

使用Kotlin编写IntelliJ plugin 张志豪

Agenda

- 自我介绍&作品简介
- 步入正题：你要开发什么插件
- IntelliJ plugin开发指南
- Why Kotlin
- IntelliJ plugin开发指南
- Live plugin简介
- 使用IntelliJ platform plugin template
- 插件实战：The IntelliJ Google Search plugin
- showcase
- 发布

自我介绍

我是张志豪，目前就职于Thoughtworks从事大数据相关的工作。业余时间一直活跃于开源社区，我在GitHub的账号是 @izhangzhihao，目前同时在维护多个项目，包括多个Intellij插件，除此之外还有一些其他Kotlin和Scala的开源项目。

作品简介

Rainbow Brackets

Rainbow Brackets是一个帮助大家提高代码阅读效率的插件。他通过给不同层级括号填充不同颜色，来提高提高阅读效率，提高阅读代码的乐趣，更快找到问题。

它很小巧，只有两百k，但是开箱即用，并且支持大多数常见语言，尤其在针对复杂或较大的文件时尤其突出。最近下载量已经突破八百万，欢迎大家下载使用~

```
public class FlatMap {  
    public static <T, U, R> Optional<R> flatMap(Optional<T> opt1,  
                                                Optional<U> opt2,  
                                                BiFunction<T, U, Optional<R>> mapper) {  
  
        return  
            opt1.flatMap(a ->  
                opt2.flatMap(b ->  
                    mapper.apply(a, b)  
                ));  
    }  
}
```

```
event.throwable?.let { throwable ->  
    IdeErrorsDialog.findPluginId(throwable)?.let { pluginId ->  
        PluginManager.getPlugin(pluginId)?.let { ideaPluginDescriptor ->  
            if (!ideaPluginDescriptor.isBundled) {  
                bean.pluginName = ideaPluginDescriptor.name  
                bean.pluginVersion = ideaPluginDescriptor.version  
            }  
        }  
    }  
}
```

```
<div>  
    <div>  
        <div class="form-group">  
            <label class="form-control-label col-sm-2">Rainbow Brackets is awesome!</label>  
            <div class="col-sm-10">  
                <input id="model" name="model" type="text"/>  
                <div>Just install it!</div>  
            </div>  
        </div>  
    </div>  
</div>
```

为什么开发插件?

IntelliJ plugin的几种类型

- 主题插件
- 支持新语言
- 支持新框架
- 集成新工具
- 提高效率
-

Why Kotlin?

Rainbow Bracket 5年前就选择Kotlin的原因

- 与Java互操作性
- 尾递归优化
- 模式匹配
- Data class
- 空安全
- 零依赖
-

IntelliJ plugin开发指南

- SDK文档: <https://plugins.jetbrains.com/docs/intellij/welcome.html>
- IntelliJ Platform Explorer: <https://plugins.jetbrains.com/intellij-platform-explorer/extensions>
- Slack
- IntelliJ-community 源码: <https://github.com/JetBrains/intellij-community>
- 快速开始: <https://github.com/JetBrains/intellij-platform-plugin-template>

