

<ерат>

Checkstyle: Теория и практика

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ABOUT CHECKSTYLE

Создан в 2001 году

100+ встроенных проверок



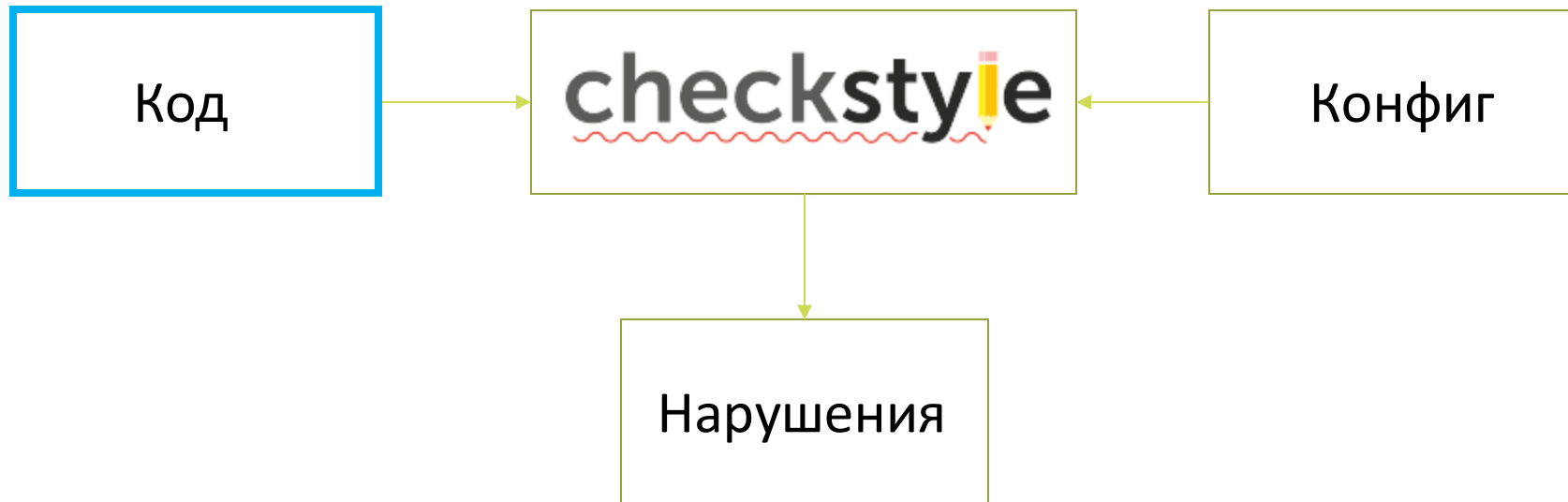
ABOUT CHECKSTYLE

```
@Level(value = "high") String getValue(String o)
{
    if (o.equals("my_key"))
    {
        return o + 199;
    }
    return o;
}
```

ABOUT CHECKSTYLE

```
private static final int CODE = 199;
/**
 * Here is javadoc
 */
@Level("high")
String getValue(String prefix) {
    if ("my_key".equals(prefix)) {
        return prefix + CODE;
    }
    return prefix;
}
```

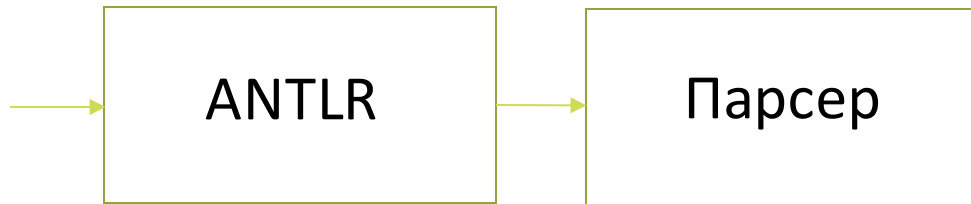
OVERVIEW



ANTLR PARSER

Grammar файл

```
tryBlock : "try"^  
         (resourceSpecification)?  
         compoundStatement  
         (handler)*  
         ( finallyHandler )?  
         ;
```



