

Analizador Sintático I - Relatório

Este relatório tem como propósito explicitar as tarefas realizadas na primeira etapa do analisador sintático. A especificação léxica, realizada no trabalho anterior, foi estendida para incorporar as regras sintáticas determinadas pela especificação BNF detalhada no capítulo 2 do livro.

Foram adicionadas algumas funcionalidades ao analisador para que este pudesse realizar a análise sintática. Nesta etapa, em alguns casos, o analisador precisa fazer uso de *lookahead*, para escapar de situações em que um token permite seguir por mais de um caminho. Para isso, é habilitado o *lookahead* do programa:

```
options
{
...
DEBUG_LOOKAHEAD = true;
}
```

no começo do programa. Assim, podemos incorporar o *lookahead* nas construções que a necessitam.

É possível, também, controlar o nível de verbosidade do logger /debugger do analisador sintático, incorporando um parâmetro a mais na chamada do programa. Para isso, é usado uma flag,

```
boolean debug_as = false;
```

que pode ser sobrescrita, caso o parâmetro *-debug_AS* estiver presente,

```
f (args[i].equals("-debug_AS"))
    debug_as = true;
```

BNF da Linguagem

Através de uma outra ferramenta do JavaCC, foi possível gerar a BNF representante da linguagem deste trabalho. A mesma pode ser encontrada no arquivo **Fun.html** que acompanha este relatório.

Arquivos de Teste

Foram criados alguns arquivos de teste para validar o funcionamento da linguagem desenvolvida. Ao todo, são 6 arquivos de teste de rejeição, e podem ser encontrados na pasta **/rejeitados**. Abaixo segue a tabela com a saída de cada arquivo.

programanaoaceito1.fun	<p>Call: program Call: classlist Call: classdecl Consumed token: <"class" at line 1 column 1> Consumed token: <<IDENT>: "ErrorPessoa" at line 1 column 7> Call: classbody Consumed token: <"{" at line 1 column 19> Call: vardecl(LOOKING AHEAD...) Visited token: <<PRIMITIVE_TYPE>: "string" at line 11 column 10>; Expected token: <<PRIMITIVE_TYPE>> Visited token: <<IDENT>: "nome" at line 11 column 17>; Expected token: <"["> Call: atribstat(LOOKING AHEAD...) Call: lvalue(LOOKING AHEAD...) Visited token: <<IDENT>: "nome" at line 11 column 17>; Expected token: <<IDENT>> Visited token: <";" at line 11 column 21>; Expected token: <"["> Visited token: <";" at line 11 column 21>; Expected token: <". "> Return: lvalue(LOOKAHEAD SUCCEEDED) Visited token: <";" at line 11 column 21>; Expected token: <"="> Return: atribstat(LOOKAHEAD FAILED) Return: vardecl(LOOKAHEAD FAILED) Call: methoddecl Consumed token: <<PRIMITIVE_TYPE>: "string" at line 11 column 10> Consumed token: <<IDENT>: "nome" at line 11 column 17> Call: methodbody Return: methodbody Return: methoddecl Return: classbody Return: classdecl Return: classlist Return: program Encountered " ";" ";" "" at line 11, column 21.</p>
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	<p>Was expecting: "(" ...</p> <p>0 Lexical Errors found 1 Syntatic Errors found</p>
programanaoaceito2.fun	<p>Call: program Call: classlist Call: classdecl Consumed token: <"class" at line 1 column 1> Consumed token: <<IDENT>: "ErrorClass" at line 1 column 7> Call: classbody Consumed token: <"{" at line 1 column 17> Call: vardecl(LOOKING AHEAD...) Visited token: <"/" at line 2 column 9>; Expected token: <<PRIMITIVE_TYPE>> Visited token: <"/" at line 2 column 9>; Expected token: <<IDENT>> Return: vardecl(LOOKAHEAD FAILED) Return: classbody Return: classdecl Return: classlist Return: program Encountered " "/" / "" at line 2, column 9. Was expecting one of: "class" ... "constructor" ... <PRIMITIVE_TYPE> ... "}" ... <IDENT> ... <PRIMITIVE_TYPE> ... <IDENT> ...</p> <p>0 Lexical Errors found 1 Syntatic Errors found</p>
programanaoaceito3.fun	<p>Call: program Call: classlist Call: classdecl Consumed token: <"class" at line 1 column 1> Consumed token: <<IDENT>: "ErrorClass" at line 1 column 7> Consumed token: <"extends" at line 1 column 18> Consumed token: <<IDENT>: "SuperClass" at line 1 column 26> Call: classbody</p>

