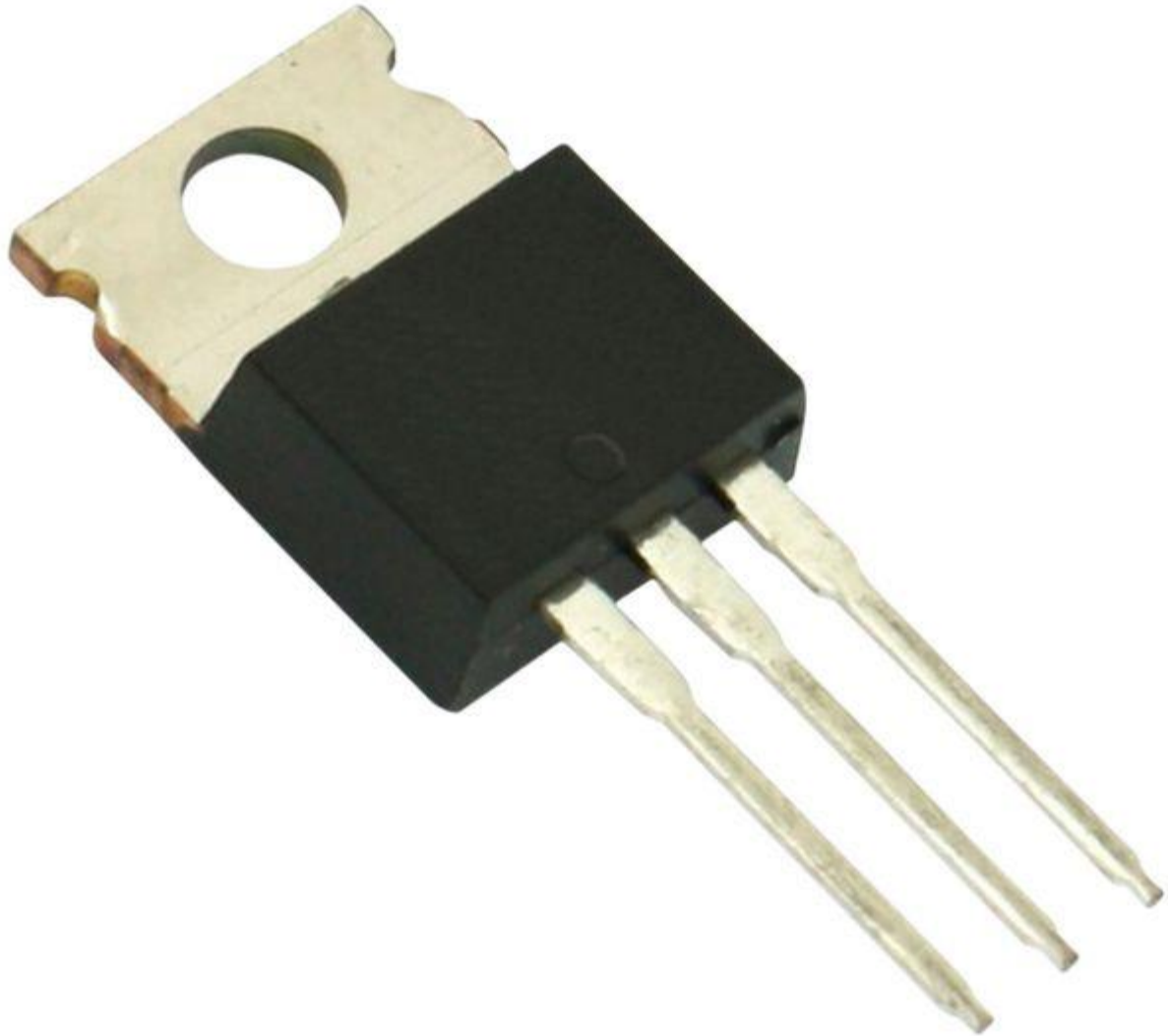
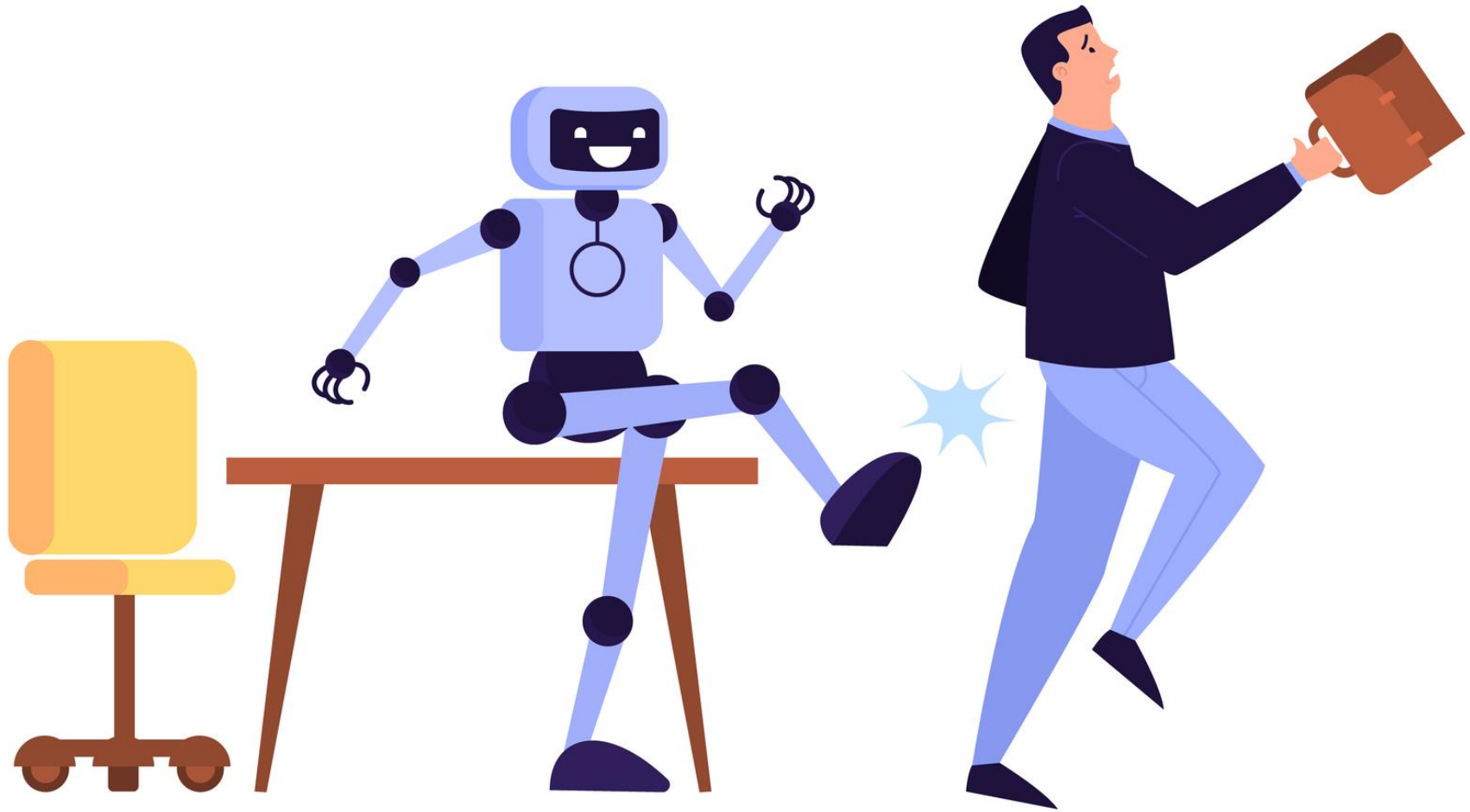
```
if (arg instanceof PsiMethodReferenceExpression) {
  PsiElement target = ((PsiMethodReferenceExpression)arg).resolve();
  if (target instanceof PsiMethod) {
    PsiMethod method = (PsiMethod)target;
    // Integer::new or Integer::valueOf
    if (targetClass == method.getContainingClass() &&
        (method.isConstructor() || method.getName().equals("valueOf")) && method.getParameterList().getParametersCount() == 1) {
      return true;
    }
  }
}
if (arg instanceof PsiLambdaExpression) {
  PsiLambdaExpression lambda = (PsiLambdaExpression)arg;
  PsiParameter[] parameters = lambda.getParameterList().getParameters();
  if (parameters.length != 1) return false;
  PsiParameter parameter = parameters[0];
  PsiExpression expression = skipParenthesizedExprDown(LambdaUtil.extractSingleExpressionFromBody(lambda.getBody()));
  // x -> x
  if (ExpressionUtils.isReferenceTo(expression, parameter)) {
    return true;
  }
  if (expression instanceof PsiCallExpression) {
    PsiExpressionList list = ((PsiCallExpression)expression).getArgumentList();
    if (list == null) return false;
    PsiExpression[] args = list.getExpressions();
    if (args.length != 1 || !ExpressionUtils.isReferenceTo(args[0], parameter)) {
      return false;
    }
    // x -> new Integer(x)
    if (expression instanceof PsiNewExpression) {
      PsiJavaCodeReferenceElement ref = ((PsiNewExpression)expression).getClassReference();
      if (ref != null && ref.isReferenceTo(targetClass)) return true;
    }
    // x -> Integer.valueOf(x)
    if (expression instanceof PsiMethodCallExpression) {
      PsiMethod method = ((PsiMethodCallExpression)expression).resolveMethod();
      if (method != null && method.getContainingClass() == targetClass && method.getName().equals("valueOf")) return true;
    }
  }
}
return false;
```

```
if (arg instanceof PsiMethodReferenceExpression) {
  PsiElement target = ((PsiMethodReferenceExpression)arg).resolve();
  if (target instanceof PsiMethod) {
    PsiMethod method = (PsiMethod)target;
    // Integer::new or Integer::valueOf
    if (targetClass == method.getContainingClass() &&
        (method.isConstructor() || method.getName().equals("valueOf")) && method.getParameterList().getParametersCount() == 1) {
      return true;
    }
  }
}
if (arg instanceof PsiLambdaExpression) {
  PsiLambdaExpression lambda = (PsiLambdaExpression)arg;
  PsiParameter[] parameters = lambda.getParameterList().getParameters();
  if (parameters.length != 1) return false;
  PsiParameter parameter = parameters[0];
  PsiExpression expression = skipParenthesizedExprDown(LambdaUtil.extractSingleExpressionFromBody(lambda.getBody()));
  // x -> x
  if (ExpressionUtils.isReferenceTo(expression, parameter)) {
    return true;
  }
  if (expression instanceof PsiCallExpression) {
    PsiExpressionList list = ((PsiCallExpression)expression).getArgumentList();
    if (list == null) return false;
    PsiExpression[] args = list.getExpressions();
    if (args.length != 1 || !ExpressionUtils.isReferenceTo(args[0], parameter)) {
      return false;
    }
    // x -> new Integer(x)
    if (expression instanceof PsiNewExpression) {
      PsiJavaCodeReferenceElement ref = ((PsiNewExpression)expression).getClassReference();
      if (ref != null && ref.isReferenceTo(targetClass)) return true;
    }
    // x -> Integer.valueOf(x)
    if (expression instanceof PsiMethodCallExpression) {
      PsiMethod method = ((PsiMethodCallExpression)expression).resolveMethod();
      if (method != null && method.getContainingClass() == targetClass && method.getName().equals("valueOf")) return true;
    }
  }
}
return false;
```



Заменят ли роботы программистов?

Тагир Валеев
Senior if-else developer

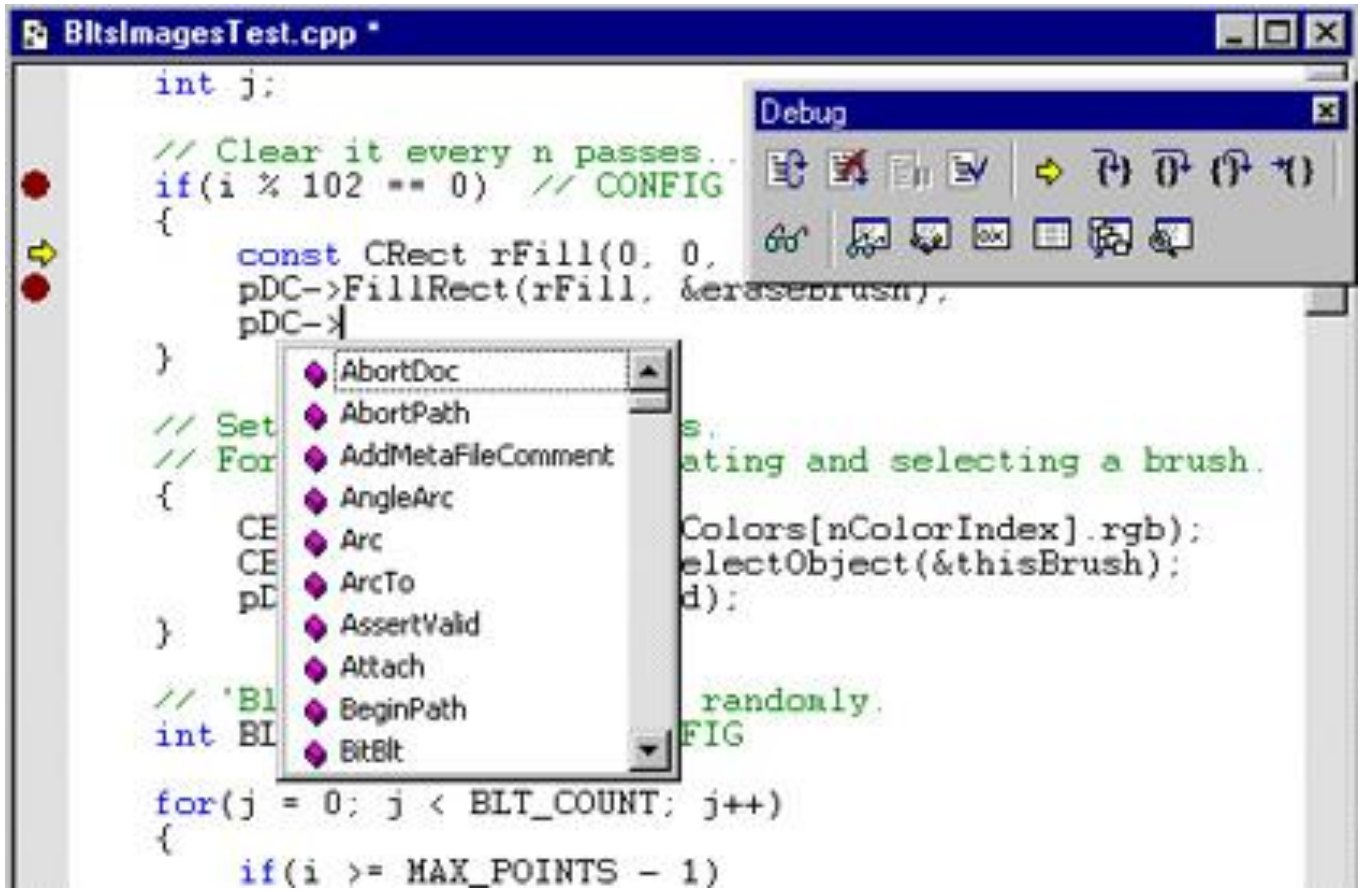


Искусственный интеллект. Российские разработчики больше доверяют искусственному интеллекту — 62% допускают, что ИИ заменит программистов в будущем, а 8% совершенно в этом уверены. В мировом комьюнити это 50% и 4% соответственно.

https://blog.jetbrains.com/ru/2020/06/22/the-state-of-developer-ecosystem-2020/

Написание кода
Написание тестов
Улучшение производительности
Анализ требований
Поиск багов
Исправление багов
Рефакторинг

Code completion



…технология IntelliSense станет, вероятно, самым полезным инструментом каждого программиста на C++. Теперь достаточно набрать имя объекта C++, и мастер IntelliSense выведет список всех методов для этого объекта вместе с перезагружаемыми версиями одной и той же функции и всеми ее параметрами. (IntelliSense перечисляет все методы, декларации, идентификаторы и даже комментарии в контексте проекта.)