AST

```
class Hello {  
    void mymethod() {  
        // some code  
    }  
}
```

Парсер

```
CLASS_DEF  
|--MODIFIERS  
|--LITERAL_CLASS -> class  
|--IDENT -> Hello  
`--OBJBLOCK  
    |--LCURLY -> {  
    |--METHOD_DEF  
    |   |--MODIFIERS  
    |   |--TYPE  
    |   |   |--LITERAL_VOID -> void  
    |   |--IDENT -> mymethod  
    |   |--LPAREN -> (  
    |   |--PARAMETERS  
    |   |--RPAREN -> )  
    |   |--SLIST -> {  
    |   |   |--RCURLY -> }  
    |--RCURLY -> }
```


НЮАНСЫ AST

```
class Hello {  
    ;  
    {  
        ;  
    }  
}
```

```
CLASS_DEF  
| --MODIFIERS  
| --LITERAL_CLASS -> class  
| --IDENT -> Hello  
`--OBJBLOCK  
    | --LCURLY -> {  
    | --SEMI -> ;  
    | --INSTANCE_INIT  
    | `--SLIST -> {  
    |     | --EMPTY_STAT -> ;  
    |     `--RCURLY -> }  
    `--RCURLY -> }
```

OVERVIEW



CHECK CONFIG

```
<module name="NeedBracesCheck">  
  <property name="id" value="Check_lambdas"/>  
  <property name="message" value="Lambda requires braces"/>  
  <property name="tokens" value="LAMBDA"/>  
  <property name="severity" value="ERROR"/>  
</module>
```

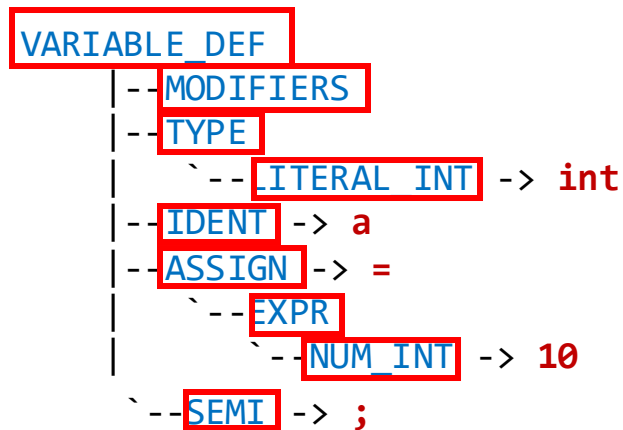
```
<module name="NeedBracesCheck" />
```

MANY CHECKS CONFIG

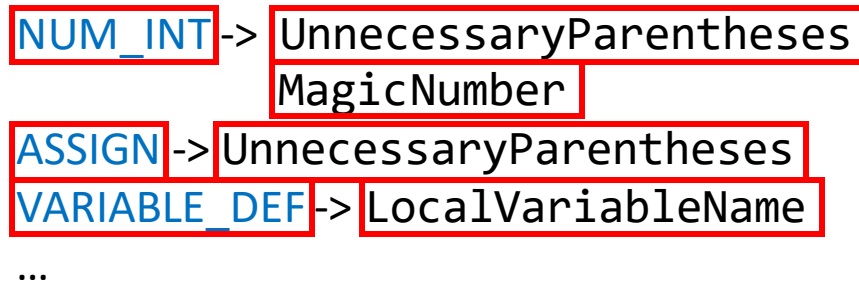
```
<module name="TreeWalker">
  <module name="NeedBracesCheck">
    <property name="id" value="Check_lambdas"/>
    <property name="message" value="Lambda requires braces"/>
    <property name="tokens" value="LAMBDA"/>
  </module>
  <module name="NeedBracesCheck">
    <property name="id" value="Check_if_else"/>
    <property name="tokens" value="LITERAL_IF,LITERAL_ELSE"/>
  </module>
  <module name="UnnecessaryParentheses"/>
</module>
```