Consumed token: <"{" at line 1 column 36>
 Call: vardecl(LOOKING AHEAD...)
 Visited token: <"constructor" at line 2 column 9>;
 Expected token: <<PRIMITIVE_TYPE>>
 Visited token: <"constructor" at line 2 column 9>;
 Expected token: <<IDENT>>
 Return: vardecl(LOOKAHEAD FAILED)
 Call: constructdecl
 Consumed token: <"constructor" at line 2 column 9>
 Call: methodbody
 Consumed token: <"(" at line 2 column 20>
 Call: paramlist
 Consumed token: <<IDENT>: "boolean" at line 2 column 21>
 Consumed token: <<IDENT>: "paramBool" at line 2 column 29>
 Consumed token: <"," at line 2 column 38>
 Consumed token: <<PRIMITIVE_TYPE>: "int" at line 2 column 40>
 Consumed token: <<IDENT>: "paramInt" at line 2 column 44>
 Return: paramlist
 Consumed token: <")" at line 2 column 52>
 Call: statement
 Call: vardecl(LOOKING AHEAD...)
 Visited token: <<PRIMITIVE_TYPE>: "int" at line 3 column 17>; Expected token: <<PRIMITIVE_TYPE>>
 Visited token: <<IDENT>: "inteiro" at line 3 column 21>; Expected token: <"[">
 Call: atribstat(LOOKING AHEAD...)
 Call: lvalue(LOOKING AHEAD...)
 Visited token: <<IDENT>: "inteiro" at line 3 column 21>; Expected token: <<IDENT>>
 Visited token: <"=" at line 3 column 29>;
 Expected token: <"[">
 Visited token: <"=" at line 3 column 29>;
 Expected token: <". ">
 Return: lvalue(LOOKAHEAD SUCCEEDED)
 Visited token: <"=" at line 3 column 29>; Expected token: <"=">
 Call: vardecl
 Consumed token: <<PRIMITIVE_TYPE>: "int" at line 3 column 17>
 Call: atribstat
 Call: lvalue
 Consumed token: <<IDENT>: "inteiro" at line 3 column 21>

	<p> Return: lvalue Consumed token: <"=" at line 3 column 29> Call: expression Call: numexpr Call: term Call: unaryexpr Call: factor Call: lvalue Consumed token: <<IDENT>: "paramInt" at line 3 column 31> Return: lvalue Return: factor Return: unaryexpr Return: term Return: numexpr Return: expression Return: atribstat Return: vardecl Consumed token: <";" at line 3 column 39> Return: statement Return: methodbody Return: constructdecl Return: classbody Return: classdecl Return: classlist Return: program Encountered " "super" "super "" at line 4, column 17. Was expecting one of: "constructor" ... <PRIMITIVE_TYPE> ... "}" ... <IDENT> ... </p> <p> 0 Lexical Errors found 1 Syntatic Errors found </p>
programanaoaceito4.fun	<p> Call: program Call: classlist Call: classdecl Consumed token: <"class" at line 1 column 1> Consumed token: <<IDENT>: "FormaGeometrica" at line 1 column 7> Call: classbody Consumed token: <"{" at line 1 column 23> Call: vardecl(LOOKING AHEAD...) Visited token: <<IDENT>: "private" at line 3 column 9>; Expected token: <<PRIMITIVE_TYPE>> </p>

	<p>Visited token: <<IDENT>: "private" at line 3 column 9>; Expected token: <<IDENT>> Visited token: <<IDENT>: "final" at line 3 column 17>; Expected token: <"["> Call: atribstat(LOOKING AHEAD...) Call: lvalue(LOOKING AHEAD...) Visited token: <<IDENT>: "final" at line 3 column 17>; Expected token: <<IDENT>> Visited token: <<IDENT>: "final" at line 3 column 23>; Expected token: <"["> Visited token: <<IDENT>: "final" at line 3 column 23>; Expected token: <". "> Return: lvalue(LOOKAHEAD SUCCEEDED) Visited token: <<IDENT>: "final" at line 3 column 23>; Expected token: < "="> Return: atribstat(LOOKAHEAD FAILED) Return: vardecl(LOOKAHEAD FAILED) Call: methoddecl Consumed token: <<IDENT>: "private" at line 3 column 9> Consumed token: <<IDENT>: "final" at line 3 column 17> Call: methodbody Return: methodbody Return: methoddecl Return: classbody Return: classdecl Return: classlist Return: program Encountered " <IDENT> "final "" at line 3, column 23. Was expecting: "(" ...</p> <p>0 Lexical Errors found 1 Syntatic Errors found</p>
programanaoaceito5.fun	<p>Call: program Call: classlist Call: classdecl Consumed token: <"class" at line 1 column 1> Consumed token: <<IDENT>: "Quadrado" at line 1 column 7> Consumed token: <"extends" at line 1 column 16> Consumed token: <<IDENT>: "FormaGeometrica" at line 1 column 24> Call: classbody Consumed token: <"{" at line 1 column 40></p>