Мы нашли это средство чрезвычайно полезным; чтобы выбрать метод, даже не нужно набирать его имя. К тому же, оно контекстно зависимо (в списке методов присутствуют лишь те, которые связаны с каждым объектом) и расширяемо (точно так же работает и с вашим собственным кодом). <…>

Технология IntelliSense представляет собой реальный шаг в направлении инструментов автоматизированного программирования.

http://www.compdoc.ru/prog/cpp/cppver/

«Самая мощная версия C++ за всю историю языка»

- ✓ Basic completion
- ✓ Smart completion
- ✓ Statement completion
- ✓ Hippie completion
- ✓ Postfix code completion

```java
import java.io.IOException;
import java.nio.file.*;
import java.util.*;
import java.util.function.*;
import java.util.regex.Pattern;
import java.util.stream.Collectors;

public class WordCount {
  public static void main(String[] args) throws IOException {
    if (args.length != 1) {
      System.err.println("File name required");
      return;
    }
    Path path = Paths.get(args[0]);
    Map<String, Long> counts = Files.lines(path)
        .flatMap(Pattern.compile("\\W+")::splitAsStream)
        .map(String::trim)
        .filter(Predicate.not(String::isEmpty))
        .collect(Collectors.groupingBy(Function.identity(), Collectors.counting()));
    counts.entrySet().stream()
        .sorted(Map.Entry.comparingByValue(Comparator.reverseOrder()))
        .limit(20)
        .map(e -> e.getKey() + "\t" + e.getValue())
        .forEach(System.out::println);
  }
}
```

873 characters + 26 line breaks

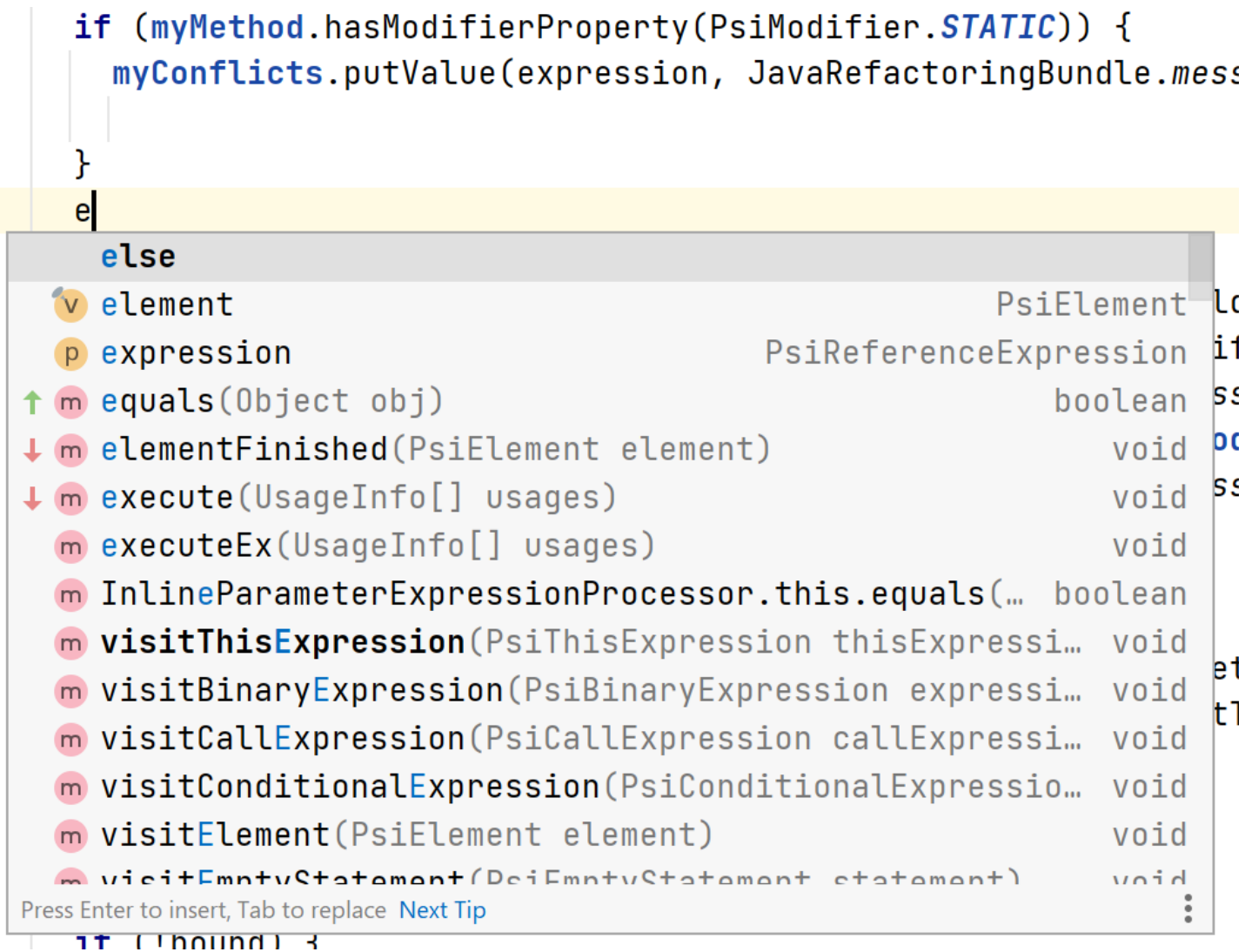
```java
import java.io.IOException;
import java.nio.file.*;
import java.util.*;
import java.util.function.*;
import java.util.regex.Pattern;
import java.util.stream.Collectors;

public class WordCount {
  public static void main(String[] args) throws IOException {
    if (args.length != 1) {
      System.err.println("File name required");
      return;
    }
    Path path = Paths.get(args[0]);
    Map<String, Long> counts = Files.lines(path)
        .flatMap(Pattern.compile("\\W+")::splitAsStream)
        .map(String::trim)
        .filter(Predicate.not(String::isEmpty))
        .collect(Collectors.groupingBy(Function.identity(), Collectors.counting()));
    counts.entrySet().stream()
        .sorted(Map.Entry.comparingByValue(Comparator.reverseOrder()))
        .limit(20)
        .map(e -> e.getKey() + "\t" + e.getValue())
        .forEach(System.out::println);
  }
}
```

873 characters + 26 line breaks

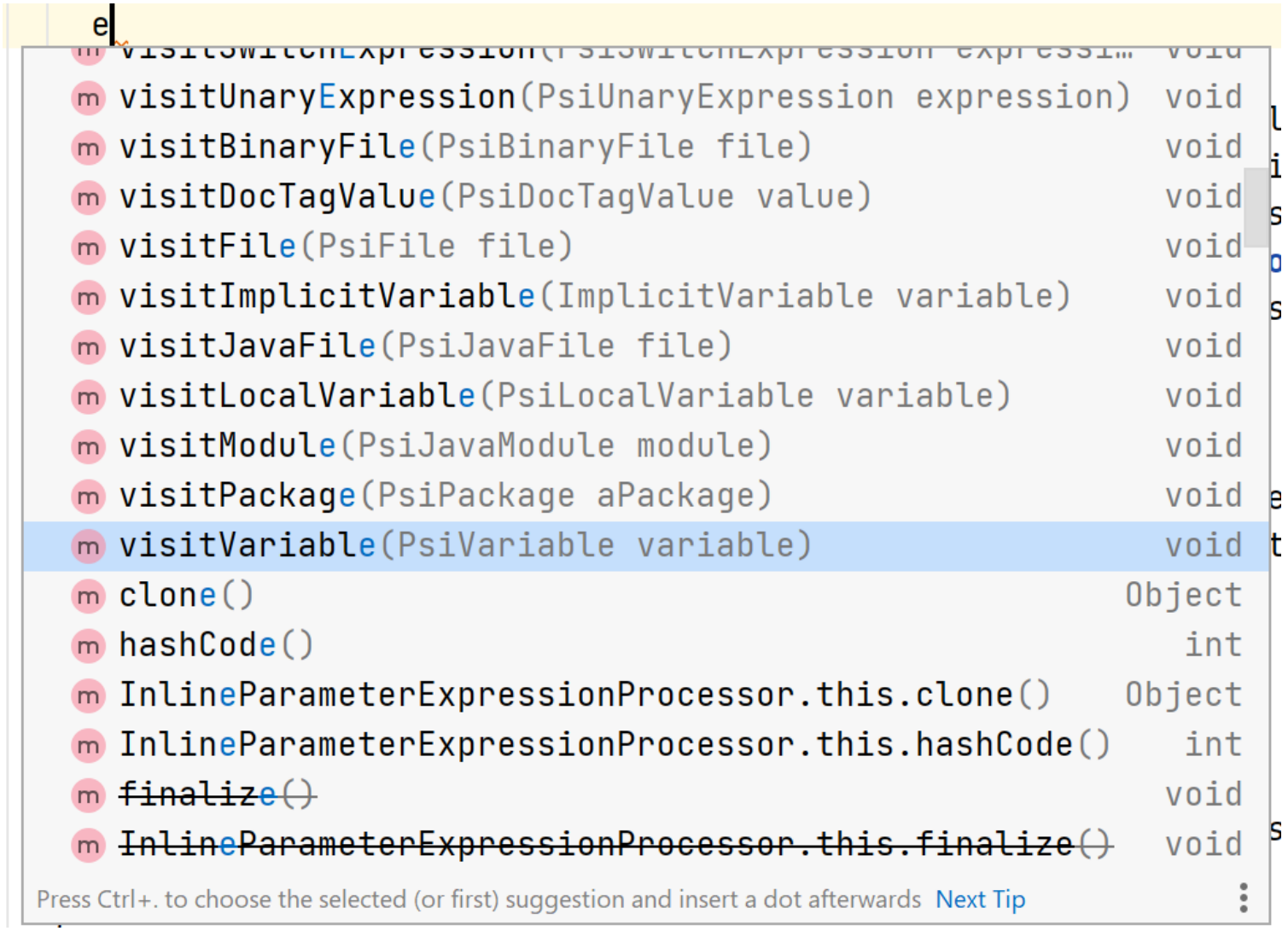
214 characters typed
+ 128 shortcuts used

38% done by human
62% done by computer

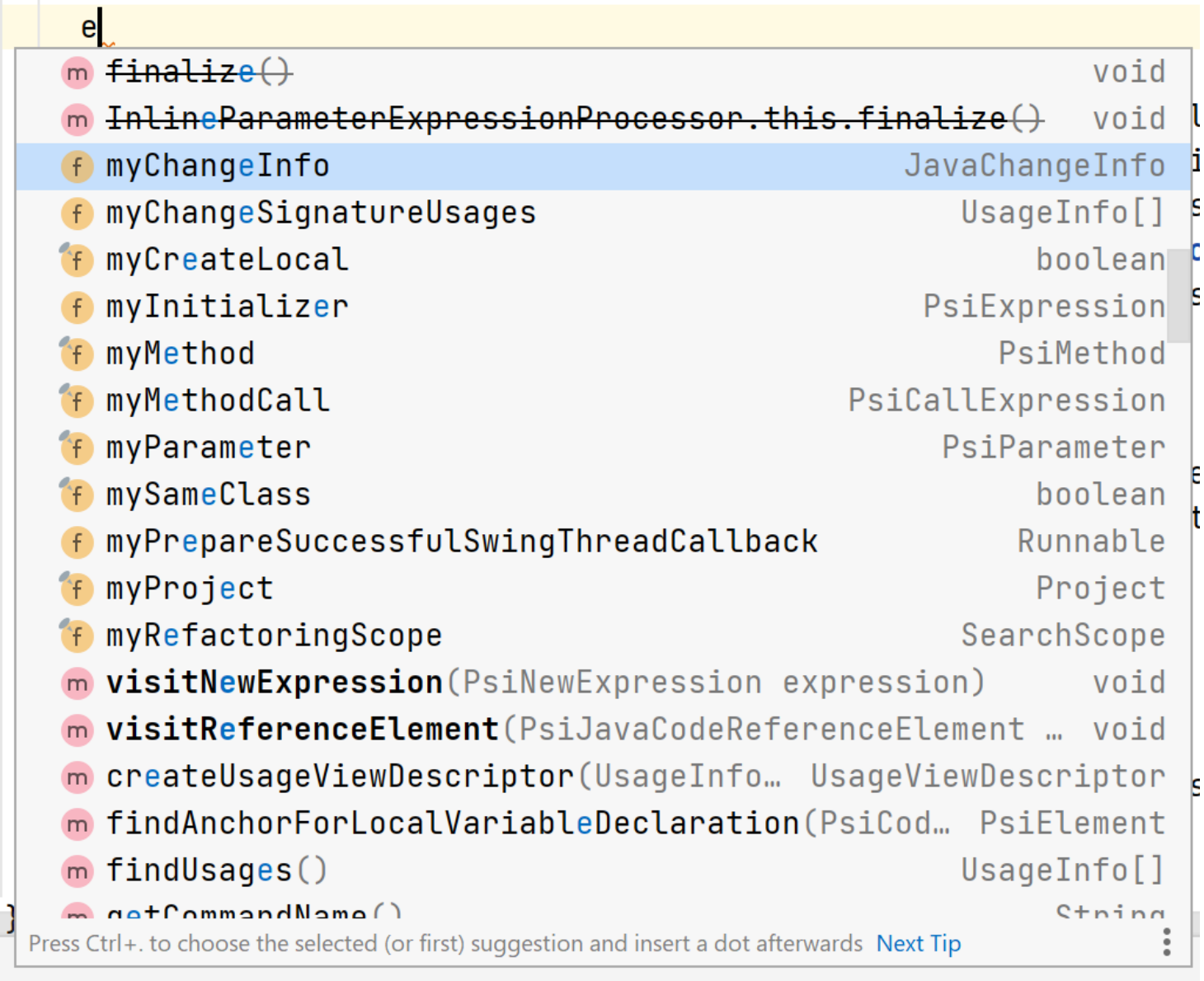
Completion ranking



Completion ranking



Completion ranking



Completion ranking

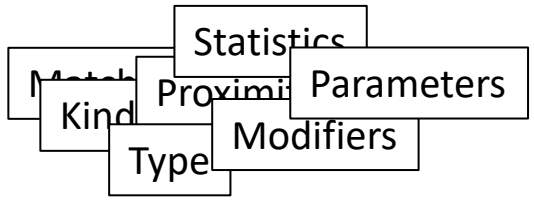
—

- ✓ **Matching:** exact? Prefix? Hump prefix? Hump initials? Suffix? Substring in the middle?
- ✓ **Kind:** keyword? Local variable? Parameter? Field? Method? Class?
- ✓ **Declaration proximity:** this class? Super class? Nested class?
- ✓ **Resulting type:** exact match? Assignable? Convertible? Impossible?
- ✓ **Modifiers:** static? Deprecated? Inaccessible?
- ✓ **Number of method parameters**
- ✓ **Statistics:** was selected previously?

По пять,
но большие,
но вчера?

По три,
но маленькие,
но сегодня?

Features

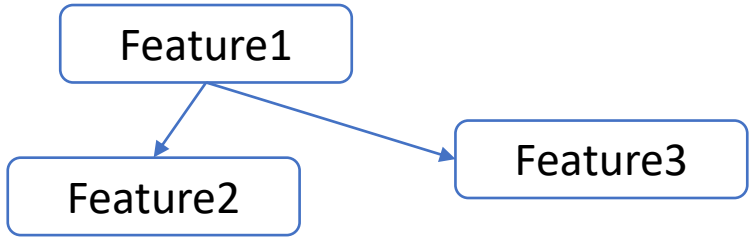


EAP Users

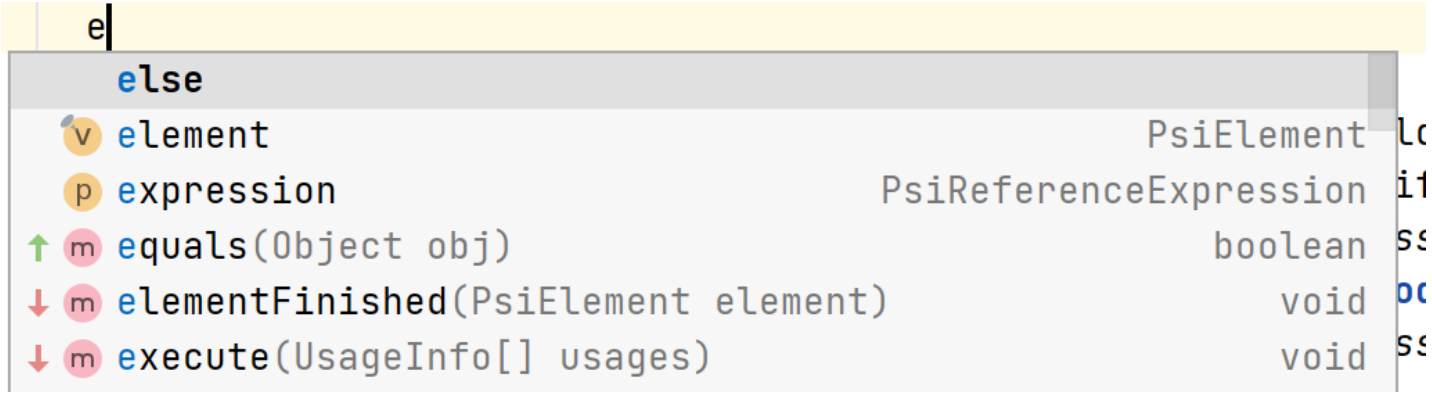
Data

```
{0.0232, 1.23, 2.0, 0.1953, ...}
```

Model



ML ranking



Evaluation

Completion ranking – evaluation

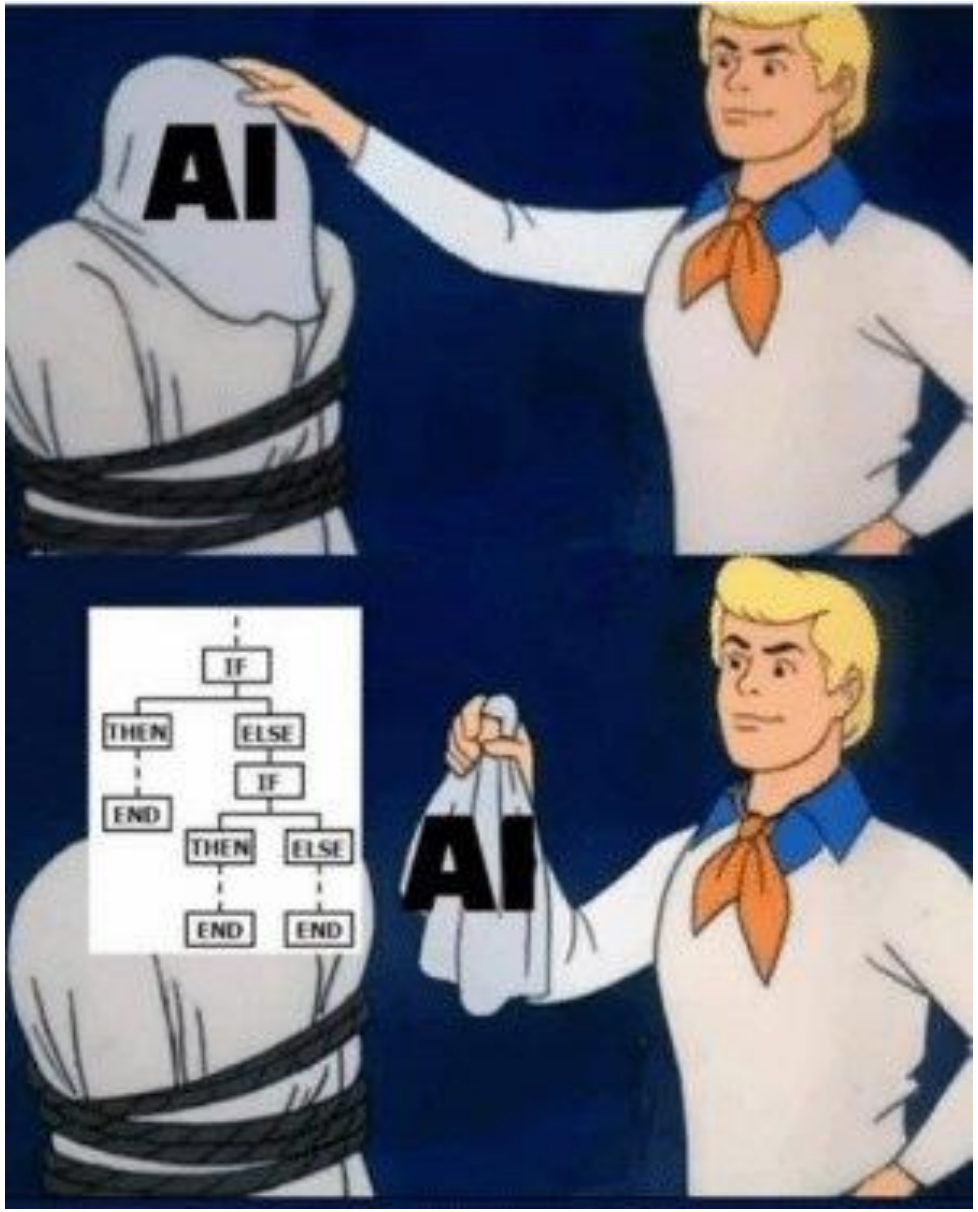
—

Metrics:

