSER --> | PASSED! Expecting [ T_CHAR ] found [ e ] on line
14...
PARSER --> | PASSED! Expecting [ T CHAR ] found [ T CHAR ]
on line 14...
PARSER --> | PASSED! Expecting [ T CHAR ] found [ ] on line
PARSER --> | PASSED! Expecting [ T CHAR ] found [ T CHAR ]
on line 14...
PARSER --> | PASSED! Expecting [ T_CHAR ] found [ i ] on line
14...
PARSER --> | PASSED! Expecting [ T CHAR ] found [ T CHAR ]
on line 14...
PARSER --> | PASSED! Expecting [ T CHAR ] found [ s ] on line
PARSER --> | PASSED! Expecting [T CHAR] found [T CHAR]
on line 14...
PARSER --> | PASSED! Expecting [ T CHAR ] found [ ] on line
PARSER --> | PASSED! Expecting [ T_CHAR ] found [ T_CHAR ]
on line 14...
PARSER --> | PASSED! Expecting [ T_CHAR ] found [ n ] on line
PARSER --> | PASSED! Expecting [ T_CHAR ] found [ T_CHAR ]
on line 14...
PARSER --> | PASSED! Expecting [ T CHAR ] found [ o ] on line
PARSER --> | PASSED! Expecting [ T CHAR ] found [ T CHAR ]
on line 14...
PARSER --> | PASSED! Expecting [ T CHAR ] found [ ] on line
PARSER --> | PASSED! Expecting [ T CHAR ] found [ T CHAR ]
on line 14...
PARSER --> | PASSED! Expecting [T CHAR] found [s] on line
PARSER --> | PASSED! Expecting [ T CHAR ] found [ T CHAR ]
on line 14...
PARSER --> | PASSED! Expecting [ T CHAR ] found [ p ] on line
PARSER --> | PASSED! Expecting [ T CHAR ] found [ T CHAR ]
on line 14...
PARSER --> | PASSED! Expecting [T CHAR] found [o] on line
14...
```

```
PARSER --> | PASSED! Expecting [ T CHAR ] found [ T CHAR ]
on line 14...
PARSER --> | PASSED! Expecting [T CHAR] found [o] on line
PARSER --> | PASSED! Expecting [T CHAR] found [T CHAR]
on line 14...
PARSER --> | PASSED! Expecting [ T_CHAR ] found [ n ] on line
14...
PARSER --> | PASSED! λ production on line 14...
PARSER --> | PASSED! Expecting [T QUOTE] found
[T QUOTE] on line 14...
PARSER --> | PASSED! Expecting [ T CLOSING PARENTHESIS ]
found [T CLOSING PARENTHESIS] on line 14...
PARSER --> | PASSED! \lambda production on line 15...
PARSER --> | PASSED! Expecting [ T_CLOSING_BRACE ] found
[ T_CLOSING_BRACE ] on line 15...
PARSER --> | PASSED! \lambda production on line 16...
PARSER --> | PASSED! Expecting [ T_CLOSING_BRACE ] found
[T CLOSING BRACE] on line 16...
PARSER --> | PASSED! Expecting [ StatementList ] found
[ Statement ] on line 18...
PARSER --> | PASSED! Expecting [ Statement ] found
[Statement] on line 18...
PARSER --> | PASSED! Expecting [ AssignmentStatement ]
found [T_ID] on line 18...
PARSER --> | PASSED! Expecting [ T_ID ] found [ T_ID ] on line
18...
PARSER --> | PASSED! Expecting [T ID] found [b] on line 18...
PARSER --> | PASSED! Expecting [ T_ASSIGNMENT_OP ] found
[ = ] on line 18...
PARSER --> | PASSED! Expecting [ Expr ] found [ IntExpr ] on
line 18...
PARSER --> | PASSED! Expecting [IntExpr] found [IntExpr] on
line 18...
PARSER --> | PASSED! Expecting [T DIGIT] found [0] on line
18...
PARSER --> | PASSED! Expecting [ StatementList ] found
[ Statement ] on line 19...
PARSER --> | PASSED! Expecting [ Statement ] found
[ Statement ] on line 19...
PARSER --> | PASSED! Expecting [ AssignmentStatement ]
found [T ID] on line 19...
PARSER --> | PASSED! Expecting [T ID] found [T ID] on line
19...
PARSER --> | PASSED! Expecting [T_ID] found [a] on line 19...
PARSER --> | PASSED! Expecting [ T ASSIGNMENT OP ] found
[ = ] on line 19...
```

PARSER Test Cases and Results

PARSER --> | PASSED! Expecting [Expr] found [IntExpr] on line 19...

PARSER --> | PASSED! Expecting [IntExpr] found [T_DIGIT] on line 19...

PARSER --> | PASSED! Expecting [T_DIGIT] found [1] on line 19...

PARSER --> | PASSED! Expecting [T_ADDITION_OP] found [+] on line 19...

PARSER --> | ERROR! Expecting [IntExpr | | StringExpr | | BooleanExpr | | Id] found [}] on line 20...

Parse Completed With 0 WARNING(S) and 1 ERROR(S)...