TREE WALKER

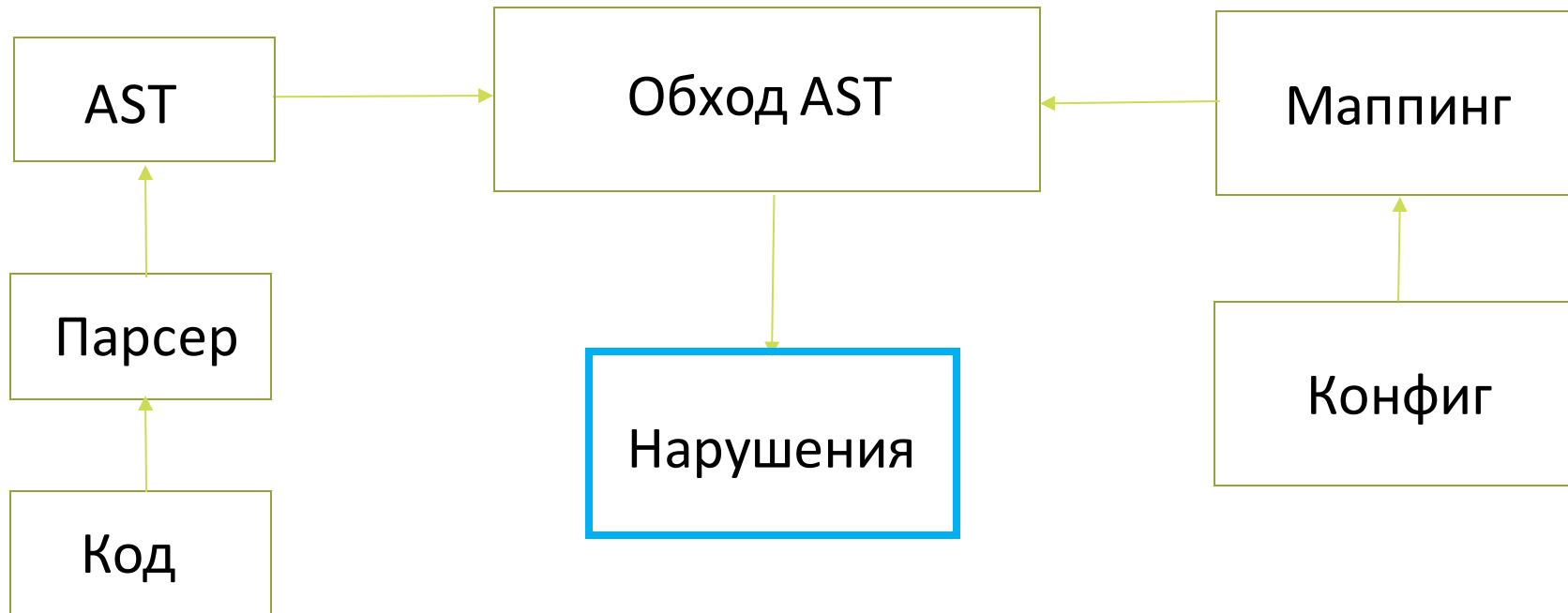
```
int a = 10;
```



```
<module name="UnnecessaryParentheses" />
<module name="MagicNumber" />
<module name="LocalVariableName" />
```



OVERVIEW



VIOLATION FILTERING

Комменты (+ конфиг)

```
<module name="SuppressionCommentFilter">  
  <property name="offCommentFormat" value="turn off"/>  
  <property name="onCommentFormat" value="turn on"/>  
</module>
```

```
// turn off  
class ThisClassIsSkipped {  
}  
// turn on
```