插件相关基本概念

给有Spring基础同学的快速理解指南

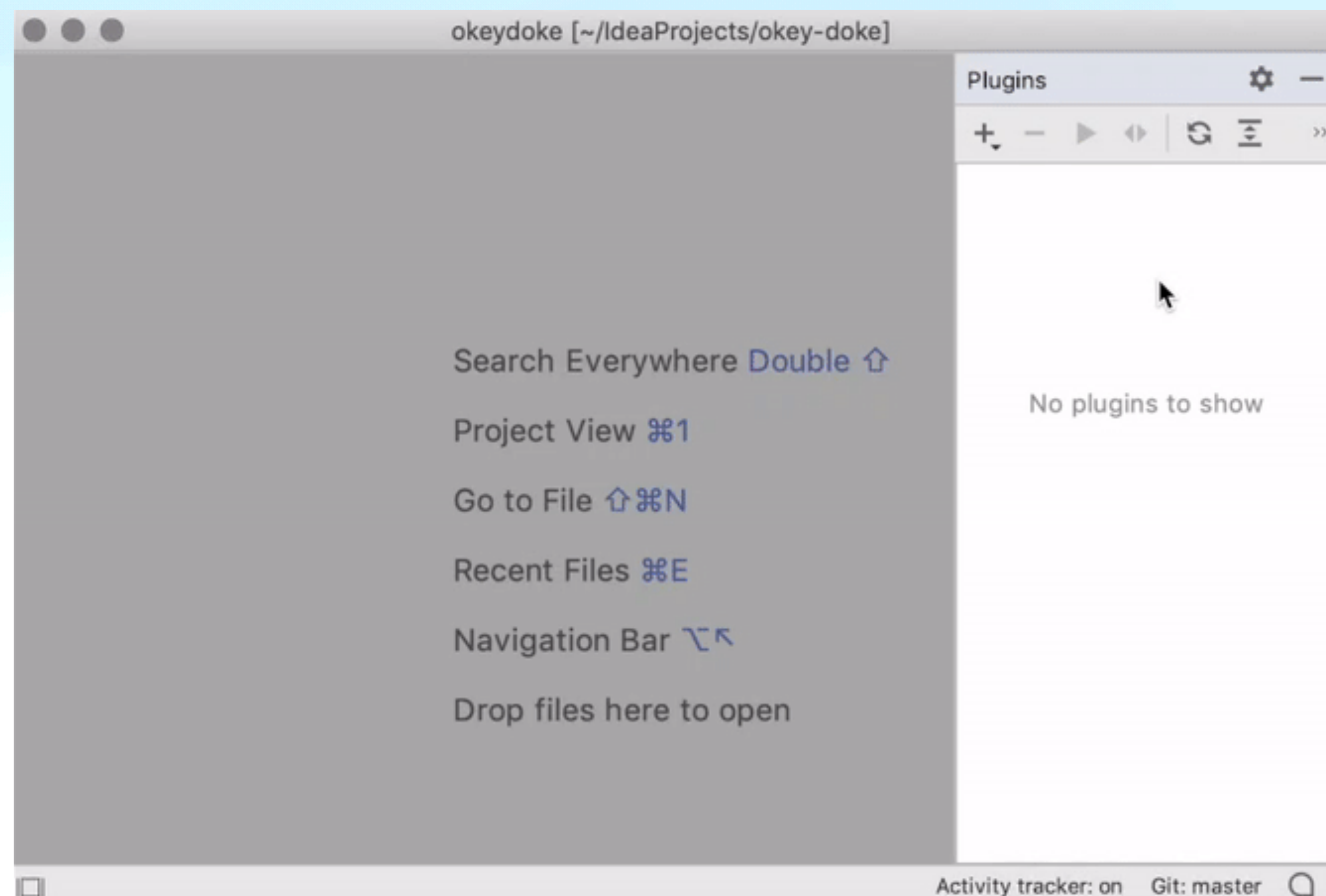
- plugin.xml => 类似于spring早期的配置文件
- Action => 注册快捷键或者菜单项
- Extension => 为已有的接口注册bean实例
- ExtensionPoint => 创建新的接口
-