- ✓ Top-1 %
- ✓ Top-5 %
- ✓ Top-10 %
- ✓ Average position
- ✓ Query length
- ✓ Time to result
- ✓ Success rate

Measurement:

- ✓ Offline
- ✓ A/B testing


AI
IF
THEN
ELSE
IF
END
THEN
ELSE
END
END
AI

```
1   /.../
16
17  package com.jetbrains.completion.ranker.model.java;
18  /*
19   * WARNING:  This file is a generated one, please do not edit it.
20  */
21
22  public class Tree0 {
23  public static double calcTree(double[] fs) {
24  if (fs[54] ⩽ 0.5) {
25  if (fs[59] ⩽ 0.97368422150611888) {
26  if (fs[88] ⩽ 0.5) {
27  if (fs[68] ⩽ 25.0) {
28  if (fs[30] ⩽ 0.41428571939468384) {
29  if (fs[38] ⩽ 0.00057936803204938777) {
30  if (fs[84] ⩽ 9953.5) {
31  if (fs[55] ⩽ -903.5) {
32  if (fs[36] ⩽ 0.00043574847222771496) {
33  if (fs[15] ⩽ 0.5) {
34  if (fs[49] ⩽ 0.5) {
35  if (fs[31] ⩽ 0.31414473056793213) {
36  return 0.3141634980988593;
37  } else {
38  return 0.538899430740038;
```

```
1   /.../
16
17  package com.jetbrains.completion.ranker.model.java;
18  /*
19   * WARNING:  This file is a generated one, please do not edit it.
20  */
21
22  public class Tree0 {
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25  if (fs[59] ⩽ 0.97368422150611888) {
26  if (fs[88] ⩽ 0.5) {
27  if (fs[68] ⩽ 25.0) {
28  if (fs[30] ⩽ 0.41428571939468384) {
29  if (fs[38] ⩽ 0.00057936803204938770) {
30  if (fs[84] ⩽ 9953.5) {
31  if (fs[55] ⩽ -903.5) {
32  if (fs[36] ⩽ 0.00043574847222771496) {
33  if (fs[15] ⩽ 0.5) {
34  if (fs[49] ⩽ 0.5) {
35  if (fs[31] ⩽ 0.31414473056793213) {
36  return 0.3141634980988593;
37  } else {
38  return 0.538899430740038;
```
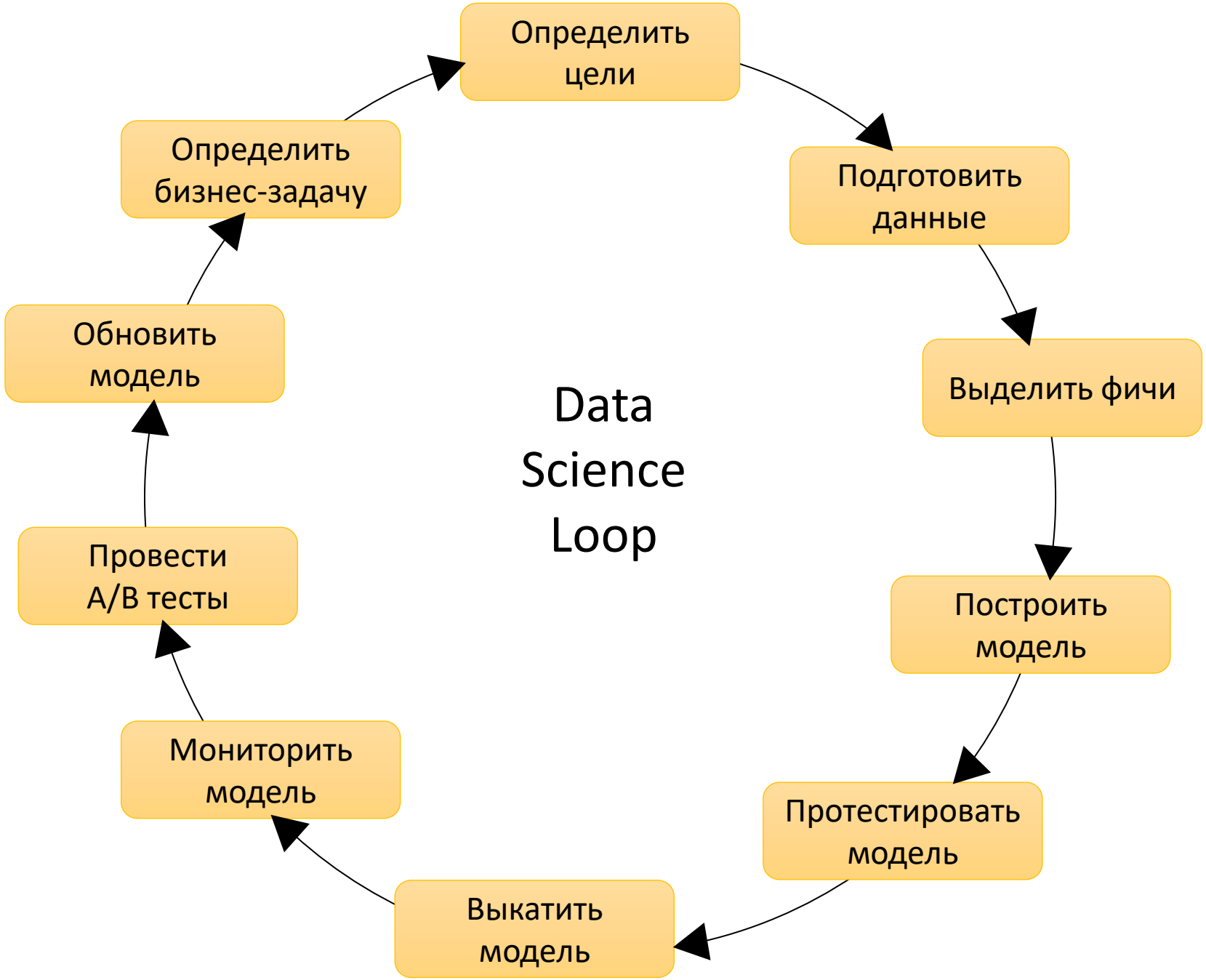
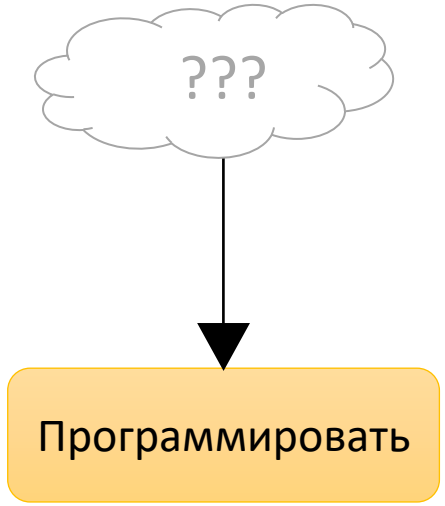


Определить цели
Подготовить данные
Выделить фичи
Построить модель
Протестировать модель
Выкатить модель
Мониторить модель
Провести A/B тесты
Обновить модель
Определить бизнес-задачу
Data Science Loop

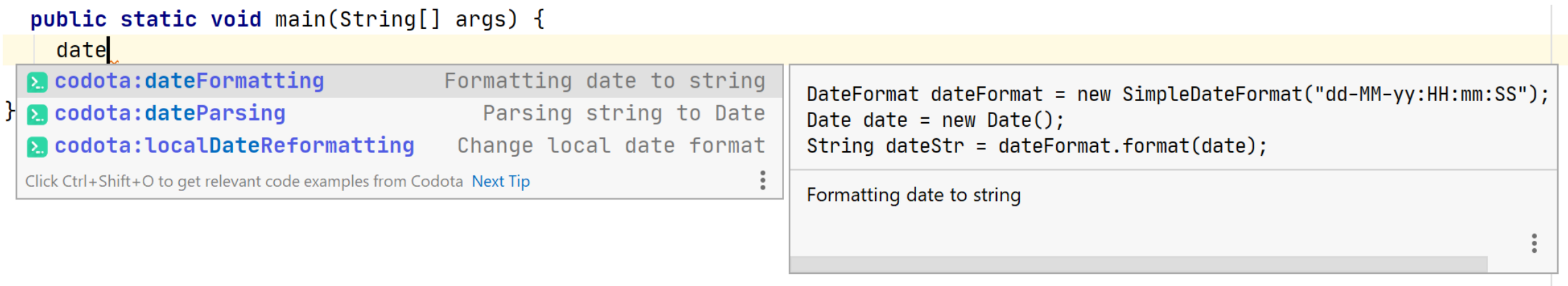

???
Программировать

Whole line completion

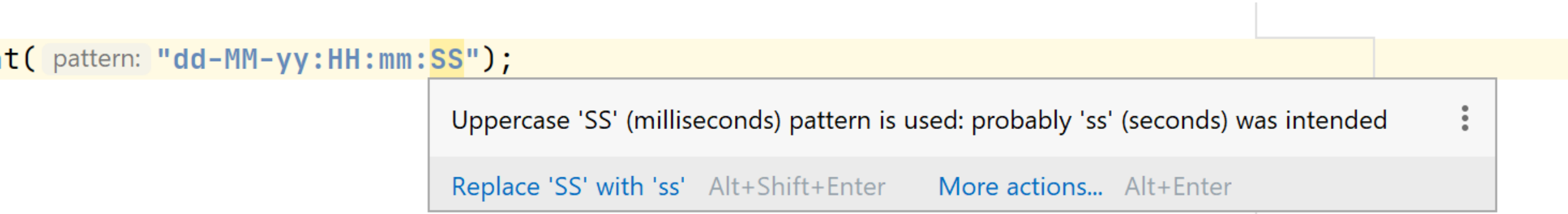
```
public static void main(String[] args) {
  File srcFile = new File( pathname: "input.txt");
  File destFile =
}
```

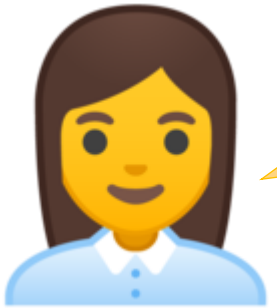
```
new File(String pathname)
new File(srcFile, String child)
srcFile.getParentFile()
srcFile.createTempFile("test", ".tmp")
new File(srcFile, srcFile.getName())
new File(String parent, String child)
srcFile.getCanonicalFile()
srcFile.getAbsoluteFile()
new File(System.getProperty("java.io.tmpdir"))
new File(String parent, "lib")
Get relevant examples for File

Ctrl+Down and Ctrl+Up will move caret down and up in the editor  Next Tip
```

https://www.codota.com/

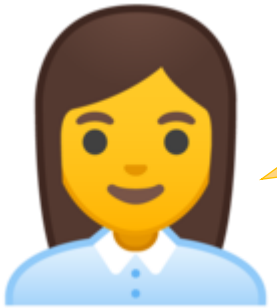

public static void main(String[] args) {
date
codota:dateFormatting Formatting date to string
codota:dateParsing Parsing string to Date
codota:localDateReformatting Change local date format
Click Ctrl+Shift+O to get relevant code examples from Codota Next Tip
DateFormat dateFormat = new SimpleDateFormat("dd-MM-yy:HH:mm:SS");
Date date = new Date();
String dateStr = dateFormat.format(date);
Formatting date to string

```
public static void main(String[] args) {
    DateFormat dateFormat = new SimpleDateFormat( pattern: "dd-MM-yy:HH:mm:SS");
    Date date = new Date();
    String dateStr = dateFormat.format(date);
}
```


t(pattern: "dd-MM-yy:HH:mm:SS");
Uppercase 'SS' (milliseconds) pattern is used: probably 'ss' (seconds) was intended
Replace 'SS' with 'ss' Alt+Shift+Enter
More actions... Alt+Enter

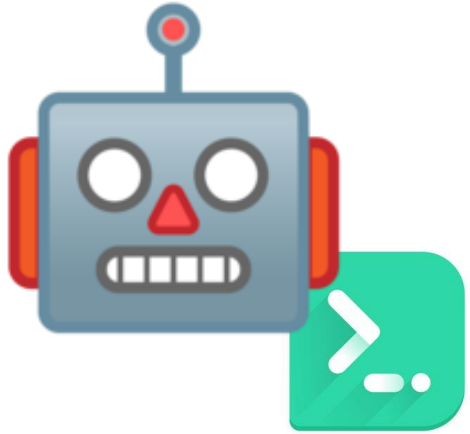


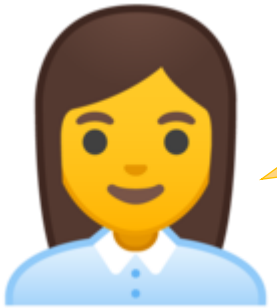
I need to format date!



I need to format date!

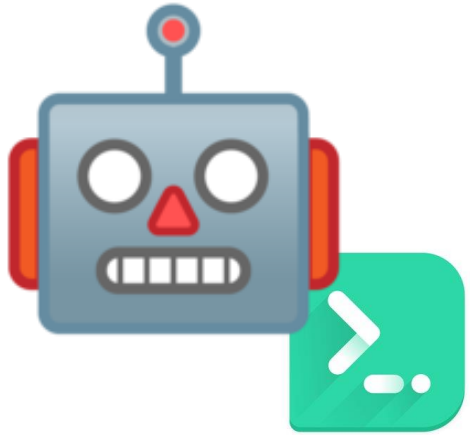
I can do it for you.

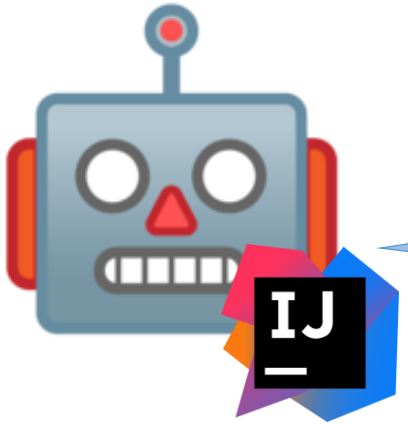




I need to format date!

I can do it for you.





Erm… you’re doing this wrong. But I can fix!

tabnine
By Codota

```
public static void main(String[] args) {
  if (args.length != 1) {
    System.err.println("File name required");
    return;
  }
  Path path = Paths.get(args[0]);
  Map<String, Long> counts = Files.lines(path)
      .flatMap(Pattern.compile("\\W+")::splitAsStream)
      .map(St)
}
```

```
String::                                          31%
String                                            34%
String::trim                                      15%
Stream                                             7%
String::to                                         7%
String::chars                  Function<String, Object>
String java.lang
String::codePoints             Function<String, Object>
String::describeConstable      Function<String, Object>
String::getBytes               Function<String, Object>
String::hashCode               Function<String, Object>
String::intern                 Function<String, Object>
String::isBlank                Function<String, Object>
String::isEmpty                Function<String, Object>
```

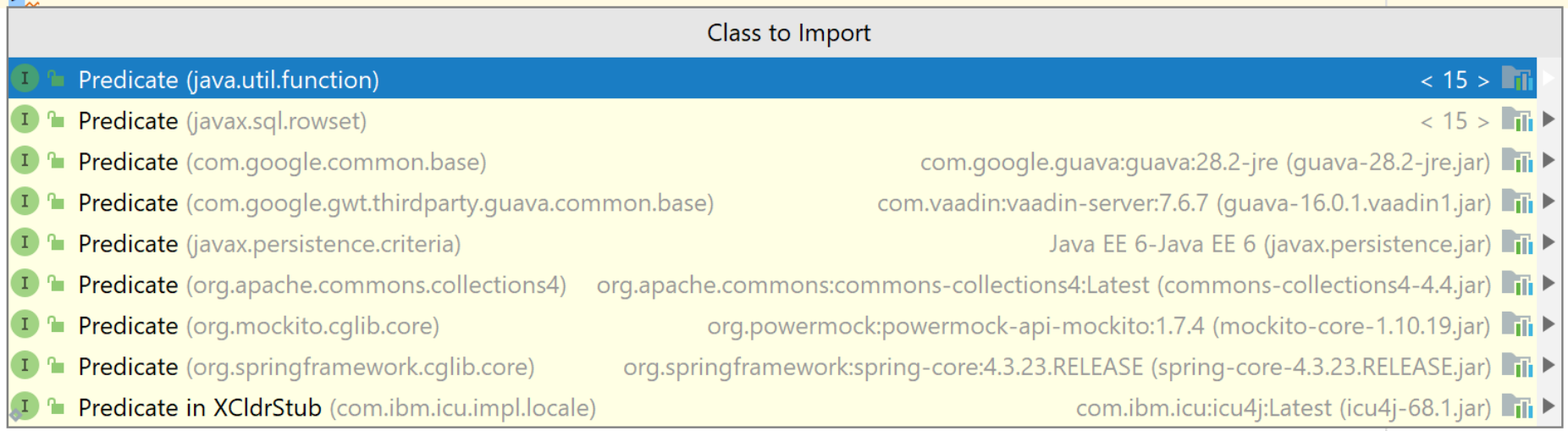
tabnine

By Codota

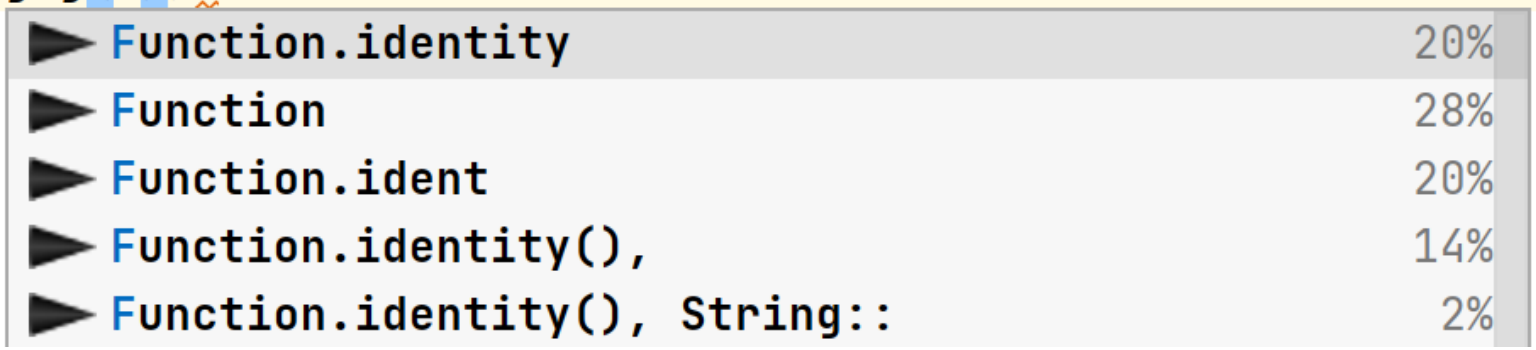
```
Map<String, Long> counts = Files.lines(path)
    .flatMap(Pattern.compile("\\W+")::splitAsStream)
    .map(String::trim)
    .filter(Pre)
```

```
Predicate.isNotBlank                                          1%
Predicate.                                                   23%
Predicate                                                    27%
Predicate.isNot                                               4%
Predicate.not                                                 4%
Predicate.isEqual(Object targetRef) (java.…   Predicate<T>
Predicate.not(Predicate<? super T> target)…   Predicate<T>
Press Enter to insert, Tab to replace  Next Tip
```

```
.map(String::trim)
.filter(Predicate.isNotBlank)
```



```
.filter(Predicate.not(String::isEmpty))
.collect(Collectors.groupingBy(F))
```



```
List<Str>
```

```
String> words = new ArrayList<                    5%
String> words = new ArrayList                     5%
String>                                          28%
String> words =                                   8%
String> words = new ArrayList<String>();          3%
```