VIOLATION FILTERING

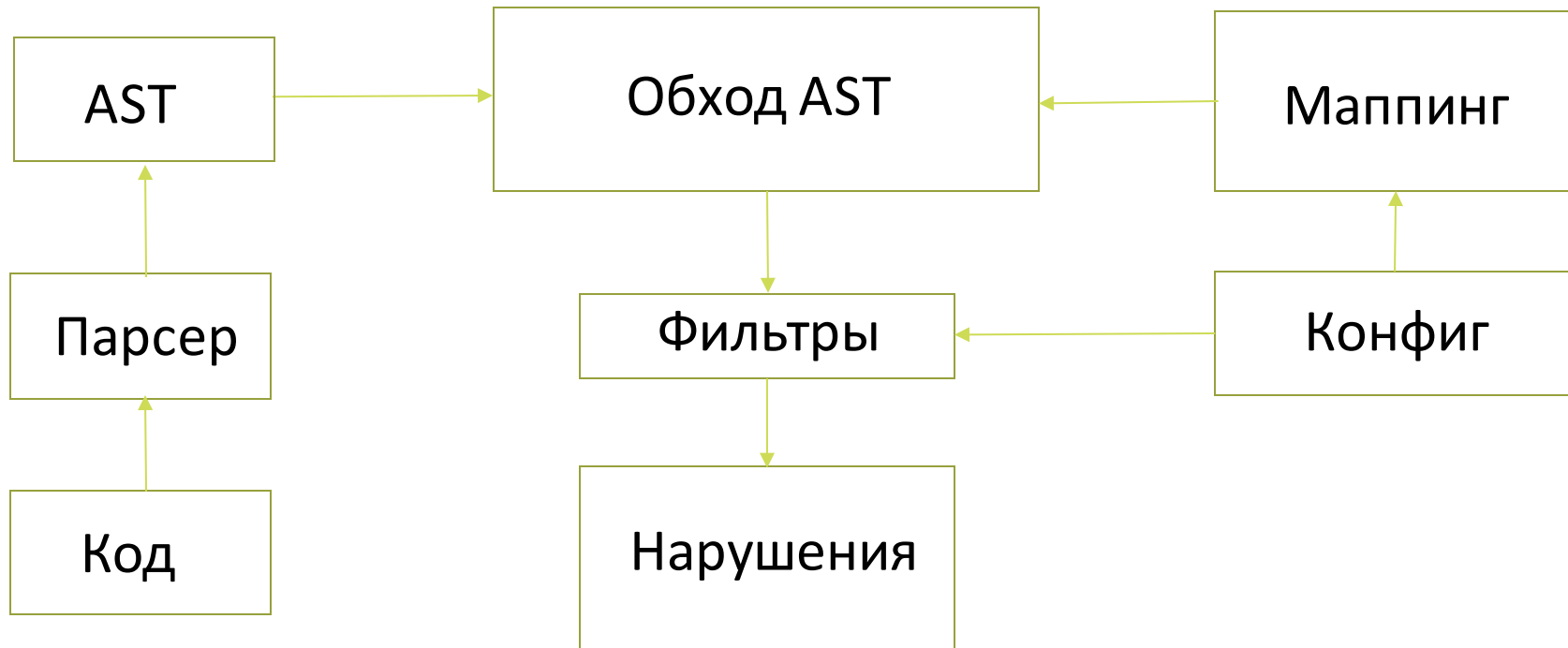
Отдельный xml конфиг

```
<suppressions>
  <suppress-xpath checks="NeedBraces"
    query="/CLASS_DEF[./IDENT[@text='ClassA']]"/>

    <!-- Здесь мой комментарий -->
    <suppress checks="NeedBraces" files="MyClass.java"
lines="11,15"/>

</suppressions>
```


OVERVIEW



LIMITATIONS

```
class Hello {  
    public static void main(String @Nullable ... args) {  
        System.out.println("Hello world!");  
    }  
}
```

com.puppcrawl.tools.checkstyle.api.CheckstyleException:
TokenStreamRecognitionException occurred

...