两种通过Kotlin编写IntelliJ plugin的方式

- Live plugin
- IntelliJ platform plugin template

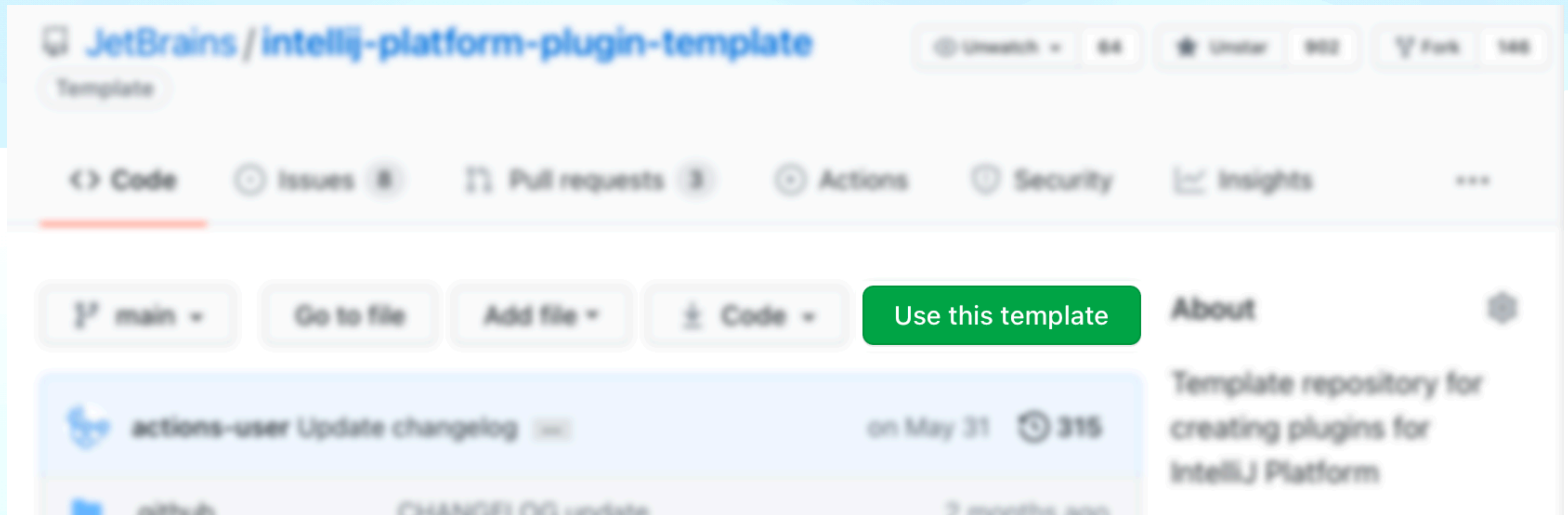
Live plugin

- 只需要安装IntelliJ和Live plugin即可开始开发
- 快速反馈，不需要重启即可调试插件功能
- Live plugin包装了部分IntelliJ的API，使得插件开发更加清爽