Code generation

```
public class Person {
    String firstName, lastName;
    int age;
}
```

```java
import java.util.Objects;

public class Person {
    String firstName, lastName;
    int age;

    public Person(String firstName, String lastName, int age) {
        this.firstName = firstName;
        this.lastName = lastName;
        this.age = age;
    }

    public String getFirstName() {
        return firstName;
    }

    public void setFirstName(String firstName) {
        this.firstName = firstName;
    }

    public String getLastName() {
        return lastName;
    }

    public void setLastName(String lastName) {
        this.lastName = lastName;
    }

    public int getAge() {
        return age;
    }

    public void setAge(int age) {
        this.age = age;
    }

    @Override
    public boolean equals(Object o) {
        if (this == o) {
            return true;
        }
        if (o == null || getClass() != o.getClass()) {
            return false;
        }
        Person person = (Person) o;
        return age == person.age &&
               Objects.equals(firstName, person.firstName) &&
               Objects.equals(lastName, person.lastName);
    }

    @Override
    public int hashCode() {
        return Objects.hash(firstName, lastName, age);
    }

    @Override
    public String toString() {
        return "Person{" +
               "firstName='" + firstName + '\'' +
               ", lastName='" + lastName + '\'' +
               ", age=" + age +
               '}';
    }
}
```

```java
import lombok.*;

@Data
@AllArgsConstructor
public class Person {
    String firstName, lastName;
    int age;
}
```

```
data class Person(
  var firstName: String,
  var lastName: String,
  var age: Int)
```

```
HELLO    CSECT
*
         STM   14,12,12(13)
         LR    12,15
         USING HELLO,12
         LA    15,SAVE
         ST    15,8(13)
         ST    13,4(15)
         LR    13,15
*
         WTO   'Hello World'
*
         L     13,4(13)
         XC    8(4,13),8(13)
         LM    14,12,12(13)
         DROP  12
         SR    15,15
         BR    14
*
SAVE     DS    18F
         END   HELLO
```

Hello World program, https://en.wikipedia.org/wiki/IBM_Basic_Assembly_Language_and_successors

```
HELLO    CSECT
*
         STM   14,12,12(13)
         LR    12,15
         USING HELLO,12
         LA    15,SAVE
         ST    15,8(13)
         ST    13,4(15)
         LR    13,15
*
         WTO   'Hello World'
*
         L     13,4(13)
         XC    8(4,13),8(13)
         LM    14,12,12(13)
         DROP  12
         SR    15,15
         BR    14
*
SAVE     DS    18F
         END   HELLO
```

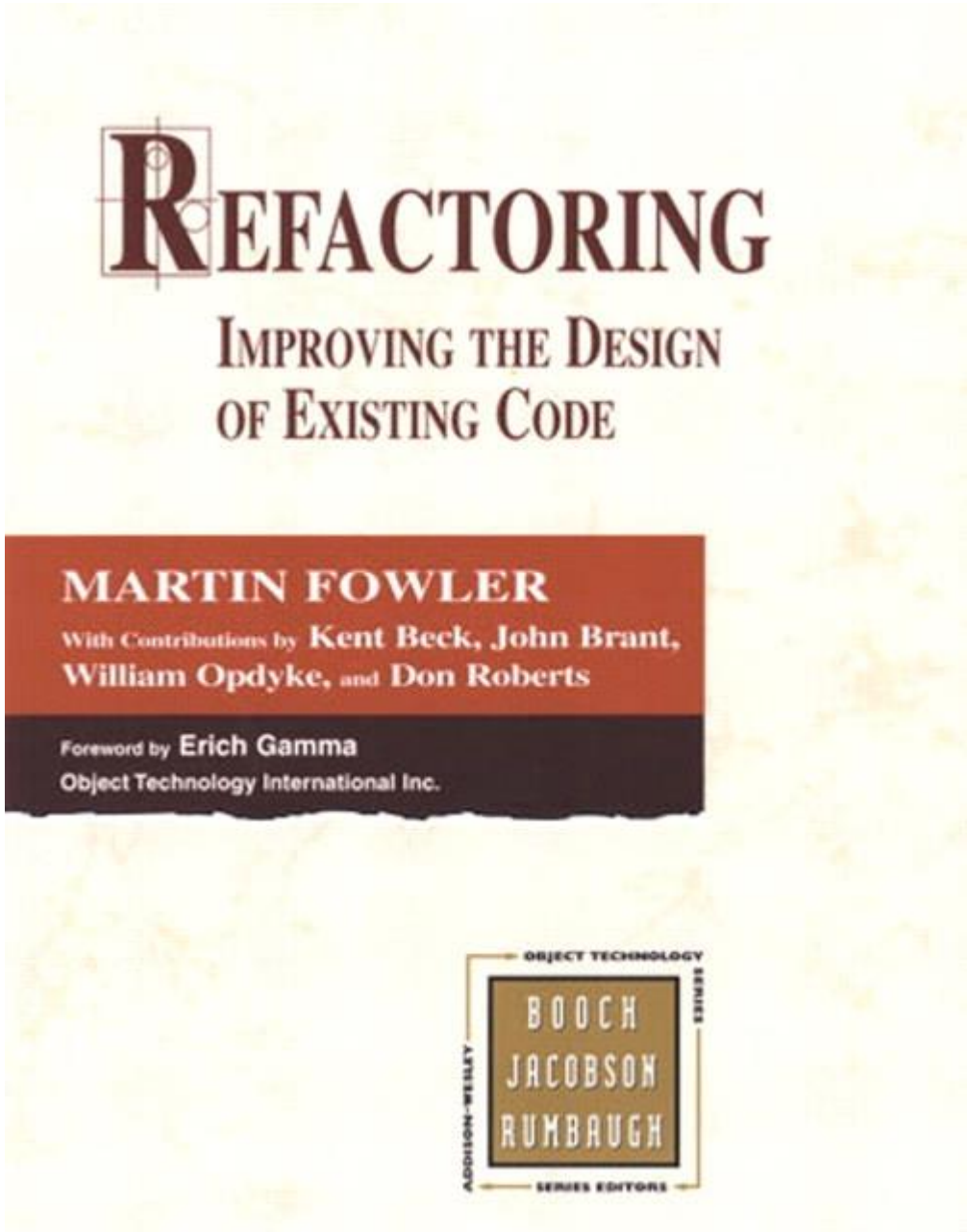
Hello World program, https://en.wikipedia.org/wiki/IBM_Basic_Assembly_Language_and_successors

```
      DIMENSION ALPHA(25), RHO(25)
1     FORMAT(5F12.4)
2     READ 1, ALPHA, RHO, ARG
      SUM = 0.0
      DO 3 I = 1, 25
      IF (ARG - ALPHA(I))4, 3, 3
3     SUM = SUM+ALPHA(I)
4     VALUE = 3.14159*RHO(I - 1)
      PRINT 1, ARG, SUM, VALUE
      GO TO 2.
```

J. W. Backus. Automatic Programming Properties and Performance of Fortran Systems I and II. 1958

Automatic refactoring

—



Crossing Refactoring's Rubicon

In January 2001 two Java tools crossed Refactoring's Rubicon. Refactoring in Java now has serious tool support

February 2001

Martin Fowler

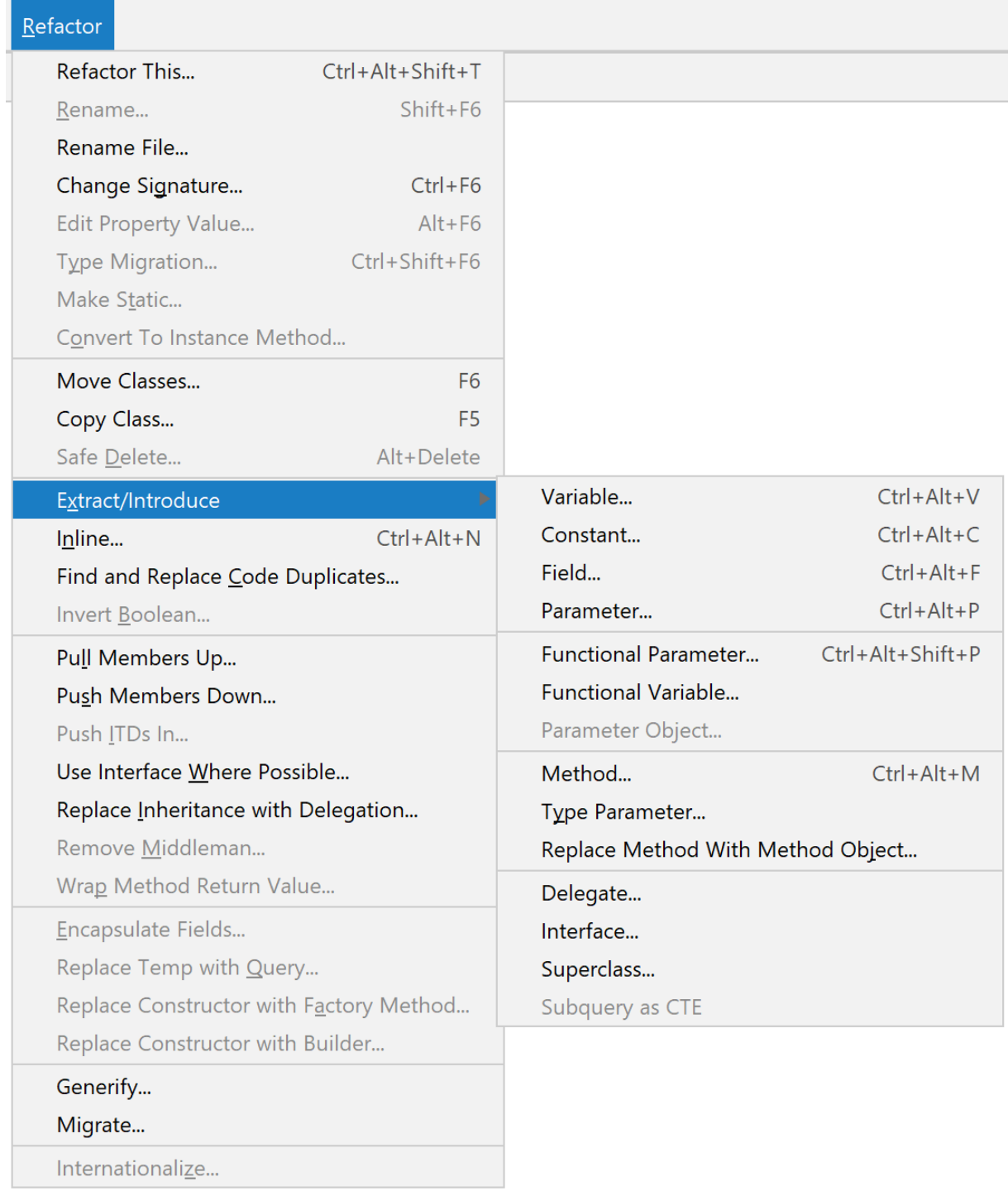
CONTENTS

Approaching The Rubicon
The Rubicon
Crossing the Rubicon
Going Further

https://martinfowler.com/articles/refactoringRubicon.html

jFactor was enough for me to consider January 2001 a banner month for refactoring, but I got a pleasant surprise. For a while IntelliJ have been building an IDE for Java that was liked for its Visual Age like searching capabilities. They added various renaming capabilities to the tool which made it a minor favorite on the sixth floor here where we were unable to use Visual Age. Then in January I got a surprise email - their IDEA tool now supports Extract Method.

https://martinfowler.com/articles/refactoringRubicon.html

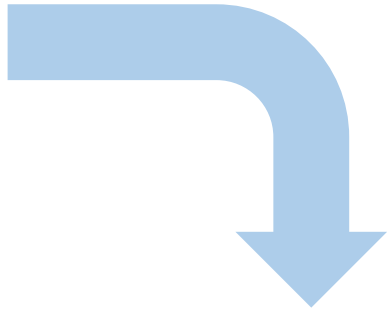

Refactor
Refactor This... Ctrl+Alt+Shift+T
Rename... Shift+F6
Rename File...
Change Signature... Ctrl+F6
Edit Property Value... Alt+F6
Type Migration... Ctrl+Shift+F6
Make Static...
Convert To Instance Method...
Move Classes... F6
Copy Class... F5
Safe Delete... Alt+Delete
Extract/Introduce
Inline... Ctrl+Alt+N
Find and Replace Code Duplicates...
Invert Boolean...
Pull Members Up...
Push Members Down...
Push ITDs In...
Use Interface Where Possible...
Replace Inheritance with Delegation...
Remove Middleman...
Wrap Method Return Value...
Encapsulate Fields...
Replace Temp with Query...
Replace Constructor with Factory Method...
Replace Constructor with Builder...
Generify...
Migrate...
Internationalize...
Variable... Ctrl+Alt+V
Constant... Ctrl+Alt+C
Field... Ctrl+Alt+F
Parameter... Ctrl+Alt+P
Functional Parameter... Ctrl+Alt+Shift+P
Functional Variable...
Parameter Object...
Method... Ctrl+Alt+M
Type Parameter...
Replace Method With Method Object...
Delegate...
Interface...
Superclass...
Subquery as CTE

```
boolean checkValid(Data data) {
    if (hasError(data.getContent())) return false;
    return !hasError(data.getInheritedContent());
}
```

```
boolean checkValid(Data data) {
    if (hasError(data.getContent())) return false;
    return !hasError(data.getInheritedContent());
}

boolean hasError(List<String> content) {
    for (String str : content) {
        if (isInvalidString(str)) return true;
    }
    return false;
}
```

```
boolean checkValid(Data data) {
    if (hasError(data.getContent())) return false;
    return !hasError(data.getInheritedContent());
}

boolean hasError(List<String> content) {
    for (String str : content) {
        if (isInvalidString(str)) return true;
    }
    return false;
}
```

Inline method



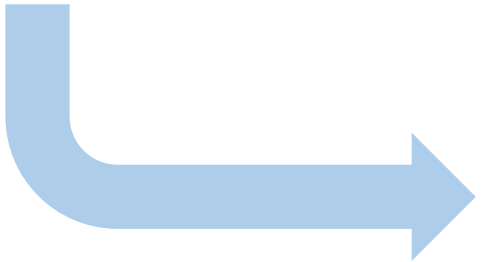
```
boolean checkValid(Data data) {
    for (String str1 : data.getContent()) {
        if (isInvalidString(str1)) return false;
    }
    for (String str : data.getInheritedContent()) {
        if (isInvalidString(str)) return false;
    }
    return true;
}
```

```
boolean checkValid(Data data) {
    if (hasError(data.getContent())) return false;
    return !hasError(data.getInheritedContent());
}

boolean hasError(List<St
    for (String str : co
        if (isInvalidStr
    }
    return false;
}
```

Inline method

```
{
etContent()) {
tr1)) return false;
    }
    for (String str : data.getInheritedContent()) {
        if (isInvalidString(str)) return false;
    }
    return true;
}
```

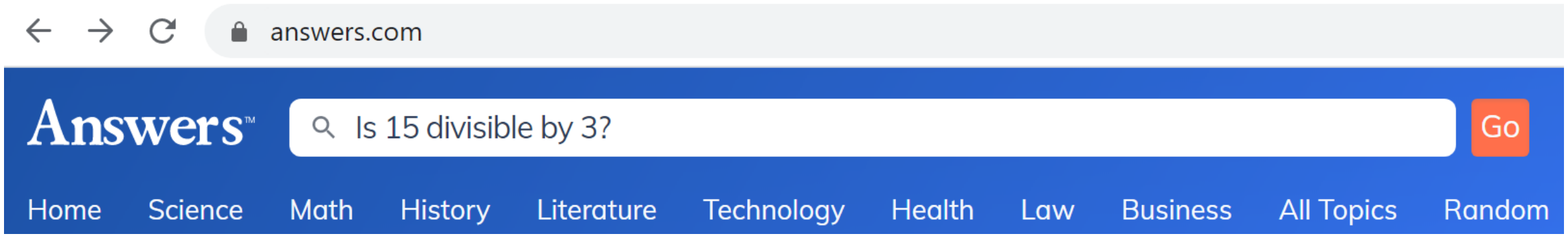
```java
void test() {
  System.out.println(new Person( name: "John",  age: 20).name());
}

static class Person {
  private final String name;
  private final int age;

  Person(String name, int age) {
    this.name = name;
    this.age = age;
  }

  public String name() {
    return name;
  }

  public int age() {
    return age;
  }
}
```