Unexpected character 0xa6 in identifier

<https://github.com/google/guava/blob/master/guava/src/com/google/common/base/Verify.java#L122>

LIMITATIONS

```
class Hello {  
  
    public static void main(String[] args) {  
        val name = "John Doe"; // final?  
        var obj = new LinkedList<>(); // нет типа  
        // бесполезный каст  
        Object str = (Object) obj.toString();  
    }  
  
    public void get(int code) { // неиспользуемый метод  
    }  
}
```

PROJECT SETUP

Кодстайл, гугл конфиг

Форматтер

Минимум подавлений, ревью

Сгенерировать файл подавлений

```
java -jar checkstyle.jar -g -c config.xml MyClass.java
```

Посмотреть на AST

```
java -jar checkstyle.jar -t MyClass.java
```

```
java -jar checkstyle.jar -T MyClass.java
```

CI CONFIG

Нарушение -> билд падает

Мониторинг с помощью WARN-проверок

```
<module name="MethodLength">
  <property name="id" value="MethodLength_Warning"/>
  <property name="max" value="40"/>
  <property name="severity" value="WARN"/>
</module>
<module name="MethodLength">
  <property name="id" value="MethodLength_Error"/>
  <property name="max" value="50"/>
  <property name="severity" value="ERROR"/>
</module>
```

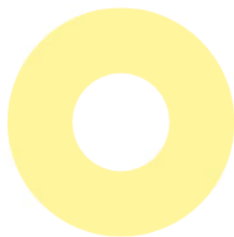
CI CONFIG - WARNINGS-NG

CheckStyle Warnings

Overview

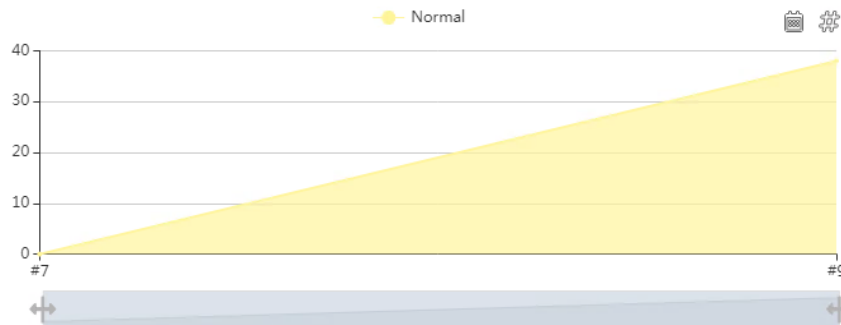


Severities Distribution



High Normal Low

History



Details

[Packages](#) [Files](#) [Issues](#)

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CUSTOM CHECKS

SevNTU-checkstyle

Checkstyle add-ons

Своя проверка

GenericXpathCheck

New issue

Присоединяйтесь :)

```
<module name="XPath"
  query="//INSTANCE_INIT[not(../*[not(
    self::LCURLY or
    self::INSTANCE_INIT or
    self::RCURLY or
    self::SINGLE_LINE_COMMENT or
    self::BLOCK_COMMENT_BEGIN
  ])]">
  <message key="xpath.finding" value="Avoid double-brace init."/>
</module>
```



LINKS

- <https://checkstyle.sourceforge.io/>
- Google config https://github.com/checkstyle/checkstyle/blob/master/src/main/resources/google_checks.xml
- Checkstyle addons <https://checkstyle-addons.thomasjensen.com/>
- Antlr <https://www.antlr.org/>
- Generic Xpath Check <https://github.com/checkstyle/checkstyle/issues/6481>
- Google code style <https://google.github.io/styleguide/javaguide.html>
- Warnings-ng plugin <https://github.com/jenkinsci/warnings-ng-plugin>
- SenNTU checkstyle <https://github.com/sevntu-checkstyle/sevntu.checkstyle>



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