

IntelliJ IDEA plugin для поиска релевантных дискуссий с Q&A сайтов

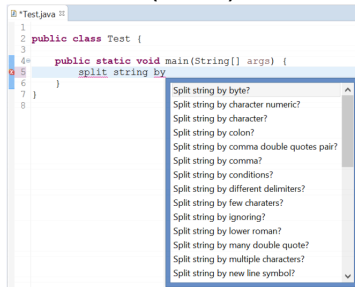
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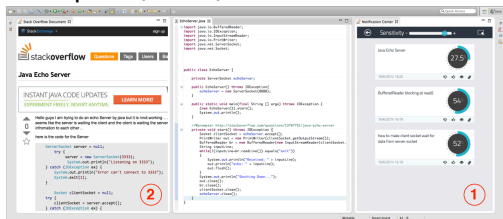
JetBrains Research

20 февраля 2018 г.

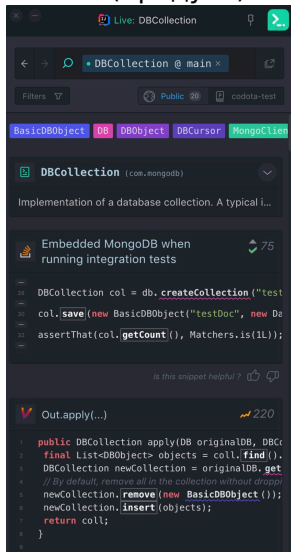
NLP2Code (2017)



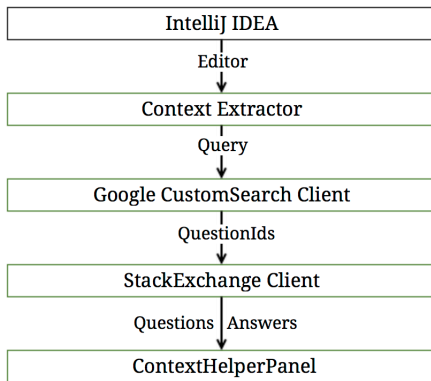
Prompter (2014)



Codota (продукт)



- Рассмотреть различные подходы к контекстной помощи в IDE
- Создать IntelliJ IDEA plugin для контекстной помощи
- Наладить средства обратной связи



ContextHelper

The screenshot shows an IDE with two main panels. The left panel displays the source code for `HttpExperiments.java`. The right panel shows search results for `ContextHelper`.

```
1 import org.apache.http.HttpResponse;
2 import org.apache.http.NameValuePair;
3 import org.apache.http.client.HttpClient;
4 import org.apache.http.client.entity.UrlEncodedFormEntity;
5 import org.apache.http.client.methods.HttpGet;
6 import org.apache.http.client.methods.HttpPost;
7 import org.apache.http.impl.client.HttpClientBuilder;
8 import org.apache.http.message.BasicNameValuePair;
9
10 import java.io.BufferedReader;
11 import java.io.IOException;
12 import java.io.InputStreamReader;
13 import java.util.ArrayList;
14 import java.util.List;
15
16 import static org.apache.http.HttpHeaders.USER_AGENT;
17
18 public class HttpExperiments {
19     public static void main(String[] args) throws IOException {
20         System.out.println(sendHttpRequest());
21         System.out.println(sendHttpPostRequest());
22     }
23
24     private static String sendHttpRequest() throws IOException {
25         String url = "http://www.google.com/search?q=httpClient";
26
27         HttpClient client = HttpClientBuilder.create().build();
28         HttpGet request = new HttpGet(url);
29
30         // Execute httpget with apache defaulthttpclient
31         // Get via httpclient
32         // Get response from httpclient
33         // Use get method httpclient
34         // Get response parameter in httpclient
35         // http() method
36         // http() method
37         // http() method
38         // http() method
39         new InputStreamReader(response.getEntity().getContent());
40
41         StringBuilder result = new StringBuilder();
42         String line;
43         while ((line = rd.readLine()) != null) {
44             result.append(line);
45         }
46         return result.toString();
47     }
48
49     private static String sendHttpPostRequest() throws IOException {
50         String url = "https://selfsolve.apple.com/wcResults.do";
51     }
52 }
```

