

Формальные языки

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Элементы формального языка

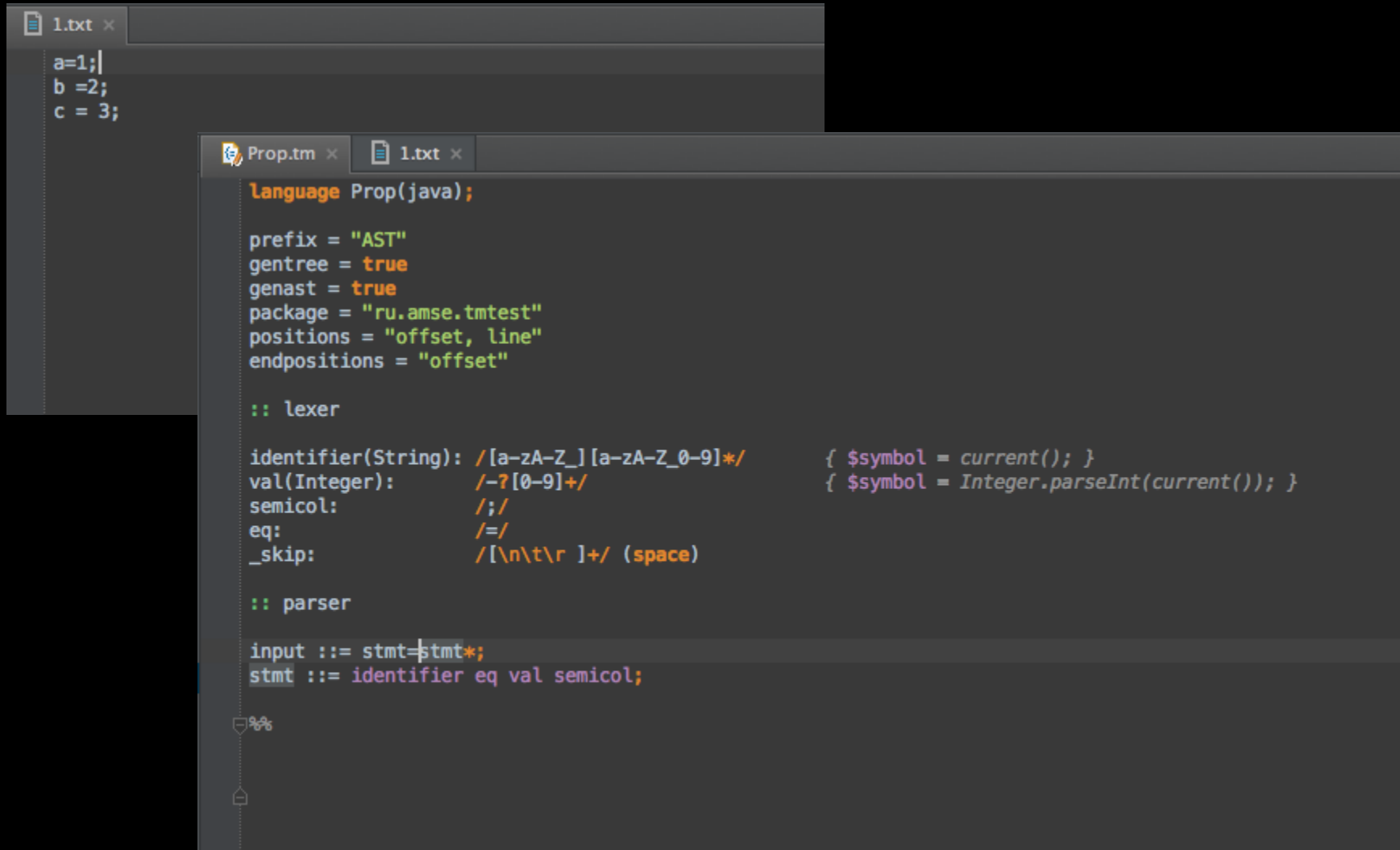
1. конкретный синтаксис (lexer)
2. абстрактный синтаксис (parser)
3. семантика (компилятор или генератор)

--(X)--> lexer --(Y)--> parser --(Z)--> compiler -->

Инструменты построения L&P

- Lex
- YACC
- JFlex
- Textmapper (textmapper.org)

Textmapper: “все в одном”



The image shows a screenshot of a text editor with two windows. The top window, titled '1.txt', contains the following code:

```
a=1;|
b =2;
c = 3;
```