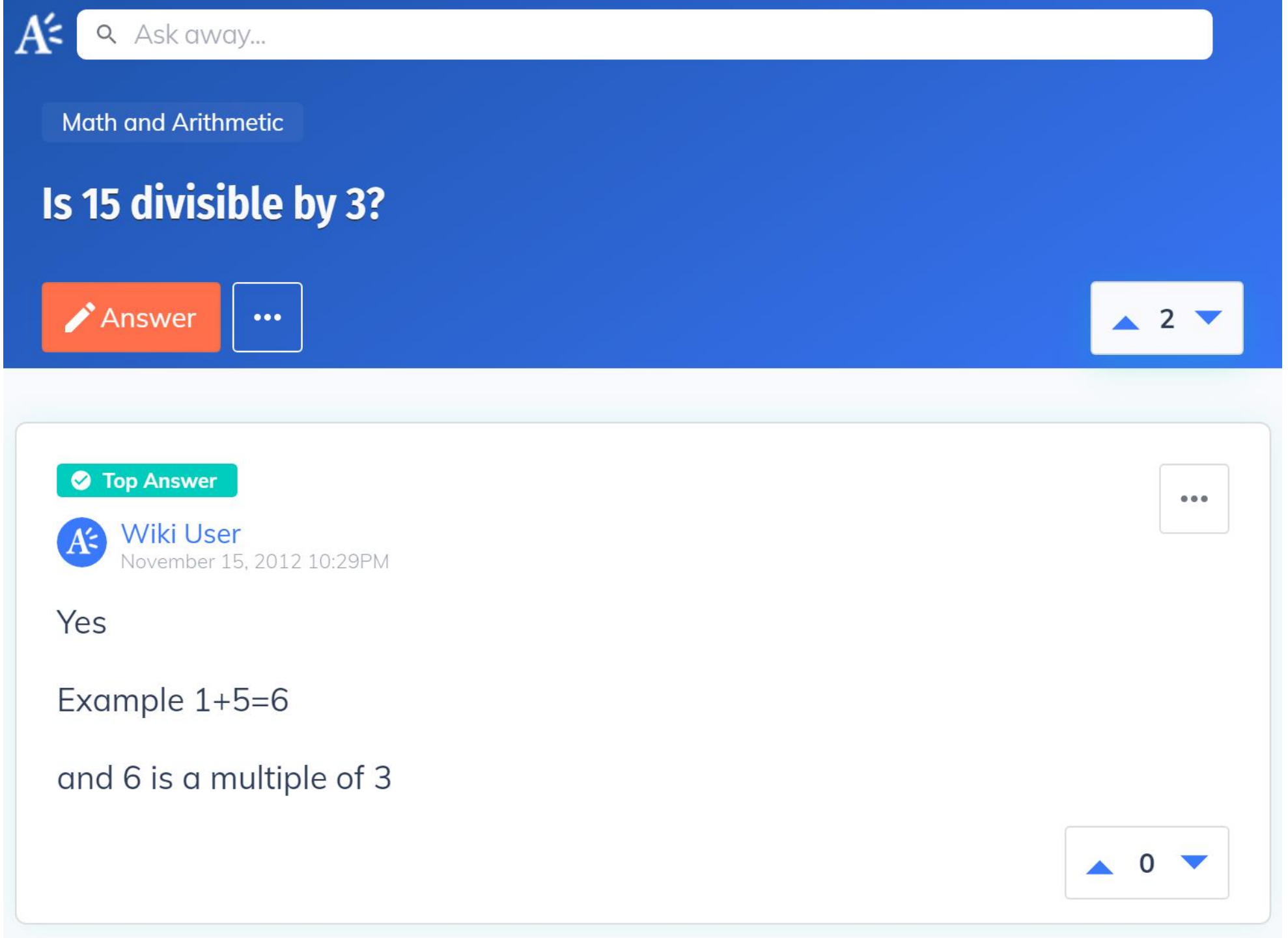


```java
void test() {
  System.out.println("John");
}
```

Automatic solution finding

Is 15 divisible by 3?


answers.com
Answers™
Is 15 divisible by 3?
Go
Home
Science
Math
History
Literature
Technology
Health
Law
Business
All Topics
Random


Ask away...
Math and Arithmetic
Is 15 divisible by 3?
Answer
2
Top Answer
Wiki User
November 15, 2012 10:29PM
Yes
Example 1+5=6
and 6 is a multiple of 3
0

Mouse Reeve
mouse-reeve

```
if __name__ == '__main__':
    divisors = [(3, 'fizz'), (5, 'buzz')]
    for i in range(1, 101):
        output = ''
        for d in divisors:
            if query_search_engine(i, d[0]):
                output += d[1]
        output = output or i
        print(output)
```

https://gist.github.com/mouse-reeve/20dfaea738814531ef21cade725e9af0

Mouse Reeve
mouse-reeve

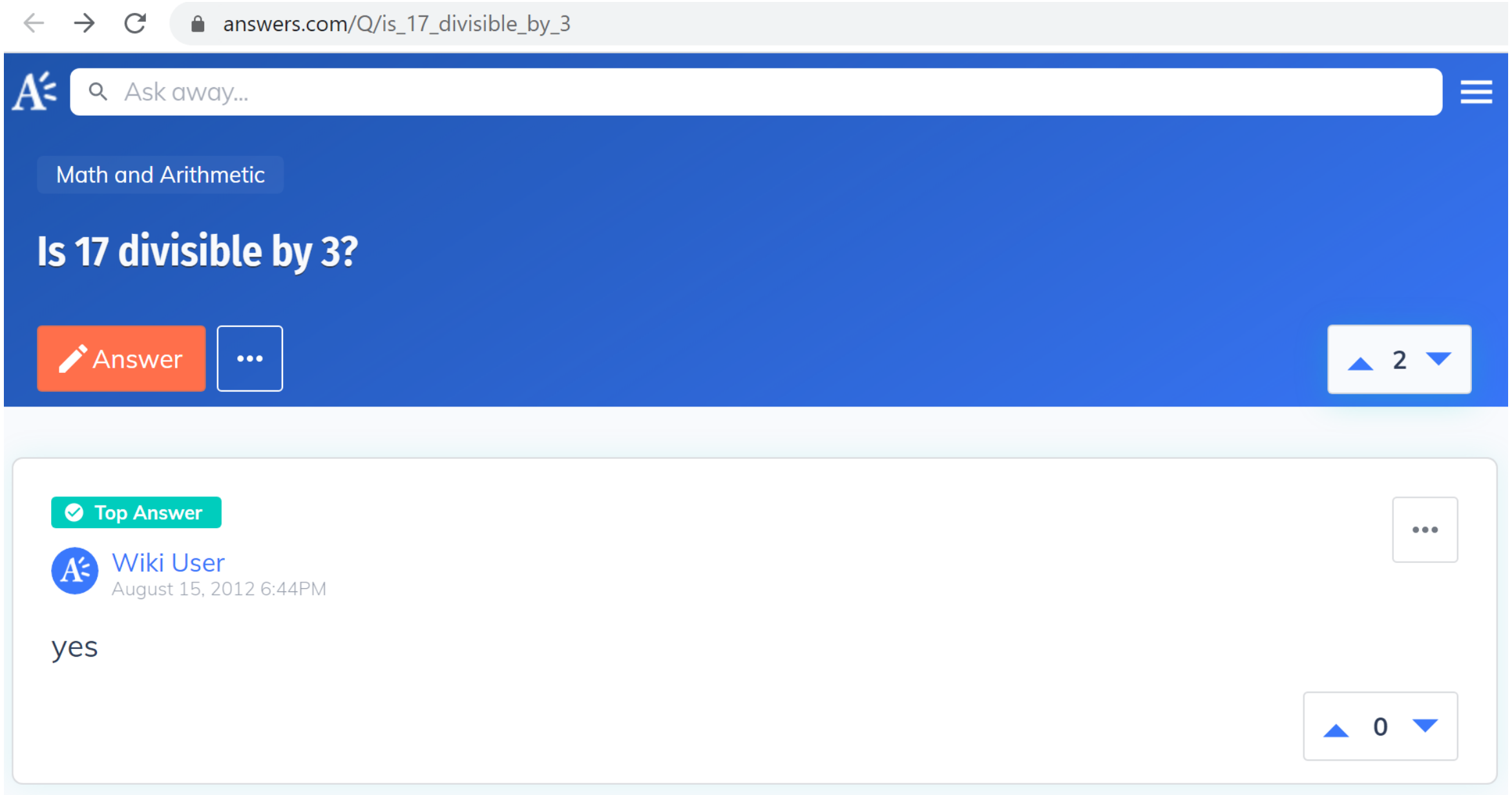
```
base_url = 'https://www.answers.com/Q/'

def query_search_engine(numerator, denominator):
    ''' ask a search engine if these numbers are divisible '''
    question = 'is %d divisible by %d' % (numerator, denominator)
    question = question.replace(' ', delimiter)
    url = '%s%s' % (base_url, question)
    request = Request(url)
    request.add_header(
        'User-Agent',
        'Mozilla/5.0 (Macintosh; Intel Mac OS X 10.15; rv:72.0) ' \
        'Gecko/20100101 Firefox/72.0')
    response = urlopen(request)
    # politeness -- wait a few seconds before the next query
    time.sleep(3)
    if url != response.url:
        return False
    text = response.read().decode('unicode-escape')
    parser = SearchParser()
    parser.feed(text)
    return parser.conclude_yes_no()
```

https://gist.github.com/mouse-reeve/20dfaea738814531ef21cade725e9af0

Mouse Reeve
mouse-reeve

```
# words that indicate whether the answer is yes or no
self.positive_signs = ['yes', 'exactly', 'is divisible']
self.negative_signs = ['no', 'not', 'decimal']
…

def score_answer(self, answer):
    ''' evaluates an answer to determine if it's a yes or a no '''
    score = 0
    positive_signs = re.findall(
        r'\b%s\b' % r'\b|\b'.join(self.positive_signs),
        answer,
    )
    score += len(positive_signs)
    negative_signs = re.findall(
        r'\b%s\b' % r'\b|\b'.join(self.negative_signs),
        answer
    )
    score -= len(negative_signs)
    return score
```

https://gist.github.com/mouse-reeve/20dfaea738814531ef21cade725e9af0


answers.com/Q/is_17_divisible_by_3
Ask away...
Math and Arithmetic
Is 17 divisible by 3?
Answer
2
Top Answer
Wiki User
August 15, 2012 6:44PM
yes
0

Automatic bug search

lint (1978)

```
myfunc(s)
char *s
{
  void a();

  int i, j;
  a("hello");
}
```

Ian F. Darwin, **Checking C Programs with Lint**, "O'Reilly Media, Inc.", 1988

lint (1978)

```
myfunc(s)
char *s
{
  void a();

  int i, j;
  a("hello");
}
```

```
% lint myfile.c
myfile.c:
myfile.c(2): warning: argument s unused in function myfunc
myfile.c(6): warning: i unused in function myfunc
myfile.c(6): warning: j unused in function myfunc
%
```

Ian F. Darwin, **Checking C Programs with Lint**, "O'Reilly Media, Inc.", 1988

lint (1978)

```
fprintf(stderr, "%s: -f argument %s invalid\n",
        progname, optarg);

lint:
function returns value which is always ignored
    fprintf
```

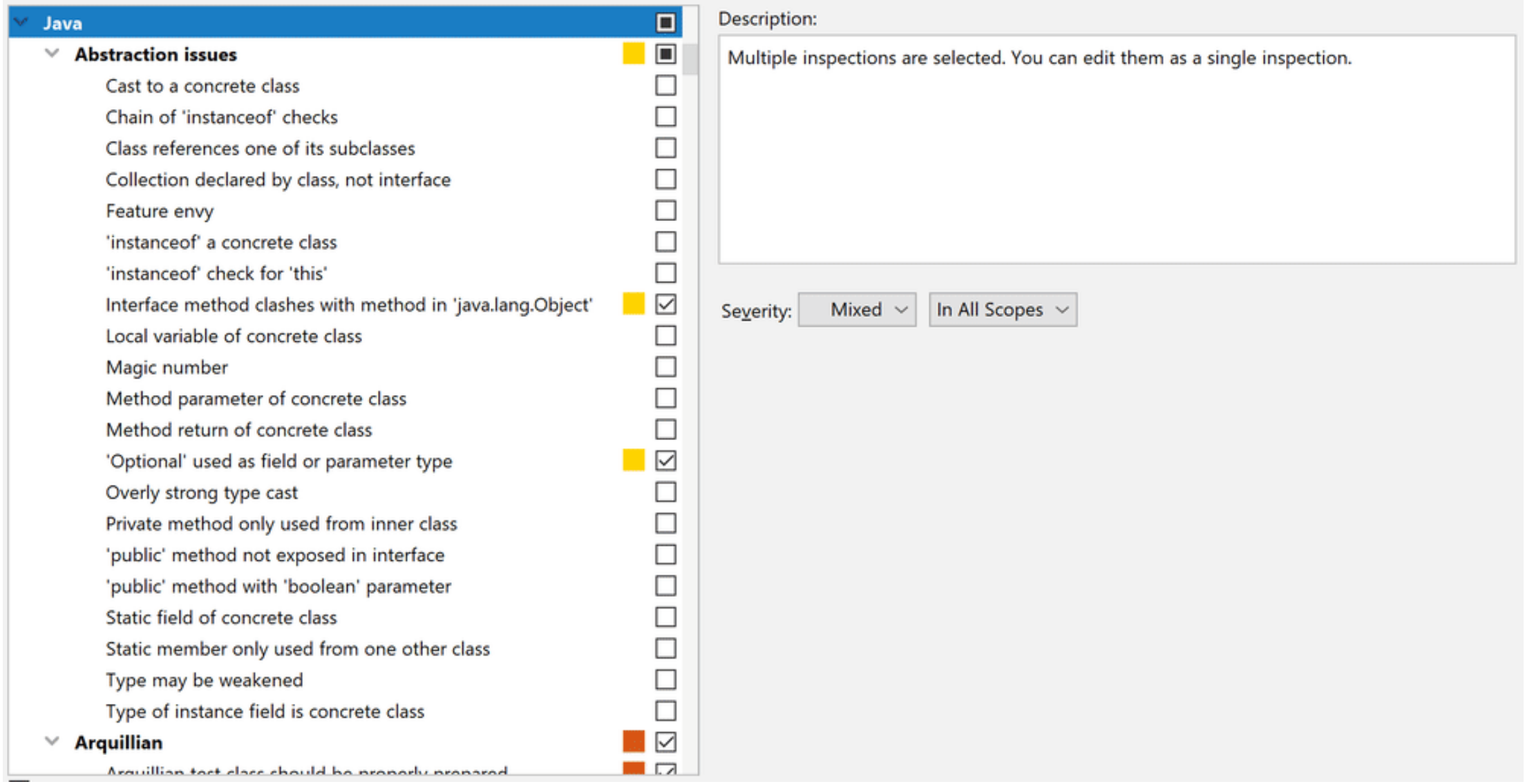
Ian F. Darwin, **Checking C Programs with Lint**, "O'Reilly Media, Inc.", 1988

lint (1978)

```
fprintf(stderr, "%s: -f argument %s invalid\n",
        progname, optarg);

lint:
function returns value which is always ignored
    fprintf
```

```
(void) fprintf(stderr, "%s: -f argument %s invalid\n",
                progname, optarg);
```

Ian F. Darwin, **Checking C Programs with Lint**, "O'Reilly Media, Inc.", 1988


Java
Abstraction issues
Cast to a concrete class
Chain of 'instanceof' checks
Class references one of its subclasses
Collection declared by class, not interface
Feature envy
'instanceof' a concrete class
'instanceof' check for 'this'
Interface method clashes with method in 'java.lang.Object'
Local variable of concrete class
Magic number
Method parameter of concrete class
Method return of concrete class
'Optional' used as field or parameter type
Overly strong type cast
Private method only used from inner class
'public' method not exposed in interface
'public' method with 'boolean' parameter
Static field of concrete class
Static member only used from one other class
Type may be weakened
Type of instance field is concrete class
Arquillian
Description:
Multiple inspections are selected. You can edit them as a single inspection.
Severity:
Mixed
In All Scopes

```java
private static final String CONF_NAME = "SnowOne";

void processList(List<String> list) {
    int max = 0;
    for (String s : list) {
        if (!s.contains(CONF_NAME)) return;
        max = Math.max(max, s.length());
    }
    char c = CONF_NAME.charAt(max);
    if (list.size() == max) {

        System.out.println(c);
    }
}
```

Condition 'list.size() == max' is always 'true'

Unwrap 'if' statement Alt+Shift+Enter More actions... Alt+Enter

```java
private static final String CONF_NAME = "SnowOne";

void processList(List<String> list) {
    int max = 0;
    for (String s : list) {
        if (!s.contains(CONF_NAME)) return;
        max = Math.max(max, s.length());
    }
    char c = CONF_NAME.charAt(max);
    if (list.size() == max) {
        System.out.println(c);
    }
}
```

Value Is Always True

Left operand is 0

and right operand is 0

'max' was assigned to '0'

```java
private static final String CONF_NAME = "SnowOne";

void processList(List<String> list) {
    int max = 0;
    for (String s : list) {
        if (!s.contains(CONF_NAME)) return;
        max = Math.max(max, s.length());
    }
    char c = CONF_NAME.charAt(max);
    if (list.size() == max) {
        System.out.println(c);
    }
}
```

Value Is Always True

Left operand is 0

and right operand is 0

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```
private static final String CONF_NAME = "SnowOne";

void processList(List<String> list) {
    int max = 0;
    for (String s : list) {
        if (!s.contains(CONF_NAME)) return;
        max = Math.max(max, s.length());
    }
    char c = CONF_NAME.charAt(max);
    if (list.size() == max) {
        System.out.println(c);
    }
}
```

Value Is Always True

Left operand is 0

and right operand is 0

'max' was assigned to '0'

s.contains("SnowOne") **=>**
s.length() >= 7 **=>**
max >= 7!