The right panel shows search results for `ContextHelper`. The top result is `Execute httpget with apache defaulthttpclient java`. Below it is a list of search results with dates and authors. At the bottom, there is a snippet of code:

```
As stated in the comments and in another answer, remove the EntityUtils.consume(entity) line. Also, instead of using the
newReader method, I would recommend withReader (it automatically handles closing the stream). I'd also recommend
specifying the encoding when creating the reader
def listAlertsUrl = 'http://example.com/whatever'
HttpGet listAlertsRequest = new HttpGet(listAlertsUrl)
HttpResponse response = httpClient.execute(listAlertsRequest)
HttpEntity entity = response.getEntity()
// specify the encoding of HTTP response instead of using default JVM encoding
entity.setContent(withReader(entity.getContentEncoding().value) { jsonResponse ->
    // do stuff with the Reader
})
```

SelectionContextExtractor

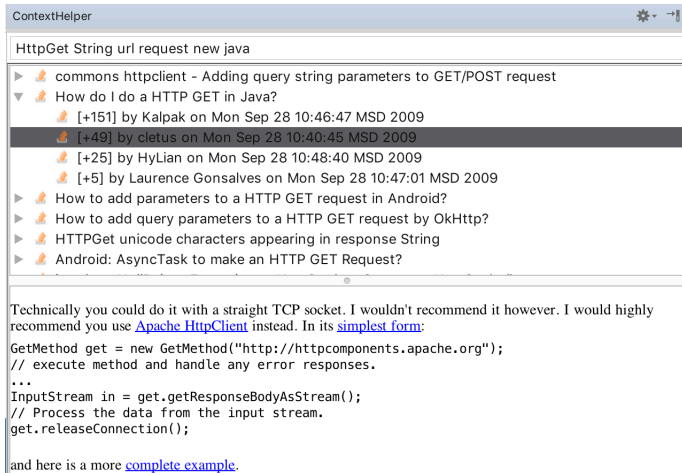
25
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@

 Adjust code style settings

 Get help based on the selection ▶

```
private static String sendHttpRequest() throws IOException {  
    String url = "http://www.google.com/search?q=httpClient";  
  
    HttpClient client = HttpClientBuilder.create().build();  
    HttpGet request = new HttpGet(url);
```



The screenshot shows a window titled "ContextHelper" with a search bar containing the text "HttpGet String url request new java". Below the search bar is a list of search results, each with a magnifying glass icon, a snippet of text, and a timestamp. The results are:

- ▶ commons httpclient - Adding query string parameters to GET/POST request
- ▼ How do I do a HTTP GET in Java?
 - 🔥 [+151] by Kalpak on Mon Sep 28 10:46:47 MSD 2009
 - 🔥 [+49] by cletus on Mon Sep 28 10:40:45 MSD 2009
 - 🔥 [+25] by HyLian on Mon Sep 28 10:48:40 MSD 2009
 - 🔥 [+5] by Laurence Gonsalves on Mon Sep 28 10:47:01 MSD 2009
- ▶ How to add parameters to a HTTP GET request in Android?
- ▶ How to add query parameters to a HTTP GET request by OkHttp?
- ▶ HTTPGet unicode characters appearing in response String
- ▶ Android: AsyncTask to make an HTTP GET Request?

Below the list, there is a text block starting with "Technically you could do it with a straight TCP socket. I wouldn't recommend it however. I would highly recommend you use [Apache HttpClient](#) instead. In its [simplest form](#):"

```
GetMethod get = new GetMethod("http://httpcomponents.apache.org");  
// execute method and handle any error responses.  
...  
InputStream in = get.getResponseBodyAsStream();  
// Process the data from the input stream.  
get.releaseConnection();
```

and here is a more [complete example](#).