The bottom window, titled 'Prop.tm', contains the following code:

```
Language Prop(java);

prefix = "AST"
gentree = true
genast = true
package = "ru.amse.tmttest"
positions = "offset, line"
endpositions = "offset"

:: lexer

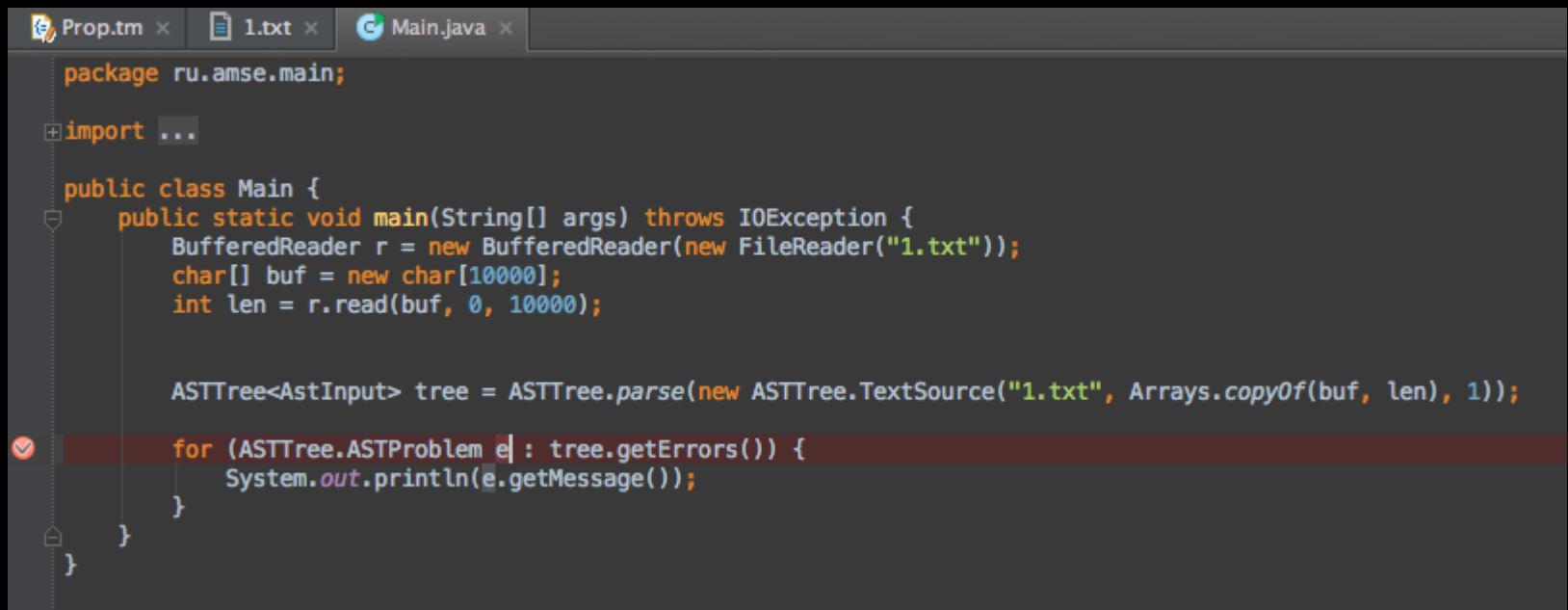
identifier(String): /[a-zA-Z_][a-zA-Z_0-9]*/      { $symbol = current(); }
val(Integer):      /-?[0-9]+/                    { $symbol = Integer.parseInt(current()); }
semicolon:        //
eq:               /=/
_skip:            /[\n\t\r ]+/ (space)

:: parser

input ::= stmt=stmt*;
stmt ::= identifier eq val semicol;
```

At the bottom of the 'Prop.tm' window, there is a small icon of a house and a percentage sign.

Parser



```
Prop.tm x 1.txt x Main.java x  
package ru.amse.main;  
  
import ...  
  
public class Main {  
    public static void main(String[] args) throws IOException {  
        BufferedReader r = new BufferedReader(new FileReader("1.txt"));  
        char[] buf = new char[10000];  
        int len = r.read(buf, 0, 10000);  
  
        ASTTree<AstInput> tree = ASTTree.parse(new ASTTree.TextSource("1.txt", Arrays.copyOf(buf, len), 1));  
        for (ASTTree.ASTProblem e : tree.getErrors()) {  
            System.out.println(e.getMessage());  
        }  
    }  
}
```