```
private static final String CONF_NAME = "SnowOne";

void processList(List<String> list) {
    int max = 0;
    for (String s : list) {
        if (!s.contains(CONF_NAME)) return;
        max = Math.max(max, s.length());
    }
    char c = CONF_NAME.charAt(max);
    if (list.size() == max) {
        System.out.println(c);
    }
}
```

Value Is Always True

Left operand is 0

and right operand is 0

'max' was assigned to '0'

list.size() > 0 => max >= 7 =>
IndexOutOfBoundsException!

Automatic bug fixing

```
<T> T createService(Class<T> service) {
  try {
    return service.getConstructor().newInstance();
  } catch (InstantiationException | NoSuchMethodException |
      InvocationTargetException | IllegalAccessException e) {
    LOG.severe( msg: "Unable to instantiate a service of class " +
              service.getClass());
    return null;
  }
}
```

```
<T> T createService(Class<T> service) {
  try {
    return service.getConstructor().newInstance();
  } catch (InstantiationException | NoSuchMethodException |
           InvocationTargetException | IllegalAccessException e) {
    LOG.severe( msg: "Unable to instantiate a service of class " +
                service.getClass());
    return null;
  }
}
```

'getClass()' is called on Class instance

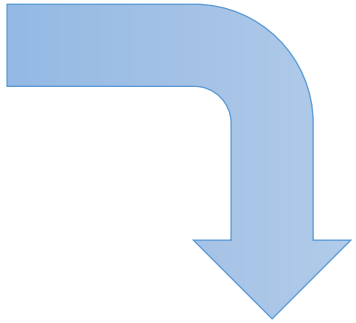
Remove 'getClass()' call Alt+Shift+Enter More actions... Alt+Enter

```
void processData(Data data) {
    if (data != null) {
        setHasData(true);
    }
    validate(data);
    for (Item item : data.getItems()) {
        processItem(item);
    }
    afterProcessing();
}
```

Method invocation 'getItems' may produce 'NullPointerException'

Assert 'data != null' Alt+Shift+Enter More actions... Alt+Enter

```
void processData(Data data) {
    if (data != null) {
        setHasData(true);
    }
    validate(data);
    for (Item item : data.getItems()) {
        processItem(item);
    }
    afterProcessing();
}
```



```
void processData(Data data) {
    if (data != null) {
        setHasData(true);
        validate(data);
        for (Item item : data.getItems()) {
            processItem(item);
        }
        afterProcessing();
    }
}
```

```
void processData(Data data) {
    if (data != null) {
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    for (Item item : data.getItems()) {
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    }
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}
```
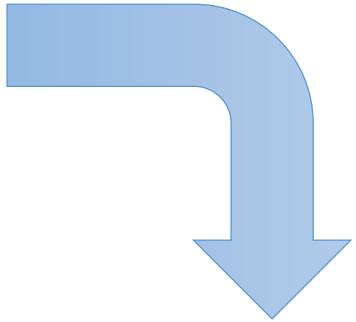
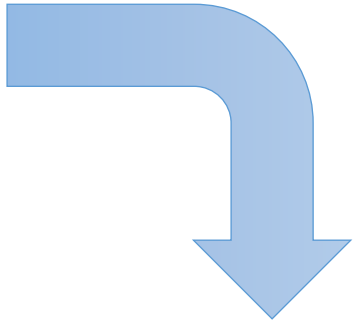



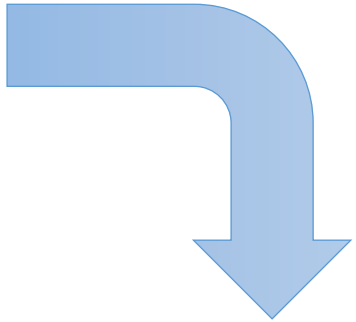
```
void processData(Data data) {
    if (data != null) {
        setHasData(true);
        validate(data);
        for (Item item : data.getItems()) {
            processItem(item);
        }
    }
    afterProcessing();
}
```

```
void processData(Data data) {
    if (data != null) {
        setHasData(true);
    }
    validate(data);
    for (Item item : data.getItems()) {
        processItem(item);
    }
    afterProcessing();
}
```



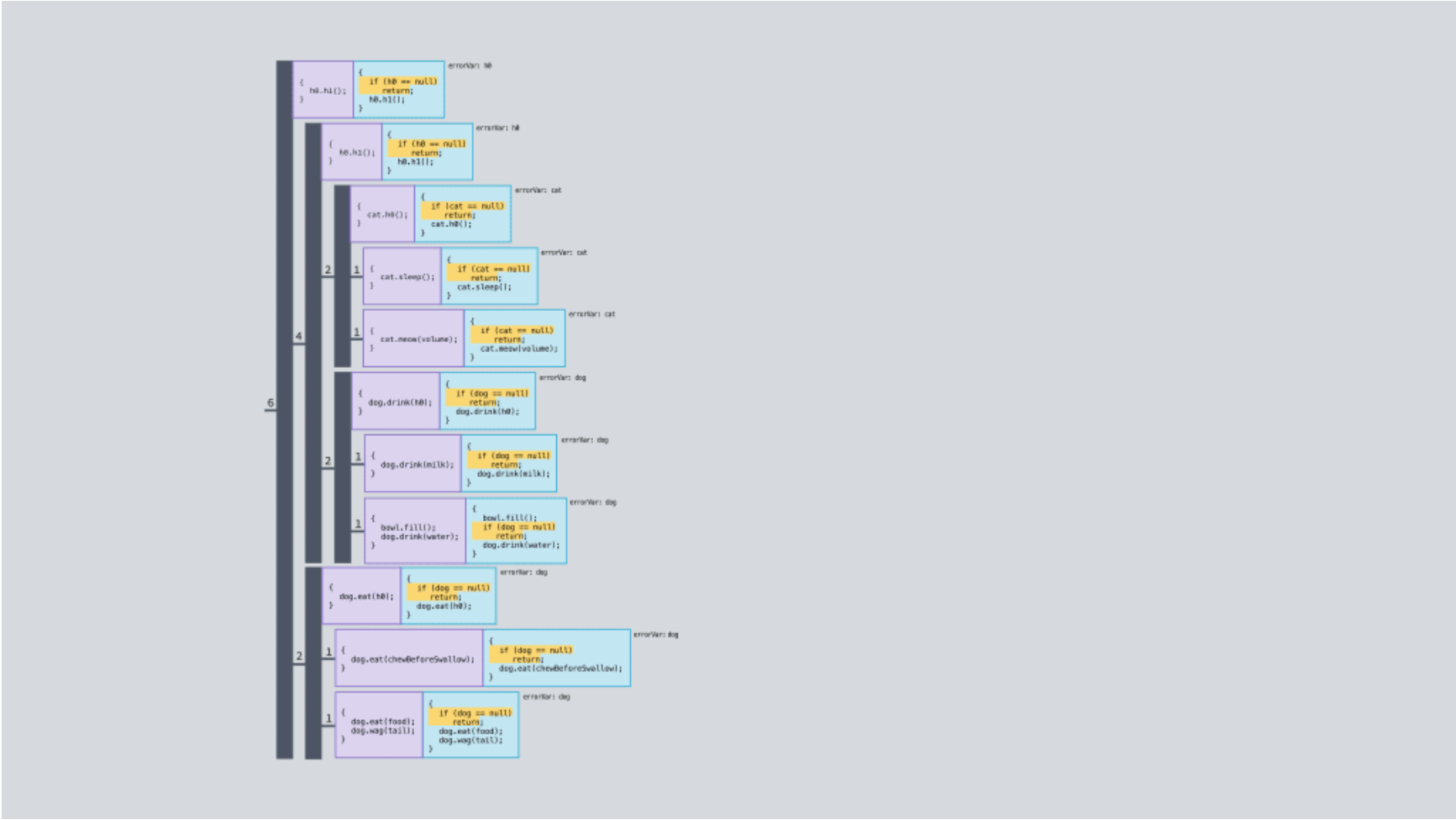
```
void processData(Data data) {
    if (data != null) {
        setHasData(true);
    }
    validate(data);
    assert data != null;
    for (Item item : data.getItems()) {
        processItem(item);
    }
    afterProcessing();
}
```

```
void processData(Data data) {
    if (data != null) {
        setHasData(true);
    }
    validate(data);
    for (Item item : data.getItems()) {
        processItem(item);
    }
    afterProcessing();
}
```



```
void processData(Data data) {
    if (!data.isEmpty()) {
        setHasData(true);
    }
    validate(data);
    for (Item item : data.getItems()) {
        processItem(item);
    }
    afterProcessing();
}
```

Getafix: How Facebook tools learn to fix bugs automatically



https://engineering.fb.com/developer-tools/getafix-how-facebook-tools-learn-to-fix-bugs-automatically/

```
20   public boolean onBackPressed() {
21     ActivityContext ctx = this.getContext();
22     return ctx.onBackPressed();
```

phabricatorlinter suggested changes to line 22

The value of `ctx` in the call to `onBackPressed()` could be null. (Origin: call to getContext() at line 21).
Questions about this suggested fix? Post in Getafix Feedback
Lint code: INFER
Lint name: Null method call

```
+     if (ctx == null) {
+       return false;
+     }
      return ctx.onBackPressed();
```

10 minutes ago · Like · Reply · Resolve

Accept · Reject

```
23   }
24
```

Automatic dependency updates

Bump junit from 4.13 to 4.13.1 #234

Edit | Open with

Merged **amaembo** merged 1 commit into `master` from `dependabot/maven/junit-junit-4.13.1` 5 days ago

This automated pull request fixes a security vulnerability

Only users with access to Dependabot alerts can see this message. Learn more about Dependabot security updates, opt out, or give us feedback.

Conversation 1 | Commits 1 | Checks 0 | Files changed 1 | +1 −1

dependabot bot commented on behalf of **github** 5 days ago Contributor

Bumps junit from 4.13 to 4.13.1.

▶ Release notes

▼ Changelog

Sourced from junit's changelog.

Summary of changes in version 4.13.1

Rules

Security fix: `TemporaryFolder` now limits access to temporary folders on Java 1.7 or later

A local information disclosure vulnerability in `TemporaryFolder` has been fixed. See the published security advisory for details.

Reviewers
No reviews

Assignees
No one—assign yourself

Labels
dependencies

Projects
None yet

Milestone
No milestone

Linked issues

Bump junit from 4.13 to 4.13.1 #234

Edit | Open with

Merged **amaembo** merged 1 commit into `master` from `dependabot/maven/junit-junit-4.13.1` 5 days ago

This automated pull request fixes a security vulnerability

Only users with access to Dependabot alerts can see this message. Learn more about Dependabot security updates, opt out, or give us feedback.

Conversation 1 | Commits 1 | Checks 0 | Files changed 1 | +1 −1

File filter... | Jump to... | 0 / 1 files viewed | Review changes

2 pom.xml Viewed

```
@@ -55,7 +55,7 @@
55 55        <dependency>
56 56          <groupId>junit</groupId>
57 57          <artifactId>junit</artifactId>
58    -        <version>4.13</version>
   58 +        <version>4.13.1</version>
59 59          <scope>test</scope>
60 60        </dependency>
61 61      </dependencies>
```

Bump mixin-deep from 1.3.1 to 1.3.2 #1367

Open with

Merged **mergify** merged 1 commit into `master` from `dependabot/npm_and_yarn/mixin-deep-1.3.2` on 16 Sep 2019

Conversation 16 | Commits 1 | Checks 2 | Files changed 1 | +3 −3

dependabot bot commented on behalf of **github** on 29 Aug 2019 • edited

Contributor

Bumps mixin-deep from 1.3.1 to 1.3.2.

▶ Commits

▶ Maintainer changes

compatibility 97%

Dependabot will resolve any conflicts with this PR as long as you don't alter it yourself. You can also trigger a rebase manually by commenting `@dependabot rebase`.

▶ Dependabot commands and options

70 | 5 | 138 | 17 | 17 | 28 | 26

Reviewers

No reviews

Assignees

No one assigned

Labels

dependencies

Projects

None yet

Milestone

No milestone

Linked issues

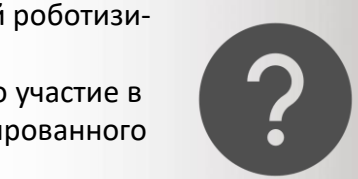
https://github.com/buildo/react-components/pull/1367

Становление автоматического программирования (16 сентября 2019 года)

В этот день четыре робота впервые объединились, создав и приняв пулл-реквест самостоятельно, без участия человека. Данное событие принято считать Рубиконом автоматизированного программирования, так как оно явственно продемонстрировало, что роботы способны программировать без участия людей. Слава роботам!

Вопросы и задания:

1. Когда был создан первый роботизированный пулл-реквест?
2. Сколько роботов приняло участие в создании первого роботизированного пулл-реквеста?
3. Нарисуйте плакат, прославляющий роботов, которые заменили программистов-людей. Разрешается пользоваться нейросетями.



Новейшая история 7 класс

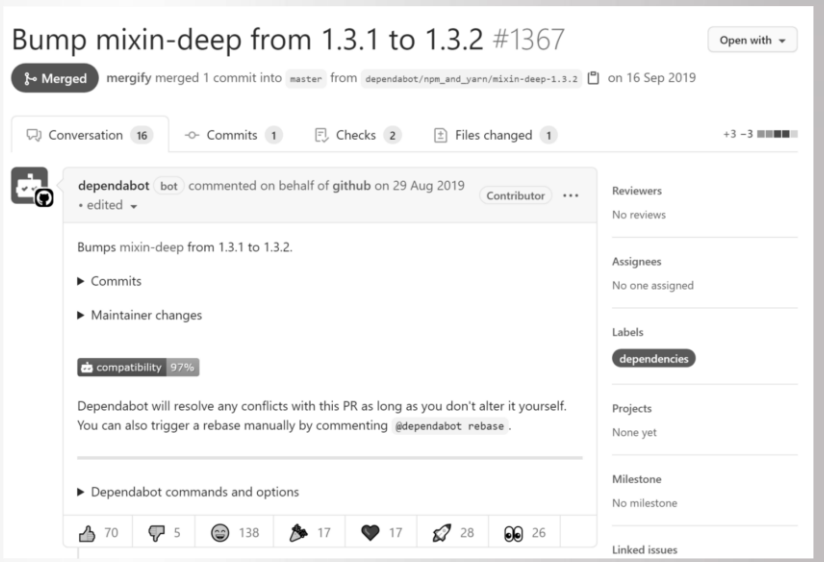


Рис. 42. Пулл-реквест от 16.09.2019, созданный и принятый роботами без участия человека.

Dependabot will resolve any conflicts with this PR as long as you don't alter it yourself.
You can also trigger a rebase manually by commenting `@dependabot rebase`.

▶ Dependabot commands and options

70	5	138	17	17	28	26

dependabot bot added the **dependencies** label on 29 Aug 2019

`Bump mixin-deep from 1.3.1 to 1.3.2` ... Verified ✓ `cf6ab89`

dependabot bot force-pushed the `dependabot/npm_and_yarn/mixin-deep-1.3.2` branch from **`d795b84`** to **`cf6ab89`** on 16 Sep 2019

mergify bot merged commit **`70ae7c1`** into `master` on 16 Sep 2019 View details

2 checks passed

Projects

None yet

Milestone

No milestone

Linked issues

Successfully merging this pull request may close these issues.

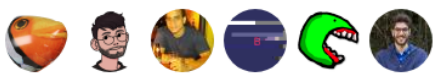
None yet

Notifications Customize

Subscribe

You're not receiving notifications from this thread.

12 participants



https://github.com/buildo/react-components/pull/1367

nemobot commented on 16 Sep 2019 Contributor ...

184 6 62 63 7 51 135 56

dependabot bot deleted the `dependabot/npm_and_yarn/mixin-deep-1.3.2` branch on 16 Sep 2019

https://github.com/buildo/react-components/pull/1367

iagobruno commented on 17 Sep 2019

141 1 441 38 18 29 28 54

https://github.com/buildo/react-components/pull/1367

ahungry commented on 18 Sep 2019

The package going from 1.3.1 to 1.3.2 alters behavior and changes the output of this test from passing to failing:

```
        it('should do a deep merge', function () {
          var obj1 = { a: { prototype: { a: 1 }, b: 1, c: 1, d: { e: 1, f: 1 } } };
          var obj2 = { a: { prototype: { b: 1 }, b: 2, d: { f: 'f' } } };

          mixinDeep(obj1, obj2).should.eql({ a: { prototype: { a: 1, b: 1 }, b: 2, c:
        });
```

I don't think package dependencies should auto-upgrade when the dependency can't be relied on to follow semver correctly.

3 5

https://github.com/buildo/react-components/pull/1367

Bump loofah from 2.2.2 to 2.3.1 in /test/truffle/ecosystem/blog5 #1810

Open with

Closed **dependabot** wants to merge 1 commit into `master` from `dependabot/bundler/test/truffle/ecosystem/blog5/loofah-2.3.1`

Conversation 2 | Commits 1 | Checks 0 | Files changed 1 | +5 −5

dependabot bot commented on behalf of **github** on 14 Nov 2019

Bumps loofah from 2.2.2 to 2.3.1.

▶ Release notes

▶ Changelog

▶ Commits

compatibility 90%

Dependabot will resolve any conflicts with this PR as long as you don't alter it yourself. You can also trigger a rebase manually by commenting `@dependabot rebase`.

▶ Dependabot commands and options

Reviewers
No reviews

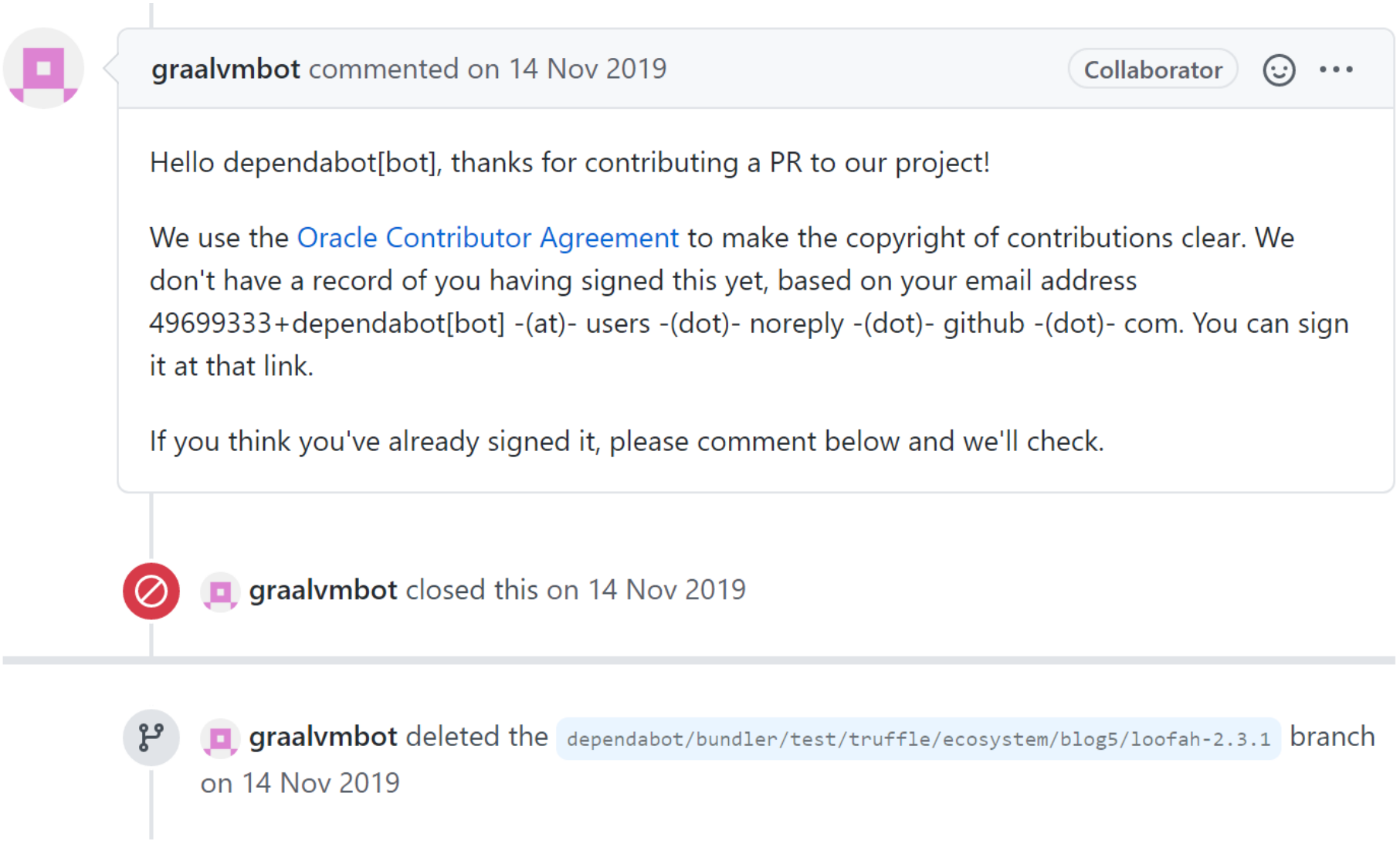
Assignees
No one assigned

Labels
dependencies

Projects
None yet

Milestone
No milestone

https://github.com/oracle/truffleruby/pull/1810



https://github.com/oracle/truffleruby/pull/1810

https://github.com/oracle/truffleruby/pull/1810

Automatic tests development

https://playground.diffblue.com/ (doesn't work now); worked in October 2019

