Evaluating How Developers Use General-Purpose Web-Search for Code Retrieval


Date: May 29, 2018
Coding Task

Convert a date string to a time object
string to time
string to time

PHP: strtoltime - Manual
php.net/manual/en/function.strtoltime.php
int strtoltime ( string $time [, int $now = time() ] ). The function expects to be given a string an English date format and will try to parse that format into a ...
Supported Date and Time ... · Strptime · PHP: strtotime - Manual

c# - Convert string to Time - Stack Overflow
https://stackoverflow.com/questions/18919530/convert-string-to-time
Sep 20, 2013 - "16:23:01" doesn't match the pattern of "hh:mm:ss tt" - it doesn't have an ; designator, and 16 clearly isn't in a 12-hour clock. You're ...
How to convert string to time in android? 3 answers May 26, 2014
python - Convert string into datetime.time object 2 answers Jan 12, 2013
java - convert String in time to Time object without Date 3 answers Mar 27, 2011
python - Converting string into datetime 17 answers Jan 21, 2009
More results from stackoverflow.com

PHP strtotime() Function - W3Schools
https://www.w3schools.com/php/func_date_strtoltime.asp
Parameter, Description. time, Required. Specifies a date/time string. now, Optional. Spe
timestamp used as a base for the calculation of relative dates ...
string to time

**PHP**: `strtotime` - Manual
int strftime ( string $time [, int $now = time() ] ). The function expects to be given a string an English date format and will try to parse that format into a ...
Supported Date and Time ... · Strptime · PHP: strtotime - Manual

**c#** - Convert string to Time - Stack Overflow
https://stackoverflow.com/questions/18919530/convert-string-to-time
Sep 20, 2013 - "16:23:01" doesn't match the pattern of "hh:mm:ss tt" - it doesn't have an t; designator, and 16 clearly isn't in a 12-hour clock. You're ...
How to convert string to time in android? 3 answers May 26, 2014
python - Convert string into datetime.time object 2 answers Jan 12, 2013
date - convert String in time to Time object without Date 3 answers Mar 27, 2011
python - Converting string into datetime 17 answers Jan 21, 2009
More results from stackoverflow.com

**PHP strtotime() Function - W3Schools**
https://www.w3schools.com/php/func_date_strtotime.asp
Parameter, Description. time, Required. Specifies a date/time string. now, Optional. Spe
timestamp used as a base for the calculation of relative dates ...
string to time using java
Now if you have a string of time like 15:30:18, you can use a SimpleDateFormat object to parse the string time and return a java.util.Date object. The pattern of the string should be passed to the SimpleDateFormat constructor. In the example below the string is formatted as hh:mm:ss (hour:minute:second).

Dec 7, 2017

How do I convert string of time to time object? | Kode Java

Convert Java string to Time, NOT Date - Stack Overflow
https://stackoverflow.com/questions/18604408/convert-java-string-to-time-not-date
Sep 4, 2013 - Example code in Joda-Time 2.7/Java 8. You can use the following code for changing the String value into the time equivalent: String str = "08:03:10 pm"; Date format = new SimpleDateFormat("HH:mm:ss a"); Date date = (Date) format.parse(str);

Java String to DateTime
java - Convert String Into Time
java - convert String in time to Time object without Date
data - How to convert string into Time object in Java?
More results from stackoverflow.com

How do I convert string of time to time object? | Kode Java
Dec 7, 2017 - Now if you have a string of time like 15:30:18, you can use a SimpleDateFormat object to parse the string time and return a java.util.Date object. The pattern of the string should be passed to the SimpleDateFormat constructor. In the example below the string is formatted as hh:mm:ss (hour:minute:second).
How do I convert string of time to time object? | Kode Java
Dec 7, 2017 - Now if you have a string of time like 15:30:18 , you can use a SimpleDateFormat object to parse the string time and return a java.util.Date object. The pattern of the string should be passed to the SimpleDateFormat constructor. In the example below the string is formatted as hh:mm:ss (hour:minute:second).
string to time using java

Search Log

string to time

DateTime

How do I convert string of time to time object? | Kode Java

Dec 7, 2017 - Now if you have a string of time like 15:30:18, you can use a SimpleDateFormat object to parse the string time and return a java.util.Date object. The pattern of the string should be passed to the SimpleDateFormat constructor. In the example below the string is formatted as hh:mm:ss (hour:minute:second).