Проблемы:

- потеря семантики
- разная частота слов

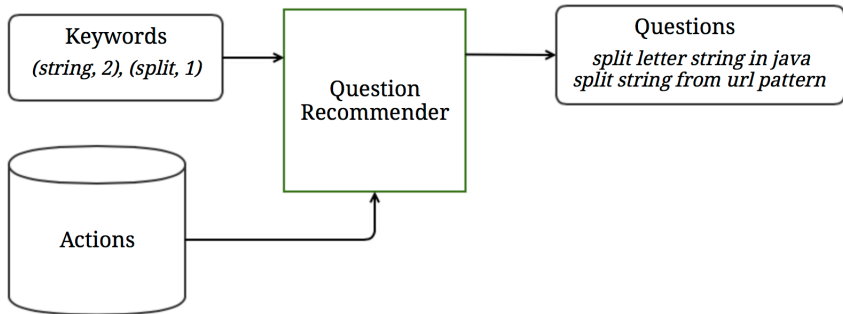
C. Treude, M. Sicard, M. Klocke and M. Robillard, "TaskNav: Task-Based Navigation of Software Documentation," 2015 IEEE/ACM 37th IEEE International Conference on Software Engineering, Florence, 2015, pp. 649-652.

Примеры действий полученных в работе для StackOverflow:
add header to httpget request
set string to calendar

Ключевые слова и вопросы SO

C. Treude, M. Sicard, M. Klocke and M. Robillard, "TaskNav: Task-Based Navigation of Software Documentation," 2015 IEEE/ACM 37th IEEE International Conference on Software Engineering, Florence, 2015, pp. 649-652.

Примеры действий полученных в работе для StackOverflow:
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set string to calendar



DeclarationsContextExtractor

TypeTrie – префиксное дерево названий пакетов. Каждой вершине назначается штраф:











$$penalty = \text{Math.exp}(\text{mostRelevantLevel}) * \text{packageSize}.$$

```
70 List<NameValuePair> urlParameters = new ArrayList<>();
71
72 urlParameters.add(new BasicNameValuePair( name: "sn", value: "C02G8416DRJM"));
73 urlParameters.add(new BasicNameValuePair( name: "cn", value: ""));
74 urlParameters.add(new BasicNameValuePair( name: "locale", value: ""));
75 urlParameters.add(new BasicNameValuePair( name: "caller", value: ""));
76 urlParameters.add(new BasicNameValuePair( name: "num", value: "12345"));
77
78 post.setEntity(new UrlEncodedFormEntity(urlParameters));
79
80 HttpResponse response = client.execute(post);
81
82 System.out.println("Response Code : "
83 | + response.getStatusLine().getStatusCode());
84
85 BufferedReader rd = new BufferedReader(
86 | new InputStreamReader(response.getEntity().getContent()));
87
88
89
90
91
92
93
94
95
```

- Download zip file from http post response
- Receive response from http post
- Save zip file from http post response
- Read http post response
- Handle response after http post

http(1), response(1), http(1), post(1)

Receive response from http post java

- ▼  How to get response from HttpPost
 -  [+0] by mubeen on Fri Apr 29 12:29:43 MSK 2016
 -  [+0] by ishmaelMakitla on Fri Apr 29 11:04:51 MSK 2016
- ▶  Reading HttpPost response
- ▶  How can I get an http response body as a string in Java?
- ▶  Java, How to get connection response code from HTTP POST method?
- ▶  Sending HTTP POST Request In Java
- ▶  Couldn't get response from HTTP Post server Java
- ▶  Sending and Parsing Response using HTTP Client for a JSON List
- ▶  Android HttpPost: how to get the result

You can try this

```
InputStream inputStream = httpResponse.getEntity().getContent();
InputStreamReader inputStreamReader = new InputStreamReader(inputStream);
BufferedReader bufferedReader = new BufferedReader(inputStreamReader);
StringBuilder stringBuilder = new StringBuilder();
String bufferedStrChunk = null;
while((bufferedStrChunk = bufferedReader.readLine()) != null){
    stringBuilder.append(bufferedStrChunk);
}
```