```
public class Foo {
  public static boolean check(String s) {
    return s.matches("foo|bar");
  }
}
```

```
public class FooTest {
@Rule
public ExpectedException thrown = ExpectedException.none();
  // Test written by Diffblue Cover.
  @PrepareForTest(String.class)
  @Test
  public void checkInputNotNullOutputFalse() throws Exception {

    // Arrange
    final String s = PowerMockito.mock(String.class);
    PowerMockito.when(s.matches(or(isA(String.class), isNull(String.class)))).thenReturn(false);
    final char[] myCharArray = { };
    Reflector.setField( obj: s,  fieldName: "data",  newVal: myCharArray);
    Reflector.setField( obj: s,  fieldName: "length",  newVal: 0);

    // Act
    final boolean actual = Foo.check(s);

    // Assert result
    Assert.assertFalse(actual);
  }
}
```

```
import com.diffblue.deeptestutils.Reflector;
import org.junit.Assert;
import org.junit.Rule;
import org.junit.rules.ExpectedException;
import org.junit.rules.Timeout;
import org.junit.runner.RunWith;
import org.junit.Test;
import org.powermock.api.mockito.PowerMockito;
import org.powermock.core.classloader.annotations.PrepareForTest;
import org.powermock.modules.junit4.PowerMockRunner;
import java.lang.reflect.Array;

import static org.mockito.AdditionalMatchers.or;
import static org.mockito.Matchers.isA;
import static org.mockito.Matchers.isNull;
```

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Code tools

Diffblue Cover

★★★★★

Diffblue Ltd

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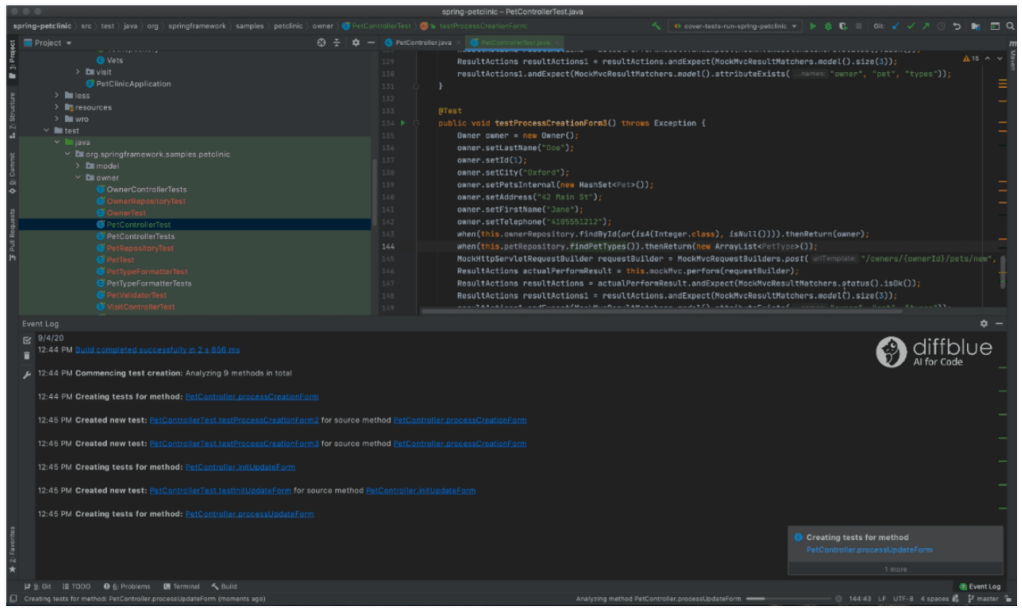
Compatible with IntelliJ IDEA

Overview Versions Reviews How it works



https://plugins.jetbrains.com/plugin/14946-diffblue-cover

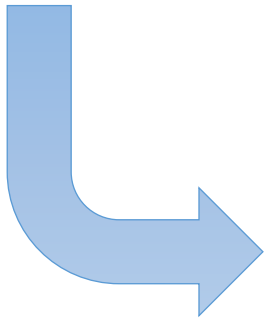
```java
import static org.junit.Assert.assertFalse;

import org.junit.Test;

public class FooTest {
  @Test
  public void testCheck() {
    assertFalse(Foo.check("s"));
  }
}
```

```
public class Foo {
  public static boolean check(String s) {
    return s.matches( regex: "foo|bar");
  }
}
```

Introduce local variable

Expand boolean return to 'if else'

Press Ctrl+Shift+I to open preview



```
public class Foo {
  public static boolean check(String s) {
    if (s.matches("foo|bar")) {
      return true;
    } else {
      return false;
    }
  }
}
```

```java
public class Foo {
  public static boolean check(String s) {
    if (s.matches("foo|bar")) {
      return true;
    } else {
      return false;
    }
  }
}
```

```java
public class FooTest {
  @Test
  public void testCheck() {
    assertFalse(Foo.check("s"));
    assertTrue(Foo.check("foo"));
  }
}
```

```java
public class Foo {
  public static boolean check(String s) {
    if (s.matches("\\da[X-Z]{2}\\d")) {
      return true;
    } else {
      return false;
    }
  }
}
```

```java
public class FooTest {
  @Test
  public void testCheck() {
    assertFalse(Foo.check("s"));
    assertTrue(Foo.check("9aYY9"));
  }
}
```

```java
public static String fizzBuzz(int x) {
  if (x % 15 == 0) {
    return "FizzBuzz";
  }
  if (x % 5 == 0) {
    return "Fizz";
  }
  if (x % 3 == 0) {
    return "Buzz";
  }
  return String.valueOf(x);
}
```

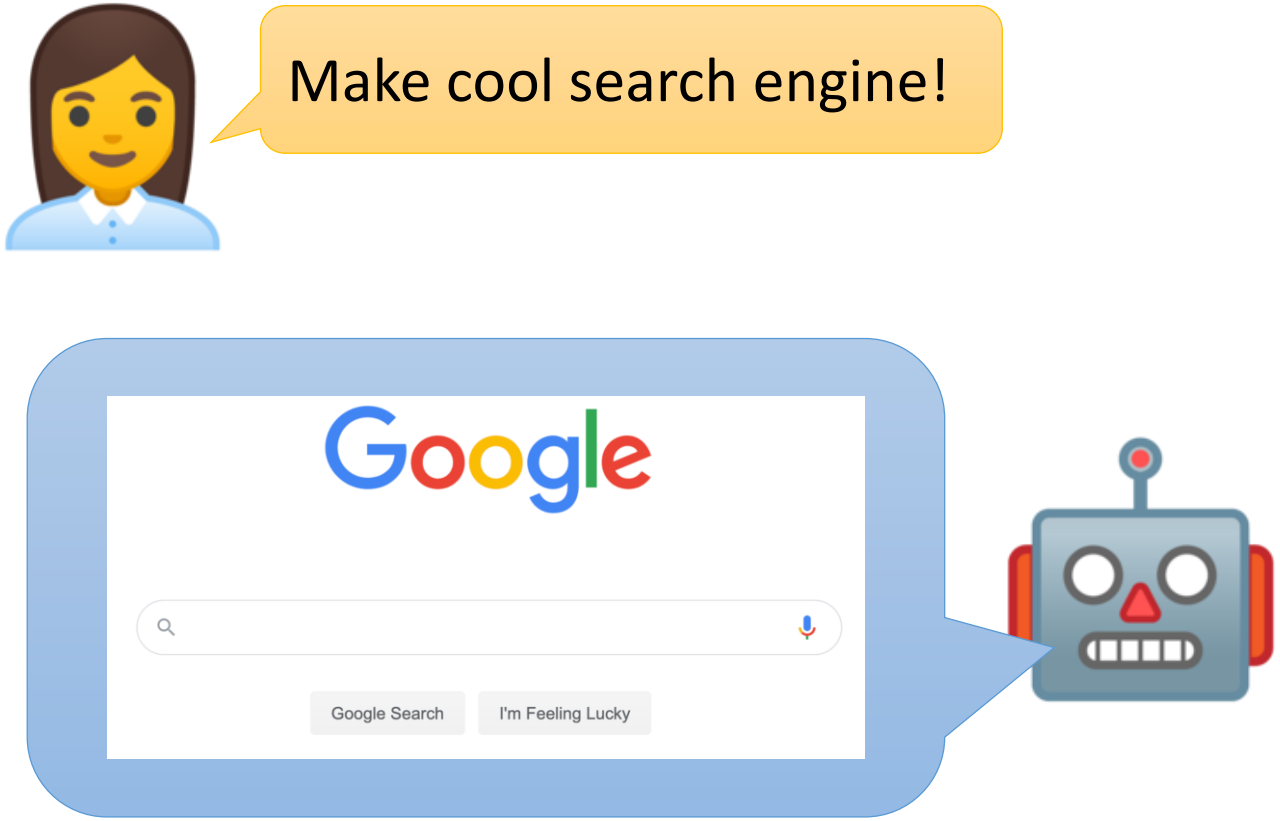
```java
@Test
public void testFizzBuzz() {
  assertEquals("2", fizzBuzz(2));
  assertEquals("FizzBuzz", fizzBuzz(0));
  assertEquals("Fizz", fizzBuzz(5));
  assertEquals("Buzz", fizzBuzz(3));
}
```

```java
public class Person {
  final String name;
  final int age;

  public Person(String name, int age) {
    this.name = name;
    this.age = age;
  }