Related searches:

- Convert Java string to Time, NOT Date - Stack Overflow
- How do I convert string of time to time object? | Kode Java
- string to time
date string to `DateTime` using java

string to time
string to time using java
date string to DateTime using java
date string to DateTime using java

Joda Time library

string to time

Search Log
date string to DateTime using Joda Time library

string to time
string to time using java
date string to DateTime using java
date string to DateTime using Joda Time library

java - Converting a date string to a DateTime object using Joda ...
https://stackoverflow.com/questions/409/converting-a-date-string-to-a-date-time-object-using-joda...
Jun 8, 2011 - vote 409. Use DateFormat : DateFormatter formatter = DateTimeFormat.
forPattern("dd/MM/yyyy HH:mm:ss"); DateTime dt = formatter.parseDateTime(string);

android - Joda Time String to Date and time conversion
May 24, 2017

java - Convert Date to DateTime using Joda
Oct 11, 2016

jodatime - How to convert string to datatime in java using joda ...
Oct 25, 2014

java - Using Joda-Time Library to Convert String to DateTime ...
Jul 19, 2012

More results from stackoverflow.com

Joda-Time - Java date and time API - User Guide
joda-time.sourceforge.net/userguide.html

We then say a few words about the role of interfaces in the library design, which is a ... The millisecond instant can be converted to any date time field using a Chronology. The initialization string must be in a format that is compatible with the ...

Architecture Overview · Chronology · Interface usage · Working with DateTime

Joda-Time – Java date and time API - Formatting - Joda.org
www.joda.org/joda-time/key_format.html

Oct 6, 2013 - Joda-Time provides a comprehensive formatting system. The case where the application needs to format a date-time in a manner appropriate ...

DateTimeFormat (Joda-Time 2.9.9 API) - Joda.org
https://www.joda.org/joda-time/apidocs/org/joda/time/format/DateTimeFormat.html

Creates a format that outputs a medium date format. The pattern string is described above in the class javadoc. It is very similar to SimpleDateFormat ...
date string to DateTime using Joda Time library

java - Converting a date string to a DateTime object using Joda ...
https://stackoverflow.com/.../converting-a-date-string-to-a-datetime-object-using-joda-...  
Jun 6, 2011 - vote 409. Use DateTimeFormat: `DateTimeFormatter formatter = DateTimeFormat.forPattern("dd/MM/yyyy HH:mm:ss"); DateTime dt = formatter.parseDateTime(string);`
android - Joda Time String to Date and time conversion  
May 24, 2017
java - Convert Date to DateTime using Joda  
Oct 11, 2016
jodatetime - How to convert string to datetime in java using joda ...  
Oct 25, 2014
java - Using Joda-Time Library to Convert String to DateTime ...  
Jul 19, 2012
More results from stackoverflow.com

Joda-Time - Java date and time API - User Guide
joda-time.sourceforge.net/uguideml.html

We then say a few words about the role of interfaces in the library design, which is a ...

Use `DateTimeFormat`:

```java
DateTimeFormatter formatter = DateTimeFormat.forPattern("dd/
DateTime dt = formatter.parseDateTime(string);
```

share improve this answer  
edited Aug 22 '13 at 11:02

JodaStephen
23k 0 261 57
date string to DateTime using Joda Time library

Joda-Time - Java date and time API - User Guide
joda-time.sourceforge.net/userguide.html

We then say a few words about the root interfaces in the library design, which is a ... The millisecond instant can be converted to any date field using a Chronology. ... The initialization string must be in a format that is compatible with the ... Architecture Overview · Chronology · Interface usage · Working with DateTime

Joda-Time – Java date and time API - Formatting - Joda.org
www.joda.org/joda-time/key_format.html

Oct 6, 2013 - Joda-Time provides a comprehensive formatting system. ... the case where the application needs to format a date-time in a manner appropriate ...

DateTimeFormat (Joda-Time 0.9 API) - Joda.org
https://www.joda.org/joda-time/apidocs/org/joda/time/format/DateTimeFormat.html

Creates a format that outputs a medium date format. ... The pattern string is described above in the class level javadoc. It is very similar to SimpleDateFormat ...
world cup fixtures
### FIFA World Cup

**Group Stage · Matchday 1 of 3**

<table>
<thead>
<tr>
<th>MATCHES</th>
<th>NEWS</th>
<th>STANDINGS</th>
<th>STATS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Russia</td>
<td>🟢</td>
<td>Egypt</td>
<td>🟢</td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>🟦</td>
<td>Uruguay</td>
<td>🟦</td>
</tr>
<tr>
<td>Morocco</td>
<td>🟠</td>
<td>Portugal</td>
<td>🟠</td>
</tr>
<tr>
<td>Iran</td>
<td>🟨</td>
<td>Spain</td>
<td>🟨</td>
</tr>
<tr>
<td>France</td>
<td>🟦</td>
<td>Argentina</td>
<td>🟦</td>
</tr>
<tr>
<td>Australia</td>
<td>🟨</td>
<td>Iceland</td>
<td>🟨</td>
</tr>
</tbody>
</table>

All times are in Eastern Time.