Instead of

```
HttpEntity entity8 = response.getEntity();
if(entity8 !=null){
    responseString = EntityUtils.toString(entity8, "UTF-8");
    System.out.println("Response body: " + responseString);
}
```

Использование API вызовов

```
23  
24 private static String sendHttpRequest() throws IOException {  
25     String url = "http://www.google.com/search?q=httpClient";  
26  
27     HttpClient client = HttpClientBuilder.create().build();  
28     HttpGet request = new HttpGet(url);
```

```
30     request.add_
```

- Add header to httpget request
- Get global ip address from java http server
- Get remote ip address with httpURLConnection
- Get mac address from jetty httpservletrequest
- Add date header to httpget

```
http(2), get(2), add(1)
```

Add date header to httpget java

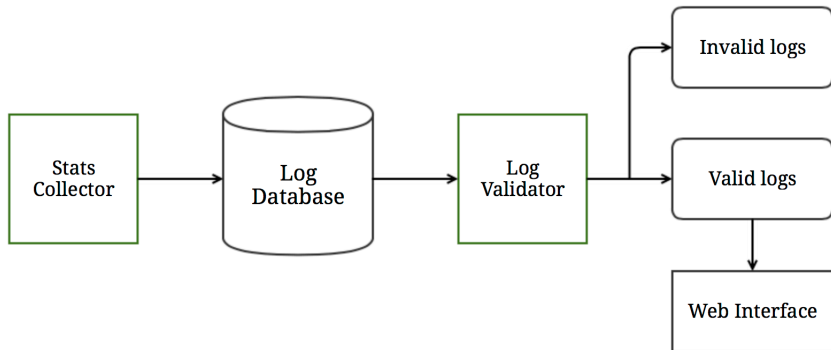
- ▼ how to add date header to httpGet
 - 🔥 [+0] by Rishi on Thu Aug 25 22:00:36 MSK 2011
 - ▶ 🔥 HttpGet adding header
 - ▶ 🔥 How to parse Date from HTTP Last-Modified header?
 - ▶ 🔥 how to get last-modified date from header to String
 - ▶ 🔥 Getting "Set-Cookie" header
 - ▶ 🔥 how to use HEAD method of HttpClient to get all headers
 - ▶ 🔥 Getting Date in HTTP format in Java
 - ▶ 🔥 Not getting the set Cookie in the header of HttpGet
 - ▶ 🔥 Apache not obeying If-Modified-Since

"The difference between the request time and the server time is too large" Then I came to know that the server needs to have the request in GMT so I did add accordingly an header (addHeader) to do the same. But still I have the same issue.

Any thoughts/ideas?

some code:

```
final String url = "ip address";
final HttpGet request = new HttpGet(url);
final ArrayList<NameValuePair> nameValues = new ArrayList<NameValuePair>();
nameValues.add(new BasicNameValuePair("Authorization", "XXX"));
nameValues.add(new BasicNameValuePair("date", "Fri, 19 Aug 2011 22:39:13 GMT"));
for (final NameValuePair h : nameValues)
{
    request.addHeader(h.getName(), h.getValue());
}
final HttpClient client = new DefaultHttpClient();
HttpResponse httpResponse;
try
{
    httpResponse = client.execute(request);
    responseCode = httpResponse.getStatusLine().getStatusCode();
    response = httpResponse.getEntity();
    responseBytes = response.getContentAsByteArray();
}
```



- Поиск общего шаблона выделения ключевых слов путем анализа SO
- Генерация естественного вопроса из ключевых слов, а не выбор action-query
- Учет действий пользователя, а не только статического контекста
- Использование логов для улучшения ранжирования

- Изучены методы контекстной помощи в IDE
- Создан plugin для IntelliJ IDEA
- Совместно с JetBrains (JetStat team) реализована возможность сбора логов plugin-a

Репозиторий:

<https://github.com/ml-in-programming/context-helper>