使用IntelliJ platform plugin template

 JetBrains
IJ Platform Plugin Template



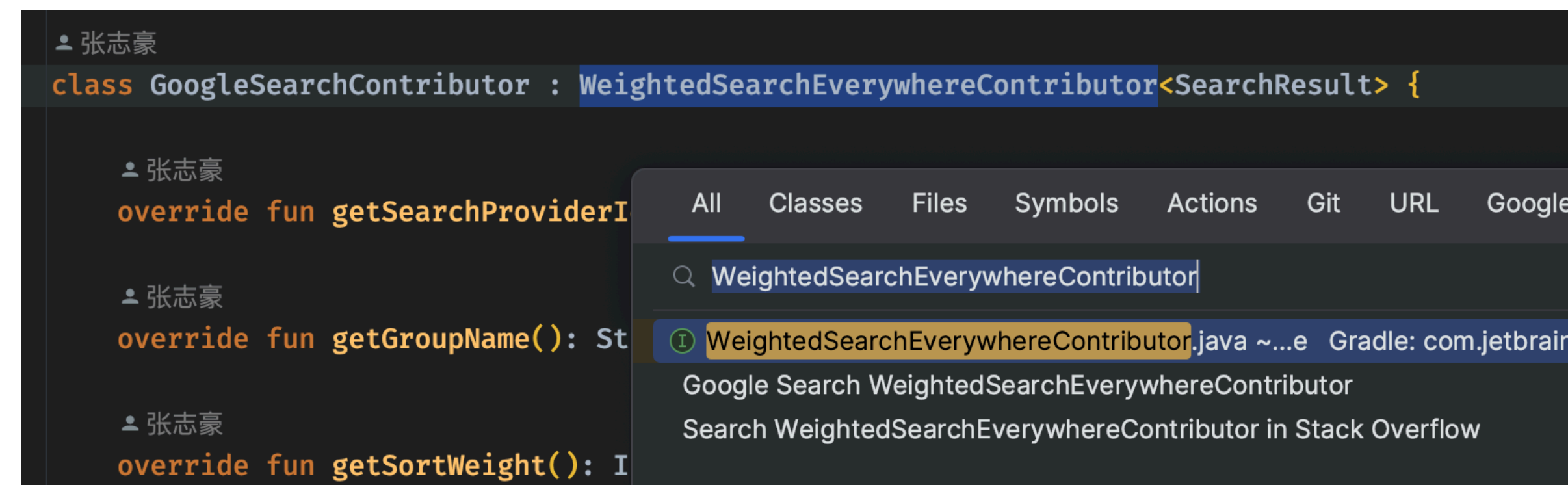
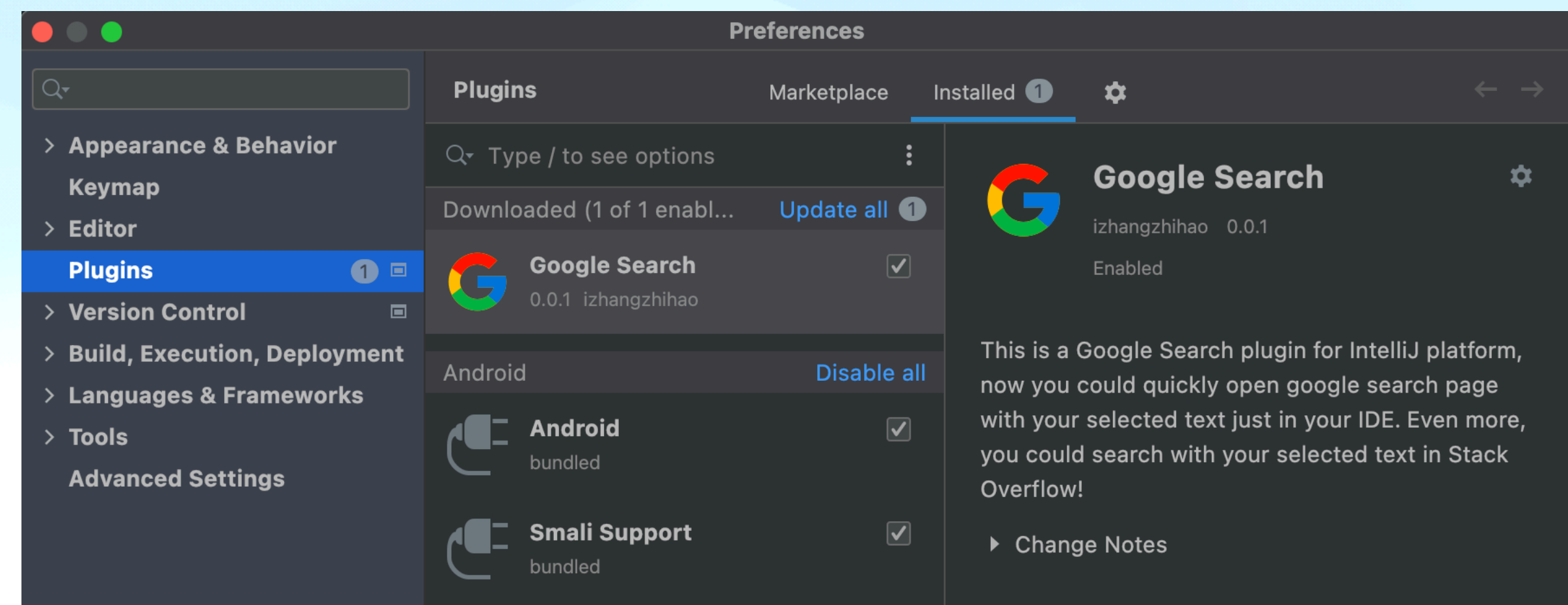
插件实战：The IntelliJ Google Search plugin

扩展IntelliJ Search Everywhere的功能。快速搜索IDE中选中的字符，支持使用Google来搜索，还可以限制只需要Stack Overflow的结果。

Tasking:

- 找到相关的IntelliJ API
- 注册新的实现
 - Google + Stack Overflow 搜索
 - 候选搜索词
 - 点击跳转到浏览器

示例代码地址：<https://github.com/izhangzhihao/intellij-google-search>



EXTENSIONS

LISTENERS

search

✕

Language

▼

Build system

▼

com.intellij.customMessageSearcher

com.intellij.definitionsScopedSearch

com.intellij.definitionsSearch

com.intellij.directClassInheritorsSearch

com.intellij.implicitToStringSearch

com.intellij.indexPatternSearch

com.intellij.methodReferencesSearch

com.intellij.overridingMethodsSearch

com.intellij.referencesSearch

com.intellij.searchEverywhereClassifier

com.intellij.searchEverywhereContributor

com.intellij.searchEverywhereResultsEqualityProvider

com.intellij.searchScopesProvider

com.intellij.searcher

com.intellij.superMethodsSearch

COM.INTELLIJ.JVM

com.intellij.jvm.declarationSearcher

com.intellij.searchEverywhereContributor 🔍

	Extensions	Downloads / Updated	
 Restful Fast Request kings1990/fast-request	8	91 203 Oct 18, 2022	User Interface Code Tools Tools Integration Editor
 Api Savior gudqs7-idea-plugins/api-savior	5	3 338 Oct 16, 2022	Tools Integration JEE Web Navigation
 Odoo Autocompletion Support wt-io-it/odoo-pycharm-plugin/	9	20 507 Oct 14, 2022	Framework
 YAML JetBrains/intellij-community	44	54 509 Oct 13, 2022	Programming Language
 RESTKit newhoo/RESTKit	11	19 368 Sep 26, 2022	Tools Integration
 Arend JetBrains/intellij-arend	86	5 542 Aug 25, 2022	Programming Language
 Search Everywhere Api docer-savior/search-everywhere-api-idea-plugin	3	615 Aug 08, 2022	JEE Web Navigation
 RestfulHelper GoldSubmarine/RestfulHelper	2	5 834 Jul 27, 2022	Code Tools Tools Integration Navigation
 Gitee Support sukaiyi/gitee-idea-plugin	3	2 323 Aug 06, 2020	Tools Integration



```
1 <idea-plugin>
2   <id>gudqs7.github.io.search.everywhere.api</id>
3   <name>Search Everywhere Api</name>
4   <vendor email="gudqs7@gmail.com" url="https://github.com/gudqs7">gudqs7</vendor>
5
6   <description><![CDATA[ Description will be added by gradle build]]></description>
7
8   <!-- please see http://www.jetbrains.org/intellij/sdk/docs/basics/getting_started/build_number_ranges.html for description -->
9   <idea-version since-build="211.6693.111"/>
10
11   <!-- please see https://www.jetbrains.org/intellij/sdk/docs/basics/getting_started/plugin_compatibility.html
12         on how to target different products -->
13   <!-- <depends>com.intellij.modules.platform</depends> -->
14   <depends>com.intellij.modules.lang</depends>
15   <depends>com.intellij.modules.java</depends>
16
17   <extensions defaultExtensionNs="com.intellij">
18     <notificationGroup displayType="BALLOON" id="Search Everywhere Api Tip" bundle="group" key="notification.group.tip.name"/>
19     <notificationGroup displayType="STICKY_BALLOON" id="Search Everywhere Api Error" bundle="group" key="notification.group.error.name"/>
20
21     <projectService serviceImplementation="cn.gudqs7.plugins.search.MethodFilterConfiguration"/>
22
23     <searchEverywhereContributor implementation="cn.gudqs7.plugins.search.ApiSearchContributorFactory"/>
24
25     <errorHandler implementation="cn.gudqs7.plugins.diagnostic.SearchApiIssueSubmitter"/>
26   </extensions>
27
28   <actions>
29     <!-- url 导航 -->
30     <action id="cn.gudqs.search.goto" class="cn.gudqs7.plugins.search.GotoApiAction"
31       text="_Api" description="Go to Api"
32       icon="AllIcons.Actions.Search">
33       <add-to-group group-id="GoToTargetEx" anchor="first"/>
34       <keyboard-shortcut keymap="$default" first-keystroke="ctrl BACK_SLASH" />
35       <keyboard-shortcut keymap="$default" first-keystroke="ctrl alt N"/>
36     </action>
37   </actions>
38
39 </idea-plugin>
```

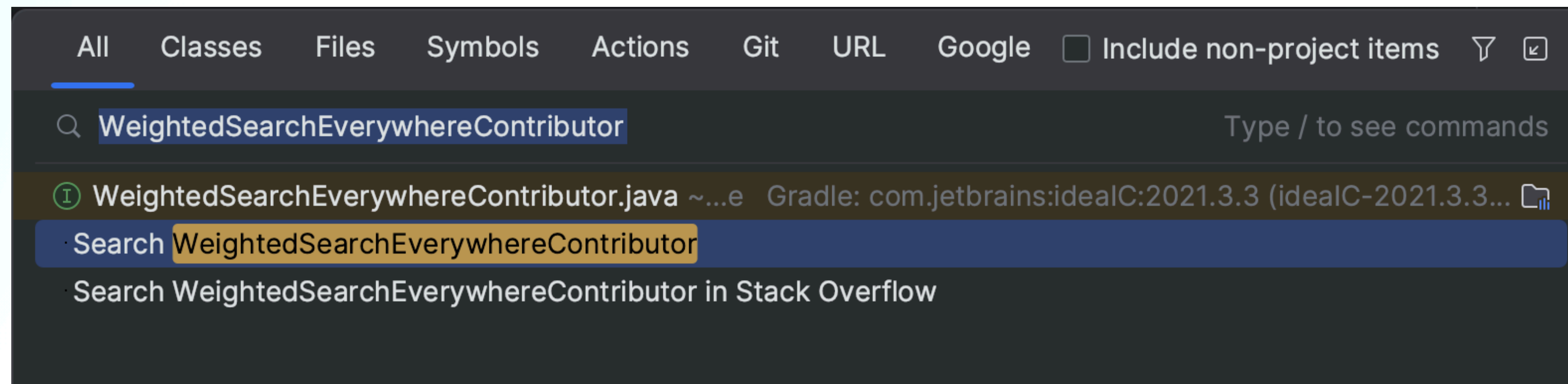

插件实战：展示搜索结果

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```
override fun getElementsRenderer(): ListCellRenderer<in SearchResult> {  
    return object : SearchEverywherePsiRenderer(this) { ... }  
}
```

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```
override fun fetchWeightedElements(  
    pattern: String,  
    progressIndicator: ProgressIndicator,  
    consumer: Processor<in FoundItemDescriptor<SearchResult>>  
) {  
    val baseUrl = "https://google.com/search?q="   
    val encodedQuery: String = URLEncoder.encode(pattern.replace("\n", ""), "UTF-8")  
    consumer.process(FoundItemDescriptor(SearchResult("Google", baseUrl + encodedQuery, "Google Search $pattern"), 1000))  
    consumer.process(FoundItemDescriptor(SearchResult("Google", "$baseUrl$encodedQuery+site%3Astackoverflow.com", "Search $pattern in Stack Overflow"),  
}
```



插件实战： 候选搜索

```
val url = URL("https://suggestqueries.google.com/complete/search?client=firefox&q=$encodedQuery")

val con = url.openConnection()
val `in` = con.getInputStream()
val encoding: String = con.contentEncoding ?: "UTF-8"
val body: String = IOUtils.toString(`in`, encoding)
val res = Gson().fromJson(body, JsonArray::class.java)
res[1].asJsonArray.forEach { it: JsonElement!
    val item = it.asString
    consumer.process(
        FoundItemDescriptor(
            SearchResult(
                "Google",
                baseUrl + (URLEncoder.encode(item.replace("\n", ""), "UTF-8")),
                "Google Search $item"
            ), 1000
        )
    )
}
```

57 2022-09-09 16:34:22.316 INFO [main :c.a.n.c.u.ParamUti

All Classes Files Symbols Actions Google ☐ Include no

how to exit

Google Search "how to exit"

Search "how to exit" in Stack Overflow

Google Search "how to exit vim"

Google Search "how to exit safe mode"

Google Search "how to exit full screen"

Google Search "how to exit full screen on mac"

Google Search "how to exit fastboot mode"

Google Search "how to exit full screen on windows"

Google Search "how to exit vi"

Google Search "how to exit safe mode on android"

Google Search "how to exit safe mode windows 10"

Google Search "how to exit a book on kindle"

showcase

```
17 import javax.swing.ListCellRenderer
18
19
20 class GoogleSearchContributor : WeightedSearchEverywhereContributor<SearchResult> {
21
22     override fun getSearchProviderId(): String = this.java
23
24     override fun getGroupName(): String = "Google"
25
26     override fun getSortWeight(): Int = 10000000000
27
28     override fun showInFindResults(): Boolean = true
29
30     override fun getElementsRenderer(): ListCellRenderer<in SearchResult> {
31         return object : SearchEverywherePsiRenderer(this) {
32             override fun customizeNonPsiElementLeftRenderer(
33                 renderer: ColoredListCellRenderer<*>,
34                 list: JList<*>,
35                 value: Any,
36                 index: Int,
37                 selected: Boolean,
38                 hasFocus: Boolean
39             ): Boolean {
40                 return try {
41                     val fgColor: Color = list.foreground
42                     val bgColor: Color = UIUtil.getListBackground()
43                     val nameAttributes = SimpleTextAttributes(SimpleTextAttributes.STYLE_PLAIN, fgColor)
44                     val itemMatchers = getItemMatchers(list, value)
45                     val apiNavigationItem: SearchResult = value as SearchResult
46                     val name: String = apiNavigationItem.description
47                     SpeedSearchUtil.appendColoredFragmentForMatcher(
```

com.intellij.ide.actions.searcheverywhere

@AvailableSince(value = "193.5233.102")

public interface WeightedSearchEverywhereContributor<I>

extends com.intellij.ide.actions.searcheverywhere.SearchEverywhereContributor<I>

Gradle: com.jetbrains:idealC:2021.3.3 (platform-api.jar)

发布到Marketplace

Template ToDo list

- ☒

Create a new [IntelliJ Platform Plugin Template](#) project.
- ☐

Get familiar with the [template documentation](#).
- ☐

Verify the [pluginGroup](#), [plugin ID](#) and [sources package](#).
- ☐

Review the [Legal Agreements](#).
- ☐

[Publish a plugin manually](#) for the first time.
- ☐

Set the Plugin ID in the above README badges.
- ☐

Set the [Deployment Token](#).
- ☐

Click the

Watch

 button on the top of the [IntelliJ Platform Plugin Template](#) to be notified about releases containing new features and fixes.

1

```
2022-10-23T03:22:24 [main] INFO  verification - Finished 1 of 4 verifications (in 1.9 s): IC-223.7126.7 against
com.github.izhangzhihao.intellijsources:0.0.1: Compatible
2022-10-23T03:22:24 [main] INFO  verification - Finished 2 of 4 verifications (in 1.9 s): IC-213.7172.25 against
com.github.izhangzhihao.intellijsources:0.0.1: Compatible
2022-10-23T03:22:24 [main] INFO  verification - Finished 3 of 4 verifications (in 1.9 s): IC-222.4345.14 against
com.github.izhangzhihao.intellijsources:0.0.1: Compatible
2022-10-23T03:22:24 [main] INFO  verification - Finished 4 of 4 verifications (in 2.0 s): IC-221.6008.13 against
com.github.izhangzhihao.intellijsources:0.0.1: Compatible
Plugin com.github.izhangzhihao.intellijsources:0.0.1 against IC-223.7126.7: Compatible
Plugin can probably be enabled or disabled without IDE restart

Plugin com.github.izhangzhihao.intellijsources:0.0.1 against IC-213.7172.25: Compatible
Plugin can probably be enabled or disabled without IDE restart

Plugin com.github.izhangzhihao.intellijsources:0.0.1 against IC-222.4345.14: Compatible
Plugin can probably be enabled or disabled without IDE restart

Plugin com.github.izhangzhihao.intellijsources:0.0.1 against IC-221.6008.13: Compatible
Plugin can probably be enabled or disabled without IDE restart

2022-10-23T03:22:24 [main] INFO  verification - Total time spent downloading plugins and their dependencies: 0 ms
2022-10-23T03:22:24 [main] INFO  verification - Total amount of plugins and dependencies downloaded: 0 B
2022-10-23T03:22:24 [main] INFO  verification - Total amount of space used for plugins and dependencies: 0 B
```

2

IDEs : Upload Plugin

JAR/ZIP file to upload

选择文件

未选择任何文件

License

Select license

https://

Unfortunately, JetBrains can't tell you what your plugin's Developer EULA should say because it will largely depend on your choice of how to license the plugin, how to use personal data, etc. However, we can give you some pointers, e.g. [Open Source licenses](#) and various independent [EULA generators](#) (not affiliated with JetBrains).

A

ABC

Tags

Select tags

Channel (optional)

Stable

If you want to publish this plugin to an arbitrarily-named channel write the name of the channel to the field above. When empty, this will use the default plugin repository channel (Stable), available to all JetBrains plugin repository users. You can find information about custom release channels [on this page](#)

Upload Plugin

3

Compatibility verification

Plugins are verified with [IntelliJ Plugin Verifier](#)

Verification Results

- ▶

IntelliJ IDEA Ultimate IU-223.7126.7 (2022.3 (eap)) Compatible (Restart)
- ▶

IntelliJ IDEA Ultimate IU-222.4345.14 (2022.2.3) Compatible (Restart)
- ▶

IntelliJ IDEA Ultimate IU-221.6008.13 (2022.1.4) Compatible (Restart)
- ▶

IntelliJ IDEA Ultimate IU-213.7172.25 (2021.3.3) Compatible (Restart)

Schedule Verification

Verifications take approximately 10 to 15 minutes

IDE

IntelliJ IDEA Ultimate

Build number

IU-223.7126.7 (2022.3 (eap))

Schedule Verification

4

发布到Marketplace

5

Google Search



Preview

Overview

Versions

Reviews

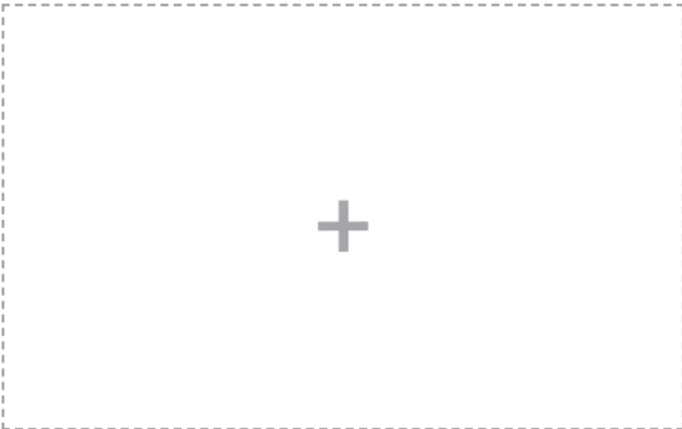
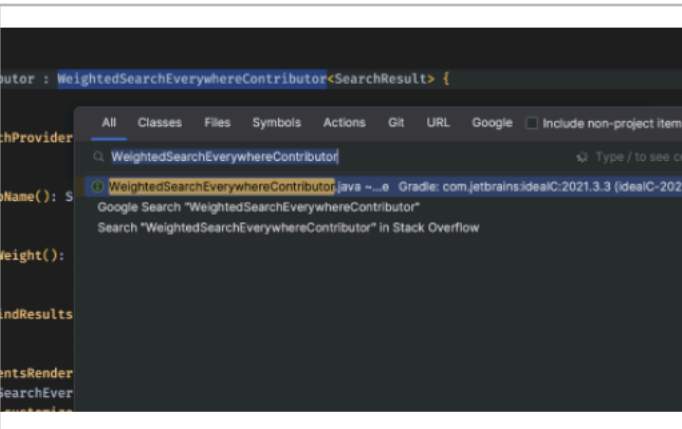
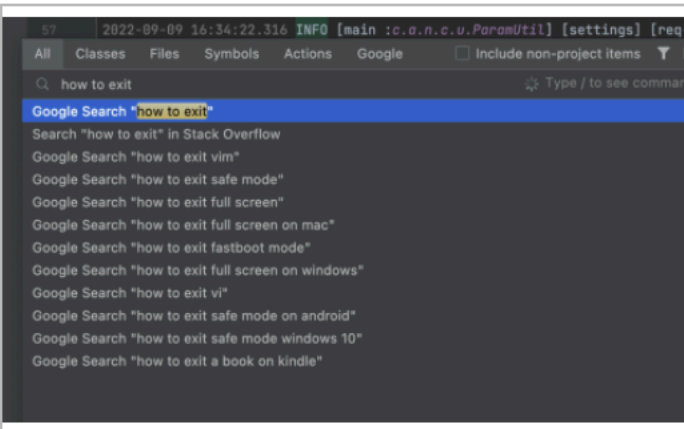
Custom Pages

Analytics

Media

Plugin Screenshots

Tip: Screenshots look best with a display ratio of 16:9 and a resolution of at least 1280 × 800 pixels. Learn more in our [media guidelines](#)

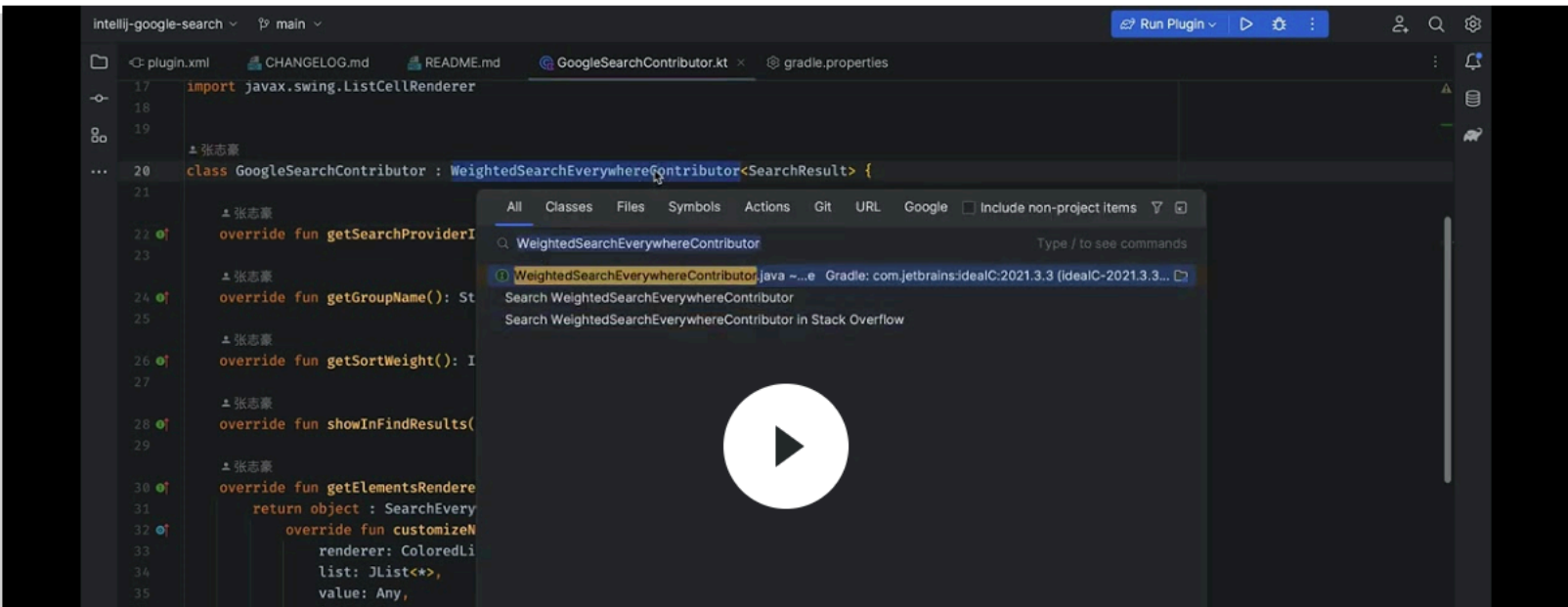


Preview Video

<https://www.youtube.com/watch?v=EZULZgeGAK4>



Paste video URL (YouTube)



Thanks!
Have a nice Kotlin



@izhangzhiahao