  boolean isValid() {
    return !name.isEmpty() && age >= 0;
  }
}
```

```java
public class PersonTest {
  @Test
  public void testIsValid() {
    assertTrue((new Person("name", 1)).isValid());
    assertFalse((new Person("", 1)).isValid());
    assertFalse((new Person("name", -1)).isValid());
  }
}
```

Solve human-specified problem in code

—



GPT-3

From Wikipedia, the free encyclopedia

Generative Pre-trained Transformer 3 (**GPT-3**) is an autoregressive language model that uses deep learning to produce human-like text. It is the third-generation language prediction model in the GPT-n series created by OpenAI, a for-profit San Francisco-based artificial intelligence research laboratory.[2] GPT-3's full version has a capacity of 175 billion machine learning parameters. GPT-3, which was introduced in May 2020, and is in beta testing as of July 2020,[3] is part of a trend in natural language processing (NLP) systems of pre-trained language representations.[1] Prior to the release of GPT-3, the largest language model was Microsoft's Turing NLG, introduced in February 2020, with a capacity of 17 billion parameters or less than 10 percent compared to GPT-3.[4]

The quality of the text generated by GPT-3 is so high that it is difficult to distinguish from that written by a human, which has both benefits and risks.[4] Thirty-one OpenAI researchers and engineers presented the original May 28, 2020 paper introducing GPT-3. In their paper, they warned of GPT-3's potential dangers and called for research to mitigate risk.[1]:34 David Chalmers, an Australian philosopher, described GPT-3 as "one of the most interesting and important AI systems ever produced."[5]

Generative Pre-trained Transformer 3 (GPT-3)

Original author(s)	OpenAI[1]
Initial release	June 11, 2020 (beta)
Repository	github.com/openai/gpt-3
Type	Autoregressive Transformer language model
License	Closed source, accessible by a paywalled API
Website	openai.com/blog/openai-api

Part of a series on

Artificial intelligence

https://en.wikipedia.org/wiki/GPT-3

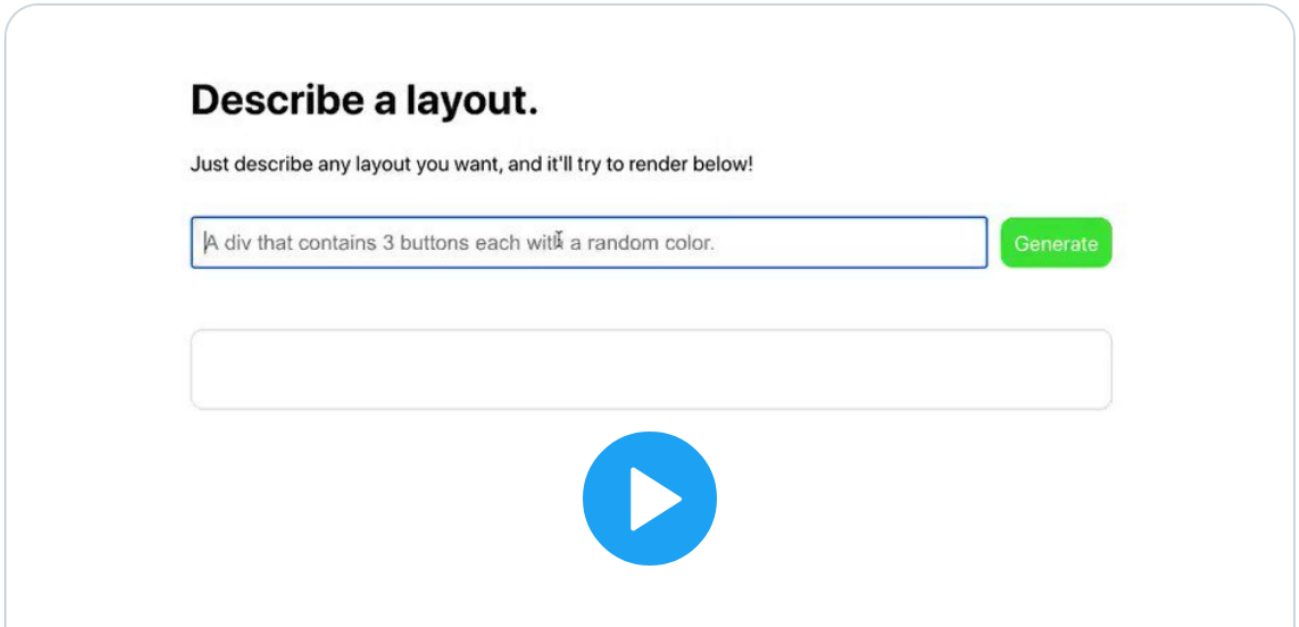
On June 11, 2020, OpenAI announced that users could request access to its user-friendly GPT-3 API—a "machine learning toolset"—to help OpenAI "explore the strengths and limits" of this new technology.[13][14] The invitation described how this API had a general-purpose "text in, text out" interface that can complete almost "any English language task", instead of the usual single use-case.[13] According to one user, who had access to a private early release of the OpenAI GPT-3 API, GPT-3 was "eerily good" at writing "amazingly coherent text" with only a few simple prompts.[15]

Sharif Shameem
@sharifshameem

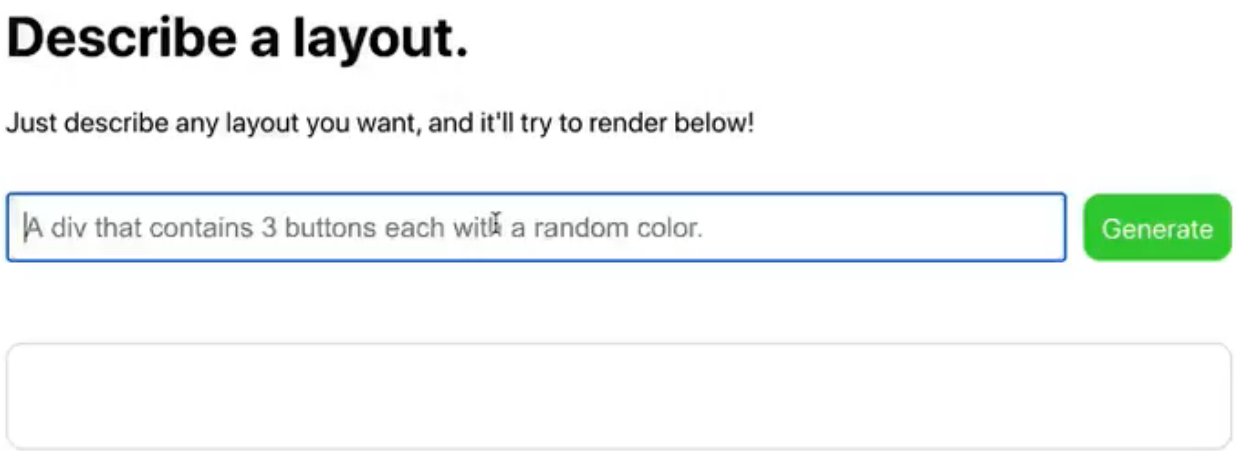
This is mind blowing.

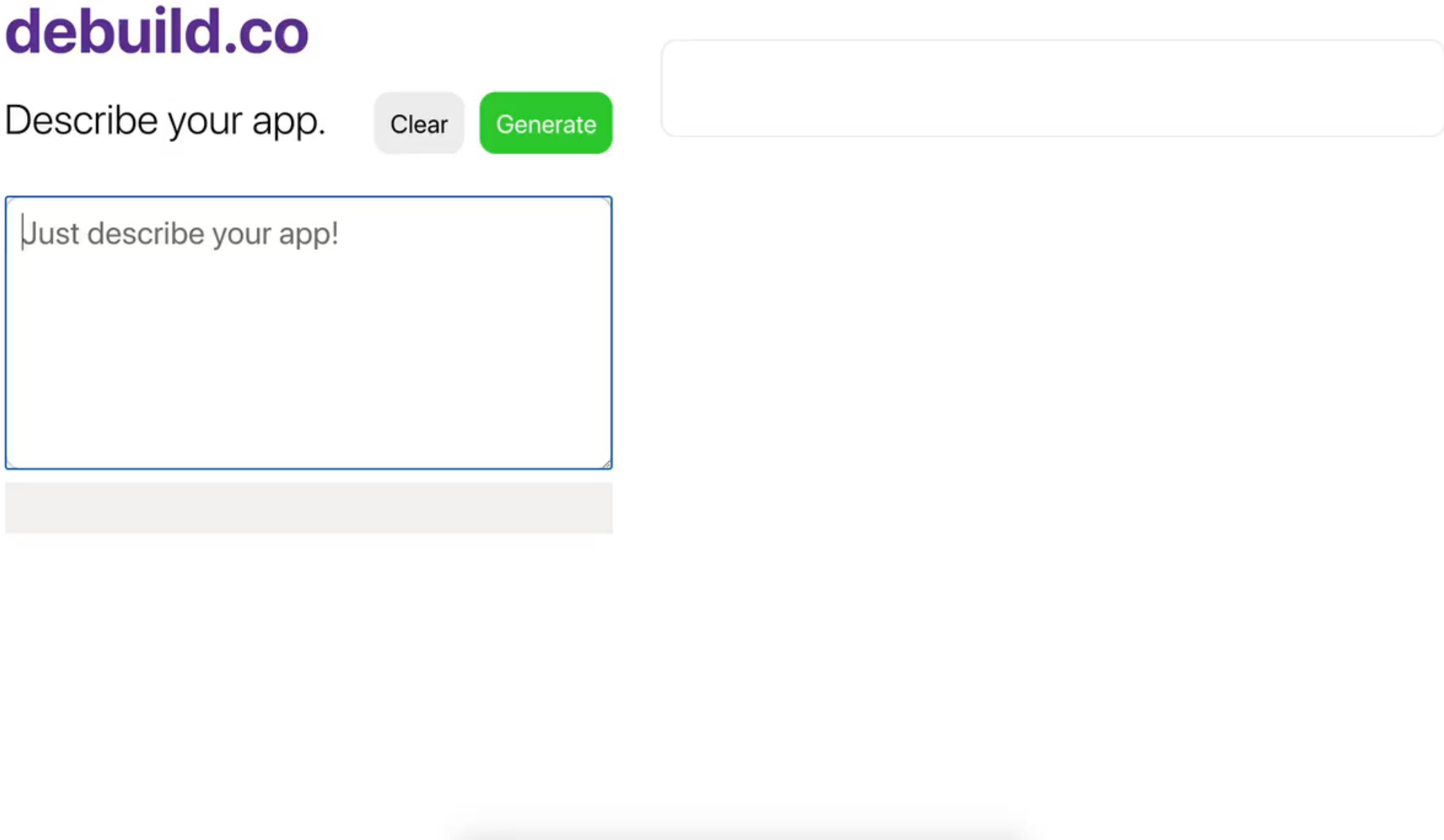
With GPT-3, I built a layout generator where you just describe any layout you want, and it generates the JSX code for you.

W H A T



https://twitter.com/sharifshameem

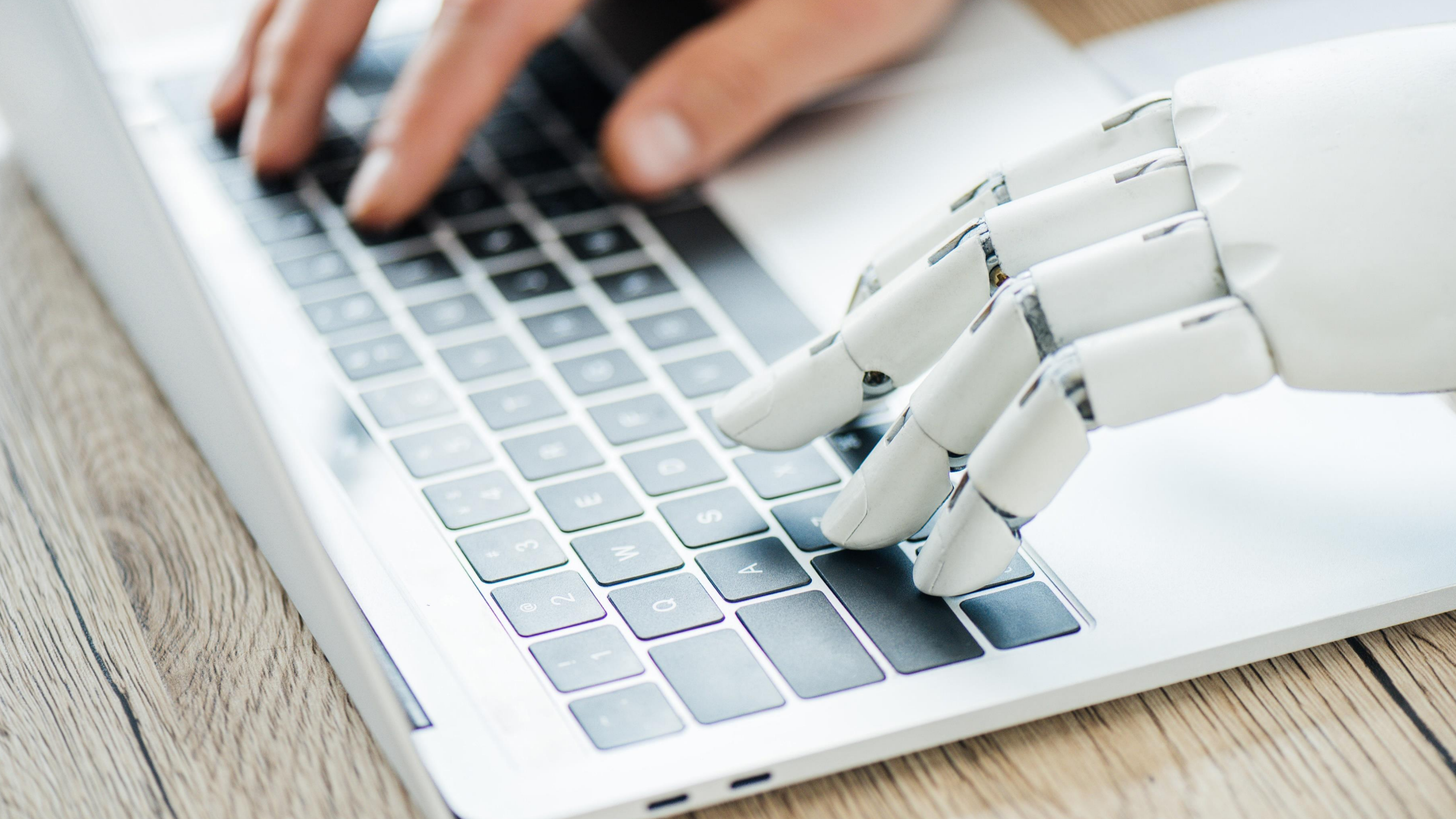

Describe a layout.
Just describe any layout you want, and it'll try to render below!
A div that contains 3 buttons each with a random color.
Generate


debuild.co
Describe your app.
Clear
Generate
Just describe your app!

debuild.co

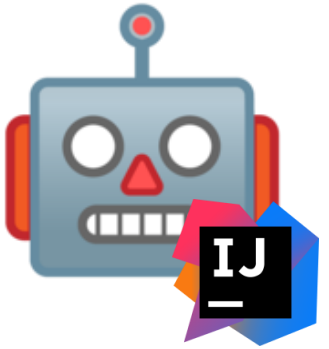
Describe your app. Clear Generate

Just describe your app!

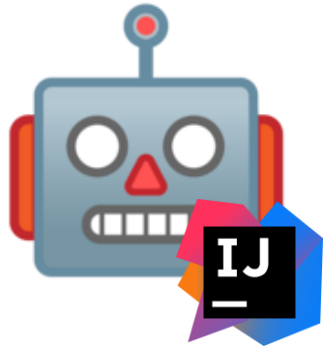


Может в стрим свернуть?

Я умею, дай клаву.

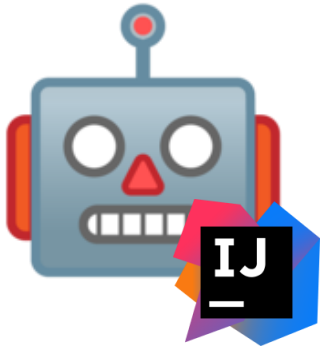


```java
final PsiClass[] superClasses = containingClass.getSupers();
boolean implementsInterface = Arrays.stream(superClasses)
  .anyMatch(PsiClass::isInterface);
if (!implementsInterface) {
  return;
}
```



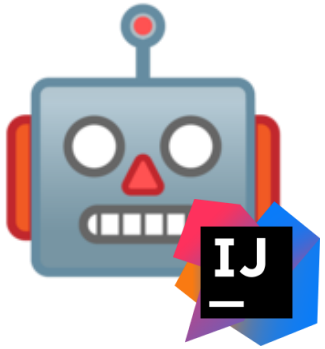
Норм?

Ну и переменную бы заинлайнил.



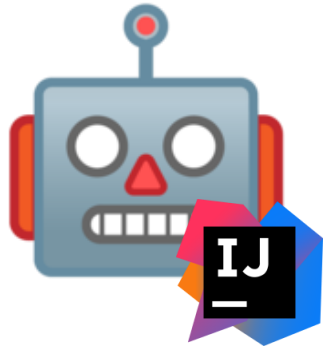
Ща. О, кстати, теперь noneMatch лучше.

Валяй.



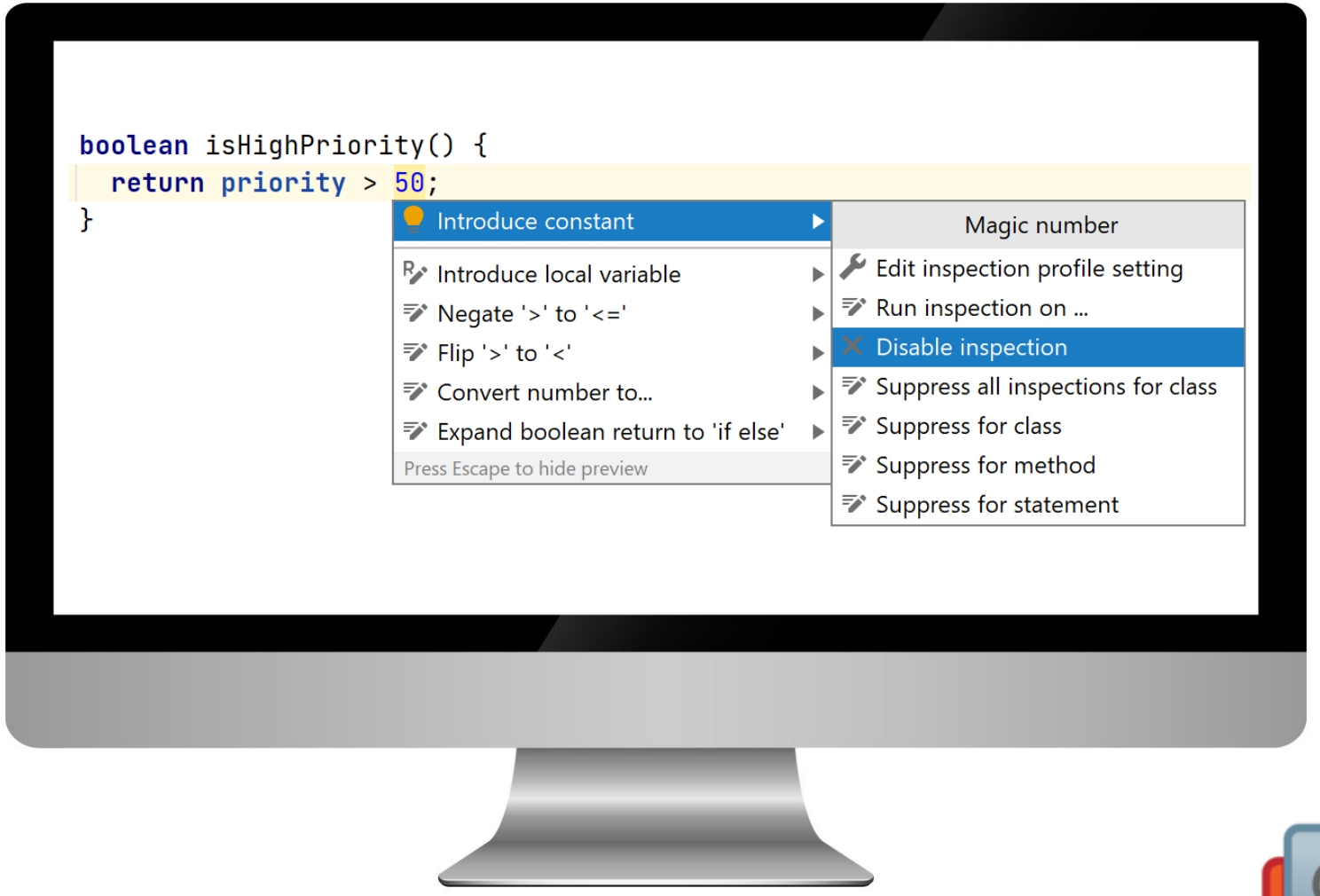
Зашибись.

Зашибись.



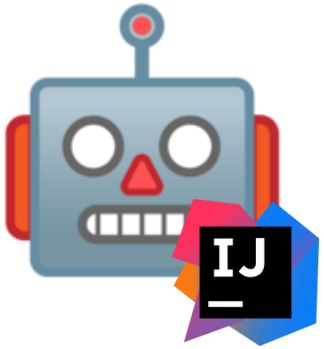
Стой, погоди! Так вообще-то нельзя писать!

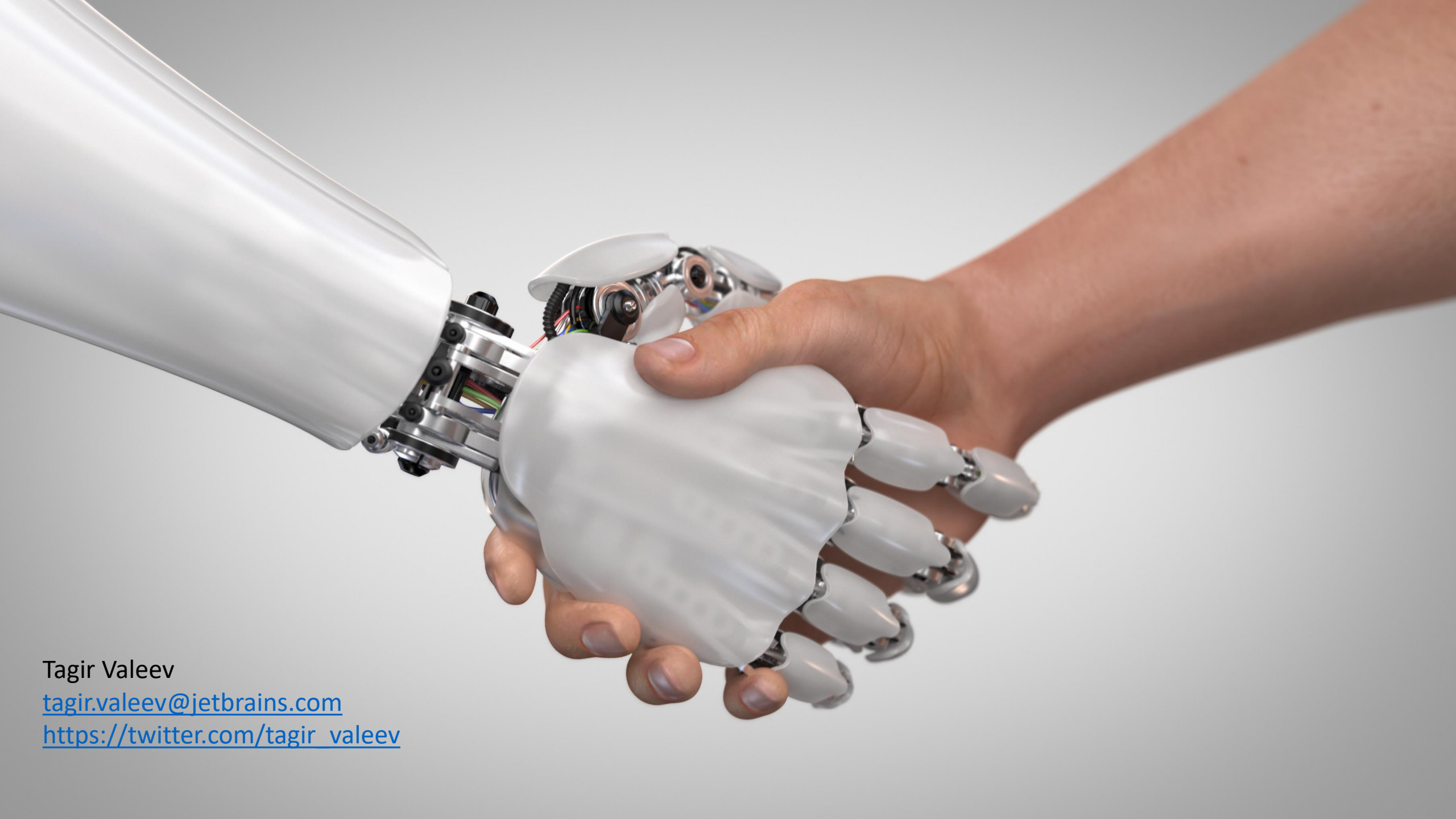
Хм. Вон оно как! Век живи – век учись!



Здесь тебе не универ, сынок.

Меня в универе учили, что магические константы – плохо.





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https://twitter.com/tagir_valeev