	<p>Call: vardecl(LOOKING AHEAD...) Visited token: <<IDENT>: "private" at line 3 column 9>; Expected token: <<PRIMITIVE_TYPE>> Visited token: <<IDENT>: "private" at line 3 column 9>; Expected token: <<IDENT>> Visited token: <<IDENT>: "short" at line 3 column 17>; Expected token: <"["> Call: atribstat(LOOKING AHEAD...) Call: lvalue(LOOKING AHEAD...) Visited token: <<IDENT>: "short" at line 3 column 17>; Expected token: <<IDENT>> Visited token: <<IDENT>: "outraInvalida" at line 3 column 23>; Expected token: <"["> Visited token: <<IDENT>: "outraInvalida" at line 3 column 23>; Expected token: <". "> Return: lvalue(LOOKAHEAD SUCCEEDED) Visited token: <<IDENT>: "outraInvalida" at line 3 column 23>; Expected token: < "="> Return: atribstat(LOOKAHEAD FAILED) Return: vardecl(LOOKAHEAD FAILED) Call: methoddecl Consumed token: <<IDENT>: "private" at line 3 column 9> Consumed token: <<IDENT>: "short" at line 3 column 17> Call: methodbody Return: methodbody Return: methoddecl Return: classbody Return: classdecl Return: classlist Return: program Encountered " <IDENT> "outraInvalida "" at line 3, column 23. Was expecting: "(" ...</p> <p>0 Lexical Errors found 1 Syntatic Errors found</p>
programanaoaceito6.fun	<p>Call: program Call: classlist Call: classdecl Consumed token: <"class" at line 1 column 1> Consumed token: <<IDENT>: "Circulo" at line 1 column 7> Consumed token: <"extends" at line 1 column 15> Consumed token: <<IDENT>: "FormaGeometrica" at line</p>

	<p>1 column 23></p> <p>Call: classbody</p> <p>Consumed token: <"{" at line 1 column 39></p> <p>Call: vardecl(LOOKING AHEAD...)</p> <p>Visited token: <<IDENT>: "private" at line 3 column 9>;</p> <p>Expected token: <<PRIMITIVE_TYPE>></p> <p>Visited token: <<IDENT>: "private" at line 3 column 9>;</p> <p>Expected token: <<IDENT>></p> <p>Visited token: <<IDENT>: "final" at line 3 column 17>;</p> <p>Expected token: <"["></p> <p>Call: atribstat(LOOKING AHEAD...)</p> <p>Call: lvalue(LOOKING AHEAD...)</p> <p>Visited token: <<IDENT>: "final" at line 3 column 17>; Expected token: <<IDENT>></p> <p>Visited token: <<IDENT>: "Quadrado" at line 3 column 23>; Expected token: <"["></p> <p>Visited token: <<IDENT>: "Quadrado" at line 3 column 23>; Expected token: <". "></p> <p>Return: lvalue(LOOKAHEAD SUCCEEDED)</p> <p>Visited token: <<IDENT>: "Quadrado" at line 3 column 23>; Expected token: < "="></p> <p>Return: atribstat(LOOKAHEAD FAILED)</p> <p>Return: vardecl(LOOKAHEAD FAILED)</p> <p>Call: methoddecl</p> <p>Consumed token: <<IDENT>: "private" at line 3 column 9></p> <p>Consumed token: <<IDENT>: "final" at line 3 column 17></p> <p>Call: methodbody</p> <p>Return: methodbody</p> <p>Return: methoddecl</p> <p>Return: classbody</p> <p>Return: classdecl</p> <p>Return: classlist</p> <p>Return: program</p> <p>Encountered " <IDENT> "Quadrado "" at line 3, column 23.</p> <p>Was expecting:</p> <p>"(" ...</p> <p>0 Lexical Errors found</p> <p>1 Syntatic Errors found</p>
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