---

**String to time**: Convert a string to a time using Java.
**Date string to DateTime**: Convert a date string to a `DateTime` using Java.

---

**World Cup fixtures**: The full schedule for Russia 2018.

*Football News*
string to time
string to time using java
date string to DateTime using java
date string to DateTime using Joda ...
world cup fixtures
place to visit in gothenburg
Code Query

Query
string to time
string to time using java
date string to DateTime using java
date string to DateTime using Joda Time library
Search Task

Convert a date string to a DateTime object using Joda Time library

Query
string to time
string to time using java
date string to DateTime using java
date string to DateTime using Joda Time library
Code vs Non-code

**Query**
- string to time
- string to time using java
- date string to DateTime using java
- date string to DateTime using Joda Time library

**Query**
- world cup fixtures
- place to visit in gothenburg
- hotel in gothenburg
General Purpose Search Engine for Code Retrieval

Query
- string to time
- string to time using java
- date string to DateTime using java
- date string to DateTime using Joda Time library

Query
- world cup fixtures
- place to visit in gothenburg
- hotel in gothenburg
Research Goal

Query characteristics
- User behavior

Query
- string to time
- string to time using java
- date string to DateTime using java
- date string to DateTime using Joda Time library

Query
- world cup fixtures
- place to visit in gothenburg
- hotel in gothenburg
Dataset

Query Search Log

string to time
string to time using java
date string to DateTime using java
date string to DateTime using Joda Time library
world cup fixtures
place to visit in gothenburg
hotel in gothenburg

Users: 310 (mostly developer)
Consist of code and non-code queries
Total query: 150K
Dataset

Query Search Log

- string to time
- string to time using java
- date string to DateTime using java
- date string to DateTime using Joda Time library
- world cup fixtures
- place to visit in gothenburg
- hotel in gothenburg

No label

Code or Non-code ?
Dataset

Query Search Log

string to time
string to time using java
date string to DateTime using java
date string to DateTime using Joda Time library
world cup fixtures
place to visit in gothenburg
hotel in gothenburg

No label

Code or Non-code ?

Query Classifier
Intent-based Query Classification
Code Intent Analysis

**Query:** javascript function to get mp3 play length
# Code Intent Analysis

**Query:**

<table>
<thead>
<tr>
<th>javascript</th>
<th>function</th>
<th>to</th>
<th>get</th>
<th>mp3</th>
<th>play</th>
<th>length</th>
</tr>
</thead>
</table>

`CodeScore ?`
## Code Intent Analysis

### Query:

<table>
<thead>
<tr>
<th>Token</th>
<th>CodeScore</th>
</tr>
</thead>
<tbody>
<tr>
<td>javascript</td>
<td>17</td>
</tr>
<tr>
<td>function</td>
<td>7</td>
</tr>
<tr>
<td>to</td>
<td>0</td>
</tr>
<tr>
<td>get</td>
<td>6</td>
</tr>
<tr>
<td>mp3</td>
<td>5</td>
</tr>
<tr>
<td>play</td>
<td>8</td>
</tr>
<tr>
<td>length</td>
<td>3</td>
</tr>
</tbody>
</table>

### Token Code Intent

\[
f(x) = \begin{cases} 
1 + \log_2(n), & \text{if } x \in S \\
0, & \text{if } x \notin S 
\end{cases}
\]

- \( S = \text{set of code related tags} \)
- \( n = \text{popularity of a tag} \)

Why is document.write considered a “bad practice”?

I know document.write is considered bad practice; and I'm hoping to 3rd party vendor as to why they shouldn't use document.write in imp
Code Intent Analysis

Query:
javascript function to get mp3 play length

Token Code Intent
\[ f(x) = \begin{cases} 
1 + \log_2(n), & \text{if } x \in S \\
0, & \text{if } x \notin S 
\end{cases} \]

Query Code Intent
\[ \text{cscore}(Q) = \sum_{i=1}^{m} f(x_i) \]
## Query Code Score

<table>
<thead>
<tr>
<th>Query</th>
<th>Code Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>string to time</td>
<td>12</td>
</tr>
<tr>
<td>string to time using java</td>
<td>20</td>
</tr>
<tr>
<td>date string to DateTime using java</td>
<td>22.5</td>
</tr>
<tr>
<td>world cup fixtures</td>
<td>0</td>
</tr>
<tr>
<td>messi curly goal</td>
<td>2.6</td>
</tr>
<tr>
<td>place to visit in gothenburg</td>
<td>0</td>
</tr>
</tbody>
</table>
## Query Code Score

<table>
<thead>
<tr>
<th>Query</th>
<th>Code Score</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>string to time</td>
<td>12</td>
<td>?</td>
</tr>
<tr>
<td>string to time using java</td>
<td>20</td>
<td>?</td>
</tr>
<tr>
<td>date string to DateTime using java</td>
<td>22.5</td>
<td>?</td>
</tr>
<tr>
<td>world cup fixtures</td>
<td>0</td>
<td>?</td>
</tr>
<tr>
<td>messi curly goal</td>
<td>2.6</td>
<td>?</td>
</tr>
<tr>
<td>place to visit in gothenburg</td>
<td>0</td>
<td>?</td>
</tr>
</tbody>
</table>
## Query Code Score

<table>
<thead>
<tr>
<th>Query</th>
<th>Code Score</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>string to time</td>
<td>12</td>
<td>?</td>
</tr>
<tr>
<td>string to time using java</td>
<td>20</td>
<td>?</td>
</tr>
<tr>
<td>date string to DateTime using java</td>
<td>22.5</td>
<td>?</td>
</tr>
<tr>
<td>world cup fixtures</td>
<td>0</td>
<td>?</td>
</tr>
<tr>
<td>messi curly goal</td>
<td>2.6</td>
<td>?</td>
</tr>
<tr>
<td>place to visit in gothenburg</td>
<td>0</td>
<td>?</td>
</tr>
</tbody>
</table>

### Classifier Evaluation

- **Manually annotated 380 queries**
- **Threshold = 10**
- Precision: 87%
- Recall: 86%
- F1-score: 87%
## Query Code Score

<table>
<thead>
<tr>
<th>Query</th>
<th>Code Score</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>string to time</td>
<td>12</td>
<td>Code</td>
</tr>
<tr>
<td>string to time using java</td>
<td>20</td>
<td>Code</td>
</tr>
<tr>
<td>date string to DateTime using java</td>
<td>22.5</td>
<td>Code</td>
</tr>
<tr>
<td>world cup fixtures</td>
<td>0</td>
<td>Non-code</td>
</tr>
<tr>
<td>messi curly goal</td>
<td>2.6</td>
<td>Non-code</td>
</tr>
<tr>
<td>place to visit in gothenburg</td>
<td>0</td>
<td>Non-code</td>
</tr>
</tbody>
</table>

### Classifier Evaluation

- Manually annotated 380 queries
- **Threshold = 10**
  - Precision: 87%
  - Recall: 86%
  - F1-score: 87%
## Query Code Score

<table>
<thead>
<tr>
<th>Query</th>
<th>Code Score</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>string to time</td>
<td>12</td>
<td>Code</td>
</tr>
<tr>
<td>string to time using java</td>
<td>20</td>
<td>Code</td>
</tr>
<tr>
<td>date string to DateTime using java</td>
<td>22.5</td>
<td>Code</td>
</tr>
<tr>
<td>world cup fixtures</td>
<td>0</td>
<td>Non-code</td>
</tr>
<tr>
<td>messi curly goal</td>
<td>2.6</td>
<td>Non-code</td>
</tr>
<tr>
<td>place to visit in gothenburg</td>
<td>0</td>
<td>Non-code</td>
</tr>
</tbody>
</table>

### Classifier Evaluation
- Manually annotated 380 queries
- **Threshold = 10**
  - Precision: 87%
  - Recall: 86%
  - F1-score: 87%

### Annotated Data
- Code: 89K (59%)
- Non-code: 61K (41%)
Research Questions

Query Characteristics

RQ1. How do query characteristics differ for code and non-code queries?

User Behavior

RQ2. How do search behaviors vary for code and non-code related queries?

RQ3. How do task sessions vary for code and non-code related search tasks?
Results
RQ1: Query Characteristics

Code
- date string to DateTime using java
- date string to DateTime using Joda Time library
- javascript function to get mp3 play length

Non-code
- world cup fixtures
- messi curly goal
- hotel in gothenburg

☑️ Code queries often longer (more tokens) than non-code
## RQ1: Query Characteristics

<table>
<thead>
<tr>
<th>Code</th>
<th>Non-code</th>
</tr>
</thead>
<tbody>
<tr>
<td>date string to DateTime using java</td>
<td>world cup fixtures</td>
</tr>
<tr>
<td>date string to DateTime using Joda <strong>Time library</strong></td>
<td>messi curly goal</td>
</tr>
<tr>
<td>javascript function to get mp3 play length</td>
<td>hotel in gothenburg</td>
</tr>
</tbody>
</table>
RQ1: Query Characteristics

- Code queries contain less vocabulary (unique tokens) than non-code queries.

- Code: 16K
- Non-code: 33K

- Code and non-code share 12K common tokens.
## RQ2: Query Search Behavior

<table>
<thead>
<tr>
<th>Code</th>
<th>Query</th>
<th># term added</th>
<th># term deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>string to time</strong></td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>string to time using java</strong></td>
<td></td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td><strong>date string to DateTime using Joda Time library</strong></td>
<td></td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td><strong>Non-code</strong></td>
<td>hotel in gothenburg</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>best hotel in gothenburg</strong></td>
<td></td>
<td>1</td>
<td>-</td>
</tr>
</tbody>
</table>
## RQ2: Query Search Behavior

<table>
<thead>
<tr>
<th>Code</th>
<th>Query</th>
<th># term added</th>
<th># term deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>string to time</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>string to time using java</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td><strong>date</strong> string to <strong>DateTime</strong> using <strong>Joda Time library</strong></td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Edited query</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-code</td>
<td>hotel in gothenburg</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Non-code</td>
<td><strong>best</strong> hotel in gothenburg</td>
<td>1</td>
<td>-</td>
</tr>
</tbody>
</table>
RQ2: Query Search Behavior

<table>
<thead>
<tr>
<th>Query</th>
<th># term added</th>
<th># term deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Code</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>string to time</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>string to time using java</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>date string to DateTime using Joda Time library</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td><strong>Non-code</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>hotel in gothenburg</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>best hotel in gothenburg</td>
<td>1</td>
<td>-</td>
</tr>
</tbody>
</table>

User often add/delete more terms (avg. 2) to a code compared to non-code (avg. 1)
## RQ2: Query Search Behavior

<table>
<thead>
<tr>
<th>Code</th>
<th>Query</th>
<th># term added</th>
<th># term deleted</th>
<th>Code Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>string to time</td>
<td>-</td>
<td>-</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>string to time using java</td>
<td>2</td>
<td>-</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>date string to DateTime using Joda Time library</td>
<td>4</td>
<td>2</td>
<td>30.5</td>
</tr>
</tbody>
</table>
## RQ2: Query Search Behavior

<table>
<thead>
<tr>
<th>Query</th>
<th># term added</th>
<th># term deleted</th>
<th>Code Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>string to time</td>
<td>-</td>
<td>-</td>
<td>12</td>
</tr>
<tr>
<td>string to time using java</td>
<td>2</td>
<td>-</td>
<td>20</td>
</tr>
<tr>
<td>date string to DateTime using Joda Time library</td>
<td>4</td>
<td>2</td>
<td>30.5</td>
</tr>
</tbody>
</table>

*Edit query to increase code intent*
## RQ3: Task Search Behavior

<table>
<thead>
<tr>
<th>Query</th>
<th># query</th>
<th>Task intent</th>
</tr>
</thead>
<tbody>
<tr>
<td>string to time</td>
<td></td>
<td>Converting a date string to a Time object</td>
</tr>
<tr>
<td>string to time using java</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>date string to DateTime using Joda Time library</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Query</th>
<th># query</th>
<th>Task intent</th>
</tr>
</thead>
<tbody>
<tr>
<td>hotel in gothenburg</td>
<td>2</td>
<td>Hotel booking in Gothenburg</td>
</tr>
<tr>
<td>best hotel in gothenburg</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

More queries required to complete a code task.
### RQ3: Task Search Behavior

<table>
<thead>
<tr>
<th>Query</th>
<th>Task intent</th>
<th>Search duration (minute)</th>
<th># web visit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code Task</td>
<td>string to time</td>
<td>Converting a date string to a Time object</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>string to time <strong>using java</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>date</strong> string to <strong>DateTime</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>using <strong>Joda Time library</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-code Task</td>
<td>hotel in gothenburg</td>
<td>Hotel booking in Sweden</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>hotel in <strong>stockholm</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

☑️ More time and website visit required to complete code related tasks
Code queries are linguistically different
Users modify code queries more often
Users give significantly more effort for code task
Summary

Code queries are linguistically different
Users modify code queries more often
Users spend significantly more effort for code task

Code search is less effective
Summary

- Code queries are linguistically different
- Users modify code queries more often
- Users spend significantly more effort for code task

Special treatment required to improve code retrieval

Code search is less effective
Code queries are **linguistically different**
- Users **modify** code queries **more often**
- Users spend significantly **more effort** for code **task**

Special treatment required to improve code retrieval

Code search